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A Review of the Vancouver Convention Centre Expansion Project:

Governance and Risk Management

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The Honourable Bill Barisoff
Speaker of the Legislative Assembly
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Dear Sir:

I have the honour to transmit herewith to the Legislative Assembly of British Columbia my 2007/2008 Report 3: A Review of the Vancouver Convention Centre Expansion Project: Governance and Risk Management.

Errol S. Price, CA
Acting Auditor General

Victoria, British Columbia
October 2007

copy: Mr. E. George MacMinn, Q.C.
Clerk of the Legislative Assembly

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Acting Auditor General's Comments

Errol S. Price, CA
Acting Auditor General

Earlier this year, my predecessor was asked by the Vancouver Convention Centre Expansion Project Ltd. (VCCEP) board Chair to undertake a review of the governance and risk management of the project, a significant expansion of Vancouver's existing exhibition and convention centre. The review was to include an assessment of the ongoing cost increases. He agreed to do so because, although much information about the project is readily available, he felt our independent perspective could add useful insights and provide a more complete picture of the project to add to the public record.

Thoughts of expansion started in earnest in the late 1990's. The initial capital cost estimate for the project announced in 2000 was $495 million. Little happened for several years, then, in early 2003, the provincial government announced that it would undertake the expansion project, using a Crown agency (VCCEP), to have it designed, constructed, commissioned, and owned. The announced capital cost of the expansion was still $495 million.

VCCEP's first approved project budget of $565 million was announced in June 2004. This amount was subsequently revised to $615 million in July 2005. Since then, government has approved three interim budget increases to ensure construction would not be interrupted while it considered a final project budget and schedule. By early 2007, the project was drawing significant public attention because of the changes in the announced schedule and repeated increases in the budget. The current budget, approved by government in July 2007, is $883.2 million.

The detailed report that follows begins with a chronology of the significant events in the evolution of the project. This provides a historical context regarding decisions and matters that predated the creation of VCCEP, and establishes the sequence of key actions by VCCEP management, its board, and government (the shareholder). It then highlights the specific challenges VCCEP has faced, including: developing accurate cost estimates, and implementing an effective project management and governance framework.

I have made one recommendation to VCCEP which is focused on risks that will continue through the remainder of the project. In addition, I have provided government with three observations intended to help it manage future major capital projects.

Acting Auditor General's Comments

Our key findings and conclusions are summarized below.

Initial funding commitments were not based on detailed project budgets

The casual observer could be forgiven in thinking that the original budget for the convention centre was $495 million, since that is what was initially announced when VCCEP was created in 2003. However, that initial amount and a subsequently announced increase to $535 million were not based on detailed designs or a detailed costing. Rather, they were based on approved funding levels from the provincial and federal governments and Tourism Vancouver.

In May 2003, VCCEP, using its costing specialists, estimated that the cost to build the facility could be at least $637 million (based on preliminary design concepts). VCCEP then prepared updated cost estimates as the design changed. The first cost-based budget was $565 million, which was approved by Treasury Board in June 2004. This budget was based on schematic designs and what were thought at the time to be sufficient contingencies.

Inflationary pressures and scope changes have made cost estimating for the project difficult

When VCCEP was preparing its initial cost-based budget, its costing consultants projected construction market escalation at approximately 4% per year. By 2006, the actual inflation rate was at 11% per year, almost three times the expected rate.

This exposure, combined with a number of changes in scope to the project, some of which were requested by the City of Vancouver, and the fact that construction of the foundation had to start before design was substantially complete, has made it difficult for VCCEP to provide an accurate final budget figure to government. Since 2004, six increases to the budget have been submitted to and approved by government. Although the latest approved budget is for $883.2 million, there is no guarantee that this will be the final cost.

Acting Auditor General's Comments

Having to complete the project within a short time frame led to a procurement strategy that left VCCEP with all significant risks

As far back as 2000, a convention centre task force recommended an expansion of the existing facility. The government agreed to a July 2008 completion date and considered using an expanded convention centre as part of the 2010 Olympic and Paralympic Winter Games (the Games) if Vancouver was selected to host the Games. After Vancouver was selected to host the Games in mid-2003, the intention was to complete the new expanded centre before the Games, to take advantage of the international exposure it would receive. In late 2004, the expanded centre was chosen to house all Games-related press and broadcast activities. This meant that the facility needed to be ready well before the Games to allow for some preliminary use and time to prepare it for those using it during the Games.

This showcasing opportunity, however, had several drawbacks. First, the hard deadline, combined with a year of elapsed time during an unsuccessful attempt at a public-private partnership agreement prior to the formation of VCCEP, meant that VCCEP's choices regarding a procurement approach were somewhat limited. Instead of proceeding with a traditional staged procurement approach such as design-bid-build, VCCEP felt obliged to proceed concurrently with construction of the marine and platform works while design of the building was being completed and retain a private sector construction management company to provide pre-construction services. Second, the procurement approach assumed that VCCEP would be able subsequently to negotiate a stipulated lump-sum contract with the construction management company. None of the early cost estimates reflected any risk premium that would be needed to compensate the construction manager for accepting the transfer of risk that would be the result of a stipulated lump-sum contact. The stipulated lump-sum contract was not completed until the first part of 2007, by which time most of the large contracts had already been let by VCCEP. This has left VCCEP to bear the originally unanticipated cost escalations.

In addition, the risk transfer premium has proven to be significant, resulting in increased fees in excess of $35 million.

Acting Auditor General's Comments

VCCEP used appropriate governance and project management frameworks, but aspects of formal project reporting have been incomplete

We found that VCCEP was appropriately structured in accordance with the provincial government's Crown agency framework. As well, a project management framework and detailed project implementation plan were also prepared by VCCEP to guide it in carrying out the project.

An important mechanism, intended to keep a broader range of stakeholders updated, was the monthly progress reports provided to the VCCEP board and stakeholders by VCCEP's management team. We found, however, that these reports, although quite detailed, lack a few important components. The reports we examined showed only actual commitments to date and forecast costs relative to the approved budget, rather than showing the total estimated costs to complete the project. The status reports also did not provide the readers with a clear understanding of the significant risks, the range of possible outcomes, and the strategies to deal with them. As the inflationary pressures increased and as contingencies were used up without being replenished, the reports painted a rosier picture than was actually the case.

We believe, however, that VCCEP management kept the board generally informed of the risks and options related to the project, at least to the extent that approved budgets would be insufficient to allow the project to be completed as per the agreed scope and timelines. In addition to the formal periodic reports referred to above, VCCEP management provided the board with comprehensive board-only materials such as special reports. Also, since a deputy minister has served on the board almost continuously since the inception of VCCEP in 2003, we believe that the shareholder was kept regularly informed about the status of the project. What was not available, until recently however, to other stakeholders, for the reasons described above, was a reasonably accurate estimate of what the total project costs would be.

Acting Auditor General's Comments

VCCEP faces managing several new risks between now and the end of the project

About $360 million had been actually spent on the project to the end of June 2007. Much of the remainder of the current $883.2 million budget is committed through signed contracts, assigned to a private sector construction management company under a stipulated lump-sum contract, replenished funding for contingencies and reserves, and additional funding for the connector to, and refurbishments for, Canada Place.

Although a stipulated lump-sum contract has now been negotiated, it still does not guarantee that the project will be completed within the latest budget. Several aspects of design remain incomplete, including the enhanced scope of the connector, lobby and plaza, although reserves have been added for this uncertainty.

There are also some risks associated with the schedule, but an incentive bonus for early completion has been added to the stipulated lump-sum contract to encourage substantial completion before March 2009.

In Summary

All major capital projects, whether in the private or public sector, have a number of inherent risks — the convention centre expansion project is no exception. In addition to standard construction risks, this project has been managed during a period of unexpectedly high inflation in the construction market. In addition, VCCEP felt constrained in its procurement options which left the project open to significant unmitigated cost escalation risks.

The cost pressures facing the project have been known to VCCEP and government since 2004 and still exist today, albeit to a lesser extent. The board and the government need to ensure that exemplary management practices and effective public reporting to the completion of the expansion are in place.

Almost two years of work are left before the expansion project will be completed and in use. Although we do not plan to do a follow-up review, we will continue to be the financial statement auditors of VCCEP and therefore will be reporting on its spending through to project completion. Interested readers should go to the VCCEP website (www.vccep.bc.ca/) to obtain ongoing information about the status of the project.

Acting Auditor General's Comments

I wish to thank everyone who cooperated with my Office and assisted us in gathering the information we required. As well, I would like to acknowledge the hard work, professionalism and dedication of my staff in the production of this report.

Errol S. Price, CA
Acting Auditor General

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Purpose and Scope of the Review

The purpose of our review was to assess whether:

- the project's overall governance framework allowed for timely, informed decision-making;
- the project risks are being managed (in particular those related to escalating costs, including identifying the main reasons for the increases); and
- the project management framework in place follows generally accepted project management and procurement practices and is being applied.

The criteria we used for this review are based on generally accepted practices in public-sector governance and project management.

Our review was carried out in accordance with Canadian generally accepted auditing standards for review engagements, and accordingly involved such tests and other procedures as we considered necessary in the circumstances, including reviews of various documents and interviews with those involved in project governance and management, as well as analytical procedures and discussion.

The findings and conclusions included in this report are based on information collected and assessed between February and July 2007.

In keeping with the scope of our review, we did not review—and therefore provide no assurance on—the appropriateness of the project selected or the likelihood that it will achieve the objectives described in the business case. We also cannot provide any assurance on what the final cost of the project might be, as this is future-oriented information that is subject to uncertainty.

Detailed Report

1 Significant events in the evolution of the Vancouver Convention Centre Expansion Project

The Vancouver Convention Centre Expansion Project (VCCEP) now underway is the product of a process that began two decades ago. The key events leading up to this point and those planned for the remainder of the project are discussed below and in Exhibit 3 on pages 32 and 33. The remaining sections of the report discuss the implications of these events.

An initial attempt at expansion, post-Expo 86, was terminated

The existing Vancouver Convention and Exhibition Centre is located on the harbour in downtown Vancouver. Built for Expo 86, a world transportation exposition held in Vancouver during 1986, the centre served as the Canada Pavilion. After Expo 86 ended, the facility was refurbished, reopening in late 1987 as a combined convention and exhibition centre and cruise ship facility. The centre is leased by the government from the federal government and is administered through the BC Pavilion Corporation, a Crown corporation accountable to the Minister of Tourism, Sport and the Arts.

Since opening, the Vancouver Convention and Exhibition Centre has experienced steady growth in event bookings and has been operating at or near capacity for several years. Even by the mid-1990s, concerns were being expressed that, with the existing facility running at capacity, opportunities for additional economic benefits were being lost to other convention centres around the world.

Several replacement and expansion options have been studied over the years. Notable among these was an expansion to the east of the existing facility (the "Portside Project"), an option that was cancelled in October 1999 following an unsuccessful attempt to obtain a viable procurement approach and contractor. Although the British Columbia government still believed there was a strong business case for expansion, it chose not to proceed without a more viable alternative.

A second expansion proposal was made in 2000 and later approved

Soon after the first proposal was cancelled, a Convention Expansion Centre Task Force was struck. It was made up of representatives of the BC Pavilion Corporation, Tourism Vancouver, the Vancouver Board of Trade, and the Vancouver Hotel Association.

Its mandate included:

- confirming that expansion was warranted;
- evaluating the best site and design for expansion (meaning one that was worthy of Vancouver's waterfront, would enhance the Canada Place icon, and would be highly functional);
- evaluating the planned expansion and confirming building costs; and
- compiling the evaluation results and presenting them in a business plan.

In the business plan it released in October 2000, the task force recommended that the existing facility be expanded to the west, with part of the structure being built over the water. The proposal was to add 38,925 square metres (419,000 square feet) to the existing 12,449 square metres (134,000 square feet) of exhibition space for a total of 51,374 square metres (553,000 square feet), more than quadrupling the space available. Provincial and federal officials received the plan outline during development so that they could provide comment.

The task force also strongly recommended that the proposed expansion proceed promptly, both to protect the existing conference and exhibition business and related economic benefits and to take advantage of strong market demand to create additional net economic benefits.

In the course of its work, the task force hired a private-sector specialist to develop a capital cost estimate and technical evaluation of the expansion. The specialist identified foundation and site preparation issues with the proposed design and location, noting that these choices made the costs and schedule more difficult to assess accurately. A separate evaluation of these concerns was therefore carried out and incorporated into the business plan.

The capital cost estimate, which was not based on a detailed design, presented in the business plan was $495 million (2000 dollars), an amount projected to cover the cost to:

- construct new facilities to the west of the Canada Place;
- renovate the existing facilities at Canada Place; and
- link the two sites to form an integrated convention and exhibition centre.

The plan hinged on tri-partite funding from the provincial and federal governments and Tourism Vancouver.

A public-private partnership procurement strategy attempted was cancelled in final negotiations

New public-sector capital can be procured in numerous ways, but these generally fall into two main categories. One includes using traditional approaches, where government specifies what needs to be built and funds its construction by the private sector. The other includes using alternative procurement methods, such as leasing, a joint venture or—now becoming more commonplace in British Columbia—a public-private partnership (often referred to as a P3).

A P3 arrangement is a very specialized procurement approach. It is a long-term contract between a government and a private-sector entity, in which the entity takes responsibility for some combination of ownership, design, construction, financing, operation and maintenance of the public-use facility. The exact nature of the arrangement can vary. The roles, responsibilities and acceptance of risks depend on the unique characteristics of the facility and the needs and objectives of each party. Because of their complexity, this alternative procurement method tends to take longer to set up than traditional procurement approaches.

The initial procurement strategy for the convention centre expansion was to have the facility constructed and operated as a P3. Procurement began in early 2002 and, through a competitive selection process, the government chose a preferred P3 proponent. Intensive negotiations then began, aimed at finalizing the terms of the contract. However, in the fall of 2002, the government announced it was unable to reach an agreement with the proponent and the P3 negotiations were cancelled.

Detailed Report

Conceptual drawing of the new Convention Centre

Source: VCCEP

New funding arrangements were announced and VCCEP was formed

In December 2002, the Province, the Government of Canada and Tourism Vancouver announced plans to expand the convention centre using traditional procurement methods rather than a P3 model. The new approach involved contracting with private-sector firms to design, construct and commission the facility.

The announced capital cost of the expansion was still $495 million. However, an additional $40 million was added to fund upgrades to the existing convention facility and physically connect it with the new one. Tourism Vancouver committed $90 million (from hotel tax revenue) and the provincial and federal governments each committed $222.5 million, for total committed funding of $535 million.

Important to note is that the federal and Tourism Vancouver contributions were fixed. Any additional costs for the project were to be approved and funded by the government.

Detailed Report

In February 2003, Vancouver Convention Centre Expansion Project Ltd. (VCCEP) was incorporated, with the Province (currently represented by the Minister of Tourism, Sport and the Arts) as the sole shareholder. This special-purpose, Crown agency's mandate was to design, construct, commission and own the convention centre expansion and manage the project scope, schedule and budget.

Operation and maintenance of the new convention centre was to be taken over by another organization, not specified at the time.

The mandate of VCCEP, assigned by government, is to:

- design, construct, commission and own an expansion to the existing Vancouver Convention and Exhibition Centre, a pedestrian and service link between the new and existing facilities, and to undertake an upgrade of facilities within Canada Place; and
- manage effectively the project's scope, budget, schedule and related activities to ensure timely delivery of the project on time and on budget.

The objectives of the project include:

- creating an exciting and commercially successful expanded convention centre that complements and enhances the existing convention facilities at Canada Place;
- building a signature feature on Vancouver's waterfront;
- creating an integrated convention facility; and
- creating an attractive link between the city core and the waterfront.

Source: VCCEP website, www.vccep.bc.ca/

After Vancouver was selected to host the 2010 Olympic and Paralympic Winter Games, the expanded convention centre was chosen for the International Broadcast Centre

As early as 2001, the government considered the expansion of the Vancouver Convention and Exhibition Centre to tie in with the bid to host the 2010 Olympic and Paralympic Winter Games (the Games).

During 2002, the government prepared a bid to host the Games (delivering it to the International Olympic Committee in January 2003). In the bid documents, Richmond, BC, was designated as the site for the International Broadcast Centre, with a convention facility to be built at a cost of $15 million. The bid documents also identified as another option using the expanded Vancouver Convention and Exhibition Centre (VCEC) if it was ready in time for the Games. This was considered to be a useful option if available, but not essential.

When the expanded Vancouver Convention and Exhibition Centre Project was approved in early 2003, the facility was not designated as the International Broadcast Centre, but the deadline for completion remained the fall of 2008 to ensure the facility was showcased on the world stage during the Games.

On July 2, 2003, Vancouver was awarded the Games. Just over a year later (on September 15, 2004) the expanded VCEC was confirmed as the venue for the International Broadcast Centre. Since VCEC had already been designated as the location of the main press centre, relocating the International Broadcast Centre there meant that all media personnel would be together in one place.

This relocation decision was made to reduce pressure on the Games capital budget and — more importantly, as the government announced — to showcase Vancouver during the Games. Thus, it became essential to complete the expansion before the start of the Games (February 2010), and preferably early enough to allow time for prior use of the facility and for fitting it out for its special purpose during the Games.

A procurement method and construction manager were selected

Constructing large complexes involves both a creative process of designing to meet client needs and a technical process of implementing a detailed design. These processes deal with the types of uncertainties inherent in any undertaking where not all the details are known at the outset (the so called "known unknowns").

Overseeing the design and building processes requires careful management of three inter-related components: scope (what is being designed and built), schedule (when the project is to be completed) and cost (what the owner is willing to pay).

Change in any one of these elements will affect one or both of the others. For example, if scope is increased, such as building a new room or enhancing the quality of materials, more costs will likely be incurred. This may also lead to more design work or materials procurement, which may delay completion.

Management of VCCEP looked at a number of procurement options for the project. These were narrowed down to five options for construction that best suited the requirements of the project.

The five procurement options VCCEP evaluated for the conference centre expansion project:

1. *A lump-sum tender after design is completed.* This is also known as a design-bid-build (DBB) method. This approach, commonly used by industry and governments, has been the government's preferred approach for procuring capital assets. It involves first putting out for tender the completion of a set of project drawings, reviewing the drawings, and then awarding the build phase of the project to the lowest qualifying bidder, who agrees to a stipulated or fixed price to complete the work.
2. *Two or more lump-sum tenders:* in this case, one design-and-build contract for the marine works (including the ground floor slab) and one for the balance of the facility or "base building."
3. *A single construction management contract for the total scope of the work,* using either a fee for service or a guaranteed maximum price. In this approach, management of all the tendering and construction is in the hands of one firm. Whereas in the DBB method, there is a single contractor to deal with all the trades and sub-trades involved, in this case VCCEP would carry out the tendering, then leave it to the contractor (as its agent) to manage the contracts and the construction process. This approach is sometimes used when a project must be fast-tracked.
4. *Two construction management contracts:* one for the marine works (foundations and marine sub-structures) and one for the balance of the project (above ground).
5. *One or more lump-sum tenders for the marine works, combined with construction management and a guaranteed maximum price* for the balance of the building.

The procurement option approved by VCCEP's board on November 13, 2003, was based on option 5 (see above). One of the intents of this procurement strategy was to shorten the construction schedule by allowing construction of the sub-structure (pilings and foundations) to begin while the project team worked concurrently on the design of the above-water structure. This was partly to ensure an early start, given VCCEP's firm deadline for the project completion. The plan was to:

- issue separate lump-sum contracts for the marine works, structural steel and curtain walls (windows);
- retain a firm to act as a construction manager to provide pre-construction services, (such as advice on alternative designs, development of design documents, construction sequencing and logistics, and costing of certain design elements) and to oversee the marine work; and
- negotiate a guaranteed maximum price contract with the construction manager, after design development was complete, for the balance of the project.

The construction manager would oversee the construction site on behalf of VCCEP for a negotiated fee. VCCEP would sign all the contracts with the sub-trades and carry the significant project risks (for example, future scope changes). The construction manager would also have the option to negotiate a guaranteed maximum price contract once design development had sufficiently progressed.

After a competitive selection process, the construction management at-fee contract was awarded to PCL Constructors Westcoast Inc. (PCL).

A detailed, fully costed project budget was developed and approved

Through 2003 and the spring of 2004, VCCEP established the project scope and schedule and completed the conceptual and schematic designs. It hired management and support staff for the project and acquired office space near the construction site.

A comprehensive three-volume project implementation plan was prepared. This standard baseline document is important because it "provides the project team with a common understanding of the fundamental goals and objectives of the project, its scope, schedule and budget and the strategies adopted to meet those goals."

As part of this planning process, a number of detailed project cost estimates were prepared. These were based on the estimated inputs required to construct the project: the volumes and unit costs of materials, and the quantity and cost of labour for each defined work package. The cost estimates also included contingency and reserve allowances for risks and uncertainties that are common in construction projects.

In June 2004, the Minister of Small Business and Economic Development obtained Treasury Board approval for VCCEP's capital project budget of $565 million and for proceeding with construction. This was the first approved budget that was based on a completed preliminary design and the estimated costs of the detailed inputs. Previous budgets had been approved based on less precise estimates.

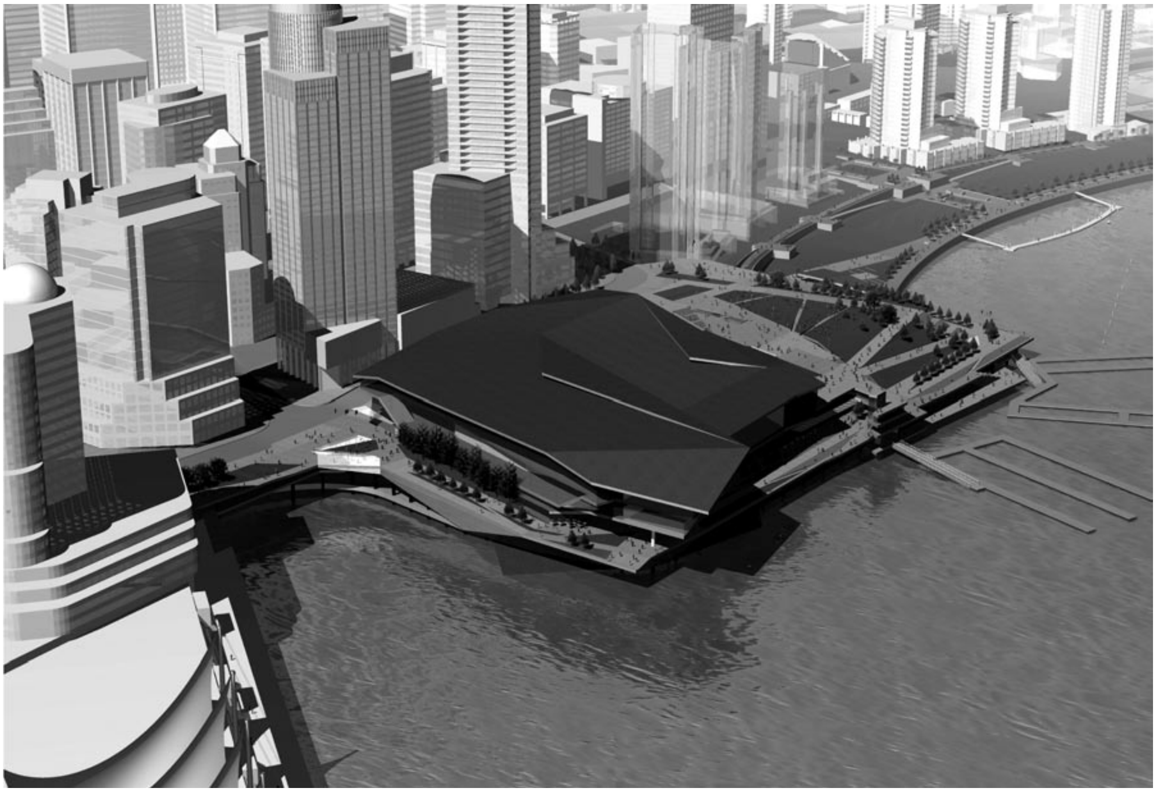
Unforeseen construction inflation and scope changes have increased project costs and delayed completion

To obtain City of Vancouver development permits, VCCEP had to make a number of design changes. These changes resulted from reviews by the city's Urban Design Panel and from workshops and other forms of public input conducted from mid-2003 to early 2005.

The City of Vancouver approved VCCEP's development application in June 2005, but with a number of conditions.

The revised design included expanded public amenities, a redesign of the roof structure to make it more prominent, and the incorporation of retail space on the exterior of the building. These design and scope changes added approximately $33 million to the estimated cost of the project.

Conceptual drawing of the "living roof"



Source: VCCEP

Not long after construction began in November 2004, technical difficulties were encountered in setting the pilings that were part of the foundation for the facility. This resulted not only in further delays to the project, but also in more costs—about $12 million.

In July 2005, Treasury Board approved a revised project budget of $615 million for changes to meet City of Vancouver design requirements ($33 million), and to cover the cost escalation related to the foundation problems and rising steel and concrete prices ($17 million).

Between that date and early 2006, several significant events related to the project occurred. Negotiations had been ongoing between VCCEP and PCL, the construction manager, to convert the terms of the contract from at-fee (which left VCCEP assuming most of the risks) to fixed-price (which would involve transferring most risk to PCL for a fee). As part of its due diligence in pricing the proposed fixed-price contract, PCL issued tenders for a number of significant contracts to firm up sub-trade contracts. When these tenders were received, bid prices were significantly above the amounts included in the $615 million approved budget. Negotiations ended in the spring of 2006 when the parties could not agree on an acceptable price for the transfer of risks. This left VCCEP carrying all of the cost escalation risks on the remaining elements to be tendered.

The rate of construction inflation was over 10% per year. The budget had been developed based on less than half that rate. Continued increases were expected before the completion of the project.

VCCEP's board Chair and project director briefed government on these issues early in 2006. The direction VCCEP received was to continue seeking ways of reducing costs and to use its contingencies and allowances to cover the immediate cost pressures while developing a new budget to submit.

As cost pressures developed through the rest of 2006, government brought in outside expertise to provide advice on the project status and costs. The experts verified that costs to complete the project had increased significantly and the scheduled completion needed to be extended.

From fall 2006 into early 2007, VCCEP and PCL renewed negotiations on a fixed-price type contract. VCCEP's intention was to work out an arrangement that would result in a "final, not to exceed" budget — a means of controlling the cost escalation — and would ensure all other objectives were met around project scope and schedule.

While a new budget was considered, interim funding approvals were provided

Meanwhile, in February 2007, Treasury Board approved an interim budget lift of $8.1 million, bringing the total approved budget to $623.1 million. This was needed to allow VCCEP to continue committing contracts while it worked with the Ministry of Tourism, Sport and the Arts to finalize a revised project schedule and budget for a new submission to Treasury Board.

A month later, in March 2007, Treasury Board approved a second interim budget lift of $60 million, for a new total of $683.1 million. This increase reflected more contracts that VCCEP had needed to enter into where construction inflation on labour and materials was significantly higher than originally allowed for. As in the previous Treasury Board submission, this allowed VCCEP to continue committing contracts while an updated schedule and budget were prepared.

In early April 2007, Treasury Board approved a third interim budget lift of $86 million. This brought the total approved budget to $769.1 million. VCCEP's new board Chair was also given authority to enter into a stipulated lump-sum contract with PCL to complete the construction of the convention centre expansion. A letter of intent to PCL to do this was issued by VCCEP on April 10, 2007, and a contract was signed in mid-May, 2007.

Although the contract adds more certainty to the cost of construction in some areas, there are still risks to be actively managed by VCCEP, especially for any further scope changes initiated by VCCEP, and changes required to integrate with the existing convention centre. We discuss these risks in more detail later in the report.

The latest budget, $883.2 million, was approved in early July 2007

In early July 2007, VCCEP's new board Chair presented Treasury Board with recommendations for a final project budget and government approved a new project budget of $883.2 million. This amount includes an amount to cover the risk transfer built into the stipulated lump-sum contract with PCL, enhanced scope of the new facility, more funding for additional upgrades to Canada Place, and additional construction-related contingencies and reserves.

2 Developing reliable cost estimates and project budgets has been a challenge

As would be expected with any large project, VCCEP put processes in place to manage for expected and unexpected events. However, several aspects of the project have been difficult to manage effectively, including rapidly rising inflation, and scope changes. We discuss these matters below. A table listing the various budget increases approved throughout the project to date is provided in Appendix A.

Conditions in the Vancouver construction market have been likened to a "perfect storm"

Common practice in developing cost estimates for large, multi-year capital projects is to estimate how materials and labour prices are likely to increase during construction. So VCCEP management engaged a firm that specializes in providing project cost estimates which factor in expected changes to unit costs of materials and labour as part of the overall expected budget.

General inflation in Vancouver (as measured by the Consumer Price Index) has averaged about 2% per year since 2000. However, because this figure is a blend of price changes over a cross-section of representative goods and services, it is not a reliable indicator of construction inflation.

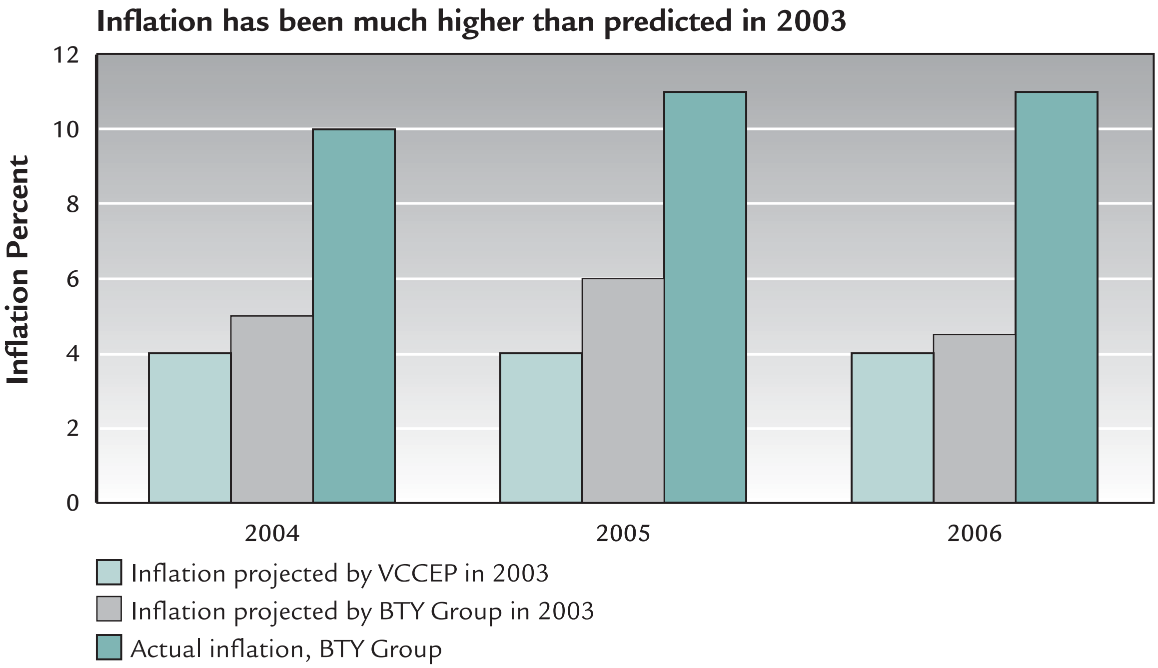
In fact, construction cost inflation in the Vancouver area over the last five years has far outpaced general inflation. Even more significant is that construction inflation has exceeded what pricing experts predicted. As shown in Exhibit 1, actual inflation was almost double — especially in 2004 — what had been anticipated. When VCCEP was preparing its initial project cost estimates early in 2003, its costing consultants projected construction market escalation at approximately 5% per year. By 2005, actual inflation was at 11% per year, almost three times the expected rate.

The cumulative construction inflation in the five years from 2002 to 2006 was 47%, averaging 9% per year. We were told by many interviewees that although there had been indications in 2003 that the inflation rate would be increasing, the actual escalation rate caught everyone in the industry by surprise.

Detailed Report

Exhibit 1:

Lower Mainland construction inflation as projected in 2003, compared with actual inflation for 2004, 2005 and 2006.



Source: Compiled by OAGBC from VCCEP and BTY Group's Market Intelligence Newsletters

A number of factors, we were told, have contributed to this inflation.

- Prices for many basic construction materials have increased significantly because of the increased world-wide demand. These materials include steel, drywall, concrete and glass—all substantial inputs to the convention centre expansion project.
- Nationally, skilled construction workers are in limited supply. General construction contractors are also competing with a strong natural resource sector, such as oil and gas projects in northern British Columbia and Alberta.
- In British Columbia, the dollar value of planned and actual large non-residential construction leading up to 2010 and the Games has doubled in the last few years and is now over $12 billion. In addition to the convention centre expansion, other committed

construction projects include the Canada Line, the Sea-to-Sky Highway improvements, numerous Games venues, and a number of commercial and institutional projects. In addition, the Lower Mainland has experienced strong and sustained growth in residential construction activity. This further adds to the inflationary pressure in an environment where the skilled labour supply is relatively fixed in the short term.

All of these pressures created a difficult situation for VCCEP, which had already committed to a much lower inflation estimate in its earlier approved budgets. Because much of the inflation risk was held by VCCEP (because of the procurement method it used), there was little it could have done to avoid the rapidly rising costs.

Initial funding commitments were not based on detailed project estimates

Appropriate caveats should always be attached to public-sector capital project announcements. Initial figures are often preliminary, not based on detailed designs or calculations of cost build-up, and therefore often less than final figures by a considerable amount. In some cases, initial approved cost estimates act as an approval-in-principle, subject to further reviews and analysis by funders. The first figures in the public domain are often the ones seen as being the budget—and, thus, may become the figures for which those responsible are held accountable.

For example, the original $495 million estimated cost was the amount presented in the October 2000 business plan of the Vancouver Convention Centre Expansion Task Force. This figure was never explicitly approved by Treasury Board as a project budget for VCCEP. What was approved was only in the context of negotiations for a public-private partnership (P3) procurement, subject to $495 million in funding (that is, with a provincial contribution of up to $202.5 million, a federal contribution of approximately $202.5 million and a tourism industry commitment of $90 million).

Similarly, the $535 million preliminary cost estimate (discussed earlier in this report) was not based on VCCEP's estimate of the actual costs to construct or on the final scope or detailed design drawings. It was only the agreed level of funding commitment at one point in time: the result of topping up the $495 million with an additional $20 million from the federal government for construction of a connector between the existing and new facility, and $20 million from the provincial government for upgrades to the existing facility.

In January 2004, VCCEP was directed by Treasury Board to continue its planning work using a project capital cost of $535 million. VCCEP was also to examine potential cost saving and revenue-generating opportunities that could reduce the net cost of the project, and to submit a final project proposal and budget to Treasury Board for approval in the spring of 2004.

The first fully costed project budget for the expansion of the convention centre was $565 million

Although government's proposed P3 procurement process was not successful, VCCEP did realize a benefit from it. The preferred P3 proponent had prepared a detailed design for its submission, including cost details. After ending negotiations, the government purchased architectural, engineering and other transferable knowledge from the P3 proponent so that VCCEP would have a baseline from which to develop an estimate for the traditional procurement method it adopted.

In May 2003, VCCEP, using its costing specialists, estimated that the cost to build the P3-designed facility was $637 million. From this design and cost information base, VCCEP then prepared updated cost estimates as the design changed. These were based on a detailed costing of the design requirements and, consistent with common practice, included reserves and allowances to reflect the inherent cost uncertainty.

The result of this process was VCCEP's first detailed (cost-based) budget of $565 million, which was approved by Treasury Board in June 2004. Estimated cost reductions from the earlier estimate of $637 million were achieved through a number of changes, including reconfiguring the location of the building to reduce the amount of building over water and using "value engineering" (an organized approach to providing the necessary functions at the lowest cost) exercises to identify areas where costs could be reduced.

Scope changes and inflation led to a higher budget

In November 2004, construction of the foundation began. In January 2005, Treasury Board received a request for a $33 million increase to the project budget to reflect the redesign of part of the building and surrounding public amenities as required by the City of Vancouver.

The budget increase request was not approved. Instead, VCCEP was directed to obtain a commitment from the City of Vancouver that the changes would result in municipal approval of the project.

On June 20, 2005, the City of Vancouver did grant VCCEP "complete development" approval, subject to a list of "prior to" conditions before the City would issue a development permit. VCCEP's board believed that these conditions could be met without further significant additional cost.

Construction site in June 2005

Source: VCCEP

When the Minister of Tourism, Sport and the Arts returned to Treasury Board in July 2005 seeking approval for the $33 million scope increase, an additional $27 million funding increase was also requested. This included $12 million for unforeseen costs related to the marine works (sub-structure foundations), and $15 million for industry-wide construction cost escalation that had not been anticipated when the initial detailed budget was prepared in early 2004.

The total funding request for the project (including the fixed contributions from the federal government and Tourism Vancouver) was therefore $625 million. Government approved revised funding totalling $615 million.

By early 2006, ongoing high inflation meant the $615 million project budget was insufficient

Shortly after the approval of the funding for $615 million, VCCEP and the construction manager, PCL Constructors Westcoast Inc. (PCL), began the first negotiation to convert from an at-fee contract to a fixed-price contract—as had been envisioned in the initial procurement strategy.

PCL had tendered a number of the large contracts, such as those for mechanical and electrical systems, drywall and acoustic ceilings, and the living roof system. However, the costs in the tenders returned were significantly more than anticipated in the budget: on average, 25% over the amounts budgeted in July 2005. Although some cost escalation had been factored into the project budget, by early 2006 it was clear to VCCEP management and the board that existing contingencies were not sufficient to stay within the project budget. The only options open to VCCEP were to: reduce the scope of the project to save costs; implement a new procurement strategy that would freeze this cost escalation; or obtain additional funding.

The Minister of Tourism, Sport and the Arts and the Chair of Treasury Board were informed of the situation. The direction they provided to VCCEP in April 2006 was to:

- continue managing within the approved $615 million budget while seeking potential cost savings that would not involve major scope reductions;

- draw down contingencies and reserves in the interim in order to continue committing contracts for the project; and
- return later in the fiscal year with a submission to address updated project cost estimates and cash-flow requirements, ongoing operating costs for the operating entity, and options for allocating cash received upfront from revenue-generating opportunities.

Further unmitigated inflation and scope changes pushed the expected project costs to the $800 million range by early 2007

Some examples of unplanned cost increases:

- $20 million for foundations (as a result of cost escalation and scope changes, including habitat skirt and perimeter beams)
- $37 million for the structure (as a result of cost escalation and scope changes related to steel fabrication and erecting)
- $20 million for mechanical and electrical (as a result of cost escalation)
- $35 million for cost escalation in other building areas such as roof, drywall and doors
- $9 million for on-site heating and air-conditioning systems (a revised analysis of costs over the life of the building concluded that using on-site systems was a better option than was originally planned, using facilities from an adjacent building)

Because VCCEP was unable to secure a fixed-price contract with PCL through 2005 and 2006, major contracts were signed at much higher rates than planned in order to keep the project on schedule. These increased costs (see sidebar)—adding up to $121 million, more than 20% over the June 2004 budget of $565 million—had to be absorbed by VCCEP.

In the latter part of 2006, VCCEP worked to update its construction forecasts and develop an updated project budget for submission to Treasury Board. By this time, most of the larger main contracts had been signed with the construction industry.

In February 2007, VCCEP estimated the final project cost at $789 million. Important to note is that VCCEP's estimate was based on successfully entering into a stipulated lump-sum contract with PCL, because a second attempt at entering into such a contract was in progress. This was submitted to the Minister of Tourism, Sport and the Arts for inclusion in a submission to Treasury Board. The Minister also received an advisor's estimate that included additional contingency allowances and a projected cost to be $823 million.

In March 2007, Treasury Board considered the proposed project budgets submitted by the Minister and deferred its decision. A review team, led by the current Chair of VCCEP, was set up to assess all aspects of the project schedule and budget, with direction to report back within 90 days.

The government has approved additional funding

In May 2007, VCCEP signed a contract with PCL for a stipulated lump sum to complete its work.

In July 2007, after a presentation by the review team, Cabinet approved a new budget of $883.2 million, part of which is a provincial contribution totalling $660.7 million of direct and indirect funding (see Exhibit 2 and 2.1). This latest budget includes the expected cost of the stipulated lump-sum contract with PCL, additional scope changes, revised estimates of reserves and contingencies to complete the project, and additional funding for making upgrades to Canada Place (over the $20 million originally budgeted).

Exhibit 2:

Project budget breakdown as at July 2007, reconciled to funding sources

Budget Items	Amount $ millions	Funding Sources	Amount $ millions
PCL lump-sum agreement	537.5	Federal government contributions:	
Construction outside of PCL agreement	104.9	Expansion facility	202.5
Professional fees, permits, DFO, oversight and opening costs	69.0	Harbour concourse connector	20.0
Land	38.6	Subtotal	222.5
Interior upgrades and construction related reserves and contingencies	36.0	Provincial government contributions:	
Insurance	13.6	Direct	540.7
Furniture, fixtures and equipment	11.8	Indirect:	
Subtotal expansion facility	811.4	Future revenues of expansion facility	30.0
Canada Place upgrades	36.2	Increase in Hotel Tax levy to be collected through Tourism Vancouver	90.0
Harbour concourse connector, lobby, plaza and contingency	35.6	Total indirect sources	120.0
		Total provincial government contributions	660.7
Total Project Budget	**883.2**	**Total Funding Sources**	**883.2**

Source: VCCEP

Detailed Report

Exhibit 2.1

Details of increase in the project budget between April and July 2007 ($ millions)

Budget Items	Expansion Facility	Connector to Canada Place	Canada Place Upgrades	Totals
April 2007 approved budget	729.1	20.0	20.0	769.1
Increases in approved budget: — Scope changes — Cost escalations[1]	 18.6 60.7	 18.6	 16.2	 53.4 60.7
Total approved budget increases	79.3	18.6	16.2	114.1
July 2007 approved budget	**808.4**	**38.6**	**36.2**	**883.2**

[1] Included in this amount is $40.4 million for additional contract reserves and contingency

Source: VCCEP

3 VCCEP established a sound project management framework, but some practices have varied from industry norms

The Vancouver Convention Centre Expansion Project is a large multi-year construction project that will cost hundreds of millions of dollars, so adoption of an appropriate framework to manage the project was important, and a prerequisite to success. We expected to find in place a project management framework that would provide the project team with the processes and practices it needed to ensure all the key requirements for a successful project were considered.

We found that, although VCCEP is using a detailed methodology suitable for managing large capital projects, some of the processes it is using are not consistent with good practice.

VCCEP is guided by government's Capital Asset Management Framework and established industry practice

Government has a Capital Asset Management Framework, designed to provide public-sector organizations with general direction on all aspects of managing capital projects. This includes governance and oversight, planning, procurement, budgeting and cost management, reporting and monitoring, and accounting.

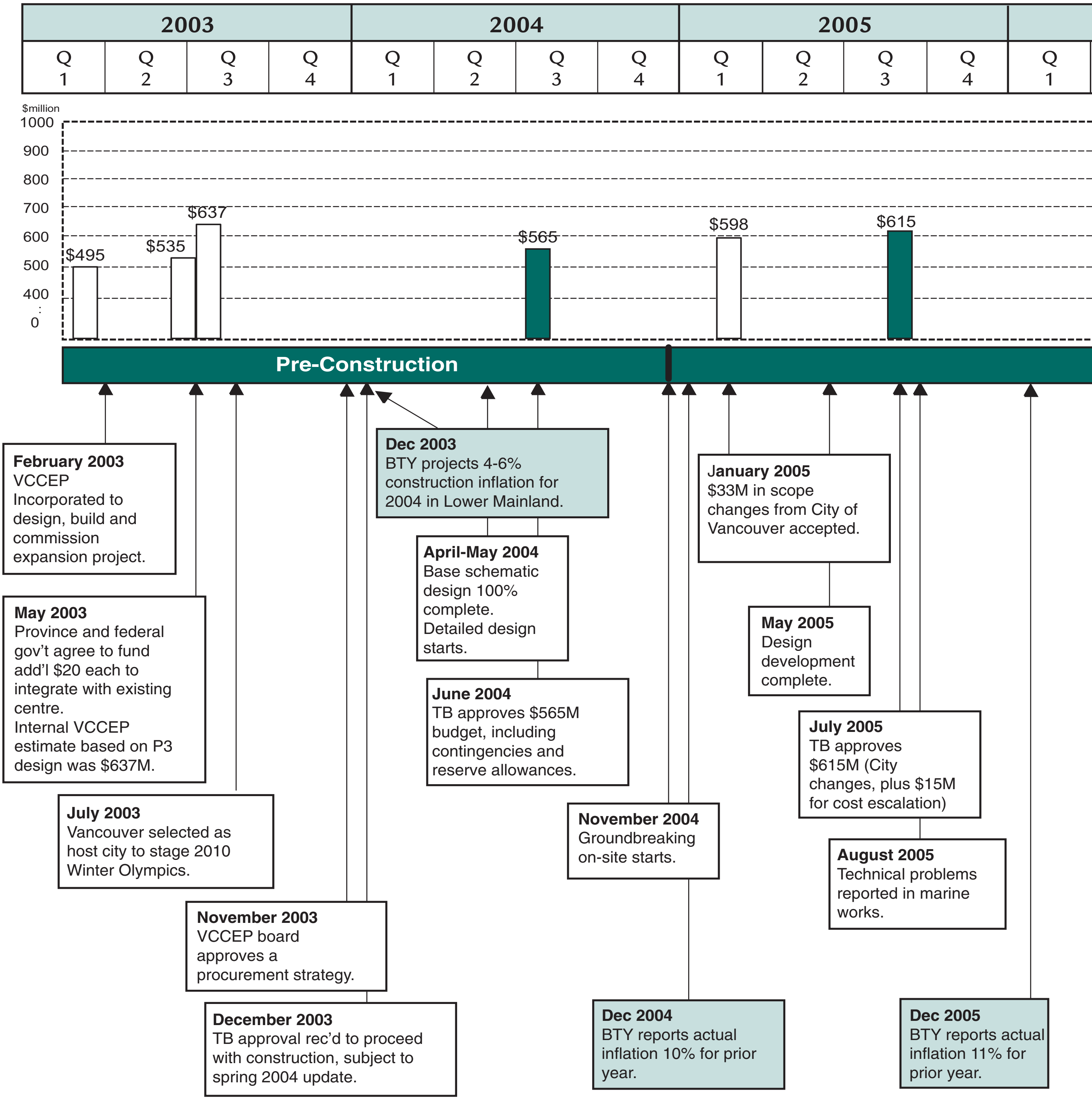
The Capital Asset Management Framework is not intended, however, to provide detailed guidance for managing major capital construction projects. Therefore, we looked for additional sources of guidance.

The Project Management Institute (PMI) is a well-recognized international organization that disseminates project management knowledge, trends and practices. It publishes a practice framework and standards for general project management, as well as for specialized areas such as construction and procurement. We found that VCCEP's framework is in line with PMI guidance for managing and controlling large projects.

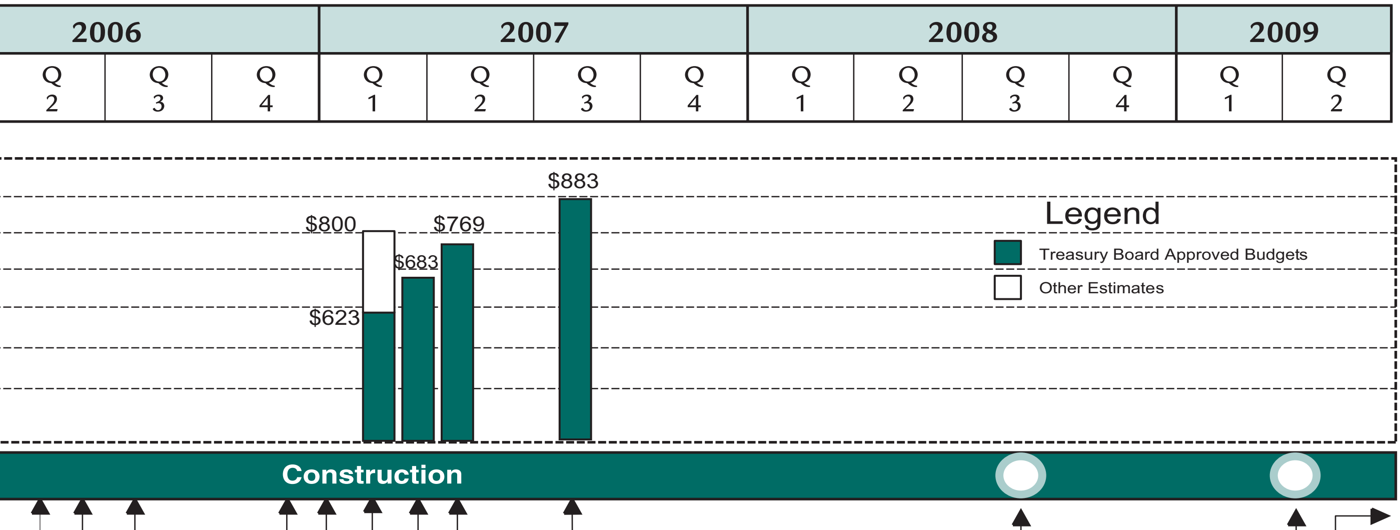
Detailed Report

Exhibit 3

Timeline of significant events and dates in the Vancouver Convention Centre Expansion Project



Detailed Report



February 2006
Large (Tier 1) contract tenders come in significantly over budget.

March 2006
Contract conversion negotiations with PCL end. "At fee" contract continues.

April May 2006
Pile driving completed. New foundation schedule also impacts steel erection.

October 2006
Contract conversion negotiations resume with PCL.

Dec 2006
BTY reports actual inflation 11% for prior year, expected fall to 6% in 2007.

February 2007
Tourism Service Plan published, indicating $623M cost, with caveat about escalation in the range of $800M.

March 2007
TB approves an additional $60M.

April 2007
TB approves an additional $86M to enter into lump-sum arrangement to complete project. (contract signed in May)

July 2007
TB approves new budget of $883M.

July 2008
Original projected completion date per the 2003 contracting strategy.

March 2009
Substantial completion of new combined facility.

February - March 2010
Vancouver hosts the Winter Olympics. Convention Centre to be used for the International Broadcast Centre.

Summary of Pre-2003 Activity

Late 1990s – Need for expansion studies.
1999 – East site plans cancelled, Task Force created. Releases business plan for west site with preliminary budget of $495 million.
2002 – Public Private partnership procurement considered, subsequently cancelled.
Late 2002 – Conventional procurement process starts. Announced capital cost $495 million, shared between the province, federal government and Tourism Vancouver.

Legend

BTY – The BTY Group (cost and project management consultants)
M – Millions of dollars
PCL – PCL Constructors Westcoast Inc.
P3 – Public Private Partnership
TB – Treasury Board
VCCEP – Vancouver Convention Centre Expansion Project

VCCEP's detailed Project Implementation Plan, which has been released publicly, documents the project definition, implementation strategies, and project controls and procedures. Two iterations of the plan have been prepared. The first, released in June 2004, supported the $565 million approved budget. The second, released in July 2005, reflected the increase in the approved project budget to $615 million. Included in the plan is a detailed description of the project management framework.

Contract management and financial payment processes are operating effectively

Procurement management is an important part of project management. The process initially involves:

- establishing and documenting requirements for goods and services;
- communicating those requirements to the marketplace;
- ensuring qualified suppliers are aware of these opportunities;
- evaluating responses in a fair and rational manner to ensure the lowest cost or best value for money; and
- negotiating and executing contracts.

After that, the process focuses on actively managing contracts to ensure that goods and services are delivered to specifications and that payments are made according to goods received or progress achieved. As well, changes to requirements that are initiated by either the project funder, owner or contractor must be managed effectively.

We found that VCCEP has followed good practices in procurement management. The project team has used competitive tendering and evaluation teams to assess bids. It has also consistently documented the results and maintained adequate controls over contracts issued.

In keeping with common practice for large public-sector capital projects in the province, VCCEP contracted with a fairness commissioner to oversee procurement processes. We reviewed the commissioner's reports and found no significant issues.

As noted above, managing requested changes to contracts is an important area of procurement management. Such requests are common in large construction projects, and are more likely to happen where the exact nature of the specification cannot be fully described or where judgement of the quality of the final performance may be subjective. For example, a contract to purchase a quantity of steel can be straightforward if the quantities and unit prices are known. However, if the contract also involves fabricating the steel on the work site according to a detailed design drawing, then unforeseen events or conditions can arise that may prompt either party to request a change to the original contract terms. The details of these requested changes are often specified in a document called a change order.

Contract managers need to maintain strong discipline over the change order process to prevent confusion and delays that could ultimately affect the whole construction budget. Good management includes identifying potential change orders early in the process, and having effective procedures for management review and timely approval for any accepted changes.

We reviewed VCCEP's policies and procedures for managing contract changes and examined a sample of contracts.
We concluded that VCCEP is following good practices in managing contract changes.

The need to complete the project within a short timeline forced VCCEP to make some unconventional project management decisions

The benefits of an expanded convention and exhibition centre, in the context of a Games bid, were considered by the government back in 2001. Following the decision to proceed with the expansion project in February 2003, and after Vancouver won its bid to host the Games, the facility was designated as the international media centre for the Games. This established a tighter deadline for completing the project that subsequently impacted project planning and decisions.

The purpose of having the convention centre expansion operational before the Games in February 2010 was to showcase the facility and enhance future economic impacts from the Games. The initial project completion date was July 2008. However, this fixed completion date, plus the delays through 2002 during the attempted public-private partnership (P3) procurement process, limited VCCEP's remaining procurement options. It meant that the procurement strategy selected resulted in not much risk transfer to the constructors, and that VCCEP had to concurrently design the facility and begin construction of the foundation, rather than having the start of construction wait until design work was sufficiently complete.

We discuss these issues in more detail in the following two sections.

The procurement method used did not transfer risks

The procurement method selected (construction management at-fee) has meant that the schedule and cost escalation risks have been carried by VCCEP until a fixed-price contract could be negotiated.

Government's preferred approach to traditional capital procurement projects is design-bid-build, where fixed-price construction bids are obtained after design is complete. The main advantages of this approach are:

- better cost certainty and more effective risk-sharing, as the bidders can gain a more accurate idea of the detailed specifications for the project from the detailed design; and
- a fixed price to the funder, as the risks of cost escalations in materials and labour are borne by the contractor.

Another important advantage is that the successful bidders have more incentive to be efficient and timely, since work not done to specifications or not done in a timely way would reduce their profit margins. Further incentives, such as bonuses for early completion, are also sometimes used when a completion date is critical.

A traditional design-bid-build was considered by VCCEP, but this approach would not likely have left enough time to complete the project in readiness for the Games. Thus, after the convention centre was named a venue, the completion date in 2008 became a hard deadline.

VCCEP also considered directly tendering out the construction work. However, it concluded that continuing with PCL Constructors Westcoast Inc. (PCL) for construction management and negotiating a conversion to a fixed-price contract in parallel was the better option. Not only did PCL have considerable knowledge about the project, but the extra time required to conduct a separate, large tendering process in a highly inflationary construction market would have put the project schedule and budget in further jeopardy.

As noted earlier, VCCEP's intention when the construction management contract was tendered was to convert it to a guaranteed maximum price or lump-sum contract once the building design was advanced enough to allow for a reasonable risk transfer to the private sector. The contractor would assume the contracts for the sub-trades and would agree to construct the project by a fixed date for a fixed price. However, because there was no formal written mechanism in the construction management contract to do this, the terms of the conversion were subject to negotiation.

VCCEP has made two separate attempts to convert its contract with PCL. The first attempt, ending in early 2006, was unsuccessful. VCCEP then decided to try reducing uncertainty around costs and schedule by finalizing project design and tendering major contracts before making a second attempt at negotiating an at-risk contract. In late 2006, as part of the cost estimation for a final project budget, VCCEP and PCL re-opened the discussions on converting to an at-risk contract. These negotiations concluded successfully in May 2007 with the signing of a stipulated lump-sum contract for the completion of construction.

When preparing the $615 million budget in early 2005, VCCEP believed the conversion premium would not be significant and could be absorbed within the project contingency. It also had the option of continuing the project without converting to an at-risk contract. No provision was made in any of the budgets (up to and including the $615 million budget) to estimate the premium that would be incurred to convert from an at-fee contract to an at-risk contract. As is now realized, this premium is significant in excess of $35 million.

The concurrent design and construction approach resulted in contracts in which VCCEP retained most of the cost escalation risk

VCCEP was challenged by the fixed timeline and the need to enter into construction contracts before the detailed design was completed. An objective of choosing the construction management method was that it would enable VCCEP to lock in as many construction contracts as possible (as soon as design drawing allowed), before anticipated pre-Games cost escalation set in. By mid-2005, several contracts were in place. However, the concurrent design-and-build approach left some portions of these contracts open to future cost increases.

For example, costs for structural steel escalated considerably. A fixed-price contract was in place to fabricate and erect the steel for the portions of the facility that had been designed (fixed price was based on specified quantities). For the yet-to-be-designed portions of the building, however, the steel budget had to be based on estimated volumes (tons) of steel.

Steel fabrication at the site

Source: VCCEP

VCCEP used the unit price per ton from its fixed-price contract to cost the undesigned portion of the building. The contract, however, allowed for this work to be later re-costed at negotiated market prices—which effectively exposed VCCEP to the ongoing cost escalation in the marketplace. Funds were budgeted within the work packages for potential cost increases, but the amounts were not sufficient to cover the cost increases negotiated by the contractor.

An alternative contracting approach, we suggest, would have been to negotiate specific unit rates for any additional steel in the contract. While this might have resulted in higher upfront costs because the contractor would have required a risk premium for the future steel requirements, it at least could have given more price certainty to this major component of the project.

Adding to the challenges in obtaining more cost certainty were the delays in finalizing the project design and construction drawings. The $565 million budget approved by Treasury Board in June 2004 included a scheduled completion date for design development by April 2005 and completed construction drawings by December 2005. However, the Treasury Board submission requesting approval of a $615 million budget about a year later (in July 2005) noted that design development had been completed in May 2005 and the milestone date for completion of construction drawings was to be extended to May 2006. As already stated, the impact of VCCEP proceeding with tendering processes based on incomplete designs have cost implications, since bidders will include a premium for the additional uncertainty.

Although most of the construction drawings are now complete, some design areas remain unfinished, most notably the combined entranceway connecting the two facilities.

The $615 million budget did not include adequate provision for cost escalation allowances, contingencies and reserves

It is prudent strategy in project management to plan and budget for uncertainties. Virtually every project has risks that, if they materialize, could affect any combination of the scope, schedule or cost of a project. Setting aside extra time in the schedule and uncommitted funds in the budget provides project managers with a degree of flexibility to deal with unexpected situations and still meet a project's objectives.

Reserves are usually established as part of an initial project budget, based on the project team's assessment of inherent risks and prior experience with similar projects. As a building project moves through the first part of its life cycle, from design through the start of construction, funds are allocated from the applicable reserve to cover the related costs of any risks that arise.

We found that VCCEP followed good practice and created specific allowances to cover anticipated additional costs (the "known unknowns") for unfinished designs and to cover cost escalation on untendered contracts. A project contingency was also established to cover unanticipated costs ("unknown unknowns") that might occur during the project. However, we also concluded that VCCEP's $615 million budget did not include adequate provisions for construction escalation allowances and project contingencies.

We acknowledge that some of the cost escalation was the result of market conditions that could not have been predicted when the budget was prepared in early 2005. Thus, although earlier identification of cost escalation would have created a more accurate budget, it would not necessarily have resulted in a lower cost of construction if the scope had been left unchanged.

This lack of understanding of the real costs may even have limited the choices of the sole shareholder, the Ministry of Tourism, Sport and the Arts. Had accurate project contingencies (and the cost of the risk premium for converting to an at-risk contract) been known earlier, cost savings (through, for example, reducing the building size or features) might still have been chosen to manage the cost pressures.

Project cost estimating should be a zero-sum game

Project cost estimating is the process of determining the cost of estimated resources required to complete each activity in the project. It is an ongoing process: several project estimates are completed throughout the life cycle of a project. As a project moves through stages of design refinements—from conceptual design to schematic design to detailed design to completion of construction drawings—the project estimate also becomes more refined. This means that the uncertainty in the estimate decreases as the project moves through its life cycle.

To fully reflect the complete cost for a project, the project budget includes contingencies and allowances. These are amounts, in addition to the estimated construction cost, to fund risks and uncertainties throughout the project's life. Reserves are also established as part of an initial project budget, based on the project team's assessment of the risks inherent in the project. For example, VCCEP set up three construction reserves (one each for a design allowance, escalation allowance and construction contingency), as well as a global project contingency.

As the project moves through its life cycle and certain risks materialize, funds are allocated from the applicable reserve to cover the added cost. In preliminary cost estimates, reserves are often based on a percentage of the total construction or project budget. These reserves should be large enough to cover the uncertainty of future design changes, the potential for construction cost increases and other unknowns.

Ideally, cost estimation is a zero-sum game. If adequate reserves are set up at the beginning of the project, then, as costs increase, the reserves are reduced to cover these specific increases in project costs, but the total project cost should not change.

All project contingencies and reserves were consumed early in the construction program

By early 2006, after the larger individual contracts had been tendered and prices were coming in well over the budgeted amounts—and over all allowances in the budget for known unknowns—it was clear to VCCEP that the $615 million budget was no longer achievable.

When faced with this type of situation, it is normal practice for a project manager to go back to the project funder for direction, since all the objectives of the project can no longer be met. The type of direction received could be to reduce the scope (for example, make the building smaller, use cheaper materials, or reduce some features to lower cost) or to delay the project to allow time for finding a more cost-effective procurement approach.

VCCEP's board Chair and project director informed the Minister of Tourism, Sport and the Arts and the Chair of Treasury Board of the budget cost pressures in February and April 2006 meetings. VCCEP's understanding of the direction from these meetings was to continue to manage within the approved $615 million budget while seeking additional areas for potential cost savings that did not involve major scope reductions.

This was intended to be a short-term measure while VCCEP firmed up the remaining construction forecasts and developed a more cost-certain final project budget to the shareholder. To maintain good project management discipline over the detailed project budget, VCCEP could not commit to contracts that exceeded the amount budgeted. This applied to both individual contract budgets and the total construction budget approved by the shareholder. To keep the project on schedule, VCCEP completed the tendering of the larger contracts and applied the project allowances and contingencies to cover the cost of existing and new contract commitments.

By the end of 2006, all of the contingencies and allowances had been allocated to cover cost escalation, but the project was still about two years away from being completed.

In our view, this practice undermined the project discipline of drawing reserves based on specific project risks (such as design, cost escalation and construction issues) and allocating the reserves over the life of the project. VCCEP acknowledged that this was not best practice, but felt that it met the shareholder's objective of quantifying the budget shortfall before returning with a more cost-certain final project budget.

VCCEP was motivated to find cost savings through value engineering

Value engineering is an approach used to improve projects, processes and products by examining how a thing (project, process or product) functions, seeking to improve its utility and doing so at a lower cost.

VCCEP's project team, operating in an environment of high cost escalation, strove to deliver the basic project at the lowest possible cost to the taxpayer, using value engineering. Early in the project, a comprehensive list of potential cost reductions was drawn up through value engineering exercises. Examples included reducing the quantity and quality of finishes in the exhibition areas and redesigning the structural steel for the roof. Some of these ideas were incorporated into subsequent design, others were not. The list of potential cost reductions evolved as the project proceeded. Some ideas were accepted by the project team, others rejected, and new ideas were added.

This active use of value engineering processes may have given government some assurance that all possible efficiencies were being built into the project, especially when it was known that the approved project budget was going to be exceeded at several points. However, the direction VCCEP received to reduce the construction estimate by using non-specific value engineering was, in effect, a reverse contingency.

The $565 million project budget approved in June 2004 reflected $28 million of non-specified value engineered cost reductions. The next approved project budget of $615 million was based on a fully costed budget of $625 million. The government directed VCCEP to value-engineer an additional $10 million out of the project. Again, specific cost reductions were not identified.

VCCEP's forecasts were only updated to approved funding levels, not to expected total project costs

Regular monitoring of actual and expected project costs is an important part of good project management. This includes tracking actual project costs against the budget and forecasting the expected total costs to complete, based on the best available information.

Forecasting the costs to complete a project involves regularly assessing and updating detailed estimates, based on a number of influencing cost factors. For example, in the VCCEP project, the results of tendered contracts, updated estimates of external market conditions (such as construction escalation and availability of key trades) and construction schedules, as well as known and anticipated draws on contingencies and allowances, all affected the estimated costs to finish the project.

The provision of relevant and reliable information on these forecasted costs by VCCEP management is essential if the VCCEP board and the government are to be able to assess performance and make well-informed project decisions.

We found, however, that the monthly progress reports prepared for the board and other stakeholders did not include all of the likely costs to complete the project. Instead, throughout the project, the reports showed only actual commitments to date and forecast costs against the approved funding level. Although the board was informed of significant cost pressures developing during 2005 and 2006 in other management reports, the total project cost was not adjusted in the progress reports.

4 The governance structure for the project is generally sound, but some reporting has been incomplete

Effective governance is an important element needed for any organization or endeavour to achieve its objectives. We found that the structure put in place to oversee and manage the convention centre expansion project generally met our expectations, although Board membership could have been strengthened and the information flowing to the shareholder about important project issues was not always complete.

VCCEP has generally complied with the government's expectations for the governance and accountability of Crown agencies

Crown agencies have long been used by the government of the day to help achieve government's policy objectives. To ensure these agencies focus on the activities necessary to fulfill their mandates, government has developed a governance and accountability framework. This framework clarifies the respective roles and responsibilities between government, as the shareholder and mandating body, and the governing boards of the Crown agencies, which have policy, stewardship and fiduciary accountabilities to the Province. The framework also lays out the performance and reporting expectations for the agencies.

The framework employed in British Columbia is embodied in several Acts and supplemented by government policy and prescriptive guidance. VCCEP, as a Crown agency, is required to follow the framework.

Shortly after incorporation, the new board of VCCEP put together a governance model that complies with the government's overall framework. VCCEP's governance model has the following features:

- For each Crown agency, a Minister is assigned by Cabinet to be responsible for the agency to the Legislative Assembly. This includes taking responsibility under the Budget Transparency and Accountability Act and the Balanced Budget and Ministerial Accountability Act for such tasks as tabling of service plans and annual reports with the Legislative Assembly. The Minister responsible is also expected to respond to any questions in the

Legislative Assembly. The current Minister responsible for VCCEP is the Minister of Tourism, Sport and the Arts.

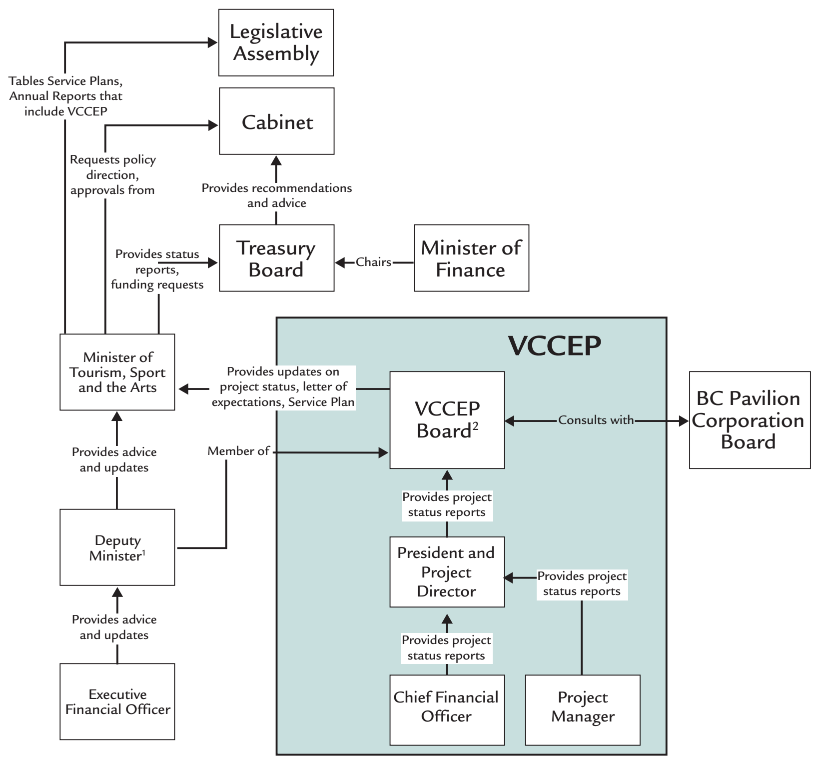
- Enabling legislation or articles of incorporation are needed when agencies are formed. VCCEP was incorporated in February 2003 and has articles of incorporation (but not enabling legislation because of its temporary nature).
- Crown agency boards are required to have Shareholder's Letters of Expectations, signed annually by board Chairs and responsible Ministers. These letters, vetted through Cabinet, lay out: government's broad mandate and direction for Crown agencies; high-level performance expectations; and the resources required to enable the agency to meet those expectations. As required, VCCEP's board Chair has signed an expectation letter with the Minister each year. The latest copy of the letter is posted on VCCEP's website.
- Crown agencies annually prepare service plans and annual reports, as required under the Budget Transparency and Accountability Act. These plans and reports are reviewed and tabled in the Legislative Assembly by the Ministers responsible. As required, VCEEP has produced these annually. Copies are posted on its website.
- In some cases, Crown agencies are also given additional instructions by Ministers responsible, Cabinet or Treasury Board to follow specific regulations, special directives or other broader policy directives. For example, VCCEP (through the Minister responsible) was required to make numerous submissions to Treasury Board related to approved project funding.
- Board members of most Crown agencies are appointed by Ministers responsible, Cabinet or both. In British Columbia, the Board Resourcing and Development Office is responsible for recruiting potential board members (using a competency-based process) and providing candidates for selection. This process was followed for the appointment of all VCCEP board members. However, we believe that from the beginning of the project the Board lacked a member with the appropriate expertise for a project of this specialized nature.

Exhibit 4 provides an overview of the VCCEP governance framework and flow of accountability information. In addition to satisfying the requirements of the shareholder (noted above, and embodied in the Shareholder's Letter of Expectations), VCCEP did the following:

- formed a board committee and sub-committees (for example, to manage auditing) and set their related charters;
- adopted government's financial policy and procedure framework;
- prepared a governance manual;
- committed to complying with the spirit of the Board Resourcing and Development Office's best practice guidance for governance and disclosure;
- filled key management and support staff positions;
- implemented a project reporting regime; and
- confirmed an external auditor.

Exhibit 4:

VCCEP Governance Framework and Flow of Accountability Information to Government



Notes:
1 The current board ceased to have a Deputy Minister since May 2007.
2 The Board was reorganized in July 2007. It is now a joint board, comprised entirely of both VCCEP and BC Pavilion corporation members

VCCEP management has generally kept board members informed about the project's status

Good governance relies on the availability of appropriate and timely information to guide decision-making and performance assessment. We found that VCCEP's board receives monthly project status reports from senior management. These reports include an executive summary and a status update for each sub-project, however, as previously pointed out, they did not identify the expected costs to complete the project. Copies are distributed to various stakeholders, including the Minister responsible and Treasury Board staff.

In addition to these standardized status reports, the board has also received ad hoc reports on a variety of matters. These reports have been used to inform members of cost pressures and budget implications, and the status of particular issues, or to help the board members make decisions (for example, related to procurement strategies).

VCCEP has kept the government informed when changes to the project budget have needed government approval

As discussed earlier, VCCEP is funded by three parties: the federal government, Tourism Vancouver and the Province. Because the contribution of the first two partners cannot be altered, VCCEP has had to look to the government for the pre-approval of all increases in the overall project budget.

Each time the approved budget has been re-established, the Minister responsible has had to make a formal submission to Treasury Board. Treasury Board has approved most requests to date, sometimes with additional conditions or requests for information.

The mandate and governance of VCCEP has unique aspects in relation to other Crown agencies

All Crown agencies, including VCCEP, are set up for specific purposes and to meet particular objectives. VCCEP is unique in a number of ways compared with other Crown agencies in British Columbia. For example, it has no enabling legislation (being created instead under the Business Corporations Act).

Agencies that have their own legislation can interpret their mandate to some extent. VCCEP must rely more on the Letter of Expectations it signed with the responsible Minister, as well as direction from government, both for guidance on the project's scope, budget and schedule and in developing its service plan.

Most Crown agencies are set up for an indefinite period to serve a particular need for society in the context of instruments of government policy. VCCEP, however, was set up to be a special-purpose vehicle to complete a specific set of objectives. This means that its method of reporting also needs to be different from that used by agencies with an ongoing mandate. Monitoring must focus on the objectives for the organization, not just on the three-year reporting horizon of most other Crown agencies. Since VCCEP's mandate is to deliver a single project in government's long-term capital plan, we would expect the monitoring and reporting to be on both short-term and long-term targets.

Shareholder representation on VCCEP's board is also different compared with that of other Crown agencies. A deputy minister was a VCCEP board member from the agency's inception, in February 2003, until May 2006 and then from September 2006 to April 2007. This is somewhat unusual for a Crown agency, since the board is already responsible and accountable to the minister responsible (as articulated in its service plan and Letter of Expectations). An outcome of this arrangement, however, is that the minister responsible can have direct and timely access — through the reporting relationship of the deputy minister — to board discussions and decisions and to all governance and project-related material.

VCCEP consulted with BC Pavilion Corporation on design and future facility operational issues because no future operator was assigned by the government

It is important for a project manager to consult with the owner's representatives responsible for operating the constructed asset, to ensure that it will meet their needs. A commercial building like the convention centre, if not well-designed and functional, will not realize its economic potential.

VCCEP sought clarification on several occasions from government, since it was concerned that the operator had not been identified. Although BC Pavilion Corporation (PAVCO) was not formally declared to be the operator of the new facility, VCCEP assumed it would take over the operations. Based on that assumption, VCCEP took a number of steps to try to ensure that the design of the new facility would meet BC Pavilion Corporation's needs. It:

- set up and held joint board meetings with PAVCO;
- consulted with PAVCO on some significant design decisions, such as reducing the size of some meeting rooms, interior finishes and eliminating the planned theatre; and
- had PAVCO approve several significant contracts that covered both the existing and expanded facility, such as kitchen equipment and telecommunications agreements.

In addition, VCCEP engaged a consultant with experience operating major convention facilities to further guide it in addressing design considerations that would have operational impacts.

In April 2007, the government reorganized the boards of BC Pavilion Corporation and VCCEP to create common board representation. Both agencies now have the same board members, although each organization remains a separate legal entity.

VCCEP has not provided stakeholders with enough information about estimated costs to complete the project

VCCEP's board and key stakeholders such as the Ministry of Tourism, Sport and the Arts and the Ministry of Finance have been receiving monthly project status reports from VCCEP senior management since early in the project. These reports include an executive summary, project schedule status, financial results to date against the approved budget, information on existing and new contracts, and summaries of other project issues (those related to environment, safety and revenue generation).

The monthly progress reports forecast only total project costs equal to the approved project budget, not total expected costs. For example, when it became known that the $615 million approved budget was no longer achievable, the reports continued to show a forecasted total project cost of $615 million rather than provide forecasted costs to completion that reflected the known cost escalations.

During 2006, VCCEP management knew the expected final project costs would exceed the approved $615 million budget. VCCEP's board and government (through the Deputy Minister's appointment to the board) was informed of these cost escalations through regular internal board briefings, on budget and contingency pressures in excess of the approved budget.

In our opinion, however, the known impact of these cost pressures should also have been reflected in the monthly progress reports that were also distributed to key stakeholders such as the other funding partners, the Minister responsible and Treasury Board staff. Instead, these reports represented an overly optimistic view of the cost pressures.

We recommend VCCEP ensure that monthly progress reports to key stakeholders include estimated costs to complete the project, rather than forecasts that only go to the approved project budget. They should also include details about the assumptions underlying such estimates, the status of significant risk factors being actively managed, and a range of cost estimates if assumptions were to vary from plan.

5 Looking forward

At this point in the project, design and approvals are nearing completion and most contracts have been tendered. This should, we believe, start leading to greater cost certainty.

Progress to date – July 2007

Source: VCCEP

Obviously, however, estimates of future costs are built on assumptions about future events, and the degree of uncertainty associated with these assumptions is a matter of judgement. We therefore cannot provide assurance about whether the current cost estimates approved by Cabinet will be sufficient to complete the project.

We can only offer the following observations regarding some of the assumptions underlying the latest project budget.

Signing a lump-sum contract does not free VCCEP from all risk

A stipulated lump-sum contract with PCL Constructors Westcoast Inc. (PCL) has been signed and all existing construction contracts have been assigned to PCL. The contract extends the project's completion date to March 15, 2009, but also includes a bonus for earlier completion. The contract should provide greater price certainty (although not a price guarantee), but this certainty comes through paying a significant risk premium to the contractor.

The move to a stipulated lump-sum contract will require VCCEP to re-focus its project management practices. Under the construction management contract, VCCEP had to develop and implement cost-effective procurement and cost control strategies, while PCL provided the on-site construction coordination and supported VCCEP in implementing its project management strategies.

With the stipulated lump-sum contract, many of VCCEP's contract management responsibilities have been transferred to PCL. This means that VCCEP now needs to focus on managing the inherent risks associated with this type of contract. For example, an at-risk contractor may seek to pass the cost impacts of any scope changes on to the project owner. In addition, a bonus for early completion may give the contractor an incentive to claim delays outside of those anticipated in the contract and therefore to extend the contractual completion date. In July 2007, VCCEP restructured its project management team and processes to reflect this new focus.

Achieving better outcomes on future major capital construction projects will require government's attention

As with any project, there are lessons to be learned and shared. In that spirit, we also offer several observations for government to achieve better outcomes on future major capital construction projects:

1. Wherever possible, major capital projects should be sufficiently designed before construction contracts are tendered, to allow the effective use of contracts that transfer appropriate cost and schedule risk (for example, lump-sum or guaranteed maximum price contracts).

2. When circumstances (such as the fixed completion date for VCCEP) require the use of procurement strategies that do not transfer significant risks, project managers and central agencies of government should ensure contingencies and allowances are adequately funded, monitored on a regular basis and adjusted as necessary.
3. Government should ensure that at least one of the appointed Board members has independent expertise specifically related to the project being undertaken, so that the Board can effectively carry out its oversight role.

Response from Vancouver Convention Centre Expansion Project Ltd.

Vancouver Convention Centre Expansion Project Ltd. (VCCEP) is pleased to provide herewith its formal response to the Office of the Auditor General's Report entitled "A Review of the Vancouver Convention Centre Expansion Project: Governance and Risk Management".

General Response

VCCEP wishes to thank the Office of the Auditor General of British Columbia for accepting the request of its former Board of Directors to undertake this review in addition to its engagement as VCCEP's financial statement auditors (wherein it has undertaken quarterly financial statement reviews and annual audits) over the duration of the Project. Completion of this review by the Office's team at a time of acknowledged heavy workload is appreciated.

The current Board of VCCEP accepts the Auditor General's recommendation respecting reporting of forecast costs to completion to all stakeholders. VCCEP has taken the steps necessary to ensure that its monthly progress reports to its stakeholders, as well as to its shareholder, include details regarding variances from plan that may arise (and mitigative actions being implemented).

The Auditor General's report does not, however, make a clear distinction between the actions and oversight of the previous Chair and Board (which commissioned the OAG's review) and the new Chair and Board appointed on April 19, 2007.

The report also does not note that, following a request by the Provincial Cabinet, a review of the Vancouver Convention Centre Expansion Project was undertaken by David Podmore in February and March 2007 (with the assistance of Roy Patzer and Henry Wakabayashi — two individuals with extensive large scale construction management experience) and several significant changes have been made between April 2007 and the present time.

Response from VCCEP

Most notably, several actions were taken following Mr. Podmore's review including:

- *appointment of Mr. Podmore as Chair of both the VCCEP and PavCo Boards replacing the previous chairs of the separate Boards;*
- *restructuring of the VCCEP and PavCo Boards to provide common membership and strengthen the expertise represented on the Boards, especially with respect to construction management, construction contracts, sales, marketing, and the hospitality industry;*
- *replacement of the previous VCCEP President and Project Director by David Podmore who is expected to maintain this additional role through to project completion;*
- *designation of two additional "owners' representatives" — Roy Patzer and Henry Wakabayashi who, working in conjunction with VCCEP's Project Manager David Walker and its President and Chair — will direct, monitor, and oversee construction activities, project budget and schedules to completion;*
- *reorganization and rationalization of the project management approach and team including relocation of this team to the construction site - all to provide more direct communication and timely response to construction issues and to challenging project requirements;*
- *reorganization of the project design team to:*
  - — *follow a more traditional approach with a designated 'prime consultant' responsible for direction of the design team;*
  - — *ensure more direct communication amongst the design team, general contractor, sub-contractors, related trades and operator; and*
  - — *accelerate design completion and improve design coordination;*
- *negotiation of a Stipulated Lump Sum Price contract with PCL Constructors Westcoast Inc. including a detailed project schedule with milestone achievement dates and early completion incentives;*
- *approval of a final project budget, scope and schedule which provides the basis for daily, weekly and monthly review of*

performance, regular cost reviews and cost-to-complete against budget reports;

- *planned integration of the VCCEP and VCEC (PavCo) Boards to ensure more effective communication between the builder and the operator;*
- *successful recruitment of a new PavCo CEO to lead an amalgamated organization. The new CEO brings significant convention centre operations and marketing expertise including extensive international convention sales and marketing experience. The new CEO will commence employment January 1, 2008 roughly coinciding with the planned timing for amalgamation of the two corporate entities.*
- *Provision of input and expertise by the newly recruited CEO that will provide valuable guidance in the final finishing, fit up, commissioning and pre-opening stages of the project.*

These and several other changes have had a significant, positive impact on the project. Construction pace has accelerated dramatically since April 2007. We are confident the project will be completed on or before March 15, 2009 and within the final project budget approval by Treasury Board in July 2007.

Response to the Specific Recommendation Directed Towards VCCEP

With regard to the specific Recommendation in the Report, VCCEP has the following comments.

Recommendation

VCCEP should ensure that monthly project reports to key stakeholders include estimated costs to complete the Project, rather than forecasts that only go to the approved Project Budget. They should also include details about the assumptions underlying such estimates, the status of significant risk factors being actively managed, and a range of cost estimates if assumptions were to vary from plan.

Response

At the outset of the Project, VCCEP established best practices of reporting monthly to its key stakeholders, in addition to its shareholder, on its forecasts to and at completion for each element in its work breakdown structure (including its remaining reserves and contingency).

Response from VCCEP

As noted in this Review Report, VCCEP has sound project management processes in place. It provided comprehensive monthly project reporting to its Board of Directors and its Shareholder (via the Minister Responsible) and provided copies of its monthly Project Progress Reports to key Ministry staff, central agencies (including Treasury Board and the Office of the Auditor General of BC) and to its key stakeholders including Infrastructure Canada and Western Economic Diversification.

With the execution of a stipulated lump-sum construction contract with PCL Constructors Westcoast Inc. (PCL) in April, 2007 and approval in July, 2007 of its final Project Budget and Schedule, VCCEP is confident that its forecast cost at completion will not exceed its approved budget through Project completion.

As a result, VCCEP is pleased that the best reporting practices it established at the outset of the project are no longer subject to the interim constraint cited in this report (that is, of following direction to manage commitments within its previous and successively approved interim budgetary limits during the period that it was concluding negotiations with PCL to convert its construction management contract and was awaiting approval of its final Project Budget). All stakeholders are again receiving forecasts to and at completion for each element in its work breakdown structure (including its remaining reserves and contingency).

As a consequence of its assignment to PCL of numerous construction contracts that it previously administered (in connection with conversion of its construction management contract), VCCEP has also already implemented several changes to its contract administrative processes. VCCEP is in the process of documenting these amendments to its contract administration procedures.

VCCEP has also re-focused its Project Team's priorities onto management and mitigation of risks attendant with the inevitable large number of requested site instructions, change orders and scope changes that typically arise from the management of complex construction projects especially where the contractor is carrying the bulk of the cost and schedule risks.

In addition, the accompanying narrative portion of VCCEP's monthly reporting has already become more explicit since the approval of its final Project Budget and the changes to its organizational structure referenced in its General Response above.

Response from VCCEP

Finally, VCCEP would expect the Office of the Auditor General of BC to review its amended contract administration procedures and risk evaluations through Project completion in its continuing role as external auditor for VCCEP beginning with its next quarterly financial review (for the second fiscal quarter ended September 30, 2007).

David Podmore
Chair, VCCEP Board
on behalf of Vancouver Convention Centre Expansion Project Ltd.

Appendices

Appendix A: Chronology of budgets and estimates we examined

Month/Year	Construction Estimates	Government-Approved Project Budget	Details
Preliminary Estimates			
October 2000	$495 million		Vancouver Convention Centre Expansion Task Force business plan—capital cost estimate
May 2003	$535 million		Preliminary funding budget—based on funding agreements in place ($495 million + $20 million for connector + $20 million for upgrade to existing facility)
May 2003	$637 million		Consultant's estimate to build a previously examined public-private partnership (P3)-designed facility
VCCEP Prepared Budgets			
June 2004		$565 million	First Treasury Board approved project budget, based on 100% schematic design
January 2005	$598 million		Internal VCCEP estimate—reflected scope changes for design requirements to meet City of Vancouver public amenities requirements ($33 million). These included expanded public amenities, redesign of the roof structure to make it more prominent, and retail space on the building exterior.
July 2005		$615 million	Second Treasury Board approved project budget—reflected the City of Vancouver requirements noted above, plus cost escalation, primarily for foundations and steel
February 2007		$623 million	Treasury Board approved interim budget authority—a $8.1 million lift to allow project to commit to contracts above the $615 million approved budget (pending a revised budget submission to Treasury Board in March 2007)
March 2007		$683 million	Treasury Board approved interim budget authority—an additional $60 million lift to allow project to commit to contracts above the $623 million approved budget (pending decision by Treasury Board on revised budget submission in June 2007)
April 2007		$769 million	Treasury Board approved interim budget authority—an additional $86 million lift to allow VCCEP to enter into a stipulated lump-sum contract for the completion of the project
July 2007		$883 million	Cabinet approves another increase, including finalized funding for a stipulated lump-sum contract with PCL Constructors Westcoast Inc., enhanced scope for the facility, new funding for additional upgrades to Canada Place, and replenished contingencies and reserves.

Appendix B: Office of the Auditor General: 2007 / 2008 reports issued to date

Report 1 — April 2007

Special Audit Report to the Speaker: The Financial Framework Supporting the Legislative Assembly

Report 2 — June 2007

The Child and Youth Mental Health Plan: A Promising Start to Meeting an Urgent Need

Report 3 — October 2007

A Review of the Vancouver Convention Centre Expansion Project: Governance and Risk Management

The above reports can be accessed through our website at http://www.bcauditor.com