

**Report of the General Auditor
to city council and the agglomeration council
concerning the audit of the entire process involving the acquisition and
installation of water meters in IBIs, as well as the optimization of the
entire Montréal agglomeration water network**

**September 21, 2009 meeting of city council
September 24, 2009 meeting of the agglomeration council**

ISBN: 978-2-7647-0864-4
<http://www.ville.montreal.qc.ca/verificateur>

SCOPE OF THE WORK

Our audit focussed on the following elements:

- The calls for tenders process leading to the award of a \$355,846,518 contract to GÉNIeau, Groupe d'experts in 2007 for the execution of Phase 1 (installation of water meters in industries, businesses and institutions [IBI]) and Phase 2 (network optimization);
- The calls for qualification process for the execution of Phase 1 (installation of water meters in industries, businesses and institutions [IBI]) and Phase 2 (network optimization);
- The choice of technical solutions and the costs for the execution of Phase 1 (installation of water meters in industries, businesses and institutions [IBI]) and Phase 2 (network optimization);
- The involvement of BPR Inc. between 2004 and 2007 and the additions to BPR Inc.'s initial contract;
- The management and overall governance of the initial project to install water meters in industries, businesses and institutions, as well as the changes in direction to that project;
- The retracing of the history of the water file from 2002 until 2007 in relation to the project regarding the installation of water meters in IBIs and the network optimization.

To fulfil this mandate, we have reviewed more than 16,000 pages of documents that were submitted to us from both internal and external sources. The majority of these documents were related to the *Water program* and the *IBI and Network Optimization* project. These documents were issued or drafted between 2002 and the audit end date.

We also met with 27 individuals, 17 of whom are currently or were previously employed by the City of Montréal prior to or during the audit period, 2 elected officials and 8 members of non-City organizations involved in the *Water program* and the *IBI and Network Optimization* project. We would like to thank everyone who agreed to meet with us and provide us with the pertinent information and documents they had in their possession.

We used a multidisciplinary team involving both internal and external auditors and investigative forensic accountants, engineers, lawyers and governance specialists.

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I. MANDATE AND CONTEXT

I.1 INTRODUCTION

During its April 21, 2009 meeting, city council adopted a resolution mandating the General Auditor of the City of Montréal to:

- *[Translation] “conduct an audit to examine the entire process of the awarding of a contract to GÉNleau, Groupe d’experts by the agglomeration council on November 29, 2007 (CG07 0449), and to submit a report on the matter at the June 18, 2009 meeting of the agglomeration council¹;*
- *mandate the executive committee, pursuant to the Act, to authorize, if applicable, the necessary budgets for the general auditor to be able to fulfil this mandate with due diligence and without prejudice to his primary duties and responsibilities within the meaning of the Act.”*

We followed an approach as well as audit procedures in order to determine whether:

- the recommended solution for the implementation of the *IBI and Network Optimization* project reasonably meets the needs of the City and optimizes its cost-effectiveness;
- the contract was awarded to GÉNleau, Groupe d’experts (GÉNleau) in compliance with the guidelines, by-laws and laws in force, as well as with the established principles regarding the acquisition of goods and services, including transparency, competition, equity, ethics and the achievement of best value;
- the contract was awarded to GÉNleau at a fair price and, all in all, if Montrealers will receive fair value for their money;
- the approach taken during the process respected the laws, by-laws and guidelines in force, as well as generally accepted best practices.

We understand that performing the work related to the *IBI² and Network Optimization* project (the “Project”) led to the awarding of a contract (the “Contract”) to GÉNleau, Groupe d’experts, S.E.C. (the “Contractor”) on November 29, 2007 for an amount of \$356 million, taxes included.^{3 4}. To this

¹ At its May 25, 2009 meeting, city council granted the General Auditor’s request to postpone the tabling of his report until the September 21, 2009 meeting of city council and the September 24, 2009 meeting of the agglomeration council.

² Industries, businesses and institutions.

³ In (non-indexed) 2007 dollars.

⁴ Unless specifically indicated, all dollar amounts referred to in this document are exclusive of taxes.

amount were added other expenses totalling \$68 million (taxes included), which were not part of the contract. This contract was duly signed by both parties on March 17, 2008.

I.2 BACKGROUND

The first phase of the *IBI and Network Optimization* project is concerned with the acquisition and installation of water meters to measure water consumption in buildings used entirely or in part for non-residential purposes (industries, businesses and institutions – IBI). Data transmission equipment (telemetry) will be attached to the meters. The project’s plan stipulates that meters will be installed in IBI buildings over a five-year period. Furthermore, the contractor chosen is required to guarantee meter operation for 15 years. The cost of this phase, as specified in the bid submitted by the Contractor, amounts to approximately \$122 million, taxes included.

The second part of the project, designated by the expression “network optimization,” focuses on the acquisition and set-up of 450 flow or pressure measurement sites and the set-up of 150 control sites within the agglomeration’s entire water network. Data transmission equipment (telemetry) for the Island of Montréal will be attached to the planned measurement equipment. The project’s plan stipulates that network measurement and control sites will be set up over a 10-year period. Furthermore, according to the contract, the contractor is required to guarantee the operation of equipment on the network for a 25-year period. The cost of this phase, as specified in GÉNleau’s bid, amounts to approximately \$234 million, taxes included.

The data from the water meters and measurement or control sites must enable the City to review water production and consumption.⁵ This data will be sent to a command centre, which will consolidate all the data collected from water meters as well as measurement or control sites. The contractor must ensure the transmission of data to the command centre for the entire duration of the project. In this respect, the Contract that the City signed with GÉNleau includes a guaranteed performance component, whereby the City only pays for data actually received. All data transmission equipment attached to IBI meters and meters on the distribution network will remain the property of GÉNleau at the end of the contract.

⁵ Although opinions are divided on the definition of the expression “review of water consumption,” it seems that this term refers to the operation used to determine the difference between the water produced and distributed by water treatment plants and the water consumed by the various users, which constitutes estimated water loss in the network.

Soft costs of \$67.8 million, including \$12.0 million for a command centre that will receive all data, will have to be added to the contract.

The City of Montréal has issued “reviews of water consumption” for over 50 years. These reviews are conducted on portions or particular areas of the network in order to determine consumption and losses in those areas. These reviews differ from the network optimization solution included in the contract since:

- they are conducted only in specific areas and not on the entire network;
- they are conducted on an ad-hoc basis and not in real time.

The Montréal agglomeration has a huge water network comprising 7 production plants and more than 5,500 km of pipes. The plants produce close to 725 million m³ of water annually, which is about 2 million m³ of water per day. Analysing this data enables per capita consumption to be pegged at about 1,100 litres per day. Consumption is therefore higher than in other large Canadian cities such as Calgary (568 litres per day), Edmonton (543 litres per day), Toronto (594 litres per day) and Ottawa (415 litres per day).⁶

The various specialists who contributed to different preliminary studies made the following observations:

- between 20% and 40% of the water distributed in the City’s network is lost;
- the primary cause of this loss is due to existing leaks in the network.

In part, the *IBI and Network Optimization* project is intended to provide more accurate measurement of water consumption and quicker detection of leaks in Montréal water mains.

⁶ This data is taken from a PricewaterhouseCoopers study dated January 2004.

II. EXECUTIVE SUMMARY

II.1 INTRODUCTION

At its May 12, 2004 meeting, the executive committee of the City of Montréal approved a series of measures concerning the execution of water management projects. Among these measures, the executive committee authorized the City Manager to issue calls for bidders as part of a qualification process for professional services as well as calls for tenders. These particular measures concerned the project to install and operate water meters in industries, businesses and institutions (IBI), the project to ensure plants' compliance with standards (PCS) and the planning for the work to be done on aqueduct and sewer networks and for the assessment of their condition (PW).

The cost of the work involved in installing and operating water meters in IBIs, as presented to the executive committee, was \$32 million, plus an additional \$4 million in professional services fees, for a total of \$36 million.

On November 21, 2007, the executive committee recommended that the agglomeration council retain the proposal for an indexed contract submitted by GÉNleau, Groupe d'experts, in response to the call for proposals for *[Translation] Measuring water consumption of industries, businesses and institutions, monitoring and optimizing water distribution*, for an amount of \$355,846,518, including taxes but excluding indexing costs. The executive committee also recommended that GÉNleau be awarded the contract to execute the project.

Furthermore, the executive committee recommended that the City's agglomeration council authorize a total expenditure of \$423,633,198, including taxes but excluding indexing costs, for a solution to monitor the drinking water distribution network over a 25-year period. Accordingly, the additional expenditures recommended by the executive committee came to roughly \$67.8 million.

As we will show in this report, the initial water meter project, first estimated at \$36 million, was to be limited to the installation and operation of water meters in industries, businesses and institutions (IBI). While the professional services contract for the IBI project was being carried out by BPR Inc., its consultants recommended that a second phase be added for the real-time management of the network. Those responsible for the project and the City's executive committee approved the recommendation. This addition, combined with the inclusion of various key contractual

requirements, including a performance clause in the call for proposals, is mostly responsible for increase in the project cost to \$423 million in just over three years.

In this report, we will analyze the circumstances that led to the addition of a second phase to the project and the approval process for this particular change. As we will see, **we have serious reservations** about the manner in which the initial project was modified as well as the **haste with which the new network optimization phase, a change that represented a significant addition from both a monetary and a technological standpoint, was introduced and approved by those responsible for the file.**

We will also be looking at the technological aspect of the project and the reasonableness of the recommended solutions for the implementation of the *IBI and Network Optimization* project. As we will see, although the newer version of the project has undeniable appeal from a technological perspective, **we feel that it does not fully meet the current needs of the network and does not provide optimal cost-effectiveness for the City.**

Finally, this report addresses the process that led to the awarding of the contract to GÉNleau. As we will see, several aspects of the process complied with the corresponding frameworks, by-laws and legislation. However, we have questions about other aspects of the process, including the manner in which the call for qualification, issued in June 2006, and the call for proposals, issued in April 2007 for the implementation of the *IBI and Network Optimization* project, were developed and managed. We have ascertained that the inclusion of the water meter and network optimization components in the same call for qualification, coupled with strict financing and performance requirements, lessened the opportunity for a really competitive process.

The April 2007 issue of a single call for proposals combining the water meter and network optimization phases, instead of separate, consecutive calls for proposals as was originally planned, increased the project's complexity, as was subsequently evidenced by the high number of addenda (14) that needed to be issued, and did not provide the City with any assurance that it would obtain the best price.

II.2 THE BEGINNINGS OF THE WATER PROGRAM AND THE CREATION OF THE WATER FUND

In March 2002, the City of Montréal initiated what is commonly known as the *Water program*. The purpose of this 20-year program was to unify all water-producing resources on the island, ensure

water production and purification plants comply with standards and rebuild the entire water distribution network.

In 2002, two studies of the water situation were conducted. The first, carried out by the firm SNC-Dessau, highlighted the investment requirements for the next 20 years, which were estimated in 2002 at \$3.2 billion. Of that total, an amount of \$53.1 million was allocated to the installation of water meters in IBIs. The second study, conducted by PricewaterhouseCoopers ("PwC"), suggested setting up a rate structure on the basis of metered user consumption profiles. The PwC study estimated that an investment of \$4.0 billion over the next 20 years would be required, taking inflation into account.

Subsequently, two new studies were produced from the CFC Group (CFC) and PwC. The first was aimed at developing and implementing an overall organizational structure for the public management of water and the second at drafting an economic and financial profile of the public management of water. In November 2003, CFC tabled a report that suggested that "water operations" be treated as distinct from other City activities. As for PwC, it suggested in the financial component of its study that volumetric pricing be used for all consumers. At that time, and without taking into account the installation of meters in residential buildings with fewer than 12 units, PwC estimated that the installation of meters in IBIs and residential buildings with 12 or more units would cost \$32.0 million and would allow for the control of more than 50% of the water consumed on the territory of the agglomeration.

Consequently, at the end of 2003, the executive committee approved the organizational model recommended by CFC and authorized its implementation. Simultaneously, the City established a dedicated budgetary envelope called the *Fonds de l'eau* (Water Fund), an allocation that started with a sum of \$25.0 million, which was to increase by \$20.0 million per year until it reached a total of \$200.0 million, an amount that would be sufficient to meet the annual needs estimated by PwC. The City thus introduced a measure aimed at implementing a meter-assisted rate structure for IBIs, effectively shelving the idea of installing meters in the residential sector.

II.3 ISSUE OF CALLS FOR QUALIFICATION FOR PCS, PW AND IBI PROJECTS

In August 2004, the City issued calls for qualification in order to retain the professional services of firms capable of advising it for the three major components of the *Water program*:

- Ensuring plants' compliance with standards (PCS);

- Planning for the work to be done on aqueduct and sewer networks and for the assessment of their condition (PW);
- Installing and operating meters in IBIs (industries, businesses and institutions).

The qualification process for the IBI project involved the planning, organization, implementation and management of an action plan to measure the water consumption of all industries, businesses and institutions within the City. We will refer to this component as Phase 1 of the IBI project.

The documentation for the call for qualification also mentioned that the bidder could be required to carry out additional work as requested by the City related to the measurement of water consumption, such as meters for the aqueduct network, the compilation of hydraulic data and so forth.

In September 2004, five firms tendered their bids. Following the analysis of these candidates, four firms qualified for the IBI project.

II.4 CALL FOR INVITATIONAL TENDERS FOR THE PCS, PW AND IBI PROJECTS

On October 27, 2004, the City Manager authorized a call for invitational tenders to retain professional services in order to implement the PCS, PW and IBI projects.

Candidates submitted their proposals in 2004 and, following the selection process, the services of BPR Inc. were retained in February 2005 for the IBI project.

II.5 MANDATE AWARDED TO BPR

BPR's mandate was to provide approximately 100,000 hours of professional services for Phase 1 of the IBI project, for a total of approximately \$7.42 million, taxes included (\$6.45 million before taxes). These services were to be provided over a 10-year period, although more than half of the fees were to be incurred in 2005.

No amounts were planned for the real-time management of the network, i.e. network optimization. The mandate awarded to BPR was divided into two phases:

- Exploration phase: this phase comprised analyses and studies to determine the work involved in installing the meters, the development and assessment of various implementation scenarios,

- Implementation phase: this phase included the monitoring of work, change and resource management, work coordination as well as schedule and budget monitoring.

When the contract was awarded to BPR in February 2005, the objective of the project was still the installation of meters in IBIs. The estimated cost of the IBI project at the time was \$40 million for new meters or \$60 million if the replacement of existing meters was included.

Most of BPR's work in 2005 involved preliminary market analyses and the pilot installation of water meters. We were unable to locate any analyses or studies that dealt with the selection of an implementation scenario, although the mandate awarded to BPR included the preparation and delivery of such scenarios. However, we ascertained that, starting early in the BPR mandate, the real-time management of the system was a concept that gradually made its way into the meeting minutes of the project management committees.

II.6 ORGANIZATIONAL STRUCTURE

In 2004, the City created a Bureau de projets to oversee the three projects (PCS, PW and IBI). This Bureau de projets was managed by a project director who reported to the director of the Service des infrastructures, transport et environnement (SITE). Each of these projects was managed by a project manager working in conjunction with the external professional consultants retained for this purpose. The IBI project was therefore under the control of a project manager reporting to the director of the Bureau de projets, working under the supervision of the director of the Direction de l'eau. The professionals from BPR joined this team.

Based on our observations, although the structure, tools and procedures put into place by the Bureau de projets to plan and monitor the water program in general and the IBI project in particular were consistent with recognized best practices, we understand that several obstacles were encountered in the management of the project, specifically in terms of the overlap between the work carried out by the various teams and the responsibilities of each party. In other words, the management philosophy that officials had initially intended to implement was disregarded. As we will see in the report, one of the main reasons for this failure is the fact that the Bureau de projets was deployed at the same time as the launch of the IBI project and the start of the BPR mandate, instead of being up and running well in advance. In addition, the composition of the Bureau de

projets was deficient, lacking several key City representatives, especially experts in technical, legal and financial matters.

In fact, we were astounded that the City's Direction du contentieux (legal department) was not actively involved in the project from the start. We believe that it would have been wise to involve the City's legal advisors in an undertaking of this magnitude.

II.7 CHANGE IN THE DIRECTION OF THE PROJECT AND ADDITION OF PHASE 2

Between February and the end of May 2006, the IBI project changed drastically through the inclusion of the real-time management of the network, also referred to as network optimization or Phase 2 of the IBI project.

This began in February 2006 when BPR presented Phase 2 to IBI project leaders and suggested the possibility of adding it to Phase 1. This presentation was followed by others made by BPR and a few IBI project leaders, including some intended for the mayor of Montréal and Messrs. Zampino and Forcillo. Phase 2 was formally adopted following a presentation made to the executive committee on May 31, 2006. On that same date, the City Manager was given a mandate to authorize the issue of a call for tenders for the *IBI and Network Optimization* project. It is clear from reading this presentation that, at that point, the network optimization (real-time network management) phase was part of the project and that a mandate had been given to the City Manager "to authorize the issue of **all the necessary calls for tenders.**"⁷ In concrete terms, this meant the issue of a call for qualification in June 2006, covering Phases 1 and 2 of the IBI project, which was supposed to be followed by two calls for proposals.

During our interviews with certain City stakeholders, we ascertained that the addition of Phase 2 was not unanimously agreed upon by the City employees in charge of the IBI project. Most, if not all, of those we met concurred that Phase 2 was certainly interesting for the City from a technological point of view. However, many of them had reservations about how quickly this phase had taken precedence over Phase 1. They also expressed concerns about its inclusion in a call-for-qualification process without first undergoing all of the requisite in-depth analyses and studies (including feasibility and profitability studies) that normally accompany a project of this scope. In fact, although there were no precise estimates available, everyone involved expected at the time

⁷ Our underlining and bold-face type.

that the cost of Phase 2 would be high. During the presentation made to the executive committee on May 31, 2006, the figure put forward for the first three years of the project was \$95 million. Our understanding is that the presenters indicated to elected officials that the costs would be much higher, but that they would be offset by the future savings expected from Phase 2. However, no formal preliminary study supported this assertion.

II.8 DEBATING WHETHER PHASE 2 IS A REASONABLE AND OPTIMALLY COST-EFFECTIVE SOLUTION TO THE CITY'S NEEDS

Phase 2 comprises several experimental aspects that have recently been introduced, in a limited way, elsewhere in North America. To the best of our knowledge, the only cities to have implemented these principles of permanent network sectorization are Halifax, in Canada, and Philadelphia, in the United States.

The main goal of Phase 2 is the detection of network leaks. The traditional approach to leak detection involves subdividing the territory in question into isolated areas (areas for monitoring water distribution) for which "intake minus discharge" reports are conducted to detect leaks. The sectors where relatively significant leaks are found are then subjected to a more extensive program to detect leaks before any breakdown occurs.

The main difference between this traditional approach and the new one proposed within this project is the permanent nature of the sectorization. Upon approval, the subdivision of the territory into areas for distribution monitoring was to be final and permanent. Each area would be connected to neighbouring ones either by permanently closed valves or by flow meters that measure water intake and discharge for reporting purposes.

At first glance, this approach seems attractive in terms of reducing the flow of leaks, especially given the network's advanced state of deterioration. Moreover, the recommended pressure modulation in Phase 2 has already been used on the Island of Montréal on a selective basis for many years. It must be encouraged and installed in a very structured and targeted way in areas where it is justified and economically viable.

However, the real value-added solution still remains pipe replacement or rehabilitation. Many of the City stakeholders we met voiced this same opinion. Phase 2 does rely on data from the IBI project since the information from the meters will be used in establishing reviews of water consumption in areas for distribution monitoring. But the connection between Phases 1 and 2 stops there. It would

have been possible, and probably wiser, to install meters in IBIs and subsequently proceed with a better-planned installation operation in Phase 2.

In addition, before deciding to systematically implement real-time management throughout the Island of Montréal and commit to a 25-year agreement with a contractor, it would have been necessary, in our opinion, to integrate this component into the PW plan – the phase dedicated to the renewal of the aqueduct and sewer networks – in order to prioritize the areas that require the most urgent attention and to support this project with relevant economic analyses.

We feel that the implementation of Phase 2 was overly hasty. The project should have been given more thorough consideration by using pilot projects in the sectors at the most risk, before a call for tenders of such magnitude was issued.

II.9 THE CALL FOR QUALIFICATION FOR THE IBI AND NETWORK OPTIMIZATION CONTRACT (2006)

Following up on the mandate given to the Director General on May 31, 2006, a call for qualification was issued on June 28, 2006 to select companies for the *IBI and Network Optimization* project. Even though the two phases are separate according to this call for qualification, which even contains a reference to the subsequent issue of one or more calls for proposals, the evaluation grid included both phases.

Furthermore, there is reason to question the appropriateness of the planned issue of calls for proposals, as opposed to calls for tenders. For this purpose, we can only point out that originally, the City favoured generic, commercially available products, but at the call for qualification stage, candidates were told that they must demonstrate *[Translation]* “*how they can stand out from the competition by making use of leading-edge processes and innovative, original solutions.*” The subsequent issue of one or more calls for proposals, as opposed to calls for tenders, would, in our opinion, make it more difficult to make comparisons between bidders.

More than 30 firms requested call-for-qualification documents, but only four consortia (grouping together eleven companies) submitted their bids in early September 2006. Some of the factors that account for the low number of candidates are the inclusion of both Phases 1 and 2 in the call for qualification, the conditions related to overall project funding and the weight given to experience working with the City of Montréal. This finding causes us to question whether the principle of free competition was being followed, especially since, as we pointed out above, separate calls for

tenders could have been issued for Phases 1 and 2. Through the selection process, which took place in mid-October 2006, three groups qualified:

- The Catania–SM consortium in collaboration with CGI, Endress+Hauser and Comab;
- GÉNleau, made up of Groupe-Conseil Dessau-Soprin and Simard-Beaudry Construction;
- The SNC-Lavalin–Gaz Métro Plus–Suez Environnement Group.

In reading the documents submitted by the different candidates involved in the selection process, we learned that each of the groups that submitted a proposal wanted to demonstrate its ability to carry out both phases. However, in reading certain documents that were produced around the same time as three candidates were selected in October 2006, we noticed that at this point, the City had not yet made a final decision whether to issue a single call for proposals encompassing Phases 1 and 2 of the IBI project or to issue two separate calls for proposals.

For this purpose, we are convinced that it would have been to the City's advantage to divide the overall project into several sub-projects, thereby allowing several bidders to submit their candidacies for these different calls for tenders and optimizing the quality-price ratio.

II.10 THE CALL FOR PROPOSALS FOR THE IBI AND NETWORK OPTIMIZATION PROJECT

It seems that it was around November 2006 that the project leads decided to issue only one call for proposals. This decision was presented and discussed at a meeting held on January 17, 2007 between the project leads and City representatives. This decision did not have unanimous support among the project leads. The director of the Bureau de projets at the time was particularly opposed to it.

Finally, a single call for proposals that included Phases 1 and 2 of the IBI project was issued on April 18, 2007. When the final proposals were submitted on October 10, 2007 by GÉNleau and the Catania–SM consortium (the SNC-Lavalin–Gaz Métro Plus–Suez Environnement Group having elected to withdraw), they were designed for a project that was substantially different from the one initially considered, since the original call for proposals had been subject to two reports and 14 addenda during the process. A later chapter in this report addresses the important elements contained in the original call for proposals and reveals the changes implemented.

II.11 EXAMPLES OF CHANGES MADE TO THE ORIGINAL CALL FOR PROPOSALS

After an addendum was issued on September 14, 2007, the risk, which, according to the original call for proposals, was to be assumed mainly by the contractor, was at that point transferred largely to the City. Yet, the documents prepared by the candidates invited to submit proposals and the various financial stakeholders who needed to study the issue clearly indicate that the project, such as it was presented in the initial call for proposals, was difficult, if not impossible, to carry out.

In this regard, note that the call for proposals, like the call for qualification, required that the successful bidder fund the entire project. This requirement was requested largely because some project leads believed, wrongly, that the contract could be accounted for “off-balance sheet,” meaning that neither the debt nor the equity would be shown in the City’s financial statements, and that only amounts billed and paid for work carried out would be accounted for during the life cycle of the contract. Strangely, this approach or way of thinking, which in our view violated generally recognized accounting principles, had been criticized from the outset by a number of stakeholders, but was not necessarily communicated to elected officials.

Furthermore, after this addendum was issued, we note that Phase 1 (IBI meters) was now to be implemented over a 15-year rather than a 25-year period, thereby forcing the City to replace a large number of these meters at the end of this operational period. We also note that at the end of the contract the City would not acquire ownership of the IBI meter reading system and the SCADA system used for system meters. Consequently, the City was now assuming the full cost of these two types of equipment.

As a result of these changes to the rules of the game, was the City required to open a new call for qualification and a new call for tenders or proposals? One would think that it would have been appropriate to consider reopening the call-for-qualification process and, ultimately, the call-for-proposals process.

In this regard, material that was written by various parties involved in the issue, including the director of the Direction de l’eau (June 28, 2007) and the IBI project manager (August 28, 2007) during the call-for-proposals process, supports our position. We think that these documents point to several misgivings, which we think are well-founded, about the success and cost of the project, and that the stakeholders should have at the very least considered suspending the process. Our

investigation determined that these misgivings expressed by the main parties involved in the IBI project were not conveyed to the executive committee.

II.12 THE AWARDING OF THE CONTRACT FOR THE IBI AND NETWORK OPTIMIZATION PROJECT (2007)

The contract was finally awarded on November 29, 2007 to GÉNieau, Groupe d'experts for \$355.8 million (\$312.3 million before taxes), to which must be added certain incidental expenses totalling \$67.8 million, the cost of the subsidy program covering the preparation of IBI plumbing for a total of \$70.8 million, including the purchase of backflow prevention devices for \$12.9 million, the effect of inflation on amounts payable over the next 25 years, which should come to about \$109.0 million. In the final analysis, the total cost of the *IBI and Network Optimization* project over the period would be in the neighbourhood of \$600 million before contingencies, which means that it will most likely cost more.

With respect to the expected benefits of the project, different figures were mentioned. Concerning the reduction in variable costs associated with water production and with purification costs that would result from a 10% reduction in leaks (200,000 m³ per day or 73.0 million m³ per year), the figures are low, amounting to approximately \$0.7 million, according to a 2003 study conducted by Gaz Métro. If we take into account a drop in fixed production costs, which Gaz Métro experts estimate would be 5% lower, we obtain additional savings of \$2.3 million, for a grand total of \$3.0 million a year in savings. The presentation that was made to city council on April 21, 2009 reported savings of \$4.8 million due to a 20% reduction of drinking water production. The smaller amounts spent repairing leaks in the network would result in additional savings, which could potentially be as high as \$15.0 million a year, bringing the total savings to \$19.8 million.

Can we economically justify expenditures over a 25-year period of more than \$600.0 million, which could climb much higher when one takes into account uncertainties raised by the choice of the technical solution, in order to save \$19.8 million a year? We think that, in view of the spending and the cost of funding such a project, these savings are insufficient.

II.13 COSTS OF METERS

Many media reports were published about the costs of the water meters to be installed in IBIs. Comparisons were made with other cities or with independent contractors. Without wishing to

comment on these reports, we did examine the costs of certain types of meters set out in the call for tenders. One has to understand that BPR established the cost of meters for each type of diameter in the benchmark proposal and a grid was included in the call-for-tenders documents so that bidders could use them to prepare their proposals.

From our analysis, we were able to conclude that the purchase and installation price is competitive and reflects the market. However, we have serious questions about additional expenses and profit margins that were later added to the price of the meters. For example, the total initial purchase and installation cost of a meter with a 2.5 mm diameter, including implementation, is \$677.60. This amount includes a 12% surcharge, which covers administrative expenses and a profit margin. "Assistance fees" of \$297.92 over and above the initial cost also include the same 12% surcharge. The total cost now comes to \$975.52. At this point, an amount of \$493.48 is added to cover certain expenses and a profit margin. This surcharge, representing 50.6% of the cost of the meter, now brings the final cost to \$1,469.00. We can note that all the surcharges introduced raise the direct costs of the meter from the initial amount of \$677.60 to \$1,469.00, a 167% increase. We can only wonder about the appropriateness of these expenditures and whether an alternate scenario could have been chosen to ensure that these expenses were reduced.

II.14 COSTS OF OPTIMIZING THE NETWORK

In reading the benchmark proposal prepared by BPR, it becomes apparent that there were considerable price discrepancies between this bid and the GÉNleau bid, even though each party submitted bids of roughly the same total value.

However, it should be mentioned that BPR forecast an amount of \$55.3 million for the replacement of the pipes in the gate houses, even though this was not a requirement in the call for proposals. The discrepancy between the two bids is of the order of 22%.

The disproportionate pricing and the discrepancies should have been analysed in minute detail before the contract was awarded.

II.15 EXTENSION OF THE INITIAL BPR CONTRACT AND NEGOTIATED CONTRACT

Because of the changes made to the IBI project, BPR obtained in 2008 an extension of its initial contract worth \$2.5 million, taxes included (\$2.2 million before taxes), in order to carry four pilot projects to test water distribution on a small scale in some areas of the City (Phase 2). In 2008, BPR also obtained a five-year negotiated contract for \$4.7 million, taxes included (\$4.2 million before taxes) for the purpose of monitoring the contract awarded to GÉNleau for the installation of meters in IBIs.

We question the way in which these additional contracts were awarded to BPR, in terms of both their form and content, because we believe that the City project managers involved made extensive changes to the tasks originally assigned to BPR, all of which led to the abovementioned additions or amendments.

II.16 ETHICS AND GOVERNANCE

Our investigation revealed that some meetings were planned (and therefore on the agenda) between the City and external partners involved in the *IBI and Network Optimization* project during the call for qualification in 2006 and between the call for qualification and the call for proposals. We cannot confirm whether those meetings took place or what was discussed. However, at the very least, this information casts doubt on the overly cozy relationships these people were bound to have and on the influence that these meetings could have had on the progress of the project. ***We cannot comment further on this situation, since the file has been turned over to the Sûreté du Québec.***

On the other hand, we believe that calls for qualification and calls for tenders must provide much clearer information on the directives concerning **total independence** between the City and external partners and among external partners themselves. This independence must be formalized, in writing, by the parties concerned, before the calls for qualification, during calls for qualification, between calls for qualification and calls for tenders and during calls for tenders.

II.17 CONCLUSIONS

As a result of the work we carried out, which we explain in this report, we think that the network optimization phase of the IBI project, such as it was undertaken, does not allow the City, at the current stage of the *Water program*, to meet its priority needs and is not cost-effective. As for Phase 1 of this project, it provides for the installation of water meters in IBIs and the establishment of a rate structure for them, and this appears to us to be justified.

Our work has brought to light a plethora of administrative irregularities, poor management and several omissions of information relevant to elected officials. Moreover, for the reasons outlined in this report, we think the overall price of the IBI contract is too high. Our work therefore leads us to conclude that:

1. Phase 2 was introduced hastily, prematurely and without proper support;
2. In our opinion, the executive committee members who on May 31, 2006 agreed to mandate the City Manager to authorize the issue of calls for tenders for the *IBI and Network Optimization* project did not have access to all the information they would have needed in order to make an informed decision;
3. The inclusion of the water meters and network optimization phases in a single call for qualification, as well as strict funding and performance requirements, resulted in reduced competition;
4. In April 2007 a single call for proposals combining the water meters and network optimization phases was launched, whereas separate calls for proposals should have been issued consecutively. This made it extremely difficult to carry out the project. This decision and many others were undocumented. Furthermore, no studies were conducted prior to this project;
5. The opinions of certain experts working both inside and outside the City of Montréal, such as those expressed in a risk analysis and cautionary letters, were ignored;
6. The City's Direction du contentieux was not involved from the beginning of the project, which in our view constitutes a major weakness;
7. The contract amendments were not always in keeping with the spirit of the *Cities and Towns Act*;

8. The mandate entrusted to BPR included several deliverables, some of which were not provided to the City;
9. More generally, the elected city council and agglomeration council officials were not informed properly. Some decision summaries mentioned nothing about the essential elements involved in making an informed decision;
10. The creation of a Bureau de projets was an entirely legitimate initiative and was in keeping with the sound rules recommended for projects of the PCS, PW or IBI type. Unfortunately, this office was set up hurriedly and without the support and resources necessary to assure its success;
11. We have also noted that some of the project management rules have been violated;
12. The City no longer has the expertise or the resources to act as a counterbalance to private business;
13. There are significant discrepancies between the benchmark proposal (BPR) and the bids obtained from GÉNleau. In fact, even though the total cost submitted by GÉNleau (\$356 million) is close to BPR's projected cost, these costs are allocated among the various sections of the project in very different ways. The significant cost discrepancies for some sections of the project between the benchmark proposal and the GÉNleau bids lead us to believe it might have been worthwhile to divide the contract into several separate sub-projects in order to obtain the best price for each of the them;
14. The City must develop management mechanisms in order to better control the cost of infrastructure work.

In short, in view of the premises upon which the project was based, as explained in the call for proposals, and the shortcomings noted on its analysis, we can only conclude that the City will not obtain optimum cost-effectiveness from this project.

III. EXAMINATION OF THE ENTIRE PROCESS

III.1 THE BEGINNINGS OF THE WATER PROGRAM (2002)

III.1.1. Highlights and analysis

On March 29, 2002, the City of Montréal issued a news release announcing the launch of the *Water program*. The purpose of this 20-year program was to unify all water-producing resources across the island, ensure that water production and purification plants complied with standards and rebuild the entire water distribution network.

At that time, the City decided to initiate two studies that would enable it to collect and update all the data needed for the development of a public water management policy with regards to the production and distribution of drinking water as well as the treatment of wastewater. These two mandates were intended to:

- provide a technical evaluation of the water infrastructure as well as an estimate of the capital expenditures necessary over the 20-year period (the planned cost of this mandate was \$500,000);
- establish a consolidated financial profile of all the resources devoted to water management and produce a preliminary 20-year operating budget (taking into consideration the estimate of capital expenditures mentioned above), as well as determine appropriate avenues for financing a public water management department (the planned cost of this mandate was \$300,000).

There was no call for qualifications. However, two calls for tenders were issued for each individual mandate. They were entitled as follows:

- *[Translation] Establishment of a technical evaluation of public water management infrastructure throughout the whole of the territory of the City of Montréal and development of related technology guidelines* (the “engineering component” – February 28, 2002);
- *[Translation] The conducting of a study establishing the economic and financial profile of public water management throughout the whole of the territory of the new City of Montréal* (the “financial component” – February 27, 2002).

The resolution⁸ of the City's executive committee approving the issue of the two calls for tenders was dated March 28, 2002.

In the case of the engineering component, 13 firms, all of them located in Québec, expressed an interest. Six of them submitted a tender. In the end, the contract was awarded to a consortium put together by SNC-Lavalin and Dessau-Soprin (hereafter referred to as "SNC-Dessau") for the amount of \$500,000, taxes included. The contract also provided for the supply of additional services up to a maximum amount of \$100,000, taxes included.

In the case of the financial component, 16 firms, all of them located in Québec, expressed an interest. Three of them submitted a tender. In the end, the contract was awarded to PwC for the amount of \$300,000, taxes included. Once again, the contract provided for the supply of additional services up to a maximum amount of \$60,000, taxes included.

The related selection process did not evaluate the tendered price, since both calls for tenders contained a section that specified the estimated budget for the mandate's performance (section 5.4 of the calls for tenders). However, the two mandates were approved by the relevant authorities.⁹

A steering committee was created to collect and analyze all the data from these studies, including an update on the infrastructure's current condition and the needs for investment in that area. This committee was comprised of elected officials: Alan DeSousa, who acted as its chair, Frank Zampino, Chairman of the City's executive committee, Marvin Rotrand, city councillor responsible for sustainable development, city councillors Bill McMurchie and Marcel Tremblay, as well as the City Manager, Guy Coulombe, the Deputy Director General and director of the Service Environnement/Voirie/Réseaux, Yves Provost and the director of the wastewater treatment plant, Réjean Lévesque.

A technical committee whose membership was drawn from City of Montréal senior managers responsible for various water management duties at that time was in charge of carrying out the necessary work for these studies in collaboration with external consultants and the City's internal resources. This committee was headed by Réjean Lévesque.

⁸ Resolution CE02 0316.

⁹ Resolution CE02 0658 in the case of the Dessau-Soprin mandate (May 15, 2002) and resolution CE02 0829 in the case of the PwC mandate (May 29, 2002).

III.1.2. Findings

As the scope of our current mandate does not cover the activities undertaken at that time, we have no findings to relate.

III.2 THE SNC-DESSAU AND PRICEWATERHOUSECOOPERS STUDIES (2002)

III.2.1 Highlights and analysis

In October 2002, SNC-Dessau issued a report entitled *[Translation] A Study to Collect Data and Provide a Technical Profile of Public Water Management Infrastructure*. The overall action plan proposed in this report was concerned with:

- Renewing the infrastructure;
- Ensuring the suitable maintenance of:
 - water production plants,
 - aqueduct and sewer networks,
 - the water treatment plant;
- Monitoring the amount of water used through:
 - water consumption management,
 - wastewater management;
- Complying with the provincial Regulation respecting drinking water;
- Optimizing the infrastructure management;
- Improving the quality of watercourses;
- Disseminating knowledge about the infrastructure.

One of the conclusions made by this study highlighted the fact that the required investments, including those to renew inadequate networks, would amount to \$3.2 billion over 20 years for the entire related infrastructure, \$1.9 billion of which would be for the aqueduct networks alone.

For its part, in November 2002 PwC issued a report entitled *[Translation] Financial Profile of Public Water Management – City of Montréal*.

This study provided an historical background to the financial profile of public water management-related activities, dealing with, among other subjects, the operating expenses incurred by the City in respect to water management, the value of the capital assets allocated to this function as at December 31, 2001, the long-term debt related to water operations as at the same date and, finally, the human resources assigned to that particular public service.

Among other things, the study concluded that, over 20 years, an amount of \$4 billion would be needed to rehabilitate and replace the current infrastructure. It is important to specify that this amount differs from that determined by the SNC-Dessau study. This discrepancy can be explained by the inflation that PwC provided for in its calculations for the next 20 years and the net value-added taxes. Moreover, additional operating expenses, in the nature of \$0.9 billion over 20 years, also had to be considered. The total calculation of all these expenses determined that the cost of a cubic metre of filtered water was 54.45¢ in 2003, while the projected cost for 2022 would be 83.11¢ per cubic metre. Finally, it should be mentioned that this report also provided data comparing water consumption per Montréal resident with that of residents in other Canadian cities (Ottawa, Toronto, Calgary and Edmonton). The document also presented the water pricing models used by these municipalities.

One of the sections of the SNC-Dessau study dealt with the installation of water meters in industries, businesses and institutions. The costs related to the installation of such meters, to be incurred between 2003 and 2007, were estimated at approximately \$53.1 million.¹⁰ However, no provision was made in respect to residential consumers. This study also tackled the subject of the implementation of a real-time management system and flow-rate monitoring per sector. As the SNC-Dessau report notes:

[Translation] “Specific metering methods for these users [i.e. the IBIs] must be implemented. Once user consumption is known, it will be easy to calculate the extent of any losses, although it will not be possible to locate them. A time [sic] management system and flow-rate monitoring per sector will then become a worthwhile tool.

[. . .]

These two measures [i.e. a real-time management system and flow-rate monitoring per sector], would constitute a major first step towards determining the actual water consumption within the City, and could later be followed by the installation of residential meters on a part of or on the whole of the City of Montréal territory.”

For its part, the PwC study ended with the following recommendation, among others:

[Translation] “In our opinion, City of Montréal should, in the short term:

¹⁰ It was impossible for us to determine what was included in this figure, particularly the number of meters involved and details about related expenses.

- i) [...]
- ii) *review the management model so as to foster the integration of water operations and acquire the suitable information and management tools for making informed decisions; and*
- iii) *conduct a thorough study of consumption management and measures that could be instituted, including a rate structure, to encourage water conservation, taking into consideration the tax harmonization requirements stipulated under the Act respecting Municipal Reorganization and the Act respecting Municipal Taxation.”*

III.2.2 Findings

Finding 1

It clearly emerges from the SNC-Dessau study that **Phase 2 (network optimization) was not a solution to be implemented from the beginning.** Furthermore, the installation of residential water meters would be subsequent to the installation of meters for IBIs, as well as the implementation of a real-time management system and flow-rate monitoring per sector.

We have noted that the City did exactly the opposite by simultaneously launching both Phase 1 (IBI water meters) and Phase 2 (network optimization) in 2006.

Finding 2

We have also observed, as will be seen further along in this report, that there is no documented justification that clearly explains this change of direction through the addition of the network optimization component to that of the installation of water meters in IBIs.

Besides the recommendation to develop integrated management that would enable the City to equip itself with more effective management tools, the PwC report suggested the implementation of a rate structure based on real consumption profiles. Various scenarios have been put forward, but no specific recommendation has been made to the City in respect to what type of rate structure should be favoured.

III.3 THE POSITIONING PROPOSAL (2003)

III.3.1. Highlights and analysis

On January 28, 2003, the steering committee on water projects management presented a document to the City of Montréal executive committee entitled *Positioning Proposal* regarding the *Water program*. This document, which suggested a strategic water management framework and made recommendations to that effect, was approved by the executive committee during its February 5, 2003 meeting.¹¹

This proposal traced the evolution of the *Water program* over the previous year and pointed out the major recommendations issued by the SNC-Dessau and PwC studies in the preceding months. Following the presentation of this proposal, the members of the steering committee informed the executive committee that further analysis was required to complete it, particularly regarding the two following questions:

- What approaches were available and helpful to measure water consumption (in the residential, industrial, business and institutional sectors) in light of their impact on financing strategies, particularly from the perspective of the self-financing of water management and of best practices?
- What kinds of organizations were available and helpful that could properly take over water management activities and take responsibility for the overall action plan, within the framework of the City's general policies?

The steering committee requested that two mandates be given dealing with these two questions through public calls for tenders. Moreover, the steering committee recommended the creation of a Water Management Development Group under the authority of the Deputy Director General of the Service Environnement/Voirie/Réseaux, whose mandate would be to establish the milestones required for the City to implement the selected strategy. Credits of \$3.5 million were budgeted for the Group's work.

The two following public calls for tenders were issued to retain the services of professional firms to carry out these additional two studies:

- *[Translation] Performance of a mandate requiring the assistance of experts in organizational research for the development and setting up of, as of January 1, 2004, a comprehensive and*

¹¹ Resolution CE03 0178.

efficient organization to deal with public water management over the territory of the City of Montréal (“organizational research” component – January 17, 2003).

- *[Translation] Performance of a mandate to recommend harmonization and financing scenarios and to supply expertise and financial support for the establishment on January 1, 2004 of an efficient, comprehensive organization for public water management on the territory of the City of Montréal* (“financial strategy and structure” component – January 15, 2003).

The second call for tenders referred to two components. The first component required that the consultant suggest rate structure scenarios for drinking water and wastewater, with a clear emphasis on water conservation and on increasing the financial resources devoted to water management in order to meet needs. The second component required that the consultant indicate the expert services and budgetary and financial support that would be needed for the January 1, 2004 implementation of the new organizational structure for public water management throughout the City, in accordance with the guidelines adopted by the authorities.

The executive committee of the City approved the issue of these calls for tenders on January 22, 2003.¹²

Eighteen firms (nearly all located in Quebec) expressed an interest in the organizational research component. Four of them submitted a tender and two obtained the minimum number of points required. The contract was finally awarded to a grouping of the firms Groupe Conseil CFC Inc. and EMA Canada Inc. (hereafter the “CFC Group”).

As for the financial strategy and structure component, 11 firms (all located in Quebec) expressed an interest. PwC was the only one among these firms to submit a tender.

Any firm that bid on both calls for tenders and was subsequently selected for the organizational research component was automatically disqualified from obtaining the contract for the financial strategy and structure component.

III.3.2. Findings

Nothing noteworthy was observed during this phase of our review.

¹² Resolution CE03 0083.

III.4 THE CFC GROUP STUDY (2003) AND THE SECOND PWC STUDY (2004)

III.4.1. Highlights and analysis

On November 10, 2003, the CFC Group filed a report entitled *[Translation] Organizational Research on Public Water Management on the Territory of the City of Montréal*. This report dealt with the three following subjects:

- Results of the performance evaluation of the existing organization and the identification of opportunities for improvement;
- Results of the discussions regarding the contemplated organizational model;
- Recommendations on the issues involving collective agreements.

The consultants concluded that the organizational model in existence at the time of the study had serious shortcomings in respect to various elements of management. They suggested a new organizational model that would improve services to the various boroughs and allow savings in both operational costs and in the capital investments to be made over the next 20 years. The consultants estimated these savings at more than \$1.3 billion for that period. The CFC Group's opinion was that the best organizational structure could only be achieved by treating "water operations" separately from other City activities. It will be noted that a short time later, in April 2004, the CFC Group filed a document with the Service des infrastructures, transport et environnement (SITE) entitled *[Translation] Integrated Coordination and Monitoring Structure for Water Management Projects* that proposed an organizational structure for this department in conjunction with the *Water program*.

On January 21, 2004, PwC filed a report entitled *[Translation] Financial Strategy and Structure – Public Water Management – City of Montréal*. This report covered the following two components:

- Rate setting for water, i.e. an analysis of possible rate structures and of the rates required to finance drinking water- and wastewater-related operations. PwC reviewed various rate setting practices in certain cities in Canada and the United-States;
- Budgetary and financial questions, in order to provide the City with in-depth accounting, budgeting and financial expertise, including the development of a rate structure model.¹³

¹³ It is our understanding that PwC never went ahead with the second component of this mandate.

In its report, PwC considered four rate structure options:

- Option 1 – No rate structure, except for a volumetric rate structure for major IBI consumers;
- Option 2 – A volumetric rate structure for major IBI consumers and a flat rate structure for all other consumers;
- Option 3 – A volumetric rate structure for IBI consumers and a flat rate structure for residential consumers;
- Option 4 – A volumetric rate structure for all consumers.

PwC was of the opinion that Option 4 – a volumetric rate structure for all consumers – was best suited to the City's objectives and to the best practices noted by the municipalities and public utilities surveyed. The implementation of this recommendation over a certain period of time would involve the following steps:

- Implementation of a universal rate structure;
- Phased implementation of water meters and a volumetric rate structure, starting with the installation of meters for IBI consumers and in large multiple-unit apartment buildings and charging residential consumers flat rates for drinking water and wastewater; and finally
- Implementation of a volumetric rate structure for all residential consumers.

Because of the necessity of increasing financial resources dedicated to drinking water- and wastewater-related operations, PwC also suggested the creation of a water fund.

In order to complete the first component of its mandate, i.e. to establish a rate structure for water, PwC retained the services of the Gaz Métro organization for a study of water meters. Gaz Métro's report, entitled *[Translation] Inventory of Water Meters and Capital Cost of Using Water Meters in the City of Montréal*, was filed on November 21, 2003. It pointed out that the City at that time had approximately 109,000 water meters, including about 8,400 for IBIs. Gaz Métro considered that, to complete the City's water meter inventory, it would be necessary to install 335,300 additional meters, including approximately 23,800 for IBIs. Gaz Métro estimated the total investment required for this equipment at \$156.7 million, including \$24.7 million for IBI meters. According to Gaz Métro, such equipment would add 386 million m³ to the 149 million m³ of water already accounted for. Again according to Gaz Métro, by adding such equipment the City would be able to account for approximately 535 million m³ of water on a yearly basis, which would represent 74% of its water plants' total production, which at that time was estimated at 725 million m³.

Gaz Métro also suggested the simultaneous installation with IBI meters of water meters for residential buildings having 12 or more units, which represented only about 6,600 additional meters

(or less than 2% of the total to be installed), but which would allow the measurement of 11% of the total volume of water consumed by residences and businesses. The cost of installing water meters for residential buildings of 12 units or more was estimated at \$7.3 million. The following table provides a summary of the meter situation and the volume of water consumed according to the Gaz Métro study.

Table 1 – Water meters, estimated total consumption and investments required (according to the Gaz Métro report)

	Less than 12 units	12 units or more	IBIs and small businesses	Total
Existing meters	98,100	1,100	9,800	109,000
Meters to be installed	304,900	6,600	23,800	335,300
Total	403,000	7,700	33,600	444,300
Water volume consumption accounted for by existing meters (000 m ³)	32,900	11,900	104,500	149,300
Water volume consumption accounted for by the meters to be installed (000 m ³)	106,100	40,900	239,600	386,600
Total (000 m ³)	139,000	52,800	344,100	535,900
Investments needed – meters to be installed (\$M)	124.7	7.3	24.7	156.7
Average cost per meter	\$409	\$1,101	\$1,038 ¹⁴	\$467

III.4.2. Findings

Finding 3

The analyses and recommendations of both Gaz Métro and PwC pointed over the long term to a volumetric rate structure for all consumers. Its implementation was to begin with a volumetric rate structure for IBI consumers and large multiple-unit residential buildings, which would be followed by flat-rate pricing of drinking water and wastewater for residential consumers. On the other hand, nothing was said in the PwC/Gaz Métro study about the need to provide the City with more sophisticated network equipment in order to implement an overall accounting of water consumption (which basically corresponds to Phase 2 of the contract awarded to GÉNleau).

¹⁴ In fact, the installation cost of one meter in IBI buildings was estimated at \$1,101. This average was affected by the installation cost of meters in small businesses, which was estimated at \$420.

III.5 SUBSEQUENT EVENTS – THE WATER FUND (2003–2004)

III.5.1 Highlights and analysis

On November 19, 2003, the executive committee approved the organizational model recommended by the steering committee on water management and authorized its implementation.¹⁵ In a press release dated November 24, 2003, the City announced the following measures:

- The creation in 2004 of a dedicated budget envelope of \$25 million called the “Water Fund,” to which \$20 million would be added every year until 2013. This fund was to be used to launch and to coordinate a long-term program for the rehabilitation of infrastructure and the reorganization of water services on the island;
- The institution of a gradual budget consolidation process for water costs and for the rebalancing of the rate structure. This would consist in identifying and regrouping all cost elements related to water services to ensure, in the near future, the proper financing of water costs and a fair contribution to its financing by all types of users;
- The implementation of a meter-assisted rate structure in IBIs, so that their financial contribution would be in line with their consumption of water;
- The implementation of management systems and tools enabling all aspects of water services to be organized on the basis of a master plan and a response plan, according to all relevant standards and existing North American best practices.

Among other things, this press release indicated that the City did not intend to install new meters in the residential sector for the foreseeable future, an operation that would have cost \$132 million according to the PwC study issued in January 2004. The press release also mentioned that the City intended to explore less costly alternatives to the installation of residential water meters, such as implementing a flat-rate type of pricing structure over a period of two or three years.

III.5.2 Findings

Finding 4

It is our understanding that the project to install meters in the residential sector was put on the backburner based on a cost-benefit analysis conducted by the City’s Direction de l’eau and other previous studies.

¹⁵ Resolution CE03 2407.

Finding 5

The installation of water meters in IBIs is supported by economic opportunity studies and by the need to have an overall picture of water activities, as well as be fair to consumers. The SNC-Dessau, PwC and Gaz Métro studies examined this component and we have noted unanimous agreement in respect to installing water meters in IBIs. Indeed, to our knowledge, the City of Montréal is one of the few metropolitan areas where IBIs are not equipped with water meters.

However, it can be noted that the costs of installing IBI water meters is not addressed in the November 24, 2003 press release, which adds to the confusion concerning the expected installation costs.

III.6 CALLS FOR PROFESSIONAL SERVICES (2004)

III.6.1 Highlights and analysis

In order to implement the guidelines provided by the executive committee as quickly as possible, the Service des infrastructures, transport et environnement (SITE) filed a request on May 12, 2004 with the executive committee that three calls for qualification be issued as part of the qualification process for suppliers of professional services in the areas indicated in the table below.

Table 2 – Calls for qualification to be issued

Program ¹⁶	Term	Total estimated cost	
		Professional services	Work
Ensuring plants' compliance with standards (PCS)	11 years	\$35.0M	\$226.0M
Planning for the work to be done on the aqueduct and sewer networks and for the assessment of their condition (PW)	5 years	\$25.0M	\$11.5M
Installation and operation of water meters in IBIs (IBI)	5 years	\$4.0M	\$32.0M

The executive committee adopted a resolution¹⁷ to approve the issuing of these calls for qualification. The amounts shown in the above table were taken from them.

Through these calls for qualification, the City was requesting that interested firms demonstrate their capacity to carry out these three projects. A selection committee was set up to evaluate the firms that had applied on the basis of the following criteria, which were strictly qualitative:

- Understanding the issues and challenges related to the project;
- Experience, leadership and ability to deliver;
- Skills in the required disciplines;
- Evaluation of the proposed resources;
- Expertise in project management.

¹⁶ These programs are the result of the structure proposed in a study entitled *[Translation] Integrated Coordination and Monitoring Structure for Water Management Projects* filed by the CFC Group in 2003 with the Service des infrastructures, transport et environnement (SITE) pertaining to the *Water project*.

¹⁷ Resolution CE04 0924.

We learned that the call-for-qualification process used in this instance, while not exceptional, is not a usual practice for the City. The purpose of the exercise, for each of the three projects, was to limit the selection of eligible bidders to those firms that obtained the passing score of 85%. Only the firms selected would subsequently be asked to bid on the possible call for tenders. During this second phase, the tenders would be assessed on the basis of price and specific evaluation criteria.

Consequently, through the Direction de l'approvisionnement of the Service des services administratifs, SITE prepared three calls for qualification, including the call for qualification 04-8165, entitled *[Translation] Professional services – Measurement of water consumption in industries, businesses and institutions (IBI)* and dated July 28, 2004. This public call for qualification was published in the daily newspaper *La Presse* on August 2, 2004. As required, it was also posted on the electronic call for tenders system (SEAO).¹⁸ The purpose of this call for qualification was to retain professional services for the execution of a water meter installation program, as well as the implementation of systems that would provide water consumption readings and manage data concerning water consumption in all industries, businesses and institutions (IBIs) on the territory of the City of Montréal. The qualification document was available as of August 2, 2004 and interested firms had to file their qualification request by September 9, 2004.

The call for qualification was a 25-page document that contained four sections:

1. A public notice and a candidate identification form;
2. Instructions for candidates and general clauses;
3. Criteria and an evaluation grid (essentially the criteria indicated on the previous page);
4. Targeted area.

The Gaz Métro report entitled *[Translation] Inventory of Water Meters and Capital Cost of Using Water Meters in the City of Montréal* and dated November 21, 2003 was attached to the call-for-qualification document.

The City specified in the call for qualification that if a firm qualified for the execution of more than one of the three projects (PCS, PW and IBI), it could not subsequently be awarded more than one contract following the call for tenders process.

Sections 1, 2 and 3 were identical for each of the three calls for qualification, i.e. ensuring the plants' compliance with standards (PCS), the planning for the work to be done on the aqueduct and

¹⁸ The SEAO is the Québec government's official site for calls for tenders. It can be accessed at www.seao.ca.

sewer networks and for the assessment of their condition (PW), and the installation and operation of meters in IBIs (IBI). Only section 4 was specific to each of the three calls for qualification. The following description of the third program (i.e., the installation and operation of meters in IBIs) can be found under heading 1.2 of section 4 of the third call for qualification:

[Translation] “To summarize, the mandate to be awarded for the purpose of measuring and billing for water consumption in all IBIs throughout the City¹⁹ is made up of the following five components:

- *Supply and installation of water meters;*
- *Updating or replacement of existing water meters;*
- *Supply and installation of a system for water meter readings;*
- *Implementation of a data management system enabling the development of consumption profiles and the billing of IBIs on the basis of their water consumption;*
- *A modus operandi for billing, maintenance and customer service.*

Furthermore, in the course of the performance of the mandate, the City may agree with the selected candidate on additional work that would be required to bring the project to fruition.

Finally, the selected candidate may be asked to perform other additional work needed by the City in respect to measuring water consumption, such as meters for the aqueduct network, the compilation of hydraulic data, etc.”²⁰

Upon reading the call for qualification, we can conclude that the third program related **nearly exclusively** to the IBI water meter project.

We would like to point out the following paragraphs in the call for qualification:

[Translation]

“The candidate must identify the nature and the extent of the work to be performed in installing the water meters, including the number and diameter of the water meters to be installed, the physical framework for such an installation, water meter installation methods, the condition of existing meters and whether they need to be updated or replaced.

[. . .]

¹⁹ Our underlining.

²⁰ Our underlining.

[Translation]

The candidate must identify best practices for the selection, installation and maintenance of water meters installed in IBIs, as well as existing methods and techniques for readings and data management.

[...]

[Translation]

A cost-benefit analysis of the various systems will lead to the identification of the most appropriate technology or technologies. The City shall favour generic and commercially available products, rather than customized solutions.²¹

III.6.2 Findings

Finding 6

Following meetings with the people responsible for drafting the call for qualification, it is our understanding that the objective of the IBI component, as described in the first paragraph under heading 1.2 reproduced above, was **to measure and to bill water consumption in all IBIs throughout the City; if an exact profile of water consumption was to be established, it would be done during a subsequent phase.** Again, according to the people we spoke to, the reference to **additional work** in the last paragraph under heading 1.2 was to inform candidates that the City reserved the right to require that the selected firm perform additional work should a portion of the hours budgeted for the performance of its mandate still be available after the IBI water meters component was completed.

Finding 7

Moreover, it is clear at this point that the City's preferred water meter option was to use "*generic and commercially available products, rather than customized solutions,*" as specified in the call for qualification.

²¹ Our underlining.

III.7 THE RESULT OF THE CALL FOR QUALIFICATION AND THE ENSUING CALL FOR TENDERS FOR PROFESSIONAL SERVICES (2004)

III.7.1 Highlights and analysis

Following the call for qualification for measuring water consumption in IBIs, 16 companies—all located in Québec—expressed interest.

Of the 16 companies that asked for the documents pertaining to the call for qualification, 5 actually presented a request for qualification. In the days that followed the deadline for the call for qualification, a selection committee made up of five people, including four City of Montréal employees and one external member, reviewed the documents submitted by these firms. Following the analysis of the various submissions in accordance with the evaluation grid included in the call for qualification document, the selection committee determined that the following four firms obtained the passing grade of 85% for the IBI program:

- BPR;
- Dessau-Soprin/Aquatech consortium;
- Consultants S.M. Inc.;
- Groupement CGT.

The same exercise was conducted for the calls for qualification related to the two other programs: ensuring plants' compliance with standards (PCS) and the planning for the work to be done on the aqueduct and sewer networks and for the assessment of their condition (PW).

The following firms qualified for the project to ensure plants' compliance with standards (PCS):

- Groupement CGT;
- SNC-Lavalin/Dessau-Soprin consortium.

As for the planning for the work to be done on the aqueduct and sewer networks and for the assessment of their condition (PW), the following firms qualified:

- BPR;
- Groupement CGT;
- SNC-Lavalin/Dessau-Soprin consortium.

At the end of October 2004, the Water Management Development Group asked that authorization be given to issue invitational tenders in order to retain professional services for the implementation of these three projects. We noted that the data related to these projects had been changed between the calls for qualification and the calls for tenders. The changes for each of the three programs are shown in italic and bold-face type in the following table.

Table 3 – Calls for tenders to be issued

Program	Term	Total estimated cost	
		Professional services	Work
Ensuring plants' compliance with standards (PCS)	11 years	\$35.0M	<i>\$250.0M</i>
Planning for the work to be done on the aqueduct and sewer networks and for the assessment of their condition (PW)	5 years + 5 years	\$25.0M	<i>\$1.15B</i>
Installation and operation of water meters in IBIs (IBI)	5 years	<i>\$7.5M</i>	\$32.0M

SITE's Direction du développement de la gestion de l'eau issued, through the Direction de l'approvisionnement, invitational tender 04-8243 entitled *[Translation] Professional services – Measurement of water consumption in industries, businesses and institutions (IBI)* on October 20, 2004. This wording was the same used for the call for qualification, i.e. the retention of professional services for the **execution** of a water meter installation program and the implementation of systems that would provide water consumption readings and manage data concerning water consumption in all industries, businesses and institutions within the City of Montréal territory.

Simultaneously, similar calls for tenders were issued for the PCS (call for tenders 04-8245) and PW (call for tenders 04-8244) components.

The issue of invitational tenders to qualified firms was authorized on October 27, 2004 by a delegated decision signed by the City Manager of Montréal.²²

The call for tenders related to the IBI component, which had a total of 22 pages, included three sections:

1. Description of the mandate;
2. Evaluation of the submissions;

²² Decision DG041801007.

3. Calculation of fees and method of payment.

A *Draft Agreement* was attached to the call-for-tenders document as an indication of the type of professional services agreement that the winning bidder would be expected to sign with the City of Montréal.

The City gave notice in the call for tenders that if one of the firms was awarded the professional service contract for ensuring plants' compliance with standards (PCS), it was therefore automatically disqualified from obtaining the contract for the planning of work (PW) and IBI components. Furthermore, any firm that was awarded the professional services contract for the planning of the work on the aqueduct and sewer networks was automatically disqualified from obtaining the contract for the IBI component.

In evaluating the calls for tenders, the City first required that bidders obtain a qualitative score of at least 70%. If this threshold was cleared, the cost of the bid came into play, in which case the calculation of the following score had to be worked out, with the highest result determining the winning bidder:

$$\text{Bidder's score} = \frac{(\text{qualitative score} + 50) \times 10,000}{\text{Bidder's price}}$$

These requirements are in accordance with the *Cities and Towns Act*.

In the call-for-tenders document, the section focussing on IBIs is entitled *[Translation] Introduction of meter-assisted billing in industries, businesses and institutions so their financial contribution corresponds to their consumption* and includes, among others, the following information:

[Translation] "Measuring the water consumption of IBIs will help to achieve some major objectives of the modernization of water management in Montréal, more particularly the establishment of a profile of drinking water consumption²³ and a progressive rebalancing of the financial contributions of the various categories of water users, each category having to contribute an amount equal to its actual consumption. The selected firm will provide professional services to support the City in the development and choice of scenarios for installing meters and data management systems. The selected firm may also have to carry out additional work required by the City and related to the review of water consumption:"

²³ Our underlining.

upgrade existing meters, study consumption profiles, monitor water distribution and aqueduct network meters, compile hydraulic data, develop a water consumption policy, etc.²⁴

The wording of the call-for-tenders document is essentially the same as that of the call for qualification. However, some statements have been added under the heading 1.3, "Mandate," which now reads as follows:

[Translation] "The firm's mandate consists of supplying professional services for the development and management of a program whose main components are the following."²⁵

- **Inventory of existing water meters;**
- **Supply and installation of new water meters;**
- Supply and installation of water meter reading systems;
- **Operation of the systems;**
- Implementation of a data management system allowing for the development of consumption profiles and the establishment of IBI water billing based on their consumption;
- Billing mechanisms;
- Customer service.

In order to do this, the firm develops and evaluates, in collaboration with the City, a range of performance scenarios.

As well, the firm may be called upon to carry out other additional work required by the City and related to the review of water consumption, such as upgrading existing meters, conducting studies of consumption profiles, monitoring the distribution of water²⁶ and aqueduct network meters, compiling hydraulic data, developing a water consumption policy,²⁷ etc."

²⁴ Our underlining.

²⁵ The additions are indicated in bold-face type.

²⁶ Our underlining.

²⁷ Our underlining.

Further along in the call for tenders can be read:

[Translation] “The firm identifies suppliers of measurement services, best practices for selecting, installing and operating water meters installed in IBIs, as well as existing methods, techniques and technologies in respect to meter reading and managing data both on the territory of the City of Montréal and on the market. It also identifies best practices in terms of security features for meters, data integrity for meter reading and data management systems, as well as fire-line consumption management.

When choices of technology are being made, the City prefers generic and commercially available products, rather than customized solutions.”²⁸

Finally, the call for tenders’ section 3, entitled *[Translation] Calculation of fees and method of payment*, specifies, under heading 3.2 “Allowable costs,” that in order to establish a value for allowable costs (i.e. those specifically mentioned in the draft agreement), the price proposal included an amount corresponding to 1% of the value of the fees as reimbursable expenses. In paragraph 11.4.4 of the *Draft Agreement*, the “*hiring of duly authorized consultants*” qualified as an allowable cost.

In order to clarify the value of professional services required under the IBI component, a price schedule specified the number of hours budgeted per category of consultant. This schedule was attached to the call-for-tenders documents. This is the usual procedure at the City, according to our interviews, when it is a question of retaining the services of engineering consulting firms. The number of budgeted hours on the price schedule totalled 101,600 and was distributed as follows:

Table 4 – Hours budgeted for the IBI professional services contract

Description	No. of hours
Project manager	1,600
Engineers	40,500
Technicians and draftspersons	40,500
Support staff	19,000
Total	101,600

²⁸ Our underlining.

III.7.2 Findings

Finding 8

It is our understanding that the same people had the responsibility for drafting the call for qualification and the call for tenders. These people, who were involved in this component of the *Water program*, reiterated to us that the goal of the IBI component was always the measurement and billing of water consumption in all IBIs on the City of Montréal territory.

Finding 9

We were informed that the purpose of the last paragraph under heading 1.3, which mentioned the possibility of additional work, was to inform candidates that the City reserved the right to require that the firm selected undertake additional work resulting from the installation of meters in IBIs. Furthermore, such work could only be carried out if **unexpended amounts remained after the “basic work”** (i.e. what was stipulated in the call for tenders) **had been completed**.

Finding 10

It is also our understanding that, at this stage, the solution that the City wished to adopt for water meters had to include *“generic and commercially available products, rather than customized solutions.”*

III.8 AWARDING OF THE PROFESSIONAL SERVICES CONTRACT (2004-2005)

III.8.1 Highlights and analysis

Following the invitational tenders for the IBI file (04-8243), the four prequalified companies submitted their bids on November 22, 2004. These companies (or consortia) were:

- BPR Inc.;
- Dessau-Soprin/Aquatech consortium;
- Consultants S.M. Inc.;
- Groupement CGT.

In the days following the closing date for invitational tenders, a selection committee made up of seven people (six City of Montréal employees and one external individual) evaluated the bids submitted by these firms. Following its analysis of the various bids in accordance with the evaluation grid included in the call-for-tenders document, the committee determined that the four firms had obtained the passing score of 70%.

The choice of firms having bid on the PCS (call for tenders 04-8245) and PW (call for tenders 04-8244) components was made. The bid from the Dessau-Soprin/Aquatech consortium was declared the winner for the PCS component and the bid from Groupement CGT won the bid for the PW component.

For the call for tenders 04-8243 (IBI), therefore, the following bidders remained:

- BPR Inc.;
- Consultants S.M. Inc.

The bid from BPR Inc. (hereinafter "BPR"), which amounted to \$6,451,127 before taxes (\$7,420,409 taxes included), was accepted for the IBI phase, as BPR obtained a better score than Consultants S.M. Inc. Admissible expenses of \$63,873, i.e. the maximum amount of 1% of the gross fees as stipulated in the draft agreement, were included.

In February 2005, the IBI project leader and the head of the Water Development Management Group, both of whom are attached to the SITE, recommended to the executive committee that it should approve the agreement and retain the professional services of the firm BPR for the

implementation of the IBI water consumption measurement project for an amount of \$7,420,409, taxes included, which was to be spent over ten years, according to the following scenario:

Table 5 – Annual budgeted amounts, including taxes, for the BPR contract

2005	\$3,900,000	2010	\$75,000
2006	\$875,000	2011	\$75,000
2007	\$875,000	2012	\$75,000
2008	\$875,000	2013	\$75,000
2009	\$500,000	2014	\$75,000

In February 2005, the executive committee authorized the expenditure of \$7,420,409, taxes included, and approved the draft agreement between BPR and the City.²⁹

In BPR's proposal for professional services (dated November 22, 2004), section 3.1.2, entitled *[Translation] Supplementary work related to the review* mentions the following point:

“Following the implementation of a system for measuring IBI consumption and the implementation of a data management system, supplementary work related to the review might be carried out. We attached to Appendix B a description of our vision of the efforts required to improve the accuracy of the review of usage both in time and in space. These solutions would also open the way for other objectives, such as better monitoring of demand and leaks, and real-time control of the network.”³⁰

As for Appendix B of the BPR proposal entitled *[Translation] Supplementary work related to the review*, we find the following text:

“Moreover, the establishment of reviews no longer just at the island level but for smaller entities would allow for a more precise analysis and the establishment of intervention priorities (detection of leaks and rehabilitation-replacement work). To this end, implementing some of the solutions that we had already proposed in 2003 to the former City of Montréal could be considered, i.e. the setting up of flow-measurement sites in the network with continuous data transmission and analysis. The 2003 report also addresses the number, positioning and level of precision to be achieved for these measurements so that they can be used to identify new leaks in the order of, for example, 500m³/day. Such

²⁹ Resolution CE05 0259.

³⁰ Our underlining and bold-face type.

an approach was applied successfully for the agglomeration of Halifax (Halifax Regional Water Commission).

It should also be noted that:

- *the coupling of a SCADA system and a hydraulic model could, in an initial phase, enable the monitoring of parts of the network that are too snarled to be examined by area;*
- *measurements of flows by area could, under certain conditions, also provide information about residential consumption.*

We therefore think we have in hand all the elements for designing and implementing a set of solutions to improve the accuracy of the water use review both in time and in space.

These solutions would also open the way to achieving other objectives, such as:

- *better monitoring of demand and leaks;*
- *real-time control of the network.*³¹

We have obtained a copy of a part of BPR's report that is mentioned in Appendix B of its proposal entitled [Translation] "The solutions we proposed to the former City of Montréal in 2003." This report entitled [Translation] *Establishment of a data model for prioritizing work on the City's aqueduct network—Phases 2.1, 2.2 and 2.3—Project: A004110*, which was revised on November 20, 2001 and submitted in its final form in March 2004, will be examined in a later chapter. However, it should be noted that the report dealt with the implementation of a leak-control program.

Of the 101,600 hours of work planned by BPR, 50,500 hours were allocated to the exploration phase that was to extend from 2005 to 2006. This phase was to include analyses and studies to determine the work required for the installation of meters, the development and evaluation of various implementation scenarios, the choice of the scenario to be adopted and the preparation and issue of a call for tenders according to the selected scenario. As for the implementation phase, BPR estimated it would have to invest 51,100 hours of work between 2007 and 2014 in accomplishing it. This phase was to include monitoring the work, managing changes and resources, coordinating the work and monitoring the schedule and budget.

³¹ Our underlining.

III.8.2 Findings

Finding 11

Following the analysis of documentation and interview results, it is our understanding that, of the total of 101,600 hours constituting the whole amount of the \$6,451,127 contract (before taxes) awarded to BPR, **no amount was provided for BPR either at the time the contract was awarded or during the first months of the mandate for real-time management or optimization of the network.**³² We note that the network optimization phase was not part of BPR's primary mandate in 2004 and that this firm treated it as supplementary work to be carried out "*following the setting up of an IBI consumption measurement system and the implementation of a data management system.*"

³² We are making reference here to subproject 08 defined as the *Review of water consumption* in the BPR document entitled *Structure of the breakdown of the project*. Moreover, we had access to a document dated September 2, 2005 that included the project budget allocated to BPR. No sum at that time was allotted to subproject 08 (*Review of water consumption*).

III.9 LAUNCH OF THE IBI PROJECT AND THE CHANGE IN DIRECTION (2005–2006)

III.9.1 Highlights and analysis

During this time, the City set up various committees to manage the *Water program*, including:

- Water project monitoring joint committee;
- Water project management steering committee;
- Public water management development group;
- Project management committee.

We had access to the minutes from several of these committees' meetings³³ covering the period that began in May 2002. In summary, these committees pursued the following general objectives:

- Achieving water quality goals that exceeded the strictest North American standards;
- Not loading onto future generations the cost of previous savings;
- Rehabilitating equipment in order to save costs;
- Developing a system that would pay for itself based on known consumption;
- Reducing network leaks by 15% to 20%.

Some of these committees were to hold working sessions on a periodic basis. For example, at the time, the water project management steering committee planned monthly meetings.

Our analysis of the available minutes shows us that, in respect to the IBI water project from 2002 to 2004 inclusively, its objective or mandate was to measure water consumption for this category of users in order to set rates for their consumption.

We also had access to minutes from certain meetings held in 2005 and 2006 between both BPR and City representatives concerning the IBI project. For the purposes of this chapter, we will refer to these as *project meetings* or *management meetings*. The goal of these meetings was to report on the progress of the project and upcoming stages. They were held regularly, sometimes weekly.

³³ For various reasons beyond our control, we did not have access to all minutes that would have been prepared following the meetings held by the various committees from 2005 to date. Those which we could access were archived in what is called E-room, an electronic tool used by IBI project managers to store various project-related electronic documents.

At the time the contract was awarded to BPR in February 2005, the objective of the project was still to implement meters in IBIs. According to minutes from 2005, costs of the IBI project were at that time estimated to be \$40 million for new meters or \$60 million if the replacement of existing meters was included. However, we noted that, since the beginning of BPR's mandate, the real-time management of the network (designated then by the generic term *[Translation] Water review*) is a concept that gradually appeared in the minutes of the project management committees' meetings.

We also noted that subproject 08, *[Translation] Review of water consumption*, appeared in 2005 among the subprojects created to follow the evolution of costs related to the IBI project, but no budgeted amount for this subproject was provided.

Through the review of the minutes of a project meeting in November 2005, we learned that the bulk of the work up until that date involved the preliminary market analyses and pilot installation of meters. We have not found any analysis or study at that date or later regarding the choice of performance scenario, although the mandate awarded to BPR provided for the preparation and delivery of such scenarios.

We reviewed a document dated January 30, 2006, entitled *[Translation] Project content statement—Measuring IBI water consumption*, which was prepared by a BPR coordinator for City managers. At that time, the subproject *Review of water consumption* was marked "to be defined." Nothing was mentioned in this statement about the network optimization phase. The cost of the IBI project was estimated at that time at between \$30 million and \$60 million.

From February 2006 to May 31, 2006, the direction of the IBI project shifted significantly. In fact, the real-time management of the network, also called network optimization or Phase 2 of the IBI project, was added during that period. A presentation made by BPR to the project monitoring committee on February 9, 2006 clearly refers to the real-time management of the network for the very first time. The project was described as follows:

1 project, 3 phases

- Metering
- Operations (replacement, maintenance), management, billing
- Real-time management of water distribution networks

The estimated costs of the project according to this presentation were to fall between \$120 million and \$160 million. This presentation also discussed a call for prequalification grouping Phases 1 and 2, at the end of which 2 to 3 candidates would be selected.

Other presentations were later made by BPR and certain IBI project managers, one of which was made on May 1, 2006, to the mayor, Messrs. Zampino and Forcillo and the City Manager.

Phase 2 formally took shape following a presentation made to the executive committee on May 31, 2006. On that date, a mandate was given to the City Manager to authorize the issue of calls for tenders for the *IBI and Network Optimization* project. The mandate³⁴ given to the Director General is worded as follows:

[Translation] "At its regular meeting on May 31, 2006, the executive committee learned of the progress of the I.B.I. meter project, as presented [by] Réjean Lévesque from S.I.T.E. and Pierre Lavallée from the firm BPR Inc., the City's authorized agent in respect to the IBI water meter program.

*Following this presentation, the executive committee mandates the Director General to authorize the issue of **all** required calls for tenders."³⁵*

It was at this time that the project actually became *IBI and Network Optimization* and that the process for the "calls for tenders" was set in motion. In practical terms, this was translated into a call for qualification being issued in June 2006 that included Phases 1 and 2 of the IBI project, which was to have been followed later by two calls for proposals.

We can see that the project seems to have taken a significant shift in spring 2006. While nothing had really hinted at the possibility that network optimization would be part of the project, it is evident that on May 31, 2006, this avenue was taken.

The presentation made by BPR to the project monitoring committee on February 9, 2006 clearly speaks about real-time management of the network. This presentation most closely resembles what the *IBI and Network Optimization* project would ultimately become. A call for prequalification was already being discussed that would group Phases 1 and 2, at the end of which 2 to 3 candidates would be chosen.

³⁴ File 1061154002.

³⁵ Our underlining and bold-face type.

This concept and the expected number of candidates to be selected was part of all subsequent draft presentations that we found and that were used to prepare the May 31, 2006 meeting with the executive committee.

It is our understanding that this concept and the expected number of candidates were incorporated as an integral part of the initial drafts of the call-for-qualification document written at the end of April 2006, i.e. before the May 31, 2006 presentation. In this instance, we were able to review a document dated May 10, 2006 that was issued by a Direction de l'approvisionnement representative to request that Clause 1.9, which referred to the selection of three candidates only, be struck from the draft call for qualification.

Among the presentation drafts that we examined, we found a 30-slide PowerPoint presentation entitled [*Translation*] *Measuring water consumption of industries, businesses and institutions (IBI)*. This draft would have been prepared by BPR in April 2006. This document clearly identifies the two phases of the IBI project: IBI meters and real-time management of the network. The following elements were also included:

- A summary chart entitled *Current* highlights the current operation of the water distribution network while another entitled *Planned* highlights the planned operation of the water distribution network, including real-time management and what was agreed to be called network optimization;
- Two schedules are detailed covering two possible scenarios, the first of which refers to a plan whereby the two phases are performed concurrently and the second of which aims at preparing two separate books of specifications for two different calls for tenders (i.e. one for the IBI meter component to be issued in October 2006 and the other for the remote network management component to be issued in March 2007);
- Reference is made to a "*prequalification estimate*" for which, according to the author of the draft presentation, between 9 and 15 groups should come forward;
- The plan was to select three that "meet all minimum qualifications";
- Reference is made to a maintenance contract (maintenance and replacement) over 25 years;
- Requesting financing options is mentioned so that the project become *off-balance sheet*³⁶;
- Finally, reference is made to performance specifications with an opening that will attract an imaginative proposal that would surpass objectives.

³⁶ It is our understanding that the "off-balance sheet" project refers to the fact that if financing was assumed by one or more contractors, no debt would be posted on the City's balance sheet. However, certain conditions must be respected for such a situation to apply. We therefore do not share the opinion of this document's author.

No implementation budget for Phases 1 and 2 of the IBI project is mentioned in this draft presentation.

During the meeting with the executive committee on May 31, 2006, there was a similar PowerPoint presentation. Although this presentation is shorter (about 15 slides), it essentially repeats the same elements as those contained in the draft presentation mentioned above. The May 31 presentation clearly identifies the two phases, i.e. the IBI meters and the real-time management of the network. The following elements are included:

- Reference is made to issuing a call for qualification in June 2006, after which two to four firms would be chosen;
- It was first planned to choose one firm for the IBI meters phase during the period between October 2006 and May 2007;
- It was then planned to choose one firm for the real-time network management phase;
- Sections of the specifications are referred to as “*performance requirements*,” “*performance guarantees*” and “*financing alternatives*”;
- Lastly, this document refers to costs of \$95 million, i.e. \$35 million for installing IBI meters (2007–2009) and \$60 million for installing telemetric instruments on the network (2008–2009).

The May 31, 2006, meeting would have lasted several hours. The purpose of the meeting was to explain the project to elected officials, praise its benefits and clarify the criteria considered most important for the selection of contractors. As for the costs that would follow after 2009, it is our understanding that the projections made to the elected officials were to the effect that these costs would be covered by the savings expected to be achieved from the project.

Our interviews with certain City of Montréal stakeholders enabled us to learn that the addition of Phase 2 was not a unanimous decision among those in charge of the IBI project. Most, if not all, of the stakeholders we met agree that Phase 2 was of definite technological interest for the City. However, several wondered about the speed with which this component had come to take precedence over Phase 1 and its inclusion in a call-for-qualification process without having first gone through all the analyses and studies usually required for a project of this magnitude. In fact, although there was no precise estimate at the time, all stakeholders expected the cost of Phase 2 to be high. During the presentation made to the executive committee on May 31, 2006, the figures mentioned for the first three years of the project were \$95 million. We understand that the elected officials felt the costs would be much higher, but would be compensated by the future savings expected from Phase 2.

If Phase 2 had to be included, some stakeholders considered that it should be part of the PW plan. Furthermore, according to them, the network had to be rehabilitated before implementing that phase.

III.9.2 Findings

Finding 12

Our interviews with certain City of Montréal stakeholders revealed the following elements:

- Phase 2 (Network Optimization) was not unanimously approved by City stakeholders. In fact, a number of them had serious reservations about its size and the way in which it would be implemented;
- If Phase 2 was to materialize, it should be part of the PW component. Furthermore, it would be essential to rehabilitate the network before implementing Phase 2.

Finding 13

As previously mentioned, on May 31, 2006, the executive committee assigned a mandate³⁷ to the Director General authorizing him to issue all the calls for tenders required under the IBI project. However, no resolution approved this mandate. It is a clearly established legal principle that a city only speaks through resolution or legislation. Therefore, when a city decides to issue a call for tenders, it usually must pass a resolution to this effect. When it chooses to use selection criteria to evaluate bids as authorized by legislation, it should determine those criteria and their weighting by resolution. In the present case, as we will later see, city council and other authorities approved both the issue of the call for qualification and call for proposals as well as the candidate selection criteria retroactively in the resolution awarding the contract to GÉNleau. One can certainly question the political soundness of proceeding in this fashion for a contract of this magnitude. However, we are of the opinion that, from a legal point of view, this situation did not affect the legality of the call-for-qualification and call-for-proposals process as issued.

Finding 14

There is no doubt that the initial project for the installation of meters in IBIs and the resulting rate structure took a completely different direction in spring 2006. This shift significantly altered the

³⁷ File 1061154002.

project's initial objective and ultimately its size, both in terms of scope and cost. In fact, after this date, the project included a real-time network management component, and it was planned that Phase 2 would use the data from the IBI project (i.e. those derived from the information from meters) in order to establish reviews of consumption.

III.10 OTHER EVENTS THAT AROSE AT THE SAME TIME AS THE CHANGE IN DIRECTION (2006)

III.10.1 Highlights and analysis

The General Auditor's Report of March 2007

Concurrent with the change in direction of the *IBI* project, two important events are noteworthy.

Firstly, in May 2007, the General Auditor of the City of Montréal issued a report entitled *Report of the City General Auditor to the conseil municipal and to the conseil d'agglomération for the Year Ended December 31, 2006 and the Quarter Ended March 31, 2007*. The section entitled *Value-for-Money and Management Audits* includes a chapter devoted to the *Rehabilitation of Water Infrastructure Systems*. This chapter deals with the audit carried out in spring 2006 by the General Auditor for which a report was issued on June 30, 2006.

This chapter led to the genesis of the various interventions put forward by the City in the *Water program*. Here are some observations made by the General Auditor:

- in 2003, the City had set up a projected financing package for the next 20 years that foresaw investments to the order of \$4 billion;
- in 2004, the City had issued calls for tenders for three major projects, namely ensuring drinking water production plants' compliance with standards (PCS), planning for the work to be done on aqueduct and sewer networks and for the assessment of their condition (PW) and installing water meters in industries, businesses and institutions (IBI);
- in 2005, the City had started work on several major, 20-year-long projects that would be part of a new water management strategy, including the installation and operation of meters in IBIs, a project that would span five years and require investments of around \$60 million.

It will be remembered that at the end of 2003, the City had created a dedicated budget envelope referred to as the *Water fund* for which an amount of \$25 million was reserved in 2004 and an additional \$20 million would be added every year until 2013. The total \$200 million set aside in this manner was intended to ensure the self-financing of the *Water program* by 2013.

In terms of capital expenses, the General Auditor estimated that on December 31, 2006 the City would show a shortfall of some \$391.8 million in investments from its original plan, taking into account the investments made and planned at the time of the audit.

A section of the report was devoted to the *IBI* project:

[Translation] “A \$7.42 million professional services contract was granted in 2005 to carry out this project, which is expected to conclude around 2009. Subsequently, the City of Montréal plans to earmark some \$60 million toward the installation of over 23,000 new water meters throughout the territory of the City of Montréal and the reconstituted municipalities. This figure will be over and above the 11,100 meters that are already in place.

The execution of the IBI project will make it possible to establish consumption profiles, help locate leaks that occur in the network, and establish an overview of potable water consumption, as well as an adequate and fair rate schedule.”³⁸

The work carried out by the General Auditor relative to the chapter devoted to the *Rehabilitation of Water Infrastructure Systems* was completed at the end of March 2006. The content of this chapter was discussed at the beginning of June 2006 with SITE managers and the stakeholders involved in the *Water program*. At that time, however, these people were aware that:

- The project now included an additional phase on the optimization of the network, i.e. real-time management of the network;
- The costs therefore involved in the *IBI* project would exceed the amount of \$60 million stated in the General Auditor’s report.
- A call for qualification including Phases 1 and 2 of the *IBI and Network Optimization* project was practically completed and was about to be issued;
- That being said, none of the people who met with the General Auditor’s representatives deemed it appropriate to mention the addition of Phase 2 to the IBI project, nor the additional costs that would result from that decision.

³⁸ Our underlining.

The Internal Auditor's Report of June 2006

Also related to the shift in direction made to the *IBI* project are the findings of a PwC study commissioned by the Internal Auditor of the City in 2006 and sponsored by SITE. The aim of this mandate was to “offer specialized services in internal auditing to investigate and review the control processes related to the awarding and management of some contracts given by the City of Montréal.” The contract was the subject of a resolution of the executive committee³⁹ dated December 14, 2005.

PwC fulfilled its mandate from January to May 2006 and issued two draft reports to the City's Internal Auditor. This department accepted these two draft reports practically in their entirety and distributed them to the SITE stakeholders concerned by the study's findings in order to get their input on the report recommendations.

The first draft report is addressed to the SITE. It is entitled *[Translation] “Calls for Tenders, Awarding and Management of Contracts for the Road, Aqueduct and Sewer Systems of the City of Montréal.”* The second report is addressed to the Deputy Director General (SITE). It is entitled: *[Translation] “Calls for Tenders for City of Montréal Public Works Contracts and Market Analysis.”*

The two reports contain some striking findings including the facts that:

- Very few bids (between 5 and 6) are submitted to the City regardless of the planned cost of the work;
- A small number of companies obtain a very large volume of all the contracts awarded by the City;
- Competition from outside Montréal is nearly non-existent.

These findings led the Internal Auditor to conclude that the prevailing environment in 2006 did not promote healthy market competition practices. Further on, in a section explaining the causes and effects of so few bidders offering their services, the Internal Auditor stated:

[Translation]

“There are many causes [. . .]

- *[. . .]*

³⁹ Resolution CE05 5159.

- *The fact that contracts are awarded based on the principle of the lowest compliant bidder.*
- *The lack of a system to prevent and detect collusive agreements, fraud, conflict of interest, cronyism and the doctoring of calls for tenders, as well as protect the confidential information in the bids received.*
- *The absence of an alternative solution to carry out the work.*
- *The lack of accountability.*
- *The complaints of managers faced with a shortage of resources.*

*Despite the use of an external appraisal firm to provide **some assurance** as to the fairness of the quotes received, the City, in extreme cases, ends up disallowing the bid and reissues the call for tenders in another form.*

The City operates in an environment that is not completely competitive for the following reasons:

- *The limited number of competitors.*
- *These companies' use of the principle of vertical and sometimes horizontal integration, which enables them to wield an influence on the local, even provincial, market.*
- *The geographical area is served exclusively by local companies.*
- *Social networks are well established and relatively closed.*
- *A few companies enjoy a dominant position and seem to have a volume of business that is more or less similar during a given period, as well as an identical rate of success.*
- *A few companies have been fined for conspiring to divide the market among themselves and unduly reduce competition in their respective fields.*

As a result of the absence of measures to prevent and detect collusion, fraud, conflict of interest and other unlawful acts, as well as of alternative solutions available to carry out the work, the City is not in a position to obtain the required services economically.”

Recommendations intended to redress this situation were written in the reports issued by the Internal Auditor. These recommendations, which were accepted by SITE managers, are included, in the final version of the two reports issued by the Internal Auditor in November 2006 along with the input from those managers concerned.

The main recommendations were presented to the audit committee in August 2007. It is our understanding from our interviews with the City Manager that major efforts have been made since 2007 to implement various corrective measures in an attempt to offset the problems raised in the Internal Auditor's 2006 reports. For instance, since August 24, 2009, one can find in the "Business" section of the City of Montréal's Web portal (ville.montreal.qc.ca), under the "Doing business with the city" heading, the City's commitments in terms of procurement as well as the rules concerning ethics and conflicts of interest as per the Code of Conduct for City of Montréal employees that outlines the organization's values. It is interesting to note that changes were made to the "Directives for bidders" in order to include specific provisions on the prevention of fraud and collusion in all municipal call-for-tenders documents.

Among other things, these directives stipulate that bidders are required to attach a solemn affirmation to their bid declaring that it has been prepared without collusion and without having contacted or reached an agreement with a competitor. It is also stipulated that a bidder must make a solemn affirmation to the effect that it, its managers or directors, partners or employees assigned to the performance of the contract, or a related company, have not been declared guilty of collusion, corrupt practices or other acts of a similar nature in respect to a call for tenders or contract with the City of Montréal, one of its paramunicipal agencies or a city on the territory of the Montréal agglomeration during the five previous years, and has not provided support to the City in the preparation of the call for tenders concerned in the six preceding months. Should any of the above occur, the bid will be rejected. It is also stipulated that the bidder is forbidden from hiring a person who provided support to the City in the preparation of the call for tenders in the six months following its issue, or retain his or her services for the performance of the related contract. Finally, a provision is also included for the termination of the contract once it is under way should it be discovered that a solemn affirmation was false, with financial compensation in favour of the City.

We have been told that City of Montréal suppliers and bidders very recently received a news release informing them about the measures described above.

III.10.2 Findings

Finding 15

It is our opinion that SITE managers and the stakeholders involved in the *Water program* did not explain the major change in the *IBI* project to the General Auditor, both in terms of the aforesaid project's scope and the resulting costs.

Finding 16

The apprehensions expressed by the Internal Auditor in relation to the competitive environment do not seem to have been taken into consideration during the preparation of the call for qualification for the IBI project. It should be remembered that this call included several components (grouping of Phases 1 and 2, performance and financing requirements, etc.) that restricted the pool of companies interested in applying as candidates.

Finding 17

According to the Internal Auditor's 2006 report, one of the recommendations to implement in the short term suggests:

[Translation] That a single predetermined threshold of tolerance should automatically cause the disallowance of a bid when the lowest bid received is higher than the detailed estimate.

In response to this recommendation, we find the following text issued by the department in question that served as both action plan and deadline:

[Translation] The concerned division should provide justification and make a recommendation to the administration regarding the disallowance or maintenance of the call for tenders. We believe that a threshold of $\pm 20\%$ must be upheld for projects whose cost is less than \$5 million and $\pm 15\%$ for projects whose cost is greater than \$5 million. These thresholds must be validated with the project estimation unit. However, we believe that the threshold of tolerance should also be predetermined when the lowest submission received is less than the detailed estimate. It is necessary to question any gap when the threshold is exceeded, either on the high or the low end.

We have seen that the cost of the IBI project on May 31, 2006 was estimated at \$95 million, with \$35 million earmarked for the installation of meters (Phase 1) and \$60 million for the real-time management of the network (Phase 2), to which major (although not quantified) costs were to be added. This information came from the presentation made on May 31, 2006 to the members of the executive committee. We will also see further on that the bids that were submitted were much higher than the amounts mentioned above, whether it be per phase or in total. Given the recommendation "that a single predetermined threshold of tolerance should automatically cause the disallowance of the bid when the lowest bid received is higher than the detailed estimate," one must

consider whether the major discrepancy between the amounts declared to the executive committee in May 2006 and those contained in the bids submitted in October 2007 should not have brought about such a disallowance, or a recommendation to that effect, from the division concerned.

Finding 18

The main recommendations were presented to the audit committee in August 2007. Since then, major efforts have been made to implement various corrective measures in an attempt to offset the problems raised in the Internal Auditor's 2006 reports.

III.11 CALL FOR QUALIFICATION FOR THE IBI AND NETWORK OPTIMIZATION CONTRACT (2006)

III.11.1 Highlights and analysis

On June 28, 2006, the Direction de l'approvisionnement issued a call for qualification (06-10143). The purpose of this document, which dealt with Phase 1 (IBI) and Phase 2 (network optimization), was to select firms for the project called *IBI and Network Optimization*. During an information session held on July 13, 2006, the City answered a question put by one of the representatives from the firms in attendance regarding the number of phases the City intended to implement:

[Translation] "The City expects that the project will be performed in 2 phases, namely the water consumption phase and the following-up and optimizing of the network phase. The terms and conditions of these phases are indicated in the foreword of the call for qualification."⁴⁰

In the document concerning call for qualification 06-10143, the City described the purpose of this call for qualification as follows:

[Translation] "The City of Montréal invites you to apply to demonstrate your capacity to provide, install, put into service, operate and maintain equipment and systems for the measurement of water consumption in IBIs; to demonstrate your capacity to provide, install and put into service equipment and systems for following-up and optimizing the public distribution of water in the Montréal agglomeration; and to maintain the information and communication systems and possibly a portion of the equipment installed as part of this project."

This call for qualification is the first phase of a candidate selection process leading to the selection of one or more firms with which the City of Montréal wishes to enter into one or more contracts with an obligation of performance."⁴¹

This public call for qualification was published in the daily newspaper *La Presse* on June 28, 2006. It was also posted, as required, over the electronic call for tenders system (SEAO). Interested candidates were asked to attend a mandatory information session on July 13, 2006. The process

⁴⁰ Our underlining.

⁴¹ Our underlining.

provided that, up until August 16, 2006,⁴² candidates could put questions in writing to the City representative and, if this led to changes in the call for qualification, there would then be addenda that would be transmitted to all interested candidates. The deadline to file the applications was September 6, 2006.⁴³ The City expected to announce the results on October 11, 2006.

In all, 31 firms requested the book of specifications. Of this number, 29 attended the mandatory information session. Subsequently, five addenda, some of which dealt with the questions that had been raised, were sent to the various firms.

After reading the call-for-qualification document, the following points stand out:

- The purpose of the document describing the qualification process was to select a candidate(s) with which the City wished to conclude a contract(s) with a performance obligation. According to the minutes of a meeting held on May 3, 2006 provided to us by a representative of the Direction de l'approvisionnement, this approach was strongly endorsed by elected officials;
- The document also mentioned that the selected candidates would be the only ones authorized to respond to the call(s) for proposals that would follow;
- In the preamble (section 1.1), in item 3, when the IBI project was first referred to, it was clearly mentioned that the project included *"[Translation] a component for the monitoring and optimization of the volume of water distributed in the aqueduct network over the territory of the Montréal agglomeration;"*
- The document mentioned the installation of 28,000 new meters, an increase over the 23,000 meters mentioned in the previous documentation. Selecting the equipment (the brand and the model) would be one of the responsibilities of the selected candidate. The installation of the meters was to be done and completed by December 31, 2009;
- As regards the Network Optimization component, the document mentioned the following approximate number of units that were to be installed:
 - 800 flow meters
 - 800 pressure transmitters
 - 600 regulating valves
 - 300 new pressure control chambers;
- The document mentioned that since the beginning of the project, certain phases had been completed by the Bureau de projets, notably the development of performance scenarios;
- The mandate the City intended to give could last up to 25 years;

⁴² This date was changed to September 6, 2006.

⁴³ This date was changed to September 27, 2006.

- The City expected that one or more financing proposals would be made for each of the projects;
- Clause 1.6, entitled *[Translation] Monitoring the selection process*, mentioned that the Direction de l'approvisionnement would be responsible for the overall candidates' selection process by monitoring the process as it unfolded and by providing an independent opinion on whether the process had been carried out in a fair and transparent manner;
- The same clause mentioned that the City's Internal Auditor had to provide an additional independent opinion regarding the execution of the selection process;
- Clause 6.2, entitled *[Translation] Communications*, mentioned that candidates were to abstain from any communications regarding this call for qualification with members of city council, their staff, city employees or any other person associated in any way whatsoever with the call for qualification, under penalty of having their candidacy rejected;
- As regards the specifications in section 2.1 of Appendix 2, *[Translation] General*, dealing with the meters, it is stated that the technologies selected for the project as a whole had to have met with approval in North America and that recent, but established technologies, would be preferred;
- As regards service life, at the end of the operating contract, the replacement system components would have to have a minimum residual service life of 10 years and the meters would have to be replaced after 20 years.

III.11.2 Findings

Finding 19

The call for qualification contains some ambiguities. On several occasions, it refers to the division into two phases. Furthermore, several parts of the document contain distinct information in relation to each of the phases. For instance, both section 2.1 of the document, entitled *[Translation] Principal components of the phase on measuring water consumption in IBIs*, and section 2.4, called *[Translation] Sharing project responsibilities for the phase on measuring water consumption in IBIs*, relate specifically to Phase 1. Furthermore, Appendix 2, entitled *[Translation] Description of the main technical and management requirements of the phase on measuring water consumption in IBIs*, only refers to that phase. However, sections 2.2, 2.5 and Appendix B refer to specific aspects of Phase 2. Section 1.3, called *[Translation] Principal elements of the project covered by this call for qualification* highlighted this separation:

[Translation] “The City is considering entrusting responsibility for one or the other or all of the following activities for up to 25 years to the candidate(s) selected at the end of the process.”⁴⁴

- **Phase dealing with measuring consumption in IBIs:**
 - *Selecting the technologies that offer the expected performance.*
 - *Making the equipment operational.*
 - *Operating and maintaining the equipment.*

- **Phase dealing with the follow-up and optimization of water distribution:**
 - *Identifying the parameters for installing the equipment.*
 - *Designing and building the infrastructure.*
 - *Making the equipment operational.*
 - *Maintaining the computer and communications equipment and possibly a part of the equipment installed as part of this project.*

The City expects that the selected firm will be able to suggest, on the basis of its experience and of the various financing strategies used in this field, one or more financing proposals for either of the project’s phases.”⁴⁵

Upon reading these sections of the call for qualification, it can be observed that the objective was to retain **one or more firms for one or the other of the phases or for both phases**. This approach is consistent with the elements included in the presentation made to the executive committee on May 31, 2006. Furthermore, in a document called [Translation] *Report on a meeting* held on October 18, 2006, which summarizes the discussions that occurred during a meeting of various City and BPR stakeholders involved in the project, reference is made to the next phase dealing with “calls for proposals.” There is a table in this document demonstrating the scope of the works. Not only does it show the scope of the work, but also describes for each of Phases 1 and 2 the responsibilities that would be given to the firm that would ultimately be retained, as well as the responsibilities of the City. In the heading of this table, it is stated, “In anticipation of 2 calls for tenders.”⁴⁶

⁴⁴ Our underlining.

⁴⁵ Our underlining.

⁴⁶ Our underlining and bold-face type.

However, upon looking at the evaluation grid in detail, it can be seen that it was prepared to include **both phases** when in fact, as stated in section 1.3 of the call for qualification mentioned above, the City was considering “*entrusting, [. . .], one or the other or all of the following activities to the candidate(s) selected at the end of this process . . .*”⁴⁷ Indeed, in the *Technical expertise* component, 10 points were awarded to candidates for *[Translation] Expertise in setting up equipment and infrastructure to measure water consumption and optimize aqueduct networks*. However, a candidate only wanting to qualify for one or the other of the phases could not obtain the maximum number of points. Consequently, it was in the best interest of interested candidates to bid on both phases. In addition, we notice the following sentence at the bottom of the evaluation grid:

[Translation] “Because the responsibilities of the selected candidate(s) will require varied experience, expertise and capabilities in order to achieve the performance objectives, the City recognizes that it will be difficult for one firm alone to meet all of the criteria and, accordingly, expects to receive candidacies made up of several firms that have united for the purposes of the project.”

A record of a meeting dated May 19, 2006, which was provided to us by one of the representatives of the Direction de l’approvisionnement, contains a reference made by one of the representatives of BPR, who, in connection with the call-for-qualification process, stated that “the formation of consortia is essential to the qualification of suppliers, since the market response strategy is intended to fulfil all needs on the basis of a single call for qualification.”

Another record of a meeting dated May 19, 2006 mentioned that: “*One of the major preoccupations of the City is to have to deal with **only one representative**.*”

It is our understanding that the expression “*only one representative*” meant that the City only wanted to deal with **one** firm that would take care of the whole project. The record continues as follows:

[Translation] “The scope and the nature of the mandate that will be given are so considerable that the creation of consortiums is unavoidable. As a result, we expect that the number of bidders will be very small.”

⁴⁷ Our underlining.

Requiring candidates to have *[Translation]* “*varied experience, expertise and capabilities in order to achieve the performance objectives,*” could only encourage, in our opinion, the creation of groups or consortia, thereby limiting competition and reducing the number of bidders.

Finding 20

We have noted that the call-for-qualification document did not refer to any budgeted amount for either of the phases. Indeed, in a written answer to one of the candidates who was inquiring about the budget envelopes for each of the phases, the City wrote:

[Translation] “*In an article published in the Journal de Montréal on June 29, 2006, it is stated that ‘The cost of this operation will reach \$150 million and it will take the City three years to realize it. It will cost \$70 million to install the meters and just as much for the equipment to measure consumption throughout the network.’”*

In our opinion, Phases 1 and 2 should have been awarded to two different firms. Moreover, they could have been performed in succession, one after the other. Indeed, during our interviews, certain City stakeholders said that at that time they had stated that the phases should be separated and awarded to different firms, in order to maximize the number of bids and facilitate monitoring. We have already previously mentioned that, according to our team of specialists, it would have been preferable to start by rehabilitating the aqueduct network through a structured response plan before beginning the systemic implementation of Phase 2 (network optimization). However, a possible alternative could have been optimization by area, through concentrating on the most critical or at-risk areas. This option was not considered.

Although the original objective of the City, based on the wording of the call for qualification, was to conclude a contract for each phase separately or for the two phases as a whole, there is no doubt in our mind that it was to a candidate’s advantage to bid on both phases as a whole. In fact, if we rely on the record of a meeting dated May 3, 2006 and on the comments of the BPR representative, the market response strategy pointed to the preparation of a single call for qualification. It will be seen in the next section that the interested candidates created consortia in order to better position themselves and that they all showed an interest in the two phases taken as a whole and that no consortium or no firm applied for only one phase.

According to certain stakeholders involved in the file and according to our specialists’ analyses, the fact that there were not two separate calls for qualification for Phase 1 (IBI) and Phase 2 (network

optimization) limited the number of candidates offering their services. If separate calls for qualification had been prepared, several bidders would then have shown interest, but for only one phase of the project. From this perspective, the call for qualification as presented in a certain way limited the number of firms that could bid.

Because those who were responsible at the Direction de l'eau and at BPR had considered preparing two separate calls for qualification and had even considered the preparation of two calls for tenders, it is difficult for us to understand the logic that led to the decision to prepare only one.

III.12 THE RESULT OF THE CALL FOR QUALIFICATION FOR THE IBI AND NETWORK OPTIMIZATION PROJECT (2006)

III.12.1 Highlights and analysis

On September 6, 2006, the following four groups submitted proposals in response to the call for qualification:

- The Catania–SM consortium, in partnership with CGI, Endress+Hauser and Comab;
- GÉNieau, made up of Groupe-Conseil Dessau-Soprin and Simard-Beaudry Construction;
- The group made up of SNC-Lavalin, Gaz Métro Plus and Suez Environnement;
- Veolia Water Canada, in partnership with John Meunier Inc.

As provided for in the call for qualification, the City's designated representative requested additional documents from some of the candidates in order to obtain further details regarding their submissions.

A selection committee met on October 18, 2006 in order to determine which groups had obtained a passing score. This committee was made up of five people, including four City of Montréal employees and one external person. A person from the City's Direction de l'approvisionnement acted as secretary of the selection committee. The City's Internal Auditor also attended this meeting. These people had previously met with consultants from BPR (for the technical component) and Raymond Chabot Grant Thornton (RCGT) (for the financial component) in order to obtain their assessment of each of the four candidates. These consultants were, in particular, assigned to point out, based on the documents submitted by them, the strengths and weaknesses of the various candidates in relation to the assessment criteria specified in the call for qualification, so as to help committee members fulfil their task.

In order to qualify, candidates had to obtain a score of at least 80 points⁴⁸ in respect to the 11 criteria appearing in the following evaluation grid, which was included in the call for qualification.

⁴⁸ According to the minutes, dated May 19, 2006, of the meeting related to the call for qualification process, which we obtained from one of the representatives of the Direction de l'approvisionnement, this score had initially been set at 60 points. It was later changed to 70 points and, in the end, set at 80 points.

Table 6 – Evaluation grid – Call for qualification 06-10143

Evaluation grid – Assessment criteria	Maximum score	
Technical expertise		
1. Expertise in the implementation of meter reading systems and data acquisition and monitoring systems	10	
2. Expertise in setting up equipment and infrastructure to measure water consumption and optimize aqueduct systems	10	
3. Expertise in operating and maintaining equipment and networks	10	
<i>Subtotal</i>		30
Organizational expertise		
4. Understanding of the issues and challenges inherent in the project	20	
5. Expertise of the team	10	
6. Project management expertise	5	
<i>Subtotal</i>		35
Expertise and familiarity with the area		
7. Familiarity with the Montréal area and the City of Montréal	10	
8. Customer service expertise	5	
9. Communications and public relations expertise	5	
<i>Subtotal</i>		20
Financial aspects		
10. Financial organization	10	
11. Financing expertise	5	
<i>Subtotal</i>		15
Total		100

On the basis of the evaluation of the various candidates according to the grid included in the call-for-qualification document, the committee determined that three (3) of the firms that had submitted their candidacy had obtained the passing score of 80 points. They were:

- The Catania–SM consortium, in partnership with CGI, Endress+Hauser and Comab;
- GÉNleau, made up of Groupe-Conseil Dessau-Soprin and Simard-Beaudry Construction;
- The group made up of SNC-Lavalin, Gaz Métro Plus and Suez Environnement.

From the outset, we would like to clarify what could be written or said in respect to the fact that Veolia Water Canada would not have met the evaluation grid criteria in terms of *Financial organization* (calculated out of 10 points). Under section 5.5 of the call-for-qualification document, the City's representative on this file contacted a representative of Veolia Water Canada Inc. in early October 2006 in order to obtain more specific details about the company's financial organization, since the financial information it had provided only concerned its French parent company. On October 6, 2006, the Executive Director of Operations at Veolia Water North America Operating Services, LLC forwarded the financial statements of Veolia Water North America, the parent company of the candidate Veolia Water Canada Inc., for the year ended December 31, 2005, along with comparative information for the year ended December 31, 2004. A few days later, on October 11, 2006,⁴⁹ it was noted in a second letter that Veolia Water North America had "*the intention of acting as guarantor for Veolia Water Canada Inc. in the execution of the project referred to, as well as in Veolia Water Canada Inc.'s performance of and its financial capacity to execute the project.*" We will conclude by mentioning that the score that Veolia Water Canada Inc. received in terms of *Financial organization* in no way interfered with its overall result and therefore had no impact on the rejection of its candidacy.

We have learned from the director of the Direction de l'eau that, once the four candidacies had been received, he had the following concerns:

- He realized that the contract to be awarded would be huge. He explained to us that that could undoubtedly restrict competition. The Direction de l'approvisionnement shared the same concern.
- The fact that the City required that financing be the responsibility of the contractor, in his words "*a sort of PPP,*" also made the project more complicated and limited the number of candidates.
- The fact that Phase 2 was envisaged as being part of a whole added to the complexity of the project and the work to be done.
- He concluded by saying that the issue of two calls for qualification would certainly have increased the number of interested candidates.

This information illustrates the highly problematic nature of the project. We will return to these elements later in this report.

⁴⁹ Even though the date appearing on this letter is October 11, 2007, we are at liberty to believe that this date should have been October 11, 2006.

III.12.2 Findings

Finding 21

We question the validity of one of the selection criteria included in the evaluation grid for the candidates under the heading *Expertise and familiarity with the area*, i.e. No. 7, *Familiarity with the Montréal area and the City of Montréal*. Within the framework of a call-for-tenders procedure, the City may initiate a “pre-screening” or qualification process in order to subsequently invite qualified contractors to submit bids. It then determines the various selection criteria that will be used to evaluate candidates. The City has absolute discretion in establishing such criteria to the extent that they are based on the interest of the community, while at the same time promoting healthy competition and respecting freedom of commerce. The City is, however, forbidden from discriminating on the basis of the contractor’s province or country of origin.

An examination of the criterion related to familiarity with the Montréal area and the City of Montréal, which counts for 10 points out of a passing score of 80, leaves us rather puzzled as to the reason justifying such a requirement. Indeed, this criterion has the direct consequence of restricting the rules of the free market by unnecessarily penalizing companies that had not worked with the City of Montréal. In our opinion, it is possible that a court would also conclude that this criterion is invalid, either because it was made to circumvent the law or because it is inconsistent with the principle of healthy competition and the interest of the community.

Although the call for qualification opened the way for candidates to apply for one or the other (or both) phases of the project, from reading the documentation provided by the various candidates we learn that each of the groups that submitted an offer wished to demonstrate their ability to carry out the two phases.

III.13 THE ISSUE OF THE CALL FOR PROPOSALS FOR THE IBI AND NETWORK OPTIMIZATION PROJECT (2006–2007)

III.13.1 Highlights and analysis

At the time the City was devoting its attention to the candidates that were to be selected for the next stage in the *IBI and Network Optimization* project, nothing had really been decided with regard to the way the City would proceed in the future.

Various documents that were prepared following the selection process show us that several options still remained on the table. The minutes of a project team meeting dated October 18, 2006 mentioned certain points relevant to this topic, including:

- The possibility of preparing one or two calls for proposals. Even though the work involved in Phases 1 and 2 was closely linked, this document outlined considerable differences in terms of their implementation. A table describing the elements to be considered in each of the phases was, for that matter, presented in anticipation of two calls for proposals;
- The length of the mandate that was to be given to the successful bidder, though not definitive, was 25 years for all phases;
- Certain issues remained to be clarified, including:
 - Ownership and transfer of equipment,
 - Performance indicators (including the replacement cycle),
 - Preparation of a benchmark proposal,
 - Evaluation criteria for the call for proposals,
 - Responsibilities of the City and those of the contractor,
 - Process for responding to changes in technologies, needs and services,
 - Schedule (constraints, milestones),
 - Contract content and the negotiation process, and
 - Physical management framework.

The only certainty to that date resided in the fact that the City would proceed with one or more calls for proposals and that everything would culminate in one or more contracts with a performance obligation.

Furthermore, we had access to a decision summary⁵⁰ prepared by the director of the Direction de l'eau, the goal of which was to inform the executive committee about the results of the call for qualification and the fact that the City would later proceed with some calls for proposals for the *IBI and Network Optimization* project.

We have also obtained from the then director of the Bureau de projets a document dated January 8, 2007 that would have been presented to the Deputy Director General (SITE) and to the director of the Direction de l'eau. This document, some twenty pages in length, makes a detailed analysis of the risks associated with the project as a whole, particularly with regard to the possibility of issuing one or two calls for tenders, highlighting the advantages and disadvantages of the two approaches. At that time, the estimated budget for the project was about \$230.0 million, \$100 million⁵¹ of which would be assigned to Phase 1 and \$130 million to Phase 2.

In fact, the choice of issuing only one call for proposals would have been made well beforehand. Indeed, BPR had earlier retained the services of Dunton Rainville to help it with the drafting of a document. This subcontract, entitled *[Translation] Support services for legal aspects and preparation of a contract with an obligation for performance* is dated November 17, 2006. The description of the project is as follows:

[Translation] "The IBI Project includes two components for which one⁵² call for proposals is being prepared, the rough copy of which should be sent to the City towards the middle of December 2006."

Later, we obtained a presentation dated January 17, 2007 whose subject was *[Translation] IBI project for water measurement—Working hypotheses for the contract*. This presentation was made by the head of the IBI project, the director of the Bureau de projets and the director of the Direction de l'eau to Sammy Forcillo, Frank Zampino, the Director General, the Deputy Director General (SITE) and the BPR representative. This document, which contained certain annotations added by its author in its margins (shown below in italics), reveals the following information:

- A single call for proposals will be launched that will cover Phases 1 and 2 of the project for measuring water. *The City was not looking for a supplier but rather an associate, a partner to whom it would assign work for a long period of time;*

⁵⁰ This document (decision summary 1061933003) was presented to the executive committee for approval by November 29, 2006 at the latest.

⁵¹ This amount included the required preparation of piping in IBIs

⁵² Our underlining and bold-face type.

- With respect to Phase 1, it was anticipated that owners would assume responsibility to prepare piping while the City would assume the costs of preparing pipe connections to the meters as well as installing the meters. *The possibility of including pipe preparation costs in the contractor's contract was under consideration;*
- With respect to Phase 2, the City was responsible for the maintenance of everything that is "control"- related (all of the existing valves and the 100 new control valves) and the Contractor was responsible for the measuring equipment (580 sites) and for all the measuring telemetry (580 sites + 100 control valves);
- The control equipment was to be paid for after being put into service and upon the acceptance of the work, which included a guarantee period;
- The measurement and telemetry system and equipment were to be paid for in monthly instalments. The monthly payment was associated with a performance obligation related to system operation (operating time frames, response times and others);
- The City agreed to carry out four or five pilot projects in 2007 to validate the proposed approach and to make any required adjustments before beginning to implement the system throughout the entire agglomeration. These pilot projects would serve to analyze the impacts of sectoring and pressure variation;
- The maintenance and replacement period for both Phase 1 and Phase 2 was to be 25 years;
- The budget allocated to Phase 1 amounted to \$141 million, whereas the Phase 2 budget amounted to \$101 million, for a total of \$242 million.

On April 18, 2007, the call for proposals for the *IBI and Network Optimization* project (07-10370) was issued. To do this, the Direction de l'approvisionnement invited qualified candidates to a meeting where the call-for-proposals documents were given to them. These documents included the following elements:

1. Background to the call for proposals
2. General presentation of the call for proposals
3. Directives for candidates
4. Description of the items in the schedule of quantities
5. Administrative clauses
6. Performance indicators and measures and method of payment
7. Selection process

Appendices

Proposal forms

- A. Scope of the work in detail
- B. Draft contract
- C. Examples of the operation of the method of payment
- D. Book of standardized requirements, Volumes 2, 3 and 4

The representatives of Dunton Rainville attended this meeting. Their mandate was to provide support for IBI project stakeholders throughout the call-for-proposals process, to review this document and prepare the draft contract. We will come back to their involvement in a later chapter entitled *BPR's initial mandate and its iterations (2005–2008)*.

III.13.2 Findings

Finding 22

In our view, the fact that there was only one call for qualification followed by one call for proposals for the two components considerably limited the market of potential bidders. In this sense, the call for proposals once again limited the potential offer and, automatically, did not necessarily allow the best price to be obtained.

Finding 23

Moreover, issuing a single call for proposals made it difficult to draw comparisons between the proposals of the various candidates as the proposed solutions could differ greatly. In our opinion, the use of this particular formula had several disadvantages, including the following:

- It lacks fairness towards bidders, because it must compare bids that do not incorporate the same products and the same technologies;
- The benchmark proposal prepared by BPR aims at validating the costs proposed by the bidders and, in our opinion, has no relevance in this context. We are not dealing with neither the same products nor the same technologies;
- It reflects a lack of rigour on the part of the City as it fails to clearly identify its needs, thereby allowing candidates to dictate what is being offered;

- It involves a long negotiation process between the City and the chosen candidate to specify the technologies, the suppliers that were not specified in the call for proposals or which are completely opposed to those outlined in the call for proposals. This stage was not supervised as well as the preceding ones and can endanger the transparency of the process.

Finding 24

On a different note, we are puzzled as to the manner in which the number of meters of various sizes was determined (on the basis of data available for the City of Ottawa) knowing that BPR was initially tasked with conducting an inventory of existing meters.

The size of the meters and the estimate of their implementation costs are directly related to the size of the water service lines. Since the size of the water service lines to IBI buildings was unknown, BPR assumed that their distribution was identical to that of the City of Ottawa as illustrated in the following paragraph taken from a document prepared by the firm:

[Translation] “The range of diameters of the new meters is an essential piece of information in estimating costs. Unfortunately, the existing databases of the city of Montréal [sic] and the reconstituted cities only contain a small amount of information with respect to the size of the water service lines and the IBI users’ consumption profiles, making it impossible to calculate the distribution of diameters of new meters on the basis of the diameters of the lines. The IBI project therefore established an approximate distribution of the diameters of the new meters based on the distribution of the IBI meters of the City of Ottawa in order to be able to work out cost estimates.”

Such uncertainties would normally have been addressed before going to a call for proposals. In conclusion, the technical information necessary for adequately responding to the call for proposals for Phase 1 of the project is incomplete. In our opinion, this directly affected the cost of the project.

The situation is similar for the call for proposals for Phase 2, which was prepared in a very short period of time in light of the scope of the anticipated work and budgets in play. The technical information necessary for the preparation of the call for proposals was incomplete. This directly affected the present and future costs of the project.

For example, we do not know either the precise number of measuring and regulating chambers required, or their location, condition or the type of equipment intended for them. In fact, all of the

quantities are very approximate and determined according to an arbitrary rule of thumb: there are 150 areas for distribution monitoring and 75 pressure control areas. As for the number of valve chambers, estimated at 600, they can be broken down into 300 new models and 300 old ones. We have learned that in January 2008, immediately after the awarding of the contract, the number of areas for distribution monitoring increased from 150 to 187, and the number of pressure control areas increased from 75 to 87. Moreover, according to the minutes of a SITE meeting dated February 27, 2008, changing the distribution of chambers to 480 old and 120 new ones was being considered in February 2008.

In our view, all of these uncertainties make the total cost of the project unsure. The variations in the costs related to other work may be much more substantial. That is the case with the costs associated with retrofitting the chambers, which may be much lower than expected.

Finding 25

There is good reason to query the solutions envisaged prior to the issue of the call for proposals. We have been able to consult a document dated March 21, 2006 that was prepared by BPR where various alternatives for completing the project were outlined, from the City being essentially the principal contractor for all the work to the entire project being mostly entrusted to an outside contractor. Moreover, when questioned about the various solutions contemplated, one of the City's stakeholders in the project indicated to us that this aspect had been discussed internally, but in a fairly superficial manner, which was confirmed by one of BPR's representatives.

From the time candidates were selected through the call for qualification to the issue of the call for proposals, a major shift took place thereby resulting in the option to issue two calls for proposals being set aside and the City issuing only one call for proposals incorporating Phases 1 and 2 of the project.

Once BPR was chosen, the level of solutions being sought clearly shifted. While the 2004 call for tenders (04-8243) stated that *[Translation] "the City shall favour, when choosing technologies, generic and commercially available products, rather than customized solutions,"* the 2007 call for proposals (07-10370) actually mentioned that *[Translation] "the present estimate, which seeks guaranteed results, allows for experimenting with new concepts and materials, as well as new techniques, promoting the development of technical expertise that will be of benefit to the Montréal agglomeration."*

III.14 EVENTS SURROUNDING THE CALL-FOR-PROPOSALS PROCESS IN THE IBI AND NETWORK OPTIMIZATION PROJECT (2007)

III.14.1 Highlights and analysis

After the filing of the call for proposals, candidates were asked to attend a group meeting held on May 2, 2007. Subsequently, there were group meetings and individual meetings. In all, 14 addenda were sent to the candidates. The addenda are indicated below in numerical order. The dates the addenda were issued are stated within brackets.

Table 7 – Description of the addenda

No.	Description of the addenda
1	Information meeting to be held on May 2, 2007 and Excel file of Appendix A2 on the schedule of quantities and prices (April 27, 2007).
2	Information meeting to be held on May 23, changes to the call for proposals and answers to the questions asked during the May 2, 2007 meeting, including certain additional details about the evaluation grid including the effect of the price of the tender on the final score (May 9, 2007).
3	Revision of the initial draft contract, revision of the specifications for the call for proposals, answers to certain questions by the candidates and changes to the quantities and price schedule (May 15, 2007).
4	Revision of the specifications for the call for proposals and answers to certain questions asked by the candidates (May 18, 2007).
5	Agenda for the individual meetings to be held with the candidates, extension of the date for filing the proposals to August 20, 2007 and of the awarding of the contract to November 2007 and changes to the quantity gaps from 50% to 100% for certain sub-items specified in chapters 7 and 8 of the quantities and prices schedule (June 8, 2007).
6	Agenda for individual meetings to be held with the candidates (June 14, 2007).
7	Cancellation of addendum 6 and new agenda for individual meetings to be held with the candidates (June 14, 2007).
8	Changes to the specifications for the call for proposals and answers to the questions asked by the candidates (June 19, 2007).
9	New extension of the date for filing the proposals (scheduled in addendum 5 for August 20, 2007) (July 5, 2007).
10	This addendum showed the original document for the amended call for proposals, including the changes made to the previous addenda (September 14, 2007).
11	This addendum contains certain changes to the call-for-proposals document, as well as a set containing the various modified appendices (September 21, 2007).
12	This addendum contains new changes to the call-for-proposals document, as well as two appendices (September 28, 2007).
13	This addendum extended the period for questions to October 2, 2007 (September 28, 2007).
14	This addendum contains certain changes to the call-for-proposals document, as well as to the appendix dealing with the terms of payment (October 5, 2007).

As mentioned previously, there were individual and group meetings. To ensure transparency and provide assurance that the process would be fair, individual meetings were recorded and attended by an observer of record, who was a representative of the legal firm of Dufresne Hébert Comeau.

As we were able to see from the content of the addenda, the filing date for the proposals was extended on several occasions. It had originally been set at June 20, 2007, but was extended to August 20, 2007 and later again to October 10, 2007.

At this point, it is important to highlight certain written documents prepared between the issuing of the call for proposals and their filing date.

Firstly, on June 5, 2007, the Deputy Director General (SITE) wrote to the Director General regarding the various problems encountered following the first meetings with the invited candidates and to highlight the significant monetary value of the project. Basically, the following points were raised:

- The expected cost of the project would be too high because it was estimated at more or less \$400 million, which was a significant increase from the previous estimate of \$250 million;
- It was estimated that IBIs would have to spend approximately \$70 million to install backflow prevention devices, as required by Quebec regulations;
- The candidates had informed the City that they would have to assume several risks;
- It was argued in certain quarters that the project was a PPP within the meaning given to this concept by the responsible government agency.

Finally, the document considered various solutions and suggested a new timeline.

An important event occurred on June 28, 2007 when the director of the Directeur de l'eau wrote to the Deputy Director General (SITE). This memo, by its very wording, constituted **"a wake-up call about the level of risk in the execution under present conditions of the IBI project and Optimization of the distribution network."**

In the memo, the director of the Direction de l'eau added:

[Translation] "Given that we had reached the final date to complete the file, I thought it was my duty to make this final call in the hope of rallying all the stakeholders in order to properly understand the problem and consider the best solutions."

I hope this intervention will help us find an appropriate solution to bring this project to fruition as quickly as possible.”

He pointed out, among other things, that the initial project only included the installation of water meters in IBIs at an estimated cost of \$50 million. The subsequent addition of the network optimization phase, which constituted a major change, had increased the estimate to \$250 million and that, at that time, the best estimate amounted to \$400 million. He also questioned the decision-making process that had been used up to then which, according to him, had failed to involve certain key city departments, such as the Service des finances and Direction du contentieux, whose involvement and support were essential to achieve quality results.

He continued by saying:

[Translation] “Furthermore, as head of the Direction de l’eau and as the person responsible for all files related to it, I feel deprived of the support that could give me the assurance that all important elements of the file have been competently assessed, that risks have been properly measured, that recommendations from my department have been properly substantiated and that I will ultimately be able to appropriately support the decisions that will be taken by those who are responsible for them and inform them, if need be, of the parameters and objectives of these decisions.”

The director recommended the following:

- *[Translation] “Postpone the opening of the call for proposals until November 2007.*
- *Create a working group made up of teams from the Direction de l’eau, the Service des finances, the Service du contentieux and the Service de l’approvisionnement in order to review the terms and conditions of the contract. This would help create an innovative contract that would benefit from the expertise and know-how of the private sector and of the City of Montréal managers in a process that would be based on contractual terms and conditions accepted by the market at large. All of this will be done to ensure unquestionably wise management, safe from blame and unexpected surprises.*
- *Review the terms of reference and the specifications to obtain the best possible value for the money spent on the contract.”*

According to our discussions, there was no response to this document by the Deputy Director General (SITE).

Contemporaneously, the director of the Bureau de projets presented to the director of the Direction de l'eau and to the Deputy Director General (SITE) a document called [*Translation*] *Grounds to support changes to Phase 2 of the IBI project*. This document explains the nature of Phase 2 and its objectives. It mentions among other things the importance of starting the process by intervening in the network itself. Here are a few excerpts:

[Translation] "The creation of distribution areas is a colossal undertaking that should not be improvised, because it will disrupt the entire water flow dynamic. Consequently, it must be thoroughly planned and executed within a strictly controlled framework. Moreover, in order to obtain maximum benefits and avoid having to constantly rebalance the supply sources for an area, it must be preceded by a preliminary diagnosis of the network, by repairing the most substantial leaks and peripheral valves. This work, despite its importance for the success of the project, does not fit in with the current priorities of the water management team.

[...]

By performing an auscultation investigation of the network and by preparing a response plan, we follow industry standards as laid down by the American Water Association and the Canadian InfraGuide. We believe that, given the advanced state of obsolescence of our network, an auscultation investigation using basic techniques such as the preventive detection of leaks and more sophisticated methods such as inducing an electromagnetic field as used on Pie-IX will give better short-term results than the instrumentation of our network.

Without questioning the appropriateness of Phase 2 of the IBI project, which eventually would provide a precious source of information to better manage our network, we believe it would be hazardous, even ill advised, at this point, to redirect the efforts of the water management team, which for the time being is totally taken up with handling the emergencies that have already been identified. Furthermore, there is no need to add new equipment which, if it were entirely operational, would depend on infrastructures that are not totally reliable because of a lack of resources."

It is our understanding that this document was ignored as well.

For his part, on August 28, 2007, the head of the IBI project filed a document to the attention of the Deputy Director General (SITE) that had previously been discussed during a meeting attended by the author as well as Messrs. Zampino and Forcillo, the Director General, the Deputy Director General (SITE) and the director of the Bureau de projets. The objectives of the document were as follows:

[Translation] "This document reviews the direction of the project and of the contractual agreement in such a way as to respond to both the City's and the candidates' main concerns, so that the latter will be able to file proposals that will be advantageous both to themselves and to the City.

The document will try to respond to concerns expressed about the financing of the project, regulations, financial assistance to IBIs, directions regarding the rate structure, resources required both internally and externally to execute the project, and for the design of a new central unit.

Briefly stated, the main suggested change deals with the adoption of a revised operational scenario that is presented as follows:

The City owns the equipment and it is responsible for financing the capital expenses needed for its equipment and its installation. Managing measurement and maintaining equipment and replacement systems are the responsibility of the contractor, by way of a service contract."

A cost estimate was prepared by the IBI project head based on figures prepared by BPR, which estimated the project would cost a total of \$428 million."

In essence, this is what was used for the changes made to the contract by means of addendum No. 10.

Finally, regarding the filing date of the proposals, subsequent to a meeting held the previous day with the City, the SNC-Lavalin–Gaz Métro Plus–Suez Environnement Group transmitted a request on September 28, 2007 to the City representative to extend the deadline for filing the proposals from October 10, 2007 to November 7, 2007. The grounds invoked were to allow the boards of directors of the three partner companies, which were all public corporations, to authorize the filing of the proposal.

On October 5, 2007, the City representative informed the candidate consortium of SNC-Lavalin–Gaz Métro Plus–Suez Environnement that the October 10, 2007 deadline would not be changed. This decision was taken by the SITE managers involved in the project. Consequently, two proposals were filed with the Direction du greffe (city clerk’s office), namely by the Catania-SM consortium in co-operation with Endress+Hauser, and by GÉNleau, made up of Groupe-Conseil Dessau-Soprin and Simard-Beaudry Construction.

It is our understanding that throughout the process leading to the filing of the proposals, City stakeholders and BPR staff were assisted by various consultants, including Dunton Rainville (to draft the call-for-proposals documents and the contract) and RCGT (to deal with the financial aspect of the project). It should be pointed out that the City’s Direction du contentieux was practically not involved in the process because, according to our information, “of a lack of resources.”

At this point, it would be appropriate to review the various addenda that were issued.

Addendum No. 2 dealt with the formula to be used to evaluate the cost of the tender. A relative weight of 40 points (out of 100) was given to this component when evaluating the candidates’ proposals. The complete grid is shown in the following table.

Table 8 – Evaluation grid – Call for proposals 07-10370

Evaluation grid – Assessment criteria	Maximum score	
Technical expertise		
1. Quality of the response given to the needs of the City	15	
2. Technical quality of the proposed solutions	19	
3. Quality of the project team	6	
<i>Subtotal</i>		40
Organizational expertise		
4. Quality of the organization	8	
5. Quality of project management	7	
6. Client services and communications	5	
<i>Subtotal</i>		20
Financial aspects		
7. Proposed cost	40	
<i>Subtotal</i>		40
Total		100

The formula used at that time to evaluate the project costs and which had basically been developed by RCGT at the request of the Service des finances of the City, was subsequently changed by means of addenda Nos. 10 and 12. The formula that was finally accepted (indicated in addendum No. 12) took into account the capitalized value of the amount to be paid to the contractor according to the terms of its bid and compared that amount (for a significant number of points: 25) to the lowest bid (including the benchmark proposal) and compared it for a lesser number of points (15) to the average of the bids received (including the benchmark proposal prepared by BPR).

As regards addendum No. 10, it was an extremely large document that contained several changes since the original call for proposals. The following table shows the major changes that occurred between the original call for proposals and the one that incorporated the changes made via addendum No. 10.

Table 9 – A comparison between certain items in the original call for proposals and the final call for proposals, including the addenda

Original	Final, including the addenda
The term of the contract for the contractor was twenty-five (25) years, both for Phase 1 (IBI meters) and Phase 2 (network optimization)	The term of the contract for the contractor was now fifteen (15) years for Phase 1 (IBI meters) and twenty-five (25) years for Phase 2 (network optimization)
The contract was based on obligations of guaranteed results that the contractor had to meet, and not on technical specifications. The expression used here was <i>Performance indicators</i> that were used to adjust the amount paid to the contractor, depending on results. The quasi-totality of payments to the contractor would be done through monthly payments.	For a great number of items, the terms of payment were modified through a <i>payment of 90% upon provisional acceptance and 10% upon final acceptance</i> . There remain certain aspects of the contract that were based on obligations of guaranteed results which the contractor had to meet, and not on technical specifications. The expression used here was <i>Performance indicators</i> that were used to adjust the amount paid to the contractor, depending on results. These indicators were lightened.
Once it was installed and made operational, the equipment (defined as measure and control devices, communication modules, information technology with a computer inventory, software and other accessories required to meet the project objectives and the performance levels required by the City) became the full property of the City.	After it was installed and made operational, the equipment became the full property of the City, except for the IBI meter reading system and the SCADA system used for the system meters.
Despite the transfer in ownership, the contractor alone was responsible, for the City's benefit, of the equipment's maintenance and had to see to its replacement.	The contractor alone was responsible, for the City's benefit, for the maintenance of the IBI meters and had to see to their replacement when needed. No change as regards Phase 2.
Even though the contract with the contractor provided that said contractor had to finance the equipment, he had to provide the equipment and maintain it free, at all times, from any priority, hypothec or other charge of any nature.	The contractor only finances the IBI meter reading system and the SCADA for the system meters, and this equipment remains its property at the end of contract.
Phase 1 (measuring IBIs' consumption) includes selecting, determining the sizing, supplying and installing an automated reading system and approximately 29,500 ⁵³ meters compatible with the reading system, coordinating the preparation with IBI owners of their piping systems, operating over a twenty-five (25) year period all the components and a system for managing the fleet of meters, as well as installing and operating computer	Phase 1 is now divided into four stages: <ul style="list-style-type: none"> ○ Stage 1 – Implementation during the first 20 months of 12,000 meters in IBI buildings where consumption is highest; ○ Stage 2 – Implementation during the following 40 months in other IBI buildings by groups of approximately 5,000 meters; ○ Stage 3 – Implementation of meters in new IBI buildings during the next

⁵³ We are referring here to the 22,500 IBI buildings that did not have meters and of 7,000 IBI buildings that already had them. The figures for the number of meters according to their size were estimated on the basis of data available in the City of Ottawa. All of this was confirmed to us by a BPR representative.

Original	Final, including the addenda
<p>interfaces with the City's system. The installation of the meters was to be carried out over a two-year period.</p>	<p>10 years;</p> <ul style="list-style-type: none"> ○ Stage 4 – Operation, including maintenance, upgrading and replacement of equipment from the moment it has been installed.
<p>Phase 2 (optimization of water distribution) included: installing approximately four hundred and fifty (450) measurement sites and approximately one hundred and fifty (150) sites to measure and monitor the aqueduct network, as well as the installation of a supervisory control and data acquisition system (SCADA); selecting, determining the size, installing and operating the system for twenty-five (25) years. Everything was to begin with a pilot project (planned for 2007–2008). The installation of the first one hundred and fifty (150) sites was to take place over a five-year period and the remainder (450) over the five following years.</p>	<p>Phase 2 is also divided into four stages:</p> <ul style="list-style-type: none"> ○ Stage 1 – Participation in a pilot project in 2008–2009 and implementation of approximately thirty (30) sites; ○ Stage 2 – Implementation of approximately one hundred and twenty (120) sites (2010–2012); ○ Stage 3 – Implementation of approximately four hundred and fifty (450) sites (2013–2017); ○ Stage 4 – Operation of equipment from the moment it is installed.
<p>Because the City did not know the exact quantity of each item needed to implement the project, it informed the contractor that the total quantities could vary from one item to another:</p> <ul style="list-style-type: none"> ○ By more or less 15% for the meters to be installed during the first five years; ○ By more or less 50% for the meters to be installed during the next 20 years; ○ By more or less 25% for the other items required for the execution of the project. 	<p>As regard quantities for several items indicated on the <i>Schedule of quantities and prices</i> (Appendix A2) that could vary, these variations were sometimes significant in relation to those written in the original call for proposals:</p> <ul style="list-style-type: none"> ○ By more or less 15% for the meters to be installed during the first five years; ○ By more or less 50% for the meters to be installed during the next 10 years; ○ By more or less 25% to 100% for other items required for the execution of the project.
<p>The city reserves the right, in the event that the total price (excluding taxes) offered by the candidate having received the best score exceeds by at least 10% the City's price estimates, to request that this candidate reduce proportionally all of its prices. In such an event, the candidate had to confirm its acceptance in writing and this would be an integral part of its proposal.</p>	<p>This clause was struck.</p>

The withdrawal of the financing component is one of the most important changes to these new addenda. We have learned that BPR had previously retained the services of PwC to review the *Financing of the project* component. Indeed, BPR was allegedly told in May 2007 by candidates that the arranging and closing of financing for the project was causing them headaches.

Furthermore, during individual meetings held with them,⁵⁴ the candidates again allegedly commented on the difficulty they were encountering in obtaining financing from financial institutions.

On June 8, 2007, PwC issued a report dealing, among other things, with the compensation of the firm to be hired. PwC obtained these costs from BPR. The cost of the project was estimated at *[Translation] “approximately \$300 million at capitalized value, including approximately \$200 million for the acquisition and replacement of equipment during the term of the agreement and \$100 million in operational costs.”*

PwC was of the opinion that given the structure contemplated at the time, candidates' lenders would demand major changes to the contractual and commercial framework before committing themselves financially to the project and that ultimately, this framework would not allow the lenders to complete the project financing. One of the proposals by PwC was even to temporarily stop the award process then under way.

In July 2007, after having been consulted on the accounting and financial aspects of the call for proposals by the Service des finances of the City,⁵⁵ RCGT made certain similar observations:

- That it could be difficult for the candidate to obtain the necessary financing to carry out the project;
- Furthermore, RCGT believed that there was the possibility that the financial guarantees required by the City pursuant to the contract would conflict with the guarantees the contractor would have to provide to its financial institution to obtain financing;
- It was of the opinion that, because the contractor would assume certain risks, this would have a direct bearing on the cost of the contract;
- It mentioned that in light of the contract and of the call for proposals, the accounting principles applied to the leased assets were similar to those used in a lease-purchase agreement and would require that the acquired assets be capitalized in the City's accounting, with the corresponding debt entered as a liability.

Ultimately, RCGT recommended that a comparison be made between the costs as tendered by the contractors with the cost of realization which the City would have to assume itself.

It is interesting to remember addendum No. 10, more specifically the part dealing with the withdrawal of financing, whereby the risk from that moment is transferred from the contractor to the

⁵⁴ These meetings were held on June 21 and 22, 2007.

⁵⁵ We will see that RCGT's services were also retained by BPR a bit later in September 2007.

City. Subsequently, after it had read the various changes to the call for proposals and to the draft contract, RCGT wrote a memo dated September 10, 2007⁵⁶ which read partly as follows:

[Translation] “Removing the financing component from the project contractor substantially changes the financial guarantees required from the candidates. Since the contractor no longer has to finance the equipment it is installing, given that the City will pay for the equipment as it is being installed (except for the usual withholdings), it becomes more difficult to enforce the contractor’s contractual obligations, performance requirements and obligation to replace non-performing or defective equipment.”

Moreover, we have reviewed a memo dated January 17, 2007, sent by a legal advisor from Dunton Rainville to a BPR representative, which explains the legal aspects of equipment financing by the contractor vis-à-vis its lenders. This memo concludes that the main asset that would interest a financial institution is the right to the revenue generated by the contractor’s contract. This memo states that it is quite likely that the financial institution would seek additional security. This memo brings us to question the soundness of the model put forward by the City in April 2007, a model that is similar to what has been called a *PPP*. Moreover, it is our understanding that the difficulty candidates were encountering in obtaining financing led the City to change its approach, and the City tacitly accepted to pay a major part of the equipment upon installation.⁵⁷

Regarding the validity of the process, on July 19, 2007, a Dunton Rainville representative had written to the IBI project head and mentioned that if there were a change to the financing component, this would not invalidate the call for qualification or the call for proposals. He was of the opinion that if the change was made by means of a clear and accurate addendum and was communicated in a timely fashion to all candidates, the fairness of the process would be maintained and the candidates would have no grounds to complain. However, he added:

[Translation] “As regards the call for qualification, here again I believe that this change does not invalidate it. However, it is possible that a candidate excluded from the call for proposals following the call for qualification for reasons related to the financing of the IBI project and its financial capacity may be dissatisfied with the turn of events and take legal action against the City of Montréal. Indeed, it would not be impossible for such a candidate to allege that the other candidates now participating in the call for proposals inordinately

⁵⁶ Here, RCGT services were retained by BPR.

⁵⁷ In fact, 90% of the price of some equipment was payable upon provisional acceptance and 10% upon final acceptance, i.e., once everything was operational.

benefited from the change in project financing. But this is a far cry from having the whole process invalidated.”

As regards the financial aspect of this change, using the benchmark proposal, we have estimated the difference between the annual disbursements the City will have to make compared to the value of the equipment taken over following the change to addendum No. 10. The figure is approximately \$10.5 million per year,⁵⁸ including recoverable taxes, which means that cumulatively after ten (10) years the City will have disbursed, according to the new rules, more than \$100 million because of this major change in financing method. Obviously, this sum will progressively be reversed starting in the 11th year because a major part of the equipment under this new contract model will have been paid. However, we must mention that, in our opinion, the City should be able to secure financing at a lesser cost than the contractor (given preferential rates for the City compared to the private sector, the contractor's profit on the financing and the unrecovered QST). We estimate the savings for the City at approximately \$15.0 million for the term of the contract. We have learned that the City's Service des finances had also reached the conclusion at that time that the City would benefit by financing the project itself rather than having the contractor do so. In fact, both the Service des finances and the director of SITE were aware that financing through the private sector would be more costly.

Additionally, the change in the method of compensation resulted in the City having to pay substantial amounts for a great number of items following their installation, whereas previously these items were to be paid by means of monthly annuities. We therefore calculated the effect of this change, based on the benchmark proposal. Given this data, we conclude that close to 70% of the payments by the City will be made following the installation of the equipment, namely \$241.3 million, taxes included, whereas a sum of \$108.0 million will be paid through monthly annuities.

Addendum No. 12 had various changes when compared to the modified call for proposals, notably:

- There had been a clause whereby the City reserved the right, in the event that the total price (excluding taxes) offered by the candidate having the best score exceeded by at least 10% the price estimated by the City, to ask this candidate to proportionally reduce all its prices; this clause was struck;
- Certain changes were made to the formula used to determine the points given to candidates, based on the price indicated in their bid.

⁵⁸ Moreover, this sum does not take into account borrowing costs the contractor would have included in the monthly sums that would have been payable.

The deletion of the clause whereby the City reserved the right, in the event the total price (excluding taxes) offered by the candidate having the best score exceeded by at least 10% the price estimated by the City, to request that the candidate proportionally reduce all its prices, is a major change. We wonder about the rationale behind the deletion of this clause and about the process that led to this decision.

In another vein, we are perplexed by the stakeholders' decision to refuse an extension to the deadline for the calls for proposals as was requested by the SNC-Lavalin–Gaz Métro Plus–Suez Environnement Group. Indeed, we are of the opinion that it would have been legitimate to grant an extension for filing given the new addenda between September 14, 2007 and the date their request was made (September 28, 2007), especially in light of the changes in addendum No. 10. As a result, the number of bidders was reduced to only two groups.

We will finish by saying that not having ownership of the meter reading system (Phase 1) or of the SCADA system (Phase 2) at the end of the contract will place the City in a delicate situation. Indeed, after 15 and 25 years, respectively, the City will have to pay several tens of millions of dollars to replace these two systems.

III.14.2 Findings

Finding 26

Firstly, we must draw attention to the number of concerns raised in writing by various stakeholders during this period, i.e. the Deputy Director General (SITE) (June 5, 2007), the director of the Direction de l'eau (June 28, 2007) and the head of the IBI project (August 28, 2007). In our opinion, these written documents demonstrate that the project raised several concerns as to its successful implementation, concerns that we believe were well founded, and that those responsible at the time should have considered suspending the process, in order to clarify and improve the parameters and objectives of the project.

Finding 27

We are of the opinion that the changes made to the call-for-proposals process, more specifically those contained in addendum No. 10, raised questions about the thoroughness of the analysis that was made in preparing the specifications contained in the original call for proposals, both at the

technical level (for example, the service life of the equipment) and as regards the performance schedule and the compensation of the contractor.

Regarding the financing component, it is obvious that the risk, which initially rested with the contractor, had been transferred to the City. Now, it seems obvious after reading what the various financial stakeholders who had to deal with the project in its initial form, which was in the nature of a PPP, have written that the project was difficult if not impossible to implement. In fact, several stakeholders stated that the main reason used to justify the suggested financing approach was that the *IBI and Network Optimization* project would be “off-balance sheet,” meaning that neither the resulting liabilities nor assets would be part of the City's financial statements. On this issue, when consulted, the Service des finances clearly indicated that, given the nature of the obligations being contracted, the City could not justify treating the money involved as operating expenses for accounting purposes, which would have meant that neither the debts nor the assets would be part of the financial statements. This brings into question the “off-balance sheet” approach. We can only conclude that, given accounting requirements, this approach was contrary to generally accepted accounting principles, as well as involving several pitfalls both of a legal and financial nature.

Finding 28

It is our opinion that withdrawing the financing requirement during the call-for-proposals phase was an important breach of the call-for-qualification process. Indeed, this major change to the call-for-qualification conditions was a direct infringement of principles at the very foundation of public calls for tenders whose purpose is to: 1) stimulate competition in order to obtain the best products and services at the best price; 2) avoid patronage and favouritism; 3) ensure equality of all persons dealing with the public service so that every interested party has an equal opportunity to contract with the government. It should be pointed out that this third objective goes beyond the principle of equality among bidders. Consequently, the conditions of a call for tenders must be the same for everyone to ensure that the community obtains the best financial conditions and the best co-contracting party. This is a question of public policy. The fact that the process was carried out in two stages, first by qualifying firms likely to meet the requirements of the project then followed with an invitation to the qualified firms to submit proposals, does not change the applicable rules. Their principles must be applied just as thoroughly.

We are of the opinion that in the present matter the issue of financing considerably restricted market competition at the qualification phase. This probably resulted in certain potential candidates deciding not to participate in the qualification process because of the substantial financing

requirements of a project of such magnitude. Consequently, this significant turnabout leads us to believe that it would have been more appropriate to restart the qualification process again, in order to generate more competition during the new call for proposals that would have ensued.

Given that the prime objectives of any public call for tenders is to generate competition to ensure the best products and services at the best price and to do so in the interest of the community, we believe that the City would be failing its obligations if it were not to start the whole qualification process over again and thereby start over the call-for-proposals process as well, given the withdrawal of the requirement to finance the project.

Finding 29

The initial operating period of the meters was twenty-five (25) years. In order to have some room to manoeuvre, the City also required that the residual service life of the equipment be at least ten (10) years at the end of the operating period. On September 14, 2007, the operating period was reduced by ten (10) years, thereby bringing it down to fifteen (15) years via addendum No. 10. This change was made following a request by one of the bidders, who thought that the risk incurred through this formula was to the City's advantage. It must be kept in mind that the meters are covered by a manufacturer's guarantee for a minimum period of ten (10) years and do not have a significant risk of malfunction during the fifteen (15)-year operational period. Above and beyond this fifteen (15)-year period, the City will be obligated to change its meters, failing which it will lose the services of its operator. In other words, as soon as the period of increased risk begins, the operational period comes to an end.

We must ask ourselves what the City will do after this fifteen (15) year-period expires. Will the contractor, with whom the City will still be bound by Phase 2 for a residual ten (10) year period, want to continue operating used meters? If so, at what price, given the high level of risk inherent in used meters? Will the contractor require that the City replace all the equipment, including the meters that would normally have been replaced after twenty (20) or twenty-five (25) years, as well as the meter reading system? Will the City then look for another operator to take care of the meters? Will the City still have the option of performing this task itself, once it has lost its existing team of meter-dedicated technicians?

Ultimately, the City could have shared the risk with the contractor by reducing the operational period from twenty-five (25) to twenty (20) years and by planning targeted replacements of the meters during this period. The City could then also have considered operating under its own control

by strengthening its team of meter-dedicated technicians and plumbers. By doing so, the City would have better optimized its investment and would have reduced its dependence on outside resources.

III.15 THE AWARDING OF THE CONTRACT FOR THE IBI AND NETWORK OPTIMIZATION PROJECT (2007)

III.15.1 Highlights and analysis

On October 10, 2007, the Catania–SM consortium and GÉNleau, Groupe d'experts (made up of Groupe-Conseil Dessau-Soprin and Simard-Beaudry Construction) submitted their respective proposals in response to the call for proposals (07-10370) that had been published on April 18, 2007. We understand that BPR had also been asked to prepare a benchmark proposal in response to the call for proposals. That proposal was to serve as a price reference. We were told that for purposes of transparency, this document was prepared by BPR's Québec City office, as the latter was not involved in nor informed of the work performed by Montréal's BPR office for the IBI project. BPR's proposal was sent to the City in a sealed envelope, like the other two bids. The two other bidders, selection committee members and other individuals involved in the IBI project had no access to the contents of the envelopes prior to their opening. The monetary information contained in the benchmark proposal is detailed in a later chapter.

The IBI project team subsequently transmitted the bid documents for evaluation by representatives of the Direction de la production de l'eau potable, the Direction des technologies de l'information, the Direction de l'eau and certain representatives of BPR and of Dunton Rainville who had been involved in the tender process.

Furthermore, RCGT had been asked to assess the compliance of the financial information included in the bids, to calculate the net capitalized value and to assist the City in assessing the financial portions of the bids.

These parties subsequently met to evaluate the bids and to prepare a set of questions that was sent to the candidates in order to obtain a clear understanding of their proposals. Both candidates had equal time to present their proposal to the technical committee and to answer the questions they had previously been asked. GÉNleau, Groupe d'experts presented its proposal on October 23, while the Catania–SM consortium presented its proposal on October 25.

On November 6, 2007, both candidates presented their respective proposals to the selection committee. The technical committee also presented its assessment of both bids. The selection committee consisted of six individuals, all city employees. The process was overseen by one

person from the City's Direction de l'approvisionnement and by another individual from this same division who served as secretary of the selection committee.

These actions were later endorsed by the city council⁵⁹ and by the agglomeration council.⁶⁰

The Catania–SM consortium's proposal was nearly one hundred (100) pages long, including data pertaining to the bid's cost component. Various information about the partners and technical specifications on the proposed equipment was included in an appendix. In addition to the main partners (Construction Frank Catania & Associés Inc. and Les Consultants S.M. Inc.), the proposal mentioned that the consortium would retain specialized services from various firms acting as exclusive suppliers. These firms were:

Table 10 – Suppliers included in the Catania-SM consortium proposal

Supplier	Services Retained
Endress+Hauser	Manufacturer (Flow meters and pressure transmitters)
Neptune Technology Group	Manufacturer (Meters and accessories) Manufacturer (Meter reading systems)
Preston Phipps	Manufacturer (Control valves and accessories)
EnviroServices Inc.	Manufacturer (Detailed profiling)
ADS Environmental Services Inc.	Manufacturer (Detailed profiling)
Oriso Solutions	Manufacturer (Information technology—ASP hardware) Manufacturer (Information technology—ASP application)
Vidéotron Inc.	Telecommunications

The proposal from GÉNleau, Groupe d'experts was slightly more than 100 pages in length, plus included various information on the participants, additional documents and data sheets on the proposed equipment. In addition to the principal partners (Groupe Dessau Inc. and Simard-Beaudry Construction Inc.), along with the firms Aquatech, Olameter and Morrow Communications, the proposal stated that the firm intended to retain the specialized services of various companies as suppliers. In the case of this proposal, however, it seemed that no specific decision had been reached in terms of one supplier or another for certain solutions. With respect to the meters, GÉNleau had selected the Neptune Technology Group's T-10 model (5/8" to 2" in diameter) and Elster's Aquamaster (3" or more in diameter). However, no definitive choices had been made in terms of other pieces of equipment or services to be retained. We also observed that some of the

⁵⁹ Resolution CM07 0794.

⁶⁰ Resolution CG07 0449.

suppliers named by GÉNleau were the same as those selected by the Catania–SM consortium, namely Endress+Hauser, Neptune Technology Group and Preston Phipps.

After reviewing the candidates' files, the members submitted the scores they assigned to each of the candidates for *Technical Expertise* and *Organizational Expertise*. The different scores for each candidate were then averaged for each criterion. RCGT calculated the *Financial Aspects* component. The following table lists the scores awarded by the selection committee.

Table 11 – Candidates' scores – Call for proposals 07-10370

Evaluation grid – Assessment criteria	Maximum score	Catania SM	GÉNleau
Technical expertise			
1. Quality of the response given to the needs of the City	15.0	11.50	12.50
2. Technical quality of the proposed solutions	19.0	16.38	15.50
3. Quality of the project team	6.0	3.38	5.63
Organizational expertise			
4. Quality of the organization	8.0	5.25	7.00
5. Quality of project management	7.0	4.05	6.00
6. Client services and communications	5.0	3.12	4.25
Subtotal	60.0	43.68	50.88
Financial aspects			
7. Proposed cost	40.0	27.20	33.05
Subtotal	40.0	27.20	33.05
Total	100.0	70.88	83.93

GÉNleau, Groupe d'experts received a score of 83.93%, compared with 70.88% for the Catania–SM consortium. GÉNleau's proposal, involving a total amount of \$355,846,518, taxes included (\$312,283,035 before taxes), was some \$40 million less than that of the Catania–SM consortium.

On November 21, 2007, the executive committee approved a resolution⁶¹ to accept the contract proposal of GÉNleau, Groupe d'experts, and to award this firm the contract to carry out the *IBI and Network Optimization* project.

Since some ancillary costs⁶² of approximately \$67.8 million came to be added to the contract, this same resolution:

- authorized a total expenditure of \$423,633,198, taxes included;
- set aside funding of \$403,633,216 subject to the approval of the Minister of Municipal Affairs and Regions of a by-law authorizing a loan of \$300,000,000 to purchase water meters, pressure gauges, flow meters and control valves, as well as to modify or build gate houses falling under the authority of the agglomeration council.

III.15.2 Findings

We have no specific finding for this chapter.

⁶¹ Resolution CE07 1873.

⁶² According to a document that was presumably submitted to the Commission des finances et de l'administration de l'agglomération on November 20, 2007, these additional expenses consisted of compensation to be paid to city employees who performed project-related work (\$44 million), for monitoring activities (\$13 million) and for development of the control centre (\$10 million).

III.16 THE EVENTS FOLLOWING THE AWARDING OF THE CONTRACT (2008–2009)

III.16.1 Highlights and analysis

Following the awarding of the Contract on October 10, 2007, city council adopted⁶³ a loan by-law entitled *[Translation] By-law authorizing a loan of \$300,000,000 for the acquisition of water meters, pressure gauges, flow meters and control valves as well as work to modify or build gate houses* during its December 17, 2007 meeting. The agglomeration council also adopted⁶⁴ this by-law on December 20, 2007. In fact, the goal of this by-law was to allow the City to finance the contract awarded to GÉNleau.

On the other hand, as mentioned previously, city council and then the agglomeration council adopted a by-law entitled *[Translation] By-law establishing a subsidy program for work necessary for the measurement of water consumption* in June 2008.⁶⁵

The objective of this program is to give owners of IBI buildings whose pipes have to undergo preliminary work before the installation of water meters a subsidy covering the costs that they will have to defray. In short, the City will require IBI owners to complete preparatory plumbing work, but on the other hand, will reimburse all costs incurred as a result. The cost of this program was estimated at \$89.8 million before taxes.

The by-law stipulates that a City-accredited contractor must carry out the work. The criteria for accreditation are essentially based on the training that employees of the contractor must have received. In August 2008, the City accredited forty-one (41) plumbing contractors.

Subsidy amounts, based on the type of work to be done, and standard forms are provided for in the by-law. In the case of smaller water inlets (less than 100 mm), the IBI owner contacts the accredited plumber of its choice, who completes a form that provides for a lump sum payment by water inlet. In respect to larger water inlets (100 mm and more), the IBI owner must ask for three quotes from accredited contractors, who will complete a form containing details of the cost of supplies, labour and equipment according to pre-established prices and hourly rates. BPR

⁶³ Resolution CM07 0920.

⁶⁴ Resolution CG07 0529.

⁶⁵ Resolutions CM08 0599 and CG08 0371.

determined the prices and rates covered by the subsidy. The by-law also provides that the backflow prevention devices that must be installed as part of this work will be supplied by the City.

Later, in December 2008, city council, and then the agglomeration council, adopted⁶⁶ the *[Translation] By-law modifying the By-law establishing a subsidy program for work necessary for the measurement of water consumption* to plan a quarterly review of the prices of supplies and an annual review of hourly labour rates. At that time, the estimated cost of this program was revised to \$70.8 million, including an amount of \$59.4 million for the reimbursement of plumbing preparation costs to IBI owners and an amount of \$11.4 million for the purchase of backflow prevention devices.

To acquire the backflow prevention devices that it had agreed to supply to owners of IBIs, the City issued a call for tenders on August 4, 2008 to buy 4,000 of the 29,500 such devices that would be required for the first five years of the contract awarded to GÉNleau. According to the decision summary requesting the awarding of the contract for the purchase of 4,000 backflow prevention devices, this call for tenders was intended to “*test the market,*” rather than order all the devices at once.

On December 18, 2008, the agglomeration council agreed⁶⁷ to award a contract to Deschênes et Fils Ltée for the purchase of 4,000 backflow prevention devices at a total approximate price of \$1.4 million, taxes included.

It is our understanding that GÉNleau has not, to date, sent a single invoice to the City for the work that it should have done. The work carried out until now would basically consist of the preparation of preliminary engineering plans for two pilot project areas, as well as a presentation on the structure envisaged for the project.

The costs associated with the financing, the subsidy program, and the purchase of backflow prevention devices appear to be lower than the contract awarded to GÉNleau. The total cost of the Contract is dealt with in a later chapter of this document.

III.16.2 Findings

We have no finding to report in respect to this chapter.

⁶⁶ Resolutions CM08 1132 and CG08 0663

⁶⁷ Resolution CG08 0636

III.17 THE INITIAL BPR MANDATE AND ITS ITERATIONS (2005–2008)

III.17.1 Highlights

On February 16, 2005, the City approved the draft agreement linking the City to BPR through an executive committee resolution. This professional services mandate thus awarded authorized the expenditure of \$7,420,409 (\$6,451,127 before taxes), with the major part (\$3,900,000) incurred during the 2005 fiscal year. A total of \$63,873, 1% of the \$6.4 million in gross fees, was included for admissible expenses. According to the call for tenders in October 2004, the BPR mandate is described as follows:

[Translation]

“The mandate of the firm consists in providing professional services for developing and managing a program with the following main components:

- Taking an inventory of existing water meters;*
- Supplying and installing new water meters;*
- Supplying and installing water meter reading systems;*
- Operating the systems;*
- Implementing a data management system enabling the development of consumption profiles and the setting up of a IBI rate structure based on their water consumption;*
- Devising billing methods;*
- Providing customer service.*

In order to accomplish this, the firm will develop and evaluate a range of implementation scenarios, in partnership with the City.”

The first budget that we had access to in respect to the BPR mandate is dated July 31, 2005. We also had access to an updated version of this same budget during subsequent months. These documents reported the following amounts as per sub-project:

Table 12 – BPR Budget – Initial professional services contract

Sub-project	Task	Budget (\$)		
		31/07/05	29/10/2005	28/01/06
00	Project start-up	216,890	216,890	216,890
01	Project management	1,472,000	1,302,558	984,747
02	Communications	245,997	158,705	158,705
03	Establishment of the administrative framework	74,000	58,900	58,900
04	Pilot project to install meters	120,000	103,785	103,785
05	Preliminary market analysis	1,644,989	1,073,981	1,226,687
06	Implementation scenarios	655,385	655,385	1,096,956
07	Implementation of selected scenario	1,975,154	2,575,154	2,084,219
08	Review of water consumption	-	250,000	500,000
09	Completion of project	20,238	20,238	20,238
Provisional balance – Budgeted tasks		6,424,653	6,415,596	6,451,127
n.a.	Difference	26,474	35,531	-
Total		6,451,127	6,451,127	6,451,127

It can be noted that on October 29, 2005 a portion of the budget was transferred to sub-project 08 *Review of water consumption*, and again on January 28, 2006.

The majority of fees billed by BPR during their first months of work were related to project management (sub-project 01) and to preliminary market analysis (sub-project 05). The cumulative fees billed in January 2006 amounted to nearly \$1 million before taxes.⁶⁸ Up until that date, fees had not yet been billed for the review of water consumption (sub-project 08).

Just over a year after signing the contract in February 2006, the SITE made a request to increase the maximum of *admissible expenses* from 1% of the total contract to 10%. The following rationale was provided in the decision summary⁶⁹ sent with this request:

[Translation] “The present file is specifically submitted to allow the firm to call on the services of consultants with expertise in the fields of communications and financial analysis⁷⁰ to accomplish certain ancillary activities deemed necessary for the completion of this major project.”

⁶⁸ The budgets and fee amounts presented in this section do not include applicable taxes, unless otherwise indicated.

⁶⁹ File number 1061158001.

⁷⁰ Our underlining.

This request was approved by a resolution of the executive committee⁷¹ dated April 12, 2006, a resolution of the city council⁷² on April 24, 2006 and a resolution of the agglomeration council⁷³ on April 27, 2006.

In May 2006, fees totalling about \$35,000 were billed for the first time for sub-project 08. Then, during subsequent months, fees were again billed for this sub-project, amounting to a cumulative total of over \$215,000 in December 2006.

Over the months, budgets were frequently revised to transfer sums from one sub-project to another. Basically, sub-project 07 (Implementation of selected scenario) served to cover planned or recorded excess costs in other sub-projects. In fact, the budget for sub-project 07 decreased from \$2.7 million in November 2005 to zero in April 2008. However, the budget for the review of water consumption (sub-project 08) was increased to approximately \$1 million in June 2007, then to \$1.8 million in March 2008.

Cumulative fees billed in December 2007 rose to approximately \$5 million, with nearly \$630,000 for the review of water consumption (sub-project 08). It should be noted that up to that date, no invoice had been received for sub-project 07, whose budget had been reduced to approximately \$680,000 at the time.

In May 2008, the IBI project head (SITE) made a request to add another budget to the initial contract signed in February 2005. The explanation given in the decision summary⁷⁴ described the additional mandate to be awarded in the following way:

[Translation] "On February 16, 2005, the firm BPR was given a professional services mandate by the City for the project "Measuring water consumption in industries, businesses and institutions (IBI)." This project included an analysis phase entitled "Review of water consumption," during which BPR was required to analyze the distribution of drinking water throughout the territory of the entire agglomeration and make recommendations to optimize the distribution of drinking water [. . .] In the report on sub-project 08, BPR recommends establishing 185 areas for monitoring water distribution and 90 areas for monitoring pressure control.

⁷¹ CE06 0484.

⁷² CM06 0255.

⁷³ CG06 0164.

⁷⁴ File number 1081933002.

[...]

In order to validate the effectiveness and merits of this approach, the City wishes to grant BPR an extension on the current contract and create four (4) areas for pilot projects in the following boroughs: Pierrefonds-Roxboro, Saint-Laurent, Mercier-Hochelaga-Maisonneuve and Ville-Marie [. . .] Given the investment required to establish approximately 185 distribution areas, it seems important to validate the effectiveness of implementing this model and to in fact carry out a practical test of this approach to project development and execution on a smaller scale through the use of four (4) pilot projects.”

This request amounted to \$2,517,371, taxes included. It was approved by a resolution of the executive committee⁷⁵ dated May 14, 2008, a resolution of the city council⁷⁶ on May 26, 2008 and a resolution of the agglomeration council⁷⁷ on May 28, 2008. These resolutions also approved the draft addendum No. 2 to be signed with BPR, which included a clause enabling *admissible expenses* to increase to 15% of the value of the amended contract (then established at \$9,937,780, taxes included).

Finally, following the additional budget of \$2,517,371 given to BPR for establishing four areas for pilot projects, on May 8, 2008 the IBI project head (SITE) made another request to award an over-the-counter contract to BPR to monitor, modify and adapt the plans and specifications for installing water meters in IBIs. The rationale indicated in the decision summary⁷⁸ described the new mandate as follows:

[Translation] “In 2005, the City awarded BPR Inc. a contract to prepare the plans and specifications for installing water meters in IBIs on the territory of the agglomeration.

In 2007, the City awarded “GÉNIEau, Groupe d’experts” a contract to install water meters in IBIs on the territory of the agglomeration over the next five years (2008–2012).

The City wishes to retain the services of BPR Inc. to monitor the contract awarded to “GÉNIEau, Groupe d’experts” to install water meters at IBIs for the next five years.

[...]

⁷⁵ CE08 0822.

⁷⁶ CM08 0451.

⁷⁷ CG08 0270.

⁷⁸ File number 1081933001.

IBI water meters are being installed in existing buildings. During a pilot project of 179 water meter installations, the city [sic] noted that only 50% of these installations were considered "standard." Given that the City does not have the required resources for proper monitoring and considering that BPR Inc. prepared plans and specifications in 2007 as well as adapted them in 2008, the City considered it appropriate to grant BPR Inc. the responsibility of monitoring all work, as well as adapting and modifying the plans and specifications."

This request brought the maximum cost of the contract to a total of \$4,709,032 over a five-year period, taxes included (\$4,171,900 before taxes, which included admissible expenses of \$125,157). It was approved by a resolution of the executive committee⁷⁹ dated May 14, 2008, a resolution of the city council⁸⁰ on May 26, 2008 and a resolution of the agglomeration council⁸¹ on May 28, 2008.

This addition to the initial contract and this new over-the-counter contract were essentially included in the budget of the review of water consumption (sub-project 08), as well as in the implementation of the selected scenario (sub-project 07), respectively. In August 2008, the budgets for these sub-projects reached nearly \$4.2 million for sub-project 07 and approximately \$3.1 million for sub-project 08. At that time, billed fees for these two sub-projects rose to almost \$215,000 and \$854,000, respectively.

Finally, in July 2009, the cumulative fees billed by BPR totalled over \$7.5 million, including a little less than \$1.5 million for the review of water consumption (sub-project 08).

Firstly, it is important to determine whether the initial BPR contract covered network optimization. The professional services contract for the project on measuring water consumption essentially involved the project to install about 30,000 water meters (Phase 1). Upon the request of the City, the BPR contract also factored in the possibility of carrying out additional work related to the water review. However, that additional work was not supposed to have generated further costs. That is to say, BPR could carry out certain work related to the optimization of water distribution, but on an ancillary basis and after having ensured that it kept within its budget envelope of \$7.4 million, taxes included, for all professional services provided in respect to the installation of water meters.

⁷⁹ CE08 0821.

⁸⁰ CM08 0448.

⁸¹ CG08 0267.

Moreover, we learnt from one project stakeholder that Phase 2 was only to be carried out if, and only if, at the end of the BPR mandate, there remained some funds in the budget after work on Phase 1 had been completed. Furthermore, the report on the SITE meeting held on February 27, 2008, therefore prior to the May 2008 requests for budget extensions, clearly confirms this:

[Translation] “The amount of fees required for monitoring activities aimed at dividing the network into areas and setting up 120 flow-measurement sites (Phase 2) over the next three years requires a total of \$7,936,741. This work is directly related to the execution of Phase 2 of the project, but this component was not specifically provided for when the original contract was awarded, as witnessed by the following excerpt from page 6 in the Mandate section in the October 20, 2004 call for tenders.”

Some may rightly claim that work to optimize water distribution are beyond the ancillary nature that had been authorized and that this modification to the contract should have resulted in a new call for qualification and call for tenders for this specific component. However, it is possible that others may rather believe that the amounts invested in the optimization component remain within the boundaries of being ancillary, according to the rule on “reasonableness” established by our courts. In our opinion, this claim may not hold water if the addition to the BPR contract for the carrying out of 4 pilot projects at a cost of \$2.5 million, taxes included, is considered and which we will discuss a bit further on.

At this point, it is relevant to examine the changes to the budget granted to BPR in 2005 and the two additional budgetary envelopes awarded to the firm in 2008. Likewise, it is appropriate to analyze the actual expenses incurred by the City with respect to these three mandates.

We wish to mention here that BPR clearly did not spend the amounts outlined in the first budget from July 2005.

Table 13 – BPR fees and initial budget

Sub-project	Task	Budget (\$)	Billed fees (\$)
		July 2005	July 2009
00	Project start-up	216,890	152,976
01	Project management	1,472,000	1,687,349
02	Communications	245,997	179,209
03	Establishment of the administrative framework	74,000	34,376
04	Pilot project to install meters	120,000	114,799
05	Preliminary market analysis	1,644,989	1,054,946
06	Implementation scenarios	655,385	1,912,287
07	Implementation of selected scenario	1,975,154	921,547
08	Review of water consumption	-	1,459,815
09	Completion of project	20,238	-
Provisional balance – Budgeted tasks		6,424,653	7,517,305
n.a.	Difference	26,474	-
Total		6,451,127	7,517,305

Among other things, this table shows us that although no budget was allocated for the review of water consumption (sub-project 08), BPR sent an invoice for nearly \$1.5 million for this task. Moreover, we noted that BPR's tasks were significantly redefined as regards sub-project 06 (Implementation scenarios), which was dedicated to certain validation work in respect to plumbing preparation, rather than developing implementation scenarios themselves, as stipulated at the start. We also observed that issuing calls for qualification and proposals was much more expensive than expected in July 2005, since what was initially budgeted at about \$90,000 cost over \$530,000.

It is interesting to note that although the City, for non-cash charges, distinguishes between amounts paid for the initial contract, the additional budget envelope and, lastly, the over-the-counter contract, BPR presents its budgetary data and expenditures under one single project.

Turning to another matter, in relation to *admissible expenses*, in the end six consulting firms were retained. It is evident that these admissible expenses increased from the original 1% when the contract was signed in February 2005 to 10% in April 2006 and, finally, to 15% in May 2008. It is obvious that that they were, in our opinion, grossly underestimated to begin with. Furthermore, the purpose of these expenses was changed over time without any clear explanation.

The following table summarizes the admissible expenses incurred under the contract that was awarded in February 2005. It shows the expenses paid to various consultants, the dates their services were retained, the type of services rendered and the amounts BPR paid these firms until June 30, 2009.

Table 14 – Expenses incurred by BPR under its contract

Firm	Contract date/ Date of 1st invoice	Type of services	Amount paid (before taxes)⁸² (\$)
Dunton Rainville	17/11/06	This contract, which initially involved an amount of \$58,400, was to be used to prepare a contract with an obligation for performance.	308,197
Octane Communication	30/06/05	This \$50,000 contract was to be used to establish an IBI communications plan.	190,463
Veritec Consulting	18/09/06	This contract, which initially involved an amount of \$94,200, was to be used to prepare a conceptual analysis of network optimization.	163,443
Raymond Chabot Grant Thornton	27/09/06	Assistance in drafting the call for qualification for the project.	20,000
PricewaterhouseCoopers	22/06/07	Analysis of the contractual framework provided for project completion.	7,500
Bernard Joly	23/07/07	Translation services	3,400
Total			693,003

III.17.2 Findings

Finding 30

It seems evident that the consultant services retained by BPR have gone beyond the simple scope of “*services of consultants expert in the fields of communications and financial analysis . . .*” With regard to having retained the services of Dunton Rainville, we learned that, at that time, the Direction du contentieux could not offer the IBI project head the resources needed, mainly in respect to preparing the call for proposals and drafting the contractor’s contract. This was

⁸² In addition to the amounts that appeared on the invoices of these contractors, BPR applied a surcharge of 5% for administrative fees.

confirmed by a BPR representative. This is the reason for hiring Dunton Rainville, which was carried out by BPR through an over-the-counter agreement. Given the tasks passed on to them by the City, one could believe that such an agreement circumvented the rules set forth in the law regarding the awarding of contracts, which require that when fees for the services of legal advisors surpass \$100,000, an invitational tender process must be instituted. This opinion is shared by one of the stakeholders in the Direction du contentieux.

Finding 31

In another connection, we question whether the addition of \$2.5 million (taxes included) to the BPR contract, an addition which was the subject of addendum No. 2 approved by the relevant authorities at the end of May 2008 and which concerned the setting up of four pilot projects, could be considered as an ancillary modification to the initial contract and therefore, compliant with the relevant laws and by-laws, or whether it was a new contract that should have been subject to the rules of a new call for tenders.

This work is directly linked to the optimizing water distribution phase, not to the water meter installation phase. In this regard, it is important to emphasize that the presentation of facts as set out in the decision summary seems to make the phase on optimizing water distribution the main focus of the BPR contract, rather than the subject of secondary or additional works. It is within this context that this increase is validated by the Direction du contentieux as a logical follow-up to the services rendered by BPR and granted by city council. In our opinion, this addition of four pilot projects completely alters the services provided for in the initial contract. By granting an additional budget in the amount of \$2.5 million, taxes included, for the optimization phase, the importance of the “ancillary” work linked to this phase is significantly increased. In fact, by adding this extra budget to the fees already billed on July 7, 2009 for the optimization phase, excluding work in respect to the four pilot projects, the portion which will be allocated to the optimization phase will probably amount to about 40% of the fees stipulated in the initial contract, plus the addition. The total amount of the contract then comes to \$9.9 million, taxes included. Given the type of works targeted by this additional amount and the significance of the related costs, it is our opinion that this constitutes a new contract separate from the initial one, rather than ancillary to it, and that it should have been subject to the rules respecting calls for tenders.

Finding 32

On this same note, it seems incongruous that in May 2008 BPR was granted the responsibility of carrying out four pilot projects, even though Stage 1 of Phase 2 of GÉNieau's contract awarded in November 2007 involved "*Participation in a 2008–2009 pilot project and implementation of approximately thirty (30) sites.*" In this light, the decision summary submitted for this phase did not mention this statement of fact and, consequently, elected officials would have been misinformed.

Finding 33

This brings us to the last contract awarded to BPR, an over-the-counter contract valued at \$4.7 million, taxes included, which was also approved by the relevant authorities at the end of May 2008 and which concerns the monitoring of work to be carried out by GÉNieau.

According to the information we were provided with, the above contract involves the same monitoring work already provided for in the initial contract, for which half of the budgeted hours were to be devoted. The statement included in the decision summary completely ignores this fact. For a contract valued at \$4.7 million, taxes included, provisions are usually made to apply the rules for issuing public calls for tenders stipulated in the relevant sections of the *Cities and Towns Act*. However, section 573.3 at the end of the *Cities and Towns Act* makes provision for an exception authorizing the municipality to enter into an over-the-counter contract under certain circumstances. In fact, the person who designs the plans and specifications used for performing a contract which has been subject to an invitation to tender can obtain the contract for monitoring such work without having to comply with the rules respecting calls for tenders.

Technically, it could be contended that the City had the right to enter into an over-the-counter contract with BPR for monitoring the installation of water meters, the execution of which was awarded to GÉNieau as the City's Direction du contentieux has otherwise confirmed. However, in light of what has been discussed previously, we have serious doubts regarding the legitimacy of this approach and are inclined to question the intention of those parties as regards complying with the rules for awarding contracts. This additional contract of \$4.7 million, taxes included, virtually removes the monitoring phase of the work stipulated in the initial contract. This over-the-counter contract is the direct result of using a substantial budget for the ancillary phase related to network optimization, a budget which came to reduce that intended for the monitoring of the work.

Finding 34

In this way, a \$7.4 million contract, taxes included, for managing the installation of water meters became a \$14.6 million contract, taxes included, that involves two phases involving respectively water meters and water distribution optimization. Moreover, budgetary estimates prepared by the City for BPR's work from 2008 until 2012 anticipate that the fees paid to BPR for this project will exceed \$20 million, taxes included. These amounts were taken from the minutes of the project meeting held on February 27, 2008. We do not know in what way the amounts allocated to BPR will be further revised upwards. Given these circumstances, we are inclined to believe that the principle of equality among bidders during the call for qualification and the call for tenders in 2004 was violated. Fundamentally, these bidders were called upon to bid for a type of contract that was subsequently changed on the basis of the direction adopted to proceed immediately to the network optimization phase.

Finding 35

Once again, we question whether SITE ensured that any work was performed in compliance with the BPR contract and whether the information that was sent to elected officials who awarded this new contract accurately reflected the situation.

According to the information we were provided, we estimate that approximately 30% of fees billed under the contract in July 2009 were for work related to network optimization, which, in turn, affected the planned budget for monitoring the installation of water meters. In this regard, SITE's approach for ensuring that work was performed in compliance with the BPR contract remains questionable. In fact, this approach runs counter to the decisions that had been previously approved by elected officials.

III.18 MONETARY ITEMS AND OTHER TERMS CONTAINED IN THE BIDS AND THE BENCHMARK PROPOSAL (2007) – OVERALL ANALYSIS

III.18.1 Highlights

Comparison of the benchmark proposal with the GÉNleau and Catania bids

The goal of the BPR benchmark proposal was to provide a basis for comparison between the bids that were obtained in response to the call for proposals. The benchmark bid was prepared following the City's request to BPR. As we have seen, the work was delegated to a team of BPR estimators who were not directly assigned to the project.

This team of BPR estimators was instructed to prepare a bid just like any other contractor who wanted to file a bid. According to one BPR representative, the documents that were provided to this team were identical to those given to the other candidates. Throughout the process, the estimators sent a variety of questions to the assigned BPR team in order to complete the benchmark proposal. However, an exception was made with regard to certain instructions surrounding meter purchasing and installation cost estimates due to the availability of a previous study conducted in 2006 by the project's team. This study provided the basis for the benchmark proposal for this section of the project.

Table 15 presents the amounts that were submitted by GÉNleau and Catania-SM, along with the benchmark proposal.

Table 15 – Results of the various submissions

Section	Description	Benchmark proposal (\$)	Catania-SM Bid (\$)	GÉNleau Bid (\$)
	PHASE 1 – MEASURING IBI WATER CONSUMPTION			
1	Meter reading system implementation and operation	11,630,856	23,000,000	21,057,300
2	New meter installation and implementation	64,003,561 ⁸³	72,476,290	74,232,350
3	Meter operation	14,009,540	24,502,940	8,456,600
4	Water consumption profiling and meter resizing	2,027,750	4,491,000	3,075,000
Phase 1 subtotal		91,671,707	124,470,230	106,821,250
	PHASE 2 – WATER DISTRIBUTION MONITORING AND OPTIMIZATION			
5.1, 5.3, 5.5	Equipment implementation – Existing chambers	63,785,343	36,592,000	31,070,000
5.2, 5.4, 5.6	Equipment implementation – New chambers	43,276,048	36,433,500	30,753,500
6.1	SCADA implementation and operation	36,903,438	22,165,000	17,800,000
6.2 to 6.4	Equipment operation	32,264,438	41,579,000	32,610,000
7	Civil works – New chambers	19,602,424	49,393,200	54,855,700
8	Civil works – Restoration of existing chambers	19,082,917	36,864,575	38,372,585
Phase 2 subtotal		214,914,608	223,027,275	205,461,785
Project total		306,586,316	347,497,505	312,283,035
	GST (6.0%)	18,395,179	20,849,850	18,736,982
	QST (7.5%)	24,373,612	27,626,052	24,826,501
Grand total		349,355,106	395,973,407	355,846,518

We note **significant differences** between the benchmark proposal and the bids issued by GÉNleau and Catania-SM for each section. As a matter of fact, while the total cost established by

⁸³ In reality, this amount should have been \$62,806,232, as the benchmark proposal includes a miscalculation of approximately \$1,200,000 on the cost of 150-mm meters.

GÉNieau (\$356 million, taxes included) remains close to the cost provided by BPR (\$349 million, taxes included), the breakdown of costs among the various sections of the project differs widely.

The following table provides summary analysis percentages showing the differences between Phases 1 and 2:

Table 16 – Comparative analysis of bids

IBI Project	Benchmark (BPR)	GÉNIEAU	Variation \$	Variation %	CATANIA	Variation \$	Variation %
Phase 2	91,671,707	106,821,250	15,149,543	17%	124,470,155	32,798,448	36%
SCADA and operations	69,167,876	50,410,000	-18,757,876	-27%	63,744,000	-5,423,876	-8%
Equipment implementation	107,061,391	61,823,500	-45,237,891	-42%	73,025,500	-34,035,891	-32%
Structural engineering within chambers	38,685,341	93,228,285	54,542,944	184%	86,257,775	47,572,434	160%
Total	306,586,315	312,283,035	5,696,720	1.86%	347,497,430	40,911,115	13.34%

Table 16 reveals the following elements:

1. The total cost of the selected bid exceeds the benchmark proposal by barely 1.86%.
2. Variations ranging from -42% to 184% can be seen between the benchmark proposal and the GÉNieau bid.
3. The existence of disproportionate pricing.

The November 2006 City of Montréal internal audit report referred to previously contained the following recommendation:

[Translation] “A single predetermined threshold of tolerance should automatically cause the cancellation of the bid when the lowest bid received is higher than the detailed estimate.”

In response to this recommendation, the department in question issued the following comment, which served as an action plan and schedule as of January 2007:

[Translation] “The division concerned should provide a justification and make a recommendation to the administration regarding the cancellation of the call for tenders or its maintenance. We believe that a threshold of $\pm 20\%$ must be upheld for projects whose cost is less than \$5 million and $\pm 15\%$ for projects whose cost is greater than \$5 million.

These thresholds must be validated with the project estimation unit. However, we believe that the threshold of tolerance should also be predetermined when the lowest bid received is less than the detailed estimate. There is room to question this variation when the threshold is surpassed, whether it is higher or lower.”

Had these thresholds been applied to **each section of the project**, a number of them would have been subjected to deeper analysis in an effort to understand and explain these variations. Such an analysis would have provided those responsible at the City more specific grounds for determining whether to maintain or cancel the call for proposals.

The original call for proposals contained such a clause. It was, however, removed by addenda No. 12, wherein the City reserved the right to ask the candidate with the best score to proportionately lower all of his prices in the event that its overall price exceeded the City's estimated price by at least 10%. Had this clause been applied to each section of the project, instead of the overall project, the City would have been able to negotiate a lower price for certain sections of the project. Chapter 19 provides a detailed analysis of the variations that exist between the BPR benchmark proposal and the GÉNleau proposal.

Separate calls for tenders

Through drastic contractual splitting, each section included in Table 15 could have constituted a separate call for tenders. It is reasonable to assume, however, that some sections require a certain degree of expertise and coordination. Splitting up all the activities into separate projects would therefore be undesirable. For this reason, it becomes all the more important to study various performance scenarios (splitting up or grouping sections), which was never considered with any amount of rigour or documentation in the case of the current project.

Additional costs in the GÉNleau contract

Various fees have been added to the \$356 million contract awarded to GÉNleau. The total cost of the contract is over \$600 million when we include the additional fees shown in Table 17:

Table 17 – Total cost of the contract awarded to GÉNleau

	(\$) Including all taxes
1. Contract awarded to GÉNleau	355,846,518
2. Related expenses – External costs	
Monitoring activities	
Phase 1	4,671,950
Phase 2	6,837,000
Fees – Command centre and pilot projects	11,907,775
Communications fees	569,750
3. Related expenses – Internal costs	
Labour	
Phase 1	5,344,437
Phase 2	38,455,768
Amount authorized by an executive committee resolution on November 21, 2007	423,633,198
4. Inflation	109,377,599 ⁸⁴
5. IBI plumbing preparation subsidy program	70,800,000
6. BPR fees	14,646,812
Total cost of the contract awarded to GÉNleau	618,457,609

We have seen previously that related expenses (Items 2 and 3) totalling \$67.8 million were authorized⁸⁵ by the executive committee on November 21, 2007, along with the resolution seeking to adopt the GÉNleau proposal.

Item 4 represents inflation costs that should be defrayed by the City under the terms of the contract that was awarded to GÉNleau, should production forecasts materialize. In fact, the GÉNleau contract stipulates that the amounts shown in the bid shall be indexed according to the Consumer Price Index, with the exception of implementation measures (i.e. installation) for any equipment deemed necessary for Phase 2. The same exception would apply for civil works

⁸⁴ We have calculated this amount using RCGT's assumption of an estimated 2.5% increase in the Consumer Price Index (CPI) and a 6.0% estimated increase in the Non-Residential Building Construction Price Index (NRBCPI).

⁸⁵ Resolution CE07 1873.

included under Phase 2, indexed according to the Non-Residential Building Construction Price Index, which has increased by 11% since the contract was signed 18 months ago.⁸⁶

Item 5 represents the costs associated with the preparation of the plumbing in IBIs prior to the installation of the meters, as approved by the executive committee on November 19, 2008.⁸⁷ Chapter 19 of this report will address this issue in greater detail. It should be noted, however, that any such undertaking in existing facilities, which are often relatively old, demands more work and will therefore be more expensive than newer ones.

On the other hand, section 2.5.7 of the call for proposals advises bidders that depending on the various project sections involved, quantity variations in the magnitude of 15%, 25%, 50% and even 100% are to be expected,. The call for proposals also states that “*Candidates must ensure that proposals take these variations into consideration.*” When these possible variations are applied to the benchmark proposal, we can see that the estimated value of the work (\$349 million) could range from \$281 million to \$417 million, for a respective variation of 20% below or above the benchmark proposal.

Economic study of the project’s cost-effectiveness and anticipated savings

Our audit did not allow us to determine whether or not a thorough and detailed analysis regarding the cost-effectiveness of Phases 1 and 2 was performed, but it should have been done using the 2004 PwC study as a starting point. In fact, neither BPR, nor the management of the Bureau des projets, nor the City’s Service des finances appear to have ever conducted an economic study concerning the project’s anticipated benefits, particularly in respect to the network optimization of Phase 2.

Various amounts have been suggested with regard to the project’s anticipated benefits. According to a 2003 Gaz Métro study, the numbers are low, as low as **\$0.7 million** annually with regard to water production and purification cost reductions generated by 10% fewer leaks (totalling 200,000 m³, or 73 million m³ annually). Adding to this a reduction in fixed production fees, estimated at 5% by Gaz Métro specialists, we obtain additional savings of **\$2.3 million** and a grand total of **\$3.0 million** in annual savings. The presentation made before the city council stated annual savings of **\$4.8 million** for a 20% reduction in drinking water production. To this would be added

⁸⁶ Statistics Canada, geography 4=Montréal, Québec (24462).

⁸⁷ Resolution CE08 2114.

the savings that would result from fewer investments made toward network-wide leak repairs. Such savings could potentially rise to **\$15.0 million** annually, for a grand total of **\$19.8 million**.

Meter rate structure

The Service des finances carried out a variety of analyses to help develop a rate structure that would respond to the City's needs and objectives. During the analysis exercise, the Service des finances concluded that the rate structure would gain nothing from meters installed within IBIs that consume marginal amounts of water, as compared to others. According to the Service des finances, these IBIs make up roughly half of the meters earmarked for installation (15,000). While the issue appears to have been raised by certain managers in the Service des finances, it is our understanding that no response was ever made by project managers.

III.18.2 Findings

Finding 36

A manager from the Direction de la gestion de l'eau informed us that a number of City stakeholders were uncomfortable about BPR preparing the benchmark proposal. For some, this task should have been assigned to an outside firm without any ties to the project. For others, the City itself should have prepared the benchmark proposal, particularly in light of the fact that it could have gained a certain amount of expertise regarding this file, more specifically surrounding telemetry equipment and the equipment intended for use under Phase 2.

Finding 37

The significant cost differences between the benchmark proposal and the GÉNleau and Catania-SM bids in respect to certain sections of the project lead us to conclude that it would have been beneficial to split up the contract into several separate sub-projects in order to take advantage of lower prices for each of these sub-projects. We have found that no thorough analysis took place with regard to various performance scenarios. The option of having a portion of the work done by City employees, or by another contractor, was not even considered.

It is reasonable to assume that issuing a call for tenders for several small-scale projects, including splitting up Phase 1-IBI and Phase 2-Network Optimization, instead of issuing the call for a single overall project, would have given more contractors the opportunity to present a bid, therefore

promoting healthier competition between candidates. As a result, the City would have been able to obtain a better price. Also, creating specialized projects within a specific sector could have led to the direct involvement of specialists in the field instead of a single general contractor who, in turn, would outsource the contract. By eliminating some of the intermediary channels with this approach, it is very likely that the City would have been able to obtain a better price.

Finding 38

We have found that the meter prices contained in the various bids involve a significant amount of incidental fees and profit, in addition to material costs, installation and assistance fees. In fact, the benchmark proposal sets aside 40% for incidentals and profits, compared to 48% for Catania and 50% for GÉNleau.

Finding 39

We have noted that no detailed study was conducted to evaluate the expected financial benefits of the project as a whole following the PwC study conducted in 2004, despite the changes in direction that were made over the years.

III.19 MONETARY ITEMS AND OTHER TERMS INCLUDED IN THE BIDS AND THE BENCHMARK PROPOSAL (2007) – DETAILED ANALYSIS

III.19.1 Highlights and analysis

This section further analyzes the different components of the bids submitted in response to the *IBI and Network Optimization* call for tenders, including the benchmark proposal. For the sake of simplicity, we will refer to the major sections of Table 18, which has already been introduced in the previous chapter.

Table 18 – Results of the various submissions

Section	Description	Benchmark proposal (\$)	Catania-SM bid (\$)	GÉNleau bid (\$)
	PHASE 1 – MEASURING IBI WATER CONSUMPTION			
1	Meter reading system implementation and operation	11,630,856	23,000,000	21,057,300
2	New meter installation and implementation	64,003,561	72,476,290	74,232,350
3	Meter operation	14,009,540	24,502,940	8,456,600
4	Water consumption profiling and meter resizing	2,027,750	4,491,000	3,075,000
Phase 1 subtotal		91,671,707	124,470,230	106,821,250
	PHASE 2 – WATER DISTRIBUTION MONITORING AND OPTIMIZATION			
5.1, 5.3, 5.5	Equipment implementation – Existing chambers	63,785,343	36,592,000	31,070,000
5.2, 5.4, 5.6	Equipment implementation – New chambers	43,276,048	36,433,500	30,753,500
6.1	SCADA implementation and operation	36,903,438	22,165,000	17,800,000
6.2 à 6.4	Equipment operation	32,264,438	41,579,000	32,610,000
7	Civil works – New chambers	19,602,424	49,393,200	54,855,700
8	Civil works – Restoration of existing chambers	19,082,917	36,864,575	38,372,585
Phase 2 subtotal		214,914,608	223,027,275	205,461,785
Project total		306,586,316	347,497,505	312,283,035
	GST (6.0%)	18,395,179	20,849,850	18,736,982
	QST (7.5%)	24,373,612	27,626,052	24,826,501
Grand total		349,355,106	395,973,407	355,846,518

We have analyzed the cost of each of the two phases. Details of this analysis are presented separately for Phases 1 and 2 in the following pages.

PHASE 1 – Measuring IBI water consumption

Our analysis addresses the four sections of the IBI phase presented in Table 18.

Section 1 – Meter reading system implementation and operation

The information relative to this section is presented in Table 19.

Table 19 – Meter reading system implementation and operation

PHASE 1 – MEASURING IBI WATER CONSUMPTION	Benchmark proposal (\$)	Catania-SM bid (\$)	GÉNleau bid (\$)
Meter reading system implementation and operation	11,630,856	23,000,000	21,057,300

BPR conducted a thorough cost-benefit analysis of different meter-reading scenarios. The cost of remote meter reading is estimated to be 10% less than the automatic meter reading alternative. However, the latter offers certain benefits, including a more complete data collection that allows for better profiling of consumer habits and provides real-time data to pinpoint leakages and regulate pressure in the hydraulic network. These benefits, among other advantages, certainly justify the additional investment of 10% in the \$6.4 million implementation estimate for the preferred automatic meter reading solution. After adding incidental fees, BPR estimated the implementation and operation cost of the meter reading system at \$11.6 million. In the actual GÉNleau contract, this component costs approximately \$21 million, which is practically **twice that of the benchmark proposal**.

Section 2 – New meter installation and implementation

The information relative to this section is presented in the following table.

Table 20 - New meter installation and implementation

PHASE 1 – MEASURING IBI WATER CONSUMPTION	Benchmark proposal (\$)	Catania-SM bid (\$)	GÉNleau bid (\$)
New meter installation and implementation during phases 1 to 3	64,003,561	72,476,290	74,232,350

In the case of Phase 1, **the implementation scenario is quite complex**. The following paragraphs explain the steps envisaged by the City as well as BPR and the selected bidder, GÉNleau, for the installation of meters (as we interpret them).

a) Implementation of meters

The price schedule shows an overall meter implementation price that includes purchase, installation, assistance and incidental fees. To determine the cost associated with each budget item, we started with the basic budget costs from BPR's benchmark proposal. To simplify matters, we limited our cost analysis to four types of meters with diameters of 15 mm, 25 mm, 75 mm and 300 mm. Table 21 presents this information.

Table 21 – Cost of buying and installing a meter – Estimates made by BPR in the benchmark proposal

Meter diameter (mm)	15	25	75	300
<i>Implementation cost per meter:</i>				
Implementation – Meter				
Supplies				
Meter	\$77.50	\$223.00	\$1,556.00	\$4,565.00
Accessories	\$1.00	\$1.00	\$593.50	\$1,288.50
Installation	\$72.00	\$181.00	\$270.00	\$2,810.00
Subtotal	\$150.50	\$405.00	\$2,419.50	\$8,663.50
Implementation – Meter interface				
Supplies				
Meter interface	\$130.00	\$130.00	\$130.00	\$130.00
Installation hardware	\$10.00	\$10.00	\$10.00	\$10.00
Installation	\$60.00	\$60.00	\$60.00	\$60.00
Meter interface installed				
Subtotal	\$200.00	\$200.00	\$200.00	\$200.00
Purchase and installation				
Meter and interface	\$350.50	\$605.00	\$2,419.50	\$8,863.50
Administration and profit margins (%)	12.00%	12.00%	12.00%	12.00%
Administration and profit margins (\$)	\$42.06	\$72.60	\$314.34	\$1,063.62
Purchase and installation – Meter and interface (without assistance fees)	\$392.56	\$677.60	\$2,933.84	\$9,927.12

As indicated above, the cost of installing a meter and its interface can vary between \$392 and \$9,927 for a maximum total of \$29,075,687 for all 30,500 meters. The prices established in Table 21 for different items can differ depending on the meter brand and the meter reading interface, the discount negotiated with the supplier as well as the administration and profit margins applied by the installation contractor. Within the framework of our audit, these differences are **marginal** and benefit GÉNleau. Consequently, **our working hypotheses are clearly conservative** vis-à-vis the conclusions of our audit. We can conclude at this stage that the **price of meters is reasonable** and **falls within the same bracket** as that reported from various sources and similar experiences in other cities. Moreover, Gaz Métro had established a similar value in its 2002 study.

b) IBI and meter sizing assistance

This task consists in collecting data from the IBIs to determine the required size of their meter and provide them with the information needed to prepare their plumbing system for the new meters. The City of Montréal wants to customize sizing for every meter installed. The goal of this operation is to determine the smallest meter required for any given IBI that will accurately measure its consumption even when water flow is reduced and not affect water pressure when water flow is at its peak. GÉNleau (or its authorized subcontractor) had planned a preliminary meeting with IBI owners to arrange an inspection of their facilities, help them complete the plumbing preparation form and obtain the required meter sizing data.

GÉNleau (or its authorized subcontractor) was to use the data from the plumbing preparation forms to size the meters to be installed based on an algorithm developed by BPR.

Table 22 details the assistance and sizing fees for every meter types previously determined as part of our audit.

Table 22 – Assistance fees for the implementation of meters as estimated by BPR in its benchmark proposal

Meter diameter (mm)	15	25	75	300
Purchase and installation – Meter and interface (without assistance fees)	\$392.56	\$67. 60	\$2,933.84	\$9,927.12
<i><u>Assistance and sizing fees:</u></i>				
Implementation – Assistance fees				
Assistance time				
Engineers, technicians, support staff, etc.	\$266.00	\$266.00	\$716.00	\$3,578.00
Administration and profit margins (%)	12.00%	12.00%	12.00%	12.00%
Administration and profit margins (\$)	31.92	31.92	85.92	429.36
Assistance	297.92	\$297.92	801.92	4,007.36
Purchase, installation and assistance	\$690.48	\$975.52	\$3,735.76	\$13,934.48

BPR estimated the cost of assistance and sizing for all 30,500 meters at \$11,044,560. It arrived at this figure based on the hourly rate paid to its own employees. The unit cost of this assistance

varies from \$266 for the smallest meter to \$3,578 for the largest. A surcharge of 12% reflecting the contractor's profits and administrative charges is also applied to these fees, bringing the cost of assistance to \$12,369,908. This, in turn, means that the total unit cost of a meter now varies from \$690 to \$13,934, for a maximum total cost of \$41,445,995. This figure represents a 42.54% increase over the total unit price of a meter as established in Table 21.

In our opinion, this assistance and sizing cost of \$12,369,908 is **too high** in relation to the **effort expected** from GÉNleau as outlined on page 33 of the GÉNleau bid:

[Translation] "Each meter will be selected on site by a technician using the algorithm provided by the City."

It is our understanding that GÉNleau's commitment applies only to meters that are 50 mm in diameter or less, which represent 90% of the meter stock. Moreover, the assistance component is not limited to sizing, but also includes the customer service telephone line as well as any required on-site support from a technician or possibly an engineer.

These assistance fees are high given the **additional surcharges** that will be added to them later.

c) Incidental fees

The costs shown above are those of the subcontractor, while incidental fees are charged by the selected bidder as per the BPR estimates.

Table 23 – Cost of purchase, installation and assistance with all fees (BPR)

Meter diameter (mm)	15	25	75	300
Purchase, installation and assistance	\$690.48	\$975.52	\$3,735.76	\$13,934.48
<i><u>Incidental fees:</u></i>				
Contingencies	11.80%	11.80%	11.80%	11.80%
Guarantee bond and financing	7.40%	7.40%	7.40%	7.40%
Insurance	1.30%	1.30%	1.30%	1.30%
Management fees	1.20%	1.20%	1.20%	1.20%
Overhead costs for the following three elements (1+2+3)	22.40%	22.40%	22.40%	22.40%
1) Profit	7.50%	7.50%	7.50%	7.50%
2) Overtime, efficiency, night premium, etc.	11.40%	11.40%	11.40%	11.40%
3) Administration (office space, management and support staff, IT, etc.)	3.50%	3.50%	3.50%	3.50%
Total incidental fees	50.60%	50.60%	50.60%	50.60%
Assistance, purchase and installation – All fees included	\$1,040	\$1,469	\$5,626	\$20,985

As indicated above, the benchmark bid includes a provision for **incidental fees of 50.6%** on the price of meters that are sized and installed by the subcontractor. According to the BPR estimate, the total unit price of a meter varies from \$1,040 to \$20,985, which represents a total price of \$62,343,589 for all 30,500 meters. The incidental fees as stipulated by BPR seem high and that of GÉNleau are even higher. The selected bidder provides an overall unit price for each meter. To estimate the incidental fees charged by GÉNleau, we made the following two hypotheses:

1. We kept the meter purchase and installation quotations put forward by BPR;
2. We also kept the assistance and sizing cost calculated by BPR according to the hourly rate of its personnel.

When subtracting the implementation and assistance costs, as calculated earlier by BPR, from the overall price of meters in the GÉNleau bid, we can estimate the incidental fees charged in this bid. This data is outlined in Table 24.

Table 24 – Purchase, installation and assistance costs applied to the (GÉNleau) bid to determine the cost of incidental fees

Meter diameter (mm)	15	25	75	300
Total cost in GÉNIEAU bid	\$1,500	\$1,600	\$5,800	\$24,000
Less				
Purchase, installation, assistance, profit margin and administrative fees	\$690.48	\$975.52	\$3,735.76	\$13,934.48
Incidental fees charged by GÉNIEAU	117.24%	64.02%	55.26%	72.23%

According to this table, GÉNleau's incidental fees and profit margin vary from 55% to 117%, depending on the size of the meter, with an average of 80.55% for the entire set of meters. Consequently, meters can cost anywhere from \$1,500 to \$24,000 per unit for a grand total of **\$74,232,350, i.e. a 154% cost increase in comparison with the installation cost established in Table 21. Assistance fees, which have also increased by 80.55%, have now reached \$22,333,868.**

Overall, BPR's estimated assistance fees were \$64 million, while GÉNleau quoted \$74.2 million, a variation of \$10.2 million or 15.9%.

Section 3 – Operation of meters

Data relative to the different bids is shown in Table 25.1.

Table 25.1 – Bids for meter operation

PHASE 1 – MEASURING IBI WATER CONSUMPTION	Benchmark proposal (\$)	Catania-SM bid (\$)	GÉNleau bid (\$)
Meter operation	14,009,540	24,502,940	8,456,600
Water consumption profiling and meter resizing	2,027,750	4,491,000	3,075,000
Total	16,037,290	28,993,940	11,531,600

Operation charges cover maintenance, replacement of meters upon the expiration of the manufacturer's warranty, meter recertification, meter resizing and consumption profiling. Although

the operation charges from the successful contract (\$11,531,600) are lower than those estimated by BPR (\$16,039,290), they remain **elevated** considering that meters will be covered by a supplier’s warranty ranging from 10 to 15 years during their first 15 years of operation. Moreover, Table 25.1 shows significant discrepancies between the bids.

PHASE 2 – NETWORK OPTIMIZATION

Our analysis addressed the various sections of Phase 2 – Water distribution monitoring and optimization.

Section 1 – Implementation of equipment – New and existing chambers

Table 25.2 outlines the data relative to the three bids for this particular section.

Tableau 25.2 – Implementation of equipment – New and existing chambers

PHASE 2 - WATER DISTRIBUTION MONITORING AND OPTIMIZATION	Benchmark proposal (\$)	Catania-SM bid (\$)	GÉNleau bid (\$)
Equipment implementation – Existing chambers	63,785,343	36,592,000	31,070,000
Equipment implementation – New chambers	43,276,048	36,433,500	30,753,500
Total	107,061,391	73,025,500	61,823,500

The implementation cost from the benchmark proposal (\$107,061,391) significantly exceeds the cost applied in the GÉNleau bid (\$61,823,500), as well as the quote from Catania (\$73,025,500). The breakdown is presented in Table 26.

For example, the unit cost of implementing equipment in the flow- and pressure-measurement chambers for pipes with diameters ranging from 1,050 to 1,500 mm is estimated by GÉNleau and Catania respectively at \$105,200 and \$105,300, compared with \$582,533 in the benchmark proposal, which represents a ratio of 5.53. The unit cost of implementing equipment in the pressure control chambers for pipes with diameters ranging from 1,050 to 1,500 mm is estimated by GÉNleau and Catania respectively at \$526,000 and \$508,300, compared with \$1,033,214 in the benchmark proposal, which represents a ratio of 1.94. The cost of implementing equipment in the 75 existing flow- and pressure-measurement chambers for pipes with diameters ranging from 500

to 900 mm is estimated by GÉNleau and Catania respectively at \$4,612,500 and \$6,307,500, compared to \$21,427,111 in the benchmark proposal, which represents a ratio of 4.64.

When scrutinizing these three bids, their only consistent pricing item is that of the 150 chambers that measure pressure only. The unit price of implementing equipment is estimated at \$37,051 by BPR, compared to \$32,000 by GÉNleau and \$45,220 by Catania. However, for this particular pressure measurement item, BPR has clearly specified that it will not modify any piping, unlike the other 450 chambers where all the piping will be reconditioned at a cost of \$55,328,643 (Table 27).

This piping infrastructure replacement could explain the discrepancies between the benchmark proposal and the two other bids. Table 28 compares the equipment implementation cost from the GÉNleau bid with the benchmark proposal stripped from any piping replacement cost as estimated by BPR. A quick cost analysis clearly shows that although the overall price in the benchmark proposal is now lower than that of GÉNleau, the two bids are priced more consistently and most of their unexplained variations have been greatly reduced, if not eliminated.

Table 26 – Chamber implementation cost comparison

Description	BPR benchmark			Catania		GÉNleau	
	Qty	Unit Price	Amount (2007 C\$)	Unit Price	Amount (2007 C\$)	Unit Price	Amount (2007 C\$)
	(1)	(2)	(3)=(1)*(2)	(3)	(4)*(1)*(3)	(5)	(6)=(1)*(5)
Equipment implementation							
Measurement of flow and pressure – Existing chambers							
100- to 250-mm pipe	10	\$70,002	\$700,020	\$45,200	\$452,000	\$43,200	\$432,000
300- to 450-mm pipe	55	\$144,412	\$7,942,660	\$52,400	\$2,882,000	\$52,000	\$2,860,000
500- to 900-mm pipe	75	\$285,695	\$21,427,125	\$84,100	\$6,307,500	\$61,500	\$4,612,500
1,050- to 1,500-mm pipe	10	\$582,533	\$5,825,330	\$105,200	\$1,052,000	\$105,300	\$1,053,000
Measurement of flow and pressure – New chambers							
100- to 250-mm pipe	10	\$67,596	\$675,960	\$45,200	\$452,000	\$42,800	\$428,000
300- to 450-mm pipe	60	\$111,777	\$6,706,620	\$52,400	\$3,144,000	\$50,600	\$3,036,000
500- to 900-mm pipe	70	\$157,001	\$10,990,070	\$84,100	\$5,887,000	\$61,100	\$4,277,000
1,050- to 1,500-mm pipe	10	\$297,081	\$2,970,810	\$105,200	\$1,052,000	\$104,900	\$1,049,000
Pressure measurement – Existing chambers							
All sizes	75	\$37,051	\$2,778,825	\$45,220	\$3,391,500	\$32,000	\$2,400,000
Pressure measurement – New chambers							
All sizes	75	\$37,051	\$2,778,825	\$45,220	\$3,391,500	\$32,000	\$2,400,000
Flow and pressure measurement as well as pressure regulation – Existing chambers							
100- to 250-mm pipe	5	\$84,324	\$421,620	\$206,800	\$1,034,000	\$141,500	\$707,500
300- to 450-mm pipe	30	\$165,864	\$4,975,920	\$259,900	\$7,797,000	\$198,200	\$5,946,000
500- to 900-mm pipe	35	\$415,651	\$14,547,785	\$315,600	\$11,046,000	\$300,500	\$10,517,500
1,050- to 1,500-mm pipe	5	\$1,033,214	\$5,166,070	\$526,000	\$2,630,000	\$508,300	\$2,541,500
Flow and pressure measurement as well as pressure regulation – New chambers							
100- to 250-mm pipe	5	\$72,296	\$361,480	\$206,800	\$1,034,000	\$139,700	\$698,500
300- to 450-mm pipe	30	\$135,394	\$4,061,820	\$259,900	\$7,797,000	\$196,300	\$5,889,000
500- to 900-mm pipe	35	\$304,998	\$10,674,930	\$315,600	\$11,046,000	\$298,600	\$10,451,000
1,050- to 1,500-mm pipe	5	\$811,106	\$4,055,530	\$526,000	\$2,630,000	\$505,000	\$2,525,000
Total	600		\$107,061,400		\$73,025,500		\$61,823,500

GÉNleau told us that it did not contemplate the pipe reconditioning option. Incidentally, GÉNleau is not even concerned with the replacement of worn-out pipes since it considers that its mandate is limited to the implementation of measurement and control equipment—not the retrofitting of pipes. Moreover, the call for proposals does not mention any piping replacement. Addendum 10 dated September 14th includes an additional sentence in paragraph 4.5: *[Translation] “Moreover, the price includes required modifications to existing pipes and taps.”* It is our understanding that the price does not include the replacement of piping in the chambers.

BPR broke down the piping cost estimate for the different chambers.

Table 27 – Cost of pipes

Ref	Description	Quantity	BPR benchmark	
			Unit price	2007 C\$
			(1)	(2)
Equipment implementation				
Flow and pressure measurement – Existing chambers				
	100- to 250-mm pipe	10	\$19,680	\$196,800
	300- to 450-mm pipe	55	\$55,760	\$3,066,800
	500- to 900-mm pipe	75	\$218,120	\$16,359,000
	1,050- to 1,500-mm pipe	10	\$444,440	\$4,444,400
Flow and pressure measurement as well as pressure control – Existing chambers				
	100- to 250-mm pipe	5	\$24,600	\$123,000
	300- to 450-mm pipe	30	\$91,184	\$2,735,520
	500- to 900-mm pipe	35	\$218,940	\$7,662,900
	1,050- to 1,500-mm pipe	5	\$506,924	\$2,534,620
				\$37,123,040
Flow and pressure measurement – New chambers				
	100- to 250-mm pipe	10	\$9,840	\$98,400
	300- to 450-mm pipe	60	\$27,880	\$1,672,800
	500- to 900-mm pipe	70	\$91,430	\$6,400,100
	1,050- to 1,500-mm pipe	10	\$219,924	\$2,199,240
Flow and pressure measurement as well as pressure control – New chambers				
	100- to 250-mm pipe	5	\$24,600	\$123,000
	300- to 450-mm pipe	30	\$61,090	\$1,832,700
	500- to 900-mm pipe	35	\$109,060	\$3,817,100
	1,050- to 1,500-mm pipe	5	\$222,220	\$1,111,100
				\$17,254,440
	Total	450		\$54,377,480
	Cost of removing existing piping			\$951,163
	Total cost			\$55,328,643

Given the fact that this piping will be distributed among 450 sites with 150 pressure-measurement chambers maintaining the same pipes, the cost of pipes is estimated at \$120,000/chamber as per the benchmark proposal. However, we note an unexplained price discrepancy of \$20,000,000 for old chambers whose piping implementation costs \$37,123,304, compared with \$17,254,440 for new chambers. In fact, BPR indicated that the amount of \$55.3 million includes, in addition to the usual contingencies, a provision to replace worn-out pipes, without specifying exactly which ones. We understand that these pipes are situated in the vicinity of existing chambers since BPR's benchmark proposal clearly states that all pipes located inside the chambers will be refurbished during the equipment installation. In our opinion, this provision is pertinent because it would be unreasonable to construct new chambers or refurbish existing ones by putting in new pipes and linking them to external, corroded pipes.

In conclusion, GÉNleau has not underestimated the cost of implementing measurement equipment in its bid when compared with the benchmark proposal. In fact, its estimate could even be considered higher than the benchmark proposal taking into account that GÉNleau planned for the use of less expensive equipment. Moreover, it should be emphasized that the incidental fees applied in the BPR tender are to the order of 65%.

The cost in the benchmark proposal (\$107,061,391) significantly exceeds the cost applied in the GÉNleau bid (\$61,823,500), as well as the cost suggested by the other bidder, Catania-SM (\$73,025,500). This discrepancy arises from BPR's inclusion of a \$55.3-million amount for the replacement of piping when bidders were not required to do so. Should this work have been required, it would have incurred extra charges in the contract. The benchmark proposal should then be adjusted downward by \$55.3 million, thus bringing it to \$251.3 million.

Table 28 – Equipment implementation cost excluding piping in the benchmark proposal

		BPR benchmark without piping	GÉNleau
Description	Quantity	Amount (2007 C\$)	Amount (2007 C\$)
	(1)		(3)
Equipment implementation			
Flow and pressure measurement – Existing chambers			
100- to 250-mm pipe	10	\$503,220	\$432,000
300- to 450-mm pipe	55	\$4,875,860	\$2,860,000
500- to 900-mm pipe	75	\$5,068,125	\$4,612,500
1,050- to 1,500-mm pipe	10	\$1,380,930	\$1,053,000
Flow and pressure measurement – New chambers			
100- to 250-mm pipe	10	\$577,560	\$428,000
300- to 450-mm pipe	60	\$5,033,820	\$3,036,000
500- to 900-mm pipe	70	\$4,589,970	\$4,277,000
1,050- to 1,500-mm pipe	10	\$771,570	\$1,049,000
Pressure measurement – Existing chambers			
All sizes	75	\$2,778,825	\$2,400,000
Pressure measurement – New chambers			
All sizes	75	\$2,778,825	\$2,400,000
Flow and pressure measurement as well as pressure control – Existing chambers			
100- to 250-mm pipe	5	\$298,620	\$707,500
300- to 450-mm pipe	30	\$2,240,400	\$5,946,000
500- to 900-mm pipe	35	\$6,884,885	\$10,517,500
1,050- to 1,500-mm pipe	5	\$2,631,450	\$2,541,500
Flow and pressure measurement as well as pressure control – New chambers			
100- to 250-mm pipe	5	\$238,480	\$698,500
300- to 450-mm pipe	30	\$2,229,120	\$5,889,000
500- to 900-mm pipe	35	\$6,857,830	\$10,451,000
1,050- to 1,500-mm pipe	5	\$2,944,430	\$2,525,000
Total	600	\$52,683,920	\$61,823,500

Section 6.1 – SCADA implementation and operation

Here is the data relating to the different bids for this area.

Table 29 – SCADA implementation and operation

PHASE 2 – WATER DISTRIBUTION MONITORING AND OPERATION	Benchmark proposal (\$)	Catania-SM bid (\$)	GÉNleau bid (\$)
SCADA implementation and operation	36,903,438	22,165,000	17,800,000

The SCADA system cost quoted in the selected bid seems appropriate and competitive to us in comparison with the benchmark proposal and our own estimate. Although it is difficult to compare the GÉNleau and benchmark proposals for this particular phase given that many architecture details remain unknown for both systems, we can state that the cost of \$17,800,000 quoted by GÉNleau is obviously competitive compared with the \$36,903,438 estimate in the proposal prepared by BPR.

Sections 6.2 to 6.4 – Operation of equipment

Here is the data relating to the different bids in this area.

Table 30 – Equipment operation

PHASE 2 – WATER DISTRIBUTION MONITORING AND OPTIMIZATION	Benchmark proposal (\$)	Catania-SM bid (\$)	GÉNleau bid (\$)
Operation of equipment	32,264,437	41,579,000	32,610,000

The cost of equipment operation planned in Phase 2 is excessive given the reduction in performance requirements arising from addendum 10. Furthermore, this operation approach could leave room for disagreement with City employees as seen below.

It is important at this point to address the tasks that will fall upon City employees. It appears as if the City has not reached an agreement with its employees about their responsibility for maintaining the control equipment. This aspect could seriously compromise the success of the project.

The pressure control valve is different from any other valves currently maintained by the City's blue-collar workers. This is further complicated by the fact that GÉNleau uses this particular valve as an experimental flow-measurement instrument. Given that proper valve maintenance is essential to ensure reliable pressure control and flow measurement, GÉNleau could blame any lacklustre performance on poor maintenance. It is well known that shared responsibilities are difficult to manage and could increase response times. In addition, any valve malfunction could have major impacts on supply safety and network pressure directly controlled by these potentially faulty valves. Finally, should the City fail to reach an agreement with its blue-collar workers about assigning this task to GÉNleau and be forced to operate the valves itself, why would it not do so for the rest of the equipment? In fact, the City had already planned for such an eventuality in the call for proposals:

[Translation] "However, the CITY reserves the right to carry out itself or assign to others, in full or in part, the operational activities of measurement and control devices."

However, has the City determined how to split the overall budget envelope of \$32,610,000 allocated to several activities?

Sections 7 and 8 – Civil works – New chambers and restoration of existing chambers

Here is the data relating to the different bids in this area (Table 31).

Table 31 – Civil works

PHASE 2 – WATER DISTRIBUTION MONITORING AND OPTIMIZATION	Benchmark proposal (\$)	Catania-SM bid (\$)	GÉNleau bid (\$)
Civil works – New chambers	19,602,421	49,393,200	54,855,700
Civil works – Restoration of existing chambers	19,082,920	36,864,575	38,372,585
Total of the bid	38,685,341	86,257,775	93,228,285
Commission des services électriques de Montréal (CSE)	(9,000,000)	(9,000,000)	(9,000,000)
Revised total	29,685,341	87,257,775	84,228,285

This is clearly the budget item with the most striking cost variation. The cost of civil works, from which we subtracted \$9.0 million dedicated to the Commission des services électriques de Montréal, is estimated at \$84,228,285 in the selected bid. This figure is \$54,542,944 higher than that of the benchmark proposal prepared by BPR (\$29,685,341), thereby exceeding it by 283%.

For example, the cost of accident prevention during repairs to chambers is ten times higher in the GÉNleau and Catania-SM (\$9,980,000 and \$9,765,000 respectively) bids than in the benchmark proposal, which also happens to be significantly overestimated (\$926,424).

Another example is the cost associated with cleaning and inspecting chambers. The GÉNleau and Catania-SM tenders assign \$6,150,000 and \$5,970,000 respectively to this budget item, compared with \$2,826,000 in the benchmark proposal.

In our opinion, the civil works costs quoted by GÉNleau should have been much lower than those of Catania-SM and BPR. Although GÉNleau uses an unproven flow-measurement method in the control chambers, it has the advantage of being more compact. Consequently, GÉNleau needs smaller chambers than those provided for in the Catania-SM and benchmark proposals.

In addition, it is startling that GÉNleau provides for the cleaning and inspection of all chambers, including those that require a major expansion, at a unit cost of approximately \$20,000. Bidders were aware that they had to specify in their schedule the number of existing chambers that needed to be enlarged separately from those that could be reused following a simple cleaning. Having been said, bidders could not do so without prior knowledge of the location of chambers, their current condition and the type of equipment required in each case.

In our opinion, BPR's estimates for civil works adequately reflect marketplace reality.

III.19.2 Findings

Finding 40

The purchase and installation price of meters is reasonable and comparable to that of other similar meter installation programs.

Finding 41

Entrusting GÉNleau with the task to assist IBIs and operate meters increases the price of meters significantly. This task could have been assigned to City employees, but this scenario was never contemplated.

Finding 42

By our estimate, the administrative fees associated with the installation of meters that are quoted in the selected bid are very high. Choosing a different meter installation approach could have been far more economical. Just like other cities, the City of Montréal could have bought its meters on its own, just as it did for the recently purchased backflow prevention devices, and awarded the installation contract directly to a contractor, thereby achieving major savings.

Finding 43

The meter operation cost is disproportionately high compared to the risks faced by GÉNleau during the target operation period. Operation charges cover maintenance, meter replacement upon the expiration of the manufacturer's warranty, meter recertification, meter resizing and consumption profiling. Although the meter operation cost stipulated in the contract awarded to GÉNleau (\$11,531,600/Appendix 2) is lower than that estimated by BPR (\$16,039,297/Appendix 3), it remains high given the low risk faced during the 15-year meter life span.

Finding 44

BPR has overestimated the cost of implementing measurement and control equipment in its benchmark proposal since it planned for the refurbishment of all piping in every chamber as well as a substantial network refitting. This work is not required of GÉNleau (as confirmed by GÉNleau representatives).

Finding 45

The SCADA system cost quoted in the selected bid seems appropriate and competitive to us in comparison with the benchmark proposal and our own estimate.

Finding 46

The maintenance work provided for in the contract could be called into question because it was not negotiated with the City's blue-collar union. Moreover, the performance component on which the contractual strategy is based could be questioned.

Finding 47

It can be conservatively stated that the cost of civil works in the contract awarded to GÉNleau is high in relation to both BPR's and market estimates. The disproportionate pricing should have been analyzed by the City to avoid a significant cost overrun.

III.20 PROJECT MANAGEMENT (2005–2008)

III.20.1 Highlights and analysis

Because of their complexity and their impact on public capital programs, major projects require formal, rigorous and transparent mechanisms to ensure that their goals are met. Such mechanisms include:

- The appointment of a senior manager accountable for the attainment of the project objectives;
- The creation of a steering committee backed by technical experts;
- Formal check points at different program and project stages.

The process for managing major projects must comply with good governance practices.

Program management

Although the program that encompasses the IBI, PCS and PW projects incorporated some of the previously mentioned mechanisms, they seem to be bereft of any real structure. This omission could explain the Bureau de projets' efforts to set up a formal governance framework.

This practice is particularly disturbing in view of the fact that a substantial series of cost increases and major changes were approved by the City without being subjected to any formal review. Essentially, the City never questioned the appropriateness nor sought any justification for these changes in regards to their alignment with its business goals and their financial implications on the program as a whole.

Bureau de projets

Actions taken in 2004 by the then-Director General during the launch of the IBI project demonstrate a will to establish structures, procedures and methods consistent with recognized project management standards and practices for the water management program. Indeed, specific actions were taken to institute best governance and management practices for the City's major projects. These actions included, but were not limited to, the requirement that a Bureau de projets be established within SITE and that an expert be hired to implement it.

The structure, tools and procedures implemented by the Bureau de projets for planning and monitoring the overall water management program and the IBI project in particular complied with best practices. They included a governance structure to provide a transparent and rigorous decision-making process, a configuration management system to ensure that proposed solutions complied with the City's expectations, clear objectives and requirements with respect to water management, as well as all the necessary project monitoring tools. Since firms were responsible for the project management component as per their mandate, the Bureau de projets was no more than a "monitoring body".

We have observed a sharp discrepancy between the definitions of the Bureau de projets conveyed by SITE management and employed in the actual Bureau de projets charter. The latter clearly states that the Bureau de projets is responsible for managing this program and monitoring projects as per *Project Management Institute* (PMI) standards. SITE management, however, indicated that the Bureau de projets primarily consists of the BPR team that is assigned on a permanent basis to City offices. This is an incomplete interpretation of what the construction industry calls a "project office" for major projects, since the primary goal in a program of this scope is to unite the specialists needed within a multi-disciplinary team. Doing so will ensure permanent mobilization of the team, complete and diversified expertise and better integration of its work, i.e. what is actually being done. Because of this restrictive view, other specialists required for proper implementation of this project were missing. For example, the Bureau de projets does not include any City of Montréal's technical experts nor individual representatives from the Service des finances, the Direction de l'approvisionnement and the Direction du contentieux.

The Bureau de projets charter referred to the integration of technical teams from the City and any firms involved. However, according to our audit, the three projects (PCS-PW-IBI) were managed in isolation and the different project teams never worked together. Furthermore, all of the City's technical personnel confirmed that they were never involved in decision making or process development for the project's Phase 2. BPR assumed primary responsibility for that component.

Change of senior managers

We observed a high turnover of senior managers and City personnel responsible for project monitoring and planning with respect to the technical verification and validation of solutions proposed in the IBI project.

Senior managers changed three times during the period in which key decisions regarding the project's scope were made. Furthermore, the final senior manager became the project manager, the director of the Bureau de projets changed twice and his position was also left vacant twice. It still has not been filled.

Document management

Several key documents (project charters, risk analysis, etc.) were not in the project's central folders. Some of these documents were to be found in the virtual trash can of the E-Room document archive while others were located in files kept by former members of the Bureau de projets.

Furthermore, this E-Room document archive was replaced over the course of the project with a dedicated section on the SITE server. This decision had major implications for the monitoring of this project as the Bureau de projets was responsible for verifying the compliance of documents filed by the firms through this E-Room. The latter was administered by a management consultant who controlled access rights to these documents. The system recorded all document creations or changes and the persons responsible for them. When the E-Room was abandoned, firms simply filed their documents on the SITE server.

Analysis of financing and performance scenario

Key decisions were made without the benefit of rigorous analysis (financing, performance scenario).

III.20.2 Findings

Finding 48

The City failed to establish strict water project governance rules similar to those enacted by professional project management associations or those governing major projects in other public administrations. The absence of a governance framework based on project reviews at formal check points, as with the British Treasury model (the Gateway), makes the governance of major programs more difficult. The City should also formalize and standardize program and project management practices based on *Project Management Institute* (PMI) standards.

Finding 49

An independent steering committee apart from SITE management was not assigned responsibility for governing the IBI, PCS and PW projects. Furthermore, project monitoring was not performed by a team consisting primarily of City representatives. This role should have been assigned to an independent project management firm reporting to the steering committee, rather than to SITE management. In the medium term, this specialized firm would assist the City in creating and training internal project management teams. Without a genuine Bureau de projets to follow up and monitor the three projects, city council should assign responsibility for analyzing the management of both the PCS and PW projects to the General Auditor.

Finding 50

The problems observed in IBI project management methods raise questions as to the rigour with which the other two water projects (PCS and PW) were managed.

Finding 51

We found that the Bureau de projets of the IBI and Network Optimization program lacked the expertise needed to administer such a program. The absence of financial and technical experts constituted a major weakness. We are, however, very puzzled by the lack of involvement of the Direction du contentieux considering the monetary importance of this program.

There were document management issues within this project. Many key documents were not kept in a central location, thereby making it very difficult to monitor the project and follow its progress.

In our view, the turnover in City employees assigned as either senior managers or individuals responsible for project planning and monitoring is a major shortcoming.

III.21 THE TECHNICAL SOLUTION SELECTED

III.21.1 Highlights and analysis

Phase 1 (IBI) was designed to take an important step towards the implementation of the user-pays principle to reduce water wastage. It was also designed to acquire better knowledge of water consumption that is fundamental to the management of this resource, and constitutes the first stage in the water leakage detection and location program. The installation of water meters in IBIs has the advantage of allowing for the measurement of a major, highly volatile portion (40%) of total water consumption with a relatively limited investment. Residential night-time – and even daytime – consumption tends to be far less unpredictable as that of IBIs and can be reasonably estimated when establishing water consumption profiles.

Phase 2 (network optimization) includes certain experimental aspects that have recently been implemented on a small scale in North America. Indeed, to our knowledge, Halifax (Canada) and Philadelphia (United States) are the only two urban centres in which the principles of permanent network sectorization were implemented as proposed in Phase 2

In 2000, Halifax – a city with some 350,000 inhabitants – launched a program similar to the one anticipated in Phase 2 (network optimization) of the City of Montréal's project. Halifax was much better prepared to undertake this type of initiative because it had been monitoring water loss since 1982. It collected this data by territory or area using traditional methods (review of water consumption, detection of losses) and implemented several infrastructure and maintenance changes. In all, it achieved a notable degree of success as the percentage of unaccounted water fell significantly from 44% in 1982 to 10.8% in 1998. In fact, BPR recommended copying the Halifax approach in its 2001 report entitled *[Translation] Building a Data Model to Prioritize Work on the City's Aqueduct Network* in which it suggested that the City of Montréal should focus its **initial** efforts on the implementation of a leak detection plan and **subsequently** incorporate water flow and consumption measurement tools into its network.

In Halifax, the shift to water flow measurement in micro-areas basically allowed the municipality to pinpoint new leaks whose location and repair were justified from an economic standpoint. This sectorization technique (for monitoring distribution by areas) led to improved leak detection in the aqueduct network, with the exception of the downtown area.

The Halifax network included the addition of 35 new chambers for measurement, control and telemetry as well as 35 existing chambers that were upgraded to the new standards. The cost of a fully equipped pressure control chamber typically costs around \$100,000. The cost can vary, but generally does not exceed \$150,000. The cost of a flow- or pressure-measurement chamber is in the neighbourhood of \$25,000, and this amount is more than sufficient to cover construction, measurement, data reading and telemetrics.

Again, in the case of Halifax, there was no special budget envelope provided for the setting up of 65 areas for distribution monitoring. Since 2000–2001, the annual development budget has been approximately \$350,000, which is used for new installations and improvements. That brings the budget necessary for implementing 65 areas for distribution monitoring to under the \$4 million mark. Halifax budgets one person-year of labour for this component.

The primary goal of Phase 2 (network optimization) is to detect leaks in the network. Traditionally, the territory is subdivided into isolated areas that are used for “intake less outtake” assessments to pinpoint leaks. Any areas where relatively high leaks are detected are deemed to be suspicious and are then subjected to a more rigorous leak detection program so as to identify the existence of leaks before any breakage occurs.

The major difference between the traditional approach and the newly proposed approach within the framework of Phase 2 (network optimization) is the permanent aspect of this sectorization. In other words, the territory will be divided into **definitive** and **permanent** areas for distribution monitoring. Each area will be linked to neighbouring areas either through permanently closed valves or flow meters that measure water intake and outtake to compile a water consumption profile. Permanent sectorization has the following advantages:

- 1- Instantaneous detection of any new major leak;
- 2- Real-time diagnosis of network breakdowns;
- 3- Better, real-time knowledge of consumption levels across the network.

However, permanent network sectorization also has major drawbacks:

- 1- This approach is **very expensive** both in regards to its implementation as well as operation. It can be justified when water is very rare and too costly.
- 2- Permanent sectorization prevents the free circulation of water, creating dead water areas with longer stagnation periods. This can affect water quality and increase pipe corrosion, thereby requiring more frequent flushing.

To remedy these problems and reduce any negative impact on water quality, it is sometimes necessary to install special valves that can be opened occasionally to allow water circulation as well as chlorination systems. These facilities require additional costs.

This approach to creating areas for distribution monitoring was initially recommended in Great Britain where networks are generally branched, and are not subject to fire fighting constraints, since local fire departments draw upon a separate network. Therefore, implementing this approach in areas that are naturally isolated from the rest of the network does not entail major modifications in the way the network operates. Although this approach can be implemented on the Island of Montréal without any major impact on certain portions of the peripheral network located at either ends of the City, its implementation downtown where the network is heavily meshed and fed by sometimes highly variable levels of water pressure can prove to be problematic. Incidentally, this is precisely why the pilot project planned to create areas for distribution monitoring in the borough of Ville-Marie was abandoned.

Leaks in the network ultimately cause pipe breakage. The ever-increasing rate of breakage in Montréal is due mainly to an aging infrastructure and an inadequate replacement and rehabilitation rate for pipes. A pipe that is in sound structural condition is normally capable of withstanding pressure up to two to three times greater than normally applied without rupturing. Once weakened by corrosion, pipes can yield under much lower pressure when certain unfavourable conditions are compounded by the volatile changes in temperature, or simply under the effect of a wave of excess pressure produced by the closing of a valve.

The pressure modulation provided for in Phase 2 (network optimization) therefore appears to be a preventive measure that can, in the best-case scenario, postpone pipe breakage for a limited time. Since pressure is not the only factor capable of causing breakage, it is impossible to know whether pressure modulation will indeed postpone pipe breakage and, if so, for how long. Will it be hours, days, weeks or months? Generally speaking, it is impossible to accurately determine this duration. What is more, frequently closing valves as required by pressure modulation can create waves of excess pressure that can actually hasten pipe breakage if it is not performed properly.

In conclusion, pressure modulation is a preventive measure that can be strategically used to postpone, for a more or less limited time frame, investments in pipe replacement. However, the true added-value solution remains the replacement or rehabilitation approach.

While network optimization has certain undeniable advantages, it also has its share of substantial drawbacks and uncertainties.

III.21.2 Findings

Finding 52

Before deciding to systematically implement a real-time network management (Phase 2) throughout the Island of Montréal and enter into a 25-year agreement with a contractor, **we maintain that this aspect should have been part of the work plan (PW), i.e. the component dedicated to the aqueduct and sewage network upgrade. This would allow for a prioritization of the most urgent and degraded areas while supporting this portion of the project (Phase 2) with relevant economic analyses.** This was not the case when Phase 2 (network optimization) was launched.

We therefore believe that Phase 2 should have been more tightly intertwined with the work plan (PW) component entrusted to the CGT Group. First of all, valve chambers are an integral part of the drinking water network and constitute the link among the various runs. Hence, the work plan must provide for the integrated management of all components, as it is unrealistic to install a new chamber on old pipes, or the other way around. In addition, the hydraulic pressure modulation that is recommended in Phase 2 as a method to minimize pipe breakage is the primary objective of the work plan. Even if the decision was made to implement Phase 2 outside of the work plan (PW), it would have been desirable to at least **plan any pilot installation and the implementation of chambers in collaboration with the City's team and the CGT consulting firm that developed the work plan** (PW). However, in light of the interviews carried out during this audit, it was confirmed that **there was no form of collaboration or harmonization between CGT and the Phase 2 planners.**

Finding 53

Phase 2 relies on Phase 1 (IBI water meters) data since it was agreed that the information from the meters would be used in establishing water consumption profiles in the areas targeted for distribution monitoring. However, the link between Phase 1 and 2 ends there. As it turns out, **it would have been possible, and most likely more sensible and economical, to set up meters in IBIs first (i.e. to begin with Phase 1), and then carry out a better planned implementation of Phase 2 (network optimization).**

Finding 54

It has been well established that leakage rates are directly related to water pipe pressure. To provide a quantifiable example, a 20% drop in pressure can reduce the leakage rate by 10%. Incidentally, the pilot projects determined the maximum pressure reduction achievable. Therefore, pressure reduction could provide an interesting option for reducing leakage, especially given the current, highly degraded condition of the network. **The pressure modulation recommended in Phase 2** has already been used on the Island of Montréal in specific instances for several years. **This practice must be encouraged and implemented in a well-planned, targeted manner in areas where it is deemed to be warranted and economically viable.**

Given the costs at stake, there should have been a thorough cost-benefit analysis conducted to determine whether the investments planned in Phase 2 would be cost-effective. One might presume that a profitability study would have given priority to certain areas where the potential pressure reduction margin is in line with the investments required and the condition of the network. In other areas that are in relatively good condition and offer limited pressure reduction potential, that same study would certainly have rejected pressure modulation, at least over the short term. It is also noteworthy that certain areas do not experience excessive water pressure, but a lack thereof.

Finding 55

As observed earlier, BPR's initial contract was extended in 2008 to include pilot projects in four areas in order to test water distribution on a small scale (Phase 2). Those projects were initiated **after** GÉNleau was awarded the contract that bound the City through a 25-year agreement.

Upcoming pilot projects will have to be strategically distributed in order to reflect the entire territory and any anticipated problem areas. Ideally, these projects should span over at least one year (perhaps more) to be fully beneficial and accurately assess the profitability and relevance of the specific approach proposed for each area.

According to BPR's studies, the various areas for distribution monitoring cannot be implemented without first detecting and locating leaks, as is indicated in this excerpt from its documentation:

[Translation] "If the initial level of leakage is high, it is recommended to carry out a thorough leak detection and repair campaign in order to eliminate most leaks. This operation will

ensure that areas for distribution monitoring have properly sized meters and chambers and that initialization costs are minimal.”

Halifax carried out these preparatory stages over a 16-year period to reduce the percentage of unaccounted water loss from 44% in 1982 to 10.8% in 1998. It was only in 2000 that Halifax began the targeted and phased implementation of permanent sectorization (which corresponds to Phase 2 of the City of Montréal's project) on force account with a much more reasonable budget.

Permanent network sectorization should most definitely be considered, and possibly tested (either in whole or in part), starting with thorough pilot projects. The call-for-qualification process should have taken this approach into account before proceeding with the call for tenders.

III.22 GOVERNANCE

III.22.1 Highlights and analysis

Background

Since the beginning of its second mandate, the current city administration has had to deal with numerous legal controversies, including the Direction des services informatiques (DSI), the Société d'habitation et de développement de Montréal (SHDM) and the water meter contract. Several of these controversies are currently the subject of investigations by the Sûreté du Québec or the General Auditor of the City of Montréal. In an interview granted recently to *La Presse*,⁸⁸ the City Manager, Claude Léger, revealed that a total of 15 investigations on the city administration had led to dismissals over the last three years.

This high number of incidents and others forced the government of Québec to create a working group on ethics in municipal affairs. Under the aegis of the Commission municipale du Québec, the working group's mandate was to examine the matter of ethics in the municipal administration field from various viewpoints. In the opinion of some people, this study on ethics mainly concerned Montréal.⁸⁹ As part of his mandate regarding the awarding of the water meter contract to GÉNIEau, the General Auditor of the City of Montréal looked beyond the procurement process to assess other aspects of governance and strategies currently implemented for the execution of work contracts at the City.

We find that the costs of public works are increasing dramatically both for projects under the responsibility of higher government levels and those managed by municipalities. Some people claim that this situation is linked to market dictates and assert that massive public investments and subsidies are the leading factors that contribute to this irrefutable fact. Others argue that collusion, fraud and the very nature of the infrastructure industry also play a role in the current situation.

We will not address these allegations at this point. However, we will look at ways that the Montréal administration could better control the management and cost of its infrastructure work.

⁸⁸ Croteau, Martin. "Quinze congédiements en trois ans à Montréal : Lemieux rassurée," *La Presse*, August 29, 2009. <http://www.cyberpresse.ca/actualites/regional/Montréal/200908/29/01-897092-quinze-co...>

⁸⁹ Clément, Éric. "Québec veut assainir la vie municipale," *Cyberpresse*, July 14, 2009, updated July 15, 2009. <http://www.cyberpresse.ca/actualites/quebec-canada/national/200907/15/01-884012-queb...>

This section of the report seeks to improve the current procurement process and encourage the City of Montréal to **revisit** its approach to the execution of major projects in the future. Although this section does not pretend to be comprehensive, it should open the door to deeper reflections on some of the ideas put forward below.

A changing environment and the financial crisis

The municipal sector has not escaped the crisis in public finances and must try to achieve greater operational flexibility to better address modern city administration issues and challenges. We have entered an era of “farming out,” outsourcing and privatization and that spurred the evolution of semi-public companies and PPPs, all of which were motivated by the pursuit of savings and efficiency.

Furthermore, the City of Montréal, like the majority of other Québec municipalities, is experiencing difficult times, particularly in terms of public finances. The impact on the upgrading or renewal of various major infrastructures is quite real, as is shown in various studies conducted or commissioned by the City. To overcome this crisis, all municipalities – especially the City of Montréal – have sought a number of solutions such as billing or outsourcing certain services hitherto provided by the municipality.

The crisis in public finances within the municipal realm has entailed its fair share of problems. One that appears particularly worrisome to us, especially within the purview of our mandate, is the management of retirements and the resulting difficulty that the City of Montréal faces in maintaining its expertise vis-à-vis that of private contractors. As we have seen through this study, water infrastructure experts come mainly from the private sector.

Given the concern of not substantially increasing the tax burden of Montrealers, the different Montréal city administrations that have succeeded one another since the middle of the 1980s implemented human resources management strategies that did not necessarily ensure staff replacement as employees left either for retirement or for other positions elsewhere, notably in the private sector.

The private sector has recruited public-sector management personnel and experts for their skills, but above all for their network of contacts and their expertise in fields where private businesses can stand out and obtain contracts from public administrations. This explains why a number of former public-sector administrators and senior managers have been hired by the private sector. This has

resulted in a significant reduction in the number of qualified employees able to support city administrations in certain advanced fields including, for example, the water infrastructure. Nowadays, several public administrations are no longer able to offset the approaches and solutions put forward by private contractors. In this connection, the addition of another solution to the original water meter contract speaks for itself.

Cost control

We believe that the city administration needs to take more direct measures to ensure greater control on rising costs. The following observations attempt to provide possible avenues to ameliorate this problematic situation.

In 1997, the then-General Auditor raised on pages 200 to 240 of his annual report certain problems relating to the management of infrastructure work, notably that:

“- the Ville finds itself rather tributary to prices submitted to it and consequently it tacitly accepts to support the random market variations;”

“the market offer in the infrastructure sector is relatively limited;”

[*Translation*] “costs are disproportionate”.

Below are the principal recommendations made at the time:

“We recommend that the Service des travaux publics revise its current production cost system by incorporating the notions of the standard costs technique while being careful to retrieve the price of material, that of labour, and other charges from it.

We recommend that the Service des travaux publics examine the possibility of modifying the way in which calls for tenders are made for PRR works.

We recommend that the Ville study the possibility of augmenting the volume of PRR work done internally. We also suggest that financial evaluation be made with the help of the marginal costs method.

We recommend that the Service des travaux publics give the Conseil municipal all necessary information for the award submitted.

We recommend that the Service des travaux publics take the means to ensure its compliance with articles in the Charter of the Ville relative to management of credits for which it is responsible, and also at all times ensuring completeness of accounted costs.

We recommend that the Service des travaux publics install cost control procedures for subprojects which will ensure an adequate follow-up on real credits and expenditures.

We recommend that whenever possible the Service des travaux publics carry out only those works for which it has requested credits, and that it document any modification in such a manner as to always be able to reconcile what was foreseen with what was done.

We recommend that the Service des travaux publics inform the Conseil municipal about modifications it makes to the contracts. So as not to overburden the process however, it should report after the fact rather than demand approval before the work.”

The General Auditor’s 2006 annual report also drew attention to problems relating to cost estimates for work.

In 2006, as we mentioned earlier in this report, the Internal Auditor raised similar issues. Among other things, he recommended:

[Translation]

- “a) that an estimator be appointed to develop and maintain databases on the evolution of unit prices for the various components (labour, material, transportation, etc.);*
- b) that bidders be required to certify the absence of collusion in the drafting of any bid for each call for tenders (see Appendix 1);*
- c) that the City avoid to issue calls for tenders in the summer when services tend to be more expensive;*
- d) that the City implement a system to prevent and detect collusion, price fixing, fraud, conflict of interest and unlawful acts;*
- e) that a consultation and coordination mechanism between municipalities (Montréal, Laval, Longueuil, Québec and Sherbrooke, for example) be developed and enhanced in order to coordinate the detection of collusion and price fixing for material and the provision of similar services;*
- f) that a system be implemented to protect the more confidential information on bids;*
- g) that an alternative be explored for carrying out work on force account;*

- h) *that appropriate documentation be filed in the central folder for each project. The documentation should include the requirement definition, specifications and technical plans, preliminary and detailed estimates as well as their underlying assumptions, the call for tenders, the list of bids received and examined, along with the results of their evaluation and the letter recommending the awarding of the contract, status reports, worksite reports, and the certificates and payment;*
- i) *that stakeholders be accountable for their work.”*

However, several of these recommendations have yet to be implemented without any truly valid justification.

Absence of the Direction du contentieux

The Direction du contentieux was not continuously involved throughout all of the activities related to the *IBI and Network Optimization* project. The reasons given to explain the non-involvement of the Direction du contentieux were, at best, vague. This lack of participation does not promote good governance practices, especially for a project of this scope.

III.22.2 Findings

Finding 56

The *Cities and Towns Act* and the rules governing the municipal sector are quite clear. However, ethics and transparency are always at the centre stage, especially when it comes to PPPs. In this area, transparency poses a certain number of problems, particularly when public administrations seek to enter into agreements with companies from the private sector. It is not unusual for private partners to require that public administrations include contractual clauses limiting access to certain information, especially corporate information.⁹⁰ For instance, some 100 passages were expunged from the contract mentioned in the footnote prior to it being tabled in the National Assembly.⁹¹

Even though elected officials, senior administrators, managers and municipal employees generally abide by the laws, rules and practices in force, there are serious challenges in municipal management and the management of paramunicipal agencies or affiliated companies where

⁹⁰ Canadian Press. “Le contrat de l’autoroute 25 gardé secret.”
<http://www.lesaffaires.com/article/article/2/gouvernement/2007-11-21/467484/le-contrat-de-laut...>

⁹¹ Ibid.

stakeholders must be extremely careful to ensure that there are no conflicts of interest or collusion whatsoever among the parties involved.

We observed that some meetings between the City and interested partners were planned. Given the limited investigative powers of the General Auditor, we cannot draw conclusions about these events, but we have forwarded this information to the Sûreté du Québec. Many people believe that if these events are substantiated, they could sully the City's reputation. We can only encourage the City and its administrators to remain prudent in order to avoid any conflict of interest or even the appearance thereof.

Finding 57

There is no shared, documented vision of a control function that would play a very important role in supervising major projects and following up on the implementation of the auditors' recommendations. We also found that several recommendations made by the General Auditor in 1997 and by the Internal Auditor in 2007 have not been implemented or have been ignored.

Control, whether preventive or supervisory, is a key management function. Guidelines, standards, laws, forms, access rights, estimates, budgets are monitoring and control mechanisms that aim primarily at optimizing the resources required to complete a mandate or a project. These essential tools ensure that choices have been made in the best interest of the organization, while avoiding errors.

There are also post-action control mechanisms such as audits, accountability reports and financial statements. These mechanisms are useful for evaluating performance and making any necessary adjustments. In light of the documents and information gathered by virtue of our mandate, we find that preventive or supervisory control mechanisms are lacking. Adjustments to the City's control structure are essential.

As we will recommend later, one avenue for improvement would be the creation of a dedicated control team. To accomplish its mission, this administrative unit would have to be completely independent from other City departments and agencies by reporting directly to the City's executive committee. The initial mandate of this unit, which we will call the controller's office, would be to advise City departments and agencies. When needed, this office would conduct risk assessments, efficiency and effectiveness studies, internal control evaluations as well as expertise and support studies for City departments and agencies. It would also carry out any monitoring and control

activities that it would deem appropriate, thus providing elected officials, senior personnel and management with all the information needed at their respective levels of responsibility to help them make sound decisions. This watchdog role would provide, in our opinion, added quality to the management of City affairs. Another potential solution could be the creation of a construction company dedicated to the execution of certain infrastructure work within the City. This company could be a paramunicipal agency, a semi-public company or a municipal department. The discussion lies not in its structure but rather in how it could act as a counterweight to the vagaries and imperfections of the market. As a result, the City would benefit from better knowledge of costs and innovative techniques. In keeping with the General Auditor's 1997 recommendation, the Internal Auditor suggested in 2006 to increase the portion of work executed on force account. Some cities are working together within specific entities to meet certain needs that are normally fulfilled by private companies. The Montréal nursery is a prime example of this collaboration.

As we will recommend later, we believe that a task force should be created to review control and governance mechanisms at the City of Montréal. The courses of action mentioned in the previous paragraph could serve as points of discussion. In any case, we strongly believe that the lack of any shared vision concerning governance and control mechanisms in the awarding and management of contracts constitutes a major problem for the City of Montréal.

Finding 58

We observed that the Direction du contentieux was not sufficiently involved in the entire process covering the BPR contract, the call for qualification and the call for proposals. This situation worries us greatly, especially given the scope of the entire project. Moreover, in examining the position of the Direction du contentieux at the City, we find that there is a functional conflict. The fact that both the Direction du contentieux and the Direction de l'approvisionnement answer to the Service des affaires corporatives constitutes, in our view, an independence issue as the Direction du contentieux should have a certain right of review over the work performed by the Direction de l'approvisionnement. By having these two departments under the authority of the Service des affaires corporatives, it becomes difficult to ensure total independence and intellectual freedom.

IV. CONCLUSIONS AND GENERAL RECOMMENDATIONS

IV.1 CONCLUSIONS

Our general conclusions concerning all three sections of our mandate are presented below.

Section 1: Determining whether the recommended solution for implementing the IBI and Network Optimization project reasonably meets the needs of the City and optimizes cost-effectiveness.

- Starting in 2002, the studies requested by the City determined that the implementation of Phase 2 (network optimization) should not be a priority.
- The project to install meters in the residential portion, put forth by some studies, was shelved following a cost-benefit analysis. In our opinion, this decision was completely justified.
- The cost-benefit analyses conducted until now do not make it possible to conclusively justify the investments required to complete the network optimization component.
- Prior to the spring 2006 change in direction, we understand that the initial project objective was to measure and invoice water consumption in all IBIs on City territory. Actual water consumption reviews were planned only for a later stage. In our opinion, this initial objective was justified within the existing context.
- The network optimization phase was not part of BPR's initial mandate. This firm treated this component as a supplementary task that was to be completed *[Translation]* "following the implementation of the IBI consumption measurement system and implementation of a data management system." However, this phase became an integral part of its mandate and, in our opinion, constituted a radical shift in direction without the benefit of a full analysis of the situation, alternatives and costs involved.
- Overall, it is our opinion that the network optimization phase, as initiated, does not correspond to the City's priorities under its *Water program*. As for the IBI phase, we find it justifiable as it aligns with the needs identified by the City for the installation of water meters in IBIs and the implementation of a rate structure.

- However, the “off-balance sheet” approach recommended during the initial call for proposals with a view towards outsourcing most aspects of the project (management, work, financing and so forth) led to a plan that did not comply with generally accepted accounting principles and would present several legal and financial problems.
- The costs and other possible impacts of this approach were not studied when it was proposed.
- Interestingly, several stakeholders disclosed their disinclination towards the proposed “off-balance sheet” financial approach for several reasons, including its perceived feasibility even before the initial call for proposals was issued.
- It is our opinion that the changes made to the call-for-proposals process raises questions about the thoroughness with which the specifications mentioned in the original call for proposals were analyzed.
- In the light of these changes, we also believe that the City should have launched a new call-for-qualification process and subsequent call for tenders, thus enabling businesses interested in submitting their candidacy to compete on a more level playing field.
- However, we are concerned by the fact that the process continued in spite of the repeated warnings of several direct project stakeholders that were voiced between the call-for-proposals issue date and the submission of proposals.
- On another matter, it is our opinion that the decision to divide the mega-contract into several smaller contracts would have provided the City with substantial economic advantages.
- Overall, considering the premises upon which the project was based as originally stated in the call for proposals and the shortcomings that came to light in its analysis, we can only conclude that this project is not the best cost-effective solution for the City.

Section 2: Determining whether the contract was awarded to GÉNleau in compliance with the guidelines, by-laws and laws in force while respecting recognized procurement principles (transparency, competition, equity, ethics and the achievement of best value).

- The decision not to issue separate calls for qualification and calls for proposals for each of the project's components limited the number of bidders and the potential offering, at least from an economic standpoint.
- By issuing a call for proposals rather than a call for tenders, it was difficult to compare the various candidates' proposals on elements other than pricing as the proposed solutions could vary widely.
- We believe that, in this case, the financing issue placed a severe restraint on competition at the qualification stage.
- As a result, it is our opinion that removing the financing requirement from the project at the call-for-proposals stage constitutes a major breach in the very validity of the process.
- This major shift leads us to believe that it would have been better to restart the qualification process in order to encourage greater competition in the ensuing call for proposals.
- In addition, no thorough analysis was ever performed regarding the various possible performance scenarios, and the option to have City employees or another contractor execute a portion of the work was never considered.
- Lastly, a major portion of the work carried out by BPR involved the network optimization phase, which was not part of its initial mandate. The rationale behind the contract extension granted to BPR as well as the over-the-counter contract was not adequately disclosed to elected officials in the documentation they received when asked to approve these additions.

Section 3: Determining whether the contract was awarded to GÉNleau at a fair price and, overall, whether it was cost-effective for Montréal taxpayers.

- Pressure modulation is a preventive measure that should be used strategically to delay any pipe replacement investments over a more or less limited timeframe. However, the real value-added solution remains pipe replacement or rehabilitation.
- Before deciding to systematically implement real-time network management throughout the island of Montréal and enter into a 25-year agreement with a contractor, this facet should have

been addressed in the work plan (PW) for renewal of the aqueduct and sewer network . This approach would have made it possible to prioritize the more urgent areas while supporting this project through pertinent economic analyses.

- As for the contract itself, we conclude that the GÉNleau contract was not awarded in a fashion that would ensure the best possible price for the City.
- There are significant differences between the benchmark proposal and the bids received from GÉNleau and Catania-SM. Although the total cost quoted by GÉNleau (\$356 million) is close to the cost provided by BPR (\$349 million), the cost distribution varies widely between the various project components.
- The significant variances in the cost of certain project components between the benchmark proposal and the GÉNleau and Catania-SM bids lead us to believe that the main contract should have been divided into several distinct sub-projects in order to get the best price for each individual element.
- Furthermore, this approach would have made it possible to consider the option of carrying out certain sub-projects with City resources, i.e. on force account, rather than relying exclusively on an external contractor.
- We also want to highlight that different fees for a variety of elements were added to the \$356 million contract awarded to GÉNleau. When taking into account these additional fees, the total cost of the contract adds up to more than \$600 million, before any contingency.
- Furthermore, at the end of the meters' expected 15-year life span, the City will have to initiate a project to replace all of its meters, which will most certainly be expensive.
- In the same vein, the fact that the meter reading system (Phase 1) and SCADA (Phase 2) will not become City property at the end of the project puts the City in an awkward situation in that it will have to incur significant expenses in order to replace these two systems after 15 and 25 years, respectively.

IV.2 RECOMMENDATIONS

Our general recommendations resulting from these conclusions are as follows:

- In view of the conclusions of this report, we believe that all possible avenues concerning the continuation of the *IBI and Network Optimization* project in its present form should be examined, including the cancellation of the contract awarded to GÉNIEau.
- In light of our conclusions dealing with the *IBI and Network Optimization* project, we recommend that city council appoint a committee comprised of independent experts in order to examine the entire management process of the two other *Water program* projects, namely the *Planning for the work to be done on the aqueduct and sewer networks and for the assessment of their condition (PW)* and *Ensuring plants' compliance with standards (PCS)*.
- The call-for-qualification documentation, like that of the calls for tenders, should be reviewed by an external member from the department involved in order to ensure, among others, that the procedures set out comply with the legislation, rules and practices in force. This approach would also allow the City to enable a greater number of candidates to offer their services at the best quality-price ratio.
- We recommend that the City strengthen its internal expertise with respect to the development and management of complex projects to counterbalance the approaches and solutions offered by external firms.
- We recommend the creation of a task force in order to review the control and governance mechanisms at the City of Montréal. This task force should comprise members of the executive committee, members of the City's management and, possibly, internal auditors. There are a number of issues to be examined, including the rules pertaining to calls for tenders, the control of major projects, insourcing and outsourcing guidelines as well as the cost of procuring materials.
- We recommend that the Direction du contentieux report directly to the Director General in order to ensure the segregation of its duties from those of other City departments, particularly the Direction de l'approvisionnement.

- We learned that neither the Direction du contentieux nor the Service des finances was involved at the beginning of the IBI project. Subsequently, they intervened on an ad hoc basis. For large-scale contracts, we recommend that a representative from the Direction du contentieux and the Service des finances be integrated into the project team as advisors from the start of the project right until the awarding of the contract. These individuals would have the task of ensuring that changes to the conditions of the call for tenders that might be made throughout the process do not end up unduly altering the scope of the project initially contemplated.
- With a view to promoting a completely competitive environment, we recommend that calls for tenders for certain major contracts be issued both inside and outside Québec, without penalizing companies that have never done business with the City.
- With reference to large-scale projects, we recommend that an assessment of different performance scenarios be mandatory. This assessment should, in particular, deal with the possibility of splitting up the project into several sub-projects and proceeding with separate calls for tenders for each of the sub-projects in order to promote competition, so as to enable the City to obtain a better price.
- Moreover, for projects of significant importance, we recommend the establishment of an internal performance scenario by City employees that would be used for comparison with the bids received or the benchmark proposal, where applicable. This approach would, in particular, allow for clear identification of the expected advantages from recourse to an external contractor.
- We also recommend that a systematic and thorough evaluation of a project's expected benefits be carried out before its implementation. The evaluation of such benefits, whether they are monetary or not, is essential for the decision making related to project execution.
- We recommend that the concept of network optimization be reviewed and that consideration be given to delaying it until a later stage. Moreover, we recommend that before proceeding with the work in Phase 2, the most problematic water loss areas for the City be identified as a matter of priority by locating major leaks and rehabilitating the defective pipes. Once the most problematic areas have been identified, it will become possible to use proven techniques to locate leaks and repair them in a concerted manner with the *[Translation] Planning for the work to be done on the aqueduct and sewer networks and for the assessment of their condition (PW)*. Finally, we recommend that the City conduct thorough economic and technical studies of

the advisability of implementing permanent sectorization (Phase 2 – IBI) for continuously detecting leaks and that the City begin to implement pilot projects in a targeted and well-planned manner. The priority, in our view, should be placed on the rehabilitation and reconstruction of the network that constitutes the best value-added solution. At the same time, pressure modulation must be considered and, where necessary, implemented in a manner that is well planned and integrated with the network's rehabilitation, in locations where it is justified and economically viable. Cost-benefit studies must support each decision to do this work.

- During its May 12, 2004 meeting, the City of Montréal's executive committee approved a series of measures linked to the execution of water management projects. Among these measures, the executive committee authorized the City Manager to issue calls for candidacies as part of a qualification process for professional services, as well as calls for tenders linked to the PCS, PW and IBI projects. Subsequently, the executive committee approved the contract proposals for BPR (February 2005) and GÉNIEau (November 2007). However, neither the calls for qualification nor the calls for tenders or proposals that led to these contracts had been previously approved by the executive committee. For the sake of better governance, we recommend that the City of Montréal's executive committee adopt resolutions before calls for tenders are issued in order to approve the nature of the services required and the selection criteria.
- Our work has led us to conclude that the elected officials of city council and those of the agglomeration council were not suitably informed about the status of the IBI project during the period from May 2004 to November 2007. Indeed, certain decision summaries remained silent about aspects that should have been essential for making an enlightened decision. We recommend that decision summaries outline the original budgets, the project description and related costs as well as any changes. In addition, decision summaries should include either a declaration or a declaration slip signed by the lead department confirming to other City departments and elected officials that all of the pertinent and essential information for decision making has been considered and that administrative rules, contractual obligations and laws have been respected. In this same context and for purposes of judging the progress of a project, we recommend that those in charge report to the executive committee on any major changes in the directions or parameters of a project and obtain the appropriate authorizations.
- We have seen that the requirements indicated in a call for qualification or call for tenders can have a major market-limiting effect. Thus, the inclusion of the water meter and network optimization phases in the same call for qualification, coupled with strict financial and

performance requirements, effectively limited competition. We recommend that calls for tenders be split up when warranted so that that the work targeted by these calls for tenders can be shared among several companies, thereby promoting greater competition.

- The inclusion in the evaluation grid of the requirement related to familiarity with the Montréal area had the direct consequence of restricting free-market practices by unnecessarily penalizing companies that had never worked with the City of Montréal. We recommend that the City promote healthy competition and, for example, avoid penalizing companies that have never previously dealt with the City.
- The City should require, as a standard procedure, that each bidder sign a form certifying the absence of collusion in the preparation of its submission. Of particular note, the Direction de l'approvisionnement should systematically verify, for each of the bidders on a call for tenders, whether or not they have received any legal sanctions or fines imposed for conspiracy to control market share and unduly reduce competition. A policy aimed at removing these companies from calls for tenders for a given period following such sanctions should be put into place. It is our understanding that a policy of this type has been in effect since August 2009.
- We recommend that the City add a standard clause to its calls for qualification and proposals so that the period restricting communications between bidders on the one hand and the City's elected officials, employees and their agents on the other covers the period stretching from the beginning of the call for qualification right up to the awarding of the contract following the call for proposals. Moreover, this type of clause should always be included, no matter what the nature of the call for tenders and for all types of goods and services required (professional fees, work, materials, invitational or public tenders). We also recommend that a standard clause be included in contracts requiring that a company that does business with the City disclose the business relationships it maintains with other individuals or companies, in order to dispel any semblance of potential conflicts of interest.
- We recommend that all individuals involved in any call for tenders or call for qualification, whether they are employed by the City or one of its agents through a service contract, sign a declaration of independence.
- We recommend that the City organize a training course in ethics for elected officials, management, administrators and the staff involved with the procurement, purchasing and contract performance process.

- We recommend that the City take into consideration and apply, where necessary, the recommendations made by the General Auditor in 1997 and those formulated by the Internal Auditor in 2006.
- In May 2006, the IBI project leaders decided to announce to the potential candidates that the call for qualification that was about to be issued for this project would be followed by one or several calls for proposals, as opposed to calls for tenders. Should the City wish to proceed to a call for proposals, this choice should be the object of a duly prepared file justifying it and explaining the reasons behind this approach in order to permit stakeholders to make an enlightened decision. The same applies to contracts with a performance obligation.
- In May 2007, BPR would have received comments from various candidates to the effect that setting up and completing financing for the project under study was becoming a headache for them. Moreover, during individual meetings held with the candidates, the latter once again expressed the difficulty they were having in obtaining financing from financial institutions. Given the problems raised by the candidates and the important changes to the call for qualification that resulted from them, we recommend that the City call on experts to validate choices related to complex infrastructure projects.
- Even though the contract awarded to BPR in 2005 anticipated the analysis of various performance scenarios, these analyses and their findings did not form part of the deliverables supplied by this firm. We recommend that an assessment of various performance scenarios be carried out as part of large-scale projects. Such an assessment should, in particular, address the possibility of the complete or partial performance of work on force account, the City purchasing its own materials and various financial aspects.
- We recommend that the City take full advantage of its technical staff's expertise in the field of water management – which has been recognized for several decades – thereby ensuring its project management leadership while promoting knowledge transfer and the development of the next generation of staff experts.
- We recommend reviewing governance practices in relation to project management. The following avenues of reflection could be pursued:
 1. Implementing and fine-tuning governance and project management structures before launching major projects.

2. Ensuring there are capable in-house resources for project management and review mechanisms to facilitate their integration, support, training and mobility.
3. Appointing a controller who will report directly to the executive committee and whose principal mission will be to advise City departments and organizations, mainly about major projects. This person's mandate will be to conduct risk analyses and effectiveness and efficiency studies, as well as to evaluate internal control mechanisms.
4. Creating a team specializing in flat costs within the Direction de l'approvisionnement, and having this team participate in the development of benchmark proposals and the evaluation of bids during major calls for tenders.
5. Changing the procedure for issuing tenders in order to specify the prices that the City intends to pay for the materials needed for the planned work.

It is clear to us that water, in addition to being a vital, non-renewable resource, is a significant public health issue. Given the enormous costs involved in maintaining the entire water distribution network, the City has obviously allowed its infrastructure to deteriorate over a lengthy time. We might query the political will to deal with this situation, which is too often regulated by electoral imperatives. There is no doubt that the City will have to work twice as hard in the future to prevent transferring the cost of earlier savings to future generations. In addition, we believe that it is only right for consumers, whoever they are, to pay for the water they use. Charging for consumption is an inescapable fact. However, given the enormous costs that lie ahead, the City will have to make better choices and ask itself whether it has the economic means to fulfil its ambitions.