REPORT ON CAPITAL PLANNING AND BUDGET FOR 2010 OLYMPICS VENUES

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Submitted to:
BC Olympic and Paralympic Games Secretariat

Prepared by:
Partnerships British Columbia

partnerships
British Columbia

TABLE OF CONTENTS

Executive Summary

Introduction

In the fall of 2005, the Vancouver Organizing Committee for the 2010 Olympic and Paralympic Winter Games (VANOC) approached the Government of Canada and the Province of British Columbia to each fund an additional $55 million towards a revised capital budget of $580 million for the construction of venues for the 2010 Winter Olympic and Paralympic Games (the Games).

The BC Olympic and Paralympic Games Secretariat (BC Secretariat) engaged Partnerships BC (PBC) to undertake a review of VANOC's venue development program to ascertain whether the BC Secretariat should recommend to the Province's Treasury Board to approve, with or without conditions, the provincial share of the additional funding request from VANOC. PBC was also to provide the BC Secretariat with an opinion on whether VANOC could complete the venue program for $580 million.

The review included an examination of:

- design and scope of the venues;
- the capital budgeting process;
- the project management oversight of VANOC; and
- the risk management strategies for the venue development program.

The review focused on high risk or high value venues – the University of British Columbia (UBC) and Hillcrest ice arenas, the Nordic and Sliding centres and the Whistler Athlete's Village.

The purpose of this report is to outline the findings and recommendations of the PBC review.

Methodology

PBC conducted several interviews with key managers responsible and involved in the delivery of the capital program at VANOC. A detailed review was undertaken of key documents supplied by VANOC and the BC Secretariat along with detailed cost analyses for the ice arenas and the Whistler Athletes' Village project.

Key Findings

Capital Cost and Scope

- The approach to capital budgeting of Olympic venues is unique to all other forms of public infrastructure development. Historically, there has been greater cost exposure to the host government than what is normal for infrastructure projects as the government has limited ability to mitigate risks due to the fixed schedule and mostly prescribed scope. In BC, the process is further complicated by construction cost inflation, which is significantly higher than general inflation.

- By applying inflation adjustment to the Bid Book estimate without any other changes to scope would have brought the budget to $665 million. VANOC has managed through various scope reduction and value engineering measures to keep the venue costs within the $580 million estimated budget.

- However, it is unclear how the current capital cost estimate of $580 million in "as spent" dollars reconciles to the original bid budget as scope has changed and inflation has been added in. It is doubtful that without significant scope reductions and other measures to reduce costs, the original capital cost estimate of $470 million in 2002 dollars would have been achievable.

- VANOC's inflation adjustments, using quantity surveyors' estimates were based on the assumption that there is an open and competitive bidders' market responding to stipulated sum guaranteed contracts. This would appear to be optimistic.

- Decreasing labour productivity has not been adequately accounted for in developing the current capital construction budgets, especially for the Whistler venues, which further increases the risk of cost overrun for these venues.

- VANOC's reporting and definition of contingency are inconsistent and it is difficult to assess what is a "true" contingency (an amount to cover for unforeseen events) versus an allowance for discretionary changes in completing the venues. Confirmation is required of what the actual contingency is.

- A review of the venues was done in terms of whether it met or exceeded the minimum requirements and whether there were opportunities for scope reductions and value engineering. PBC concluded that in general, at this time VANOC has limited opportunities for design/ scope reductions and changes. Opportunities for value engineering and scope reductions have to be realized before the tendering of contracts.

    - However, VANOC still has opportunities to apply value engineering and do a review of the scope for the Whistler Athletes' Village and the Hillcrest Curling venue, both venues having scope and design which appears to be in excess of minimum requirements.

    - The design and scope for the Sliding Centre appear to exceed the minimum requirements while the scope and design for the Nordic venue appears to be reasonable. However, both venues are well underway and further scope reductions and value engineering options, therefore, appear limited.

    - The scope and design for the UBC hockey rink appear to be comparable to other ice arenas in Canada and the US. As the project is well underway, scope reductions and value engineering options are limited.

- The requirement to obtain a Leadership in Energy and Environmental Design (LEED) designation for environmental sustainability adds a premium to the capital cost and should be applied with discretion. However, where appropriately applied the designation can be a small component of total capital costs, and should, in principle, generate value for money over the life of the project through reduced operating costs.

- Due to the technical nature of some venues and the tight construction market, VANOC has opted for a construction management procurement approach where the owner signs separate contracts with the general contractor, the architect, the engineer and the

construction manager. Such an approach to project delivery requires experienced project managers and timely and responsive legal support. This procurement method adds substantial risk to the project as the Construction Manager (CM) is not motivated to keep cost under control and may lead to increased propensity for claims. The current contingency allocations do not take this higher level of risk into consideration.

Project Management and Oversight

- VANOC has recently made significant investments in project services support to effectively manage the venue projects under its control. Centralized project teams assist project managers in the administration of their projects. There is a concern that VANOC will not be able to implement this system in a timely manner. It also remains to be seen whether the system is properly implemented and used as planned.

- VANOC is making changes to its organization to address insufficient capacity in project delivery. Whether these changes will be sufficient to address the issues of limited "manpower" and provide more focused project management expertise remains to be seen. Given the tight market for talent and the nature of its business, VANOC has a challenge in attracting and retaining highly qualified people.

Risk Management and Analysis

- VANOC's preferred method of venue delivery risk mitigation is the provision of a fixed contribution to a third party best able to manage the risk. Given the present market conditions, this is both appropriate and desirable.

- VANOC is in the process of implementing an Enterprise Wide Risk Management program, which will assist project managers in better identifying, assessing and addressing risks in delivering the venues. A quantified risk analysis appears not to have been done to date, and, until such an analysis is performed, it is premature to determine whether $580 million is inadequate to complete the construction of the venues.

Recommendations

- VANOC should continue to complete project definition reports and project execution plans for all venues, including a complete quantitative risk register and analysis by October 31, 2006 and demonstrate how they will meet the proposed $580 million capital construction budget.

- It is recommended that the Province approve and release its share of the funding immediately for venues where risk mitigation strategies are in place—UBC Hockey Arena, Richmond Oval, Vancouver Athletes' Village and Training Venues to proceed. For the venues where there are no project definition reports and execution plans or risk mitigation strategies, the Province should not release its share of the additional funding until the proper documentation and reporting is complete.

- The Province's share of additional funding should be released on VANOC expressed agreement that it will provide regular progress reporting of earned value and contingencies taking into account the risk analysis and VANOC meeting any other funding conditions.

- The Province should monitor, on a regular basis, VANOC's progress on implementing project support services and risk management plans to ensure that they are implemented on time.

- VANOC should seek opportunities to mitigate construction and schedule risks by transferring risks to third parties with a fixed contribution. Venues where this strategy should be explored include the Hillcrest Curling venue, the Whistler Athletes' Centre and Whistler Athlete's Village. VANOC management should report back to the VANOC Finance Committee by October 31, 2006.

- It is recommended that a capital works or a construction advisory committee be established at the earliest possible date to receive, review and make recommendations on monthly status reporting, progress measurement and forecasting to the VANOC Finance Committee.

- Where "sole sourcing" and "construction management" is the procurement method, a documented and approved value for money approach is recommended for the VANOC Finance Committee to demonstrate that this is the preferred procurement method.

- Where VANOC has maintained project delivery responsibility, it is recommended that various project delivery options should be considered and incorporated into contract provisions to mitigate the risk of claims at the end of the process. Such contract provisions could include:

    - Incentive Programs
    - Value Engineering
    - Cost and Schedule Controls
    - As-Built Schedule
    - Impact Claim Deadlines
    - Economic Price Adjustments
    - Procurement of Equipment and Materials
    - Realistic Contract and Performance Schedules
    - Timing of Construction
    - Tendering Document Quality
    - Securing Experienced Personnel

Introduction

The approach to capital budgeting, design, construction and commissioning of Olympic venues is unique to all other forms of public infrastructure development. The Province of British Columbia, as a host government, is a participant in a process in which it has little flexibility or control as the schedule is fixed and scope is mostly driven by the International Olympic Committee (IOC) requirements. The IOC determines the size and scope of the venues and the parties to the agreement accepts all risks for delivery. Many of the best practices associated with traditional capital project delivery are therefore adjusted or substantially modified out of necessity for delivering the venues to an aggressive schedule and a predefined level of scope.

In the fall of 2005, the Vancouver Organizing Committee for the 2010 Olympic and Paralympic Winter Games (VANOC) approached the Government of Canada and the Province of British Columbia to each fund an additional $55 million towards a revised capital budget of $580 million for the construction of venues for the 2010 Winter Olympics and Paralympic Games (the Games). The funding was in addition to the $470 million (in 2002 dollars) previously committed by the Province and Canada at the bid stage for a proposed total capital budget of $580 million. As of report writing, neither the Government of Canada nor the Province of British Columbia has confirmed whether such additional funding will be forthcoming.

The BC Olympic and Paralympic Games Secretariat (BC Secretariat) engaged Partnerships BC (PBC) to undertake a review of VANOC's venue development program to ascertain whether the BC Secretariat should recommend to the Province's Treasury Board to approve, with or without conditions, the provincial share of the additional funding request from VANOC. Canada has also undertaken an independent review of the adequacy of the proposed $580 million venue capital budget, with regard to providing advice to federal government decision makers on Canada's share of the additional funding request.

The main objectives of PBC's review include an examination of:

- design and scope of the venues;
- the capital budgeting process;
- the project management oversight of VANOC; and
- the risk management strategies for the venue development program.

The purpose of this report is to outline the findings and recommendations of PBC's review.

PBC Team and Methodology

PBC undertook its review during the months of April and May, 2006. The PBC team was led by Al Sakalauskas, Chief Project Advisor, and Eva Hage, Assistant Vice-President. The team included specialists in real estate, construction and cost estimation; Mark Miles and Tom Simpson. Resumes for all the team members are attached in Appendix 1. In addition, consultants with expertise in the construction of ice arenas and real estate development in Whistler were engaged to conduct specific analyses.

The PBC team conducted a thorough review of relevant documentation provided by VANOC and the BC Secretariat relating to VANOC's Business Plan Version 1 and the venue development program. In addition, some 16 interviews and workshops, as well as follow up discussion to provide clarity, were conducted with senior and key managers at VANOC. External due diligence by the sector specialists was conducted as required. Detailed scope and cost analysis was conducted for the ice arenas—the UBC Hockey Arena and the Hillcrest Curling Arena—and the Whistler Athletes' Village project. Information on interviewees and documentation is provided in Appendix 2.

The conclusions and recommendations in this report rely solely on the information provided by VANOC. No formal audit of the information was conducted.

Key Priorities

At the outset of the review, the BC Secretariat directed PBC to focus its analysis on the following three venues:

- The Nordic Centre and the Sliding Centre – as these are the largest and most complex venues.
- The University of British Columbia (UBC) Hockey Arena – as there is an urgent need to sign the venue agreement and request the release of provincial funding.

In mid-April 2006, the priority focus changed to the following venues:

- The Hillcrest Curling Arena (Hillcrest) – as a result of a substantial increase in the projected budget.
- The Whistler Athletes' Village – as there is an urgent need to have a signed venue agreement and concern over timely delivery.
- As well as the UBC Hockey Arena.

This report addresses all the venues, but provides more in-depth analysis on the ice venues – UBC and Hillcrest – and the Whistler Athletes' Village (excluding the Athletes' Centre).

Funding

The Province of British Columbia and the Government of Canada have agreed to equally contribute to the capital budget for venue development. The total budget for venue construction at the time of the bid was estimated to be $470 million ($235 million contribution from each of the Province and Canada) in 2002 dollars.

The relationship of the venue cost estimates and the Province's overall funding commitment is presented in Figure 1 below. This table shows the effect VANOC's requested funding increase would have on the Province's contingency allocation. Assuming Canada's current agreement of 50/50 cost sharing on venue costs, the Province's contingency allocation of $131.5 million would decrease to $76.5 million, to be used for other potential provincial funding commitments with respect to the 2010 Olympic Games.

Figure 1

Provinces Estimated Games-Related Costs
($ millions)

Provincial Government Olympic Commitment ($ million)			Federal Contribution		Total Bid Budget		Estimated Cost Increase		VANOC Revised Estimate
Federal & Provincial Shared Costs									
Venue Construction (VANOC Responsibility	235.0	+	**235.0**	▶	**470.0**		**110.0**		**580.0**
Live Sites	20.0		20.0		40.0				
Venue Operating Trust	55.0		55.0		110.0				
Total Venue and Live Sites	**310.0**		**310.0**		**620.0**				
Security	87.5		87.5		175.0				
Paralympic Games	20.0		20.0		40.0				
Total Federal & Provincial Shared Costs	**417.5**	+	**417.5**	▶	**835.0**				
Provincial Only Costs									
Medical	13.0								
Sport Development Legacy	10.0								
First Nations Legacy	18.0								
Municipal Legacy	10.0								
Total Provincial Costs Before Contingency	**468.5**								
Contingency	**131.5**	−	**Provincial Share Contingency Drawdown**			=	**Available Envelope Contingency**		
TOTAL	**600.0**		**$55 million**				**$76.5 million**		

Venue Scope and Costs

Background

The rights and obligations of the Government of Canada, the Government of British Columbia, the City of Vancouver and the Resort Municipality of Whistler (collectively the Government Partners) relating to the governance of VANOC are contained in a Multiparty Agreement (MPA) signed by the Government Partners, the Canadian Olympic Committee, the Canadian Paralympic Committee and the Vancouver 2010 Bid Corporation on November 14, 2002 and in the Bylaws of VANOC.

The IOC determines the form and nature of the Games and requirements of the submitted bid estimates. The most important requirement, from a current venue costing perspective, is that bids were to be expressed in 2002 US dollars.

The IOC determines which sports events will be included in the Games, the number of athletes, officials and the length of the Games. Estimates of cost were to be on a cash basis as if they were purchased in 2002. From a traditional capital budgeting perspective, this adds considerable additional risk to accurately determining capital cost estimates at opening. The 2002 capital estimate did not include a contingency reserve to cover unforeseen costs including inflation and scope changes.

VANOC has acknowledged the risks associated with bidding for the Games in 2002 dollars and delivering the Games in current "as spent" dollars. VANOC has observed that previous host cities experienced serious difficulties in venue construction as a result of schedule slippage. VANOC has, as a result, adopted a risk mitigation strategy to build the venues as soon as possible. Experience from other host cities indicates that when venues are late in opening due to schedule slippage, construction costs are higher, risks associated with operational planning and testing time increases, and host country athletes have less time to become accustomed to the venue.

VANOC maintains that one measure of delivering successful Games is how well the home team performs, and, to support this objective, early construction and operation of all Olympic venues is a high priority to allow for sufficient training opportunities for Canadian athletes.

VANOC's procurement method and approach to construction reflects the priority given to schedule. The traditional balance between cost, schedule and quality in capital construction is weighted in favour of time (schedule) for completing Olympic venues. As a result of non-negotiable opening dates, the transference of risk such as meeting the construction schedules will have a significant effect on the final costs of the Olympic venues, especially in the accelerated construction industry conditions in BC (including material cost inflation and skilled labour shortages). The advantages and disadvantages of various construction procurement methods are described in Appendix 3.

Building the Olympic venues involves risks. Risks can be mitigated in the procurement process by allocating them to the party best able to manage them. Projects which have the greatest opportunity for a successful outcome include a workable, commercially viable and cost effective

risk-sharing in a balanced design and construction contract. Inequitable risk allocation could result in unnecessary project cost increases and claims against VANOC.

The BC Construction Challenge

BC is presently experiencing an unprecedented construction boom and market signals indicate that there is a likelihood of a few more years of high and increasing construction costs. The Games are a factor contributing to the construction boom. In addition, there are a number of large infrastructure projects – institutional, residential and non-residential – underway. These factors and the above-average growth in the provincial economy, especially in the Lower Mainland, are contributing to this current construction reality. BC is in competition for scarce resources with the thriving construction markets in Alberta and Ontario.

Figure 2 illustrates the trend in construction related inflation based on a market survey conducted by BTY. According to BTY the construction price indices in residential and non-residential construction have increased some 36% since 2002 as a result of rising fuel and raw material costs and limited supply of heavy construction equipment, skilled labour, construction management personnel and professionals.

Figure 2

Indicative Construction Inflation
1998 to 2005

Year	Inflation Rate (%)
1998	1.4
1999	1.0
2000	2.5
2001	3.0
2002	7.0
2003	8.0
2004	10.0
2005 (proj.)	11.0

Source: BTY

VANOC has applied various strategies in order to deal with escalating input costs and these are examined in greater detail in the venue-by-venue analysis in subsequent sections of this report.

Figure 3 below presents a venue cost summary outlining the changes from the Bid Book Budget estimate of 2002 to the most recent estimate of venue cost as at June 2006.

VANOC adjusted the bid budget of $470 million for construction cost escalation using inflation indices provided by professional quantity surveyors. Without any further adjustments to design or other cost containment strategies, the bid capital budget was adjusted to $665 million in 2005 dollars.

VANOC then went through a process of redesign, risk transfer, cost containment agreements and other measures, and was able to reduce the cost estimate to $542 million. This estimate formed the basis for VANOC's Business Plan in July 2005.

After further scope analysis and inflation adjustments in October 2005, the cost estimate was increased to $580 million and is the basis for the current request for increased funding to both levels of government.

Figure 3

Review of Venue Cost Estimates
($millions)

Venue	Bid Budget 2002	Constr. Inflation Adjusted	July 2005	Oct. 2005	October Contin. Alloca.	March 2006		June 2006 Costs with Scope Changes
						Contin. Draws	Estimated Cost	
Richmond Oval	63.7	91.1	60.7	60.7			60.7	62.7
Vancouver Village	30.0	30.0	30.0	30.0			30.0	30.0
UBC Hockey Rink	35.8	60.1	36.1	37.6			37.6	37.6
Training Venues	7.2	7.2	5.6	5.0			5.0	5.0
Venues at More Advanced Stage								
Whistler Nordic	102.0	143.8	117.3	111.3	11.1	4.4	115.7	115.7
Whistler Sliding	55.0	76.2	68.9	80.4	12.1	19.5	99.9	99.9
Whistler Alpine	23.1	32.2	26.2	26.2	3.9		26.2	26.2
Venues at Conceptual Stage								
GM Place	5.0	8.1	6.4	14.5	2.2		14.5	5.5
Hastings Park	23.1	36.7	25.7	25.7	3.9		25.7	25.7
Hillcrest Curling	28.3	44.9	35.1	37.1	7.4	3.0	40.1	37.1
Cypress Freestyle / Snowboard	10.9	15.2	14.6	14.6	2.2		14.6	14.6
Whistler Village	32.5	48.4	32.5	37.5	6.8	9.0	46.5	37.5
Whistler Athletes Centre	13.0	18.2	13.0	16.0	2.4	3.0	19.0	16.0
Sledge Hockey Arena	20.0	20.0	20.0	20.0			20.0	20.0
Whistler Media	3.0	3.0	3.0	3.0			3.0	3.0
BC Place	2.5	3.8	2.5	3.8			3.8	3.8
Other Design & Planning			0.6	4.6			4.6	3.6
International Broadcast Centre	15.0	23.0						
Contingency			44.0	52.0	52.0	(38.9)	13.1	36.1
Total Venue Capital	**470**	**665**	**542**	**580**			**580**	**580**

Contingency Reserve

As shown in Figure 3, the contingency reserve allocation was $52 million in October 2005. By March 2006 this reserve had been drawn down to $13.1 million to cover construction costs to 2008, based on updated cost estimates. Note that this is the portion of the amount of estimated venue funding under control of VANOC that has been set aside within VANOC to offset emerging cost pressures.

At the time of report writing, and as VANOC continues to refine project scope within the $580 million total venue cost estimate, the contingency reserve had been increased to $36.1 million in June 2006. The increase in contingency from March 2006 is a result of changes to the Whistler Village agreement and scope reductions at General Motors (GM) Place.

It is also unclear how the contingency is included in the project budget and at the discretion of the project manager versus a "central" contingency amount which is controlled by the VANOC Executive and the Finance Committee. The $36.1 million appears to represent the "central" contingency.

Until a risk analysis has been done the adequacy of the central contingency cannot be determined.

Venue Analysis

The venues in Figure 3 have been grouped according to PBC's perceived level of risk inherent in each project of completing on schedule and on budget. Venues with risk mitigation strategies include the Richmond Speed Skating Oval, the Vancouver Athletes Village, the UBC Hockey Rink and the Training Venues in Vancouver. Venue owners assume scope, budget and schedule risk for these projects. VANOC provides grants to venue owners in return for the use of the new or modified facilities during the Games.

Venues at a more advanced stage of development would have a different risk profile than those at the conceptual stage. For the Whistler Nordic, Sliding and Alpine venues, project definition reports and project execution plans have been completed, design drawings are near completion, and various tender packages have been awarded.

Venues at the conceptual stage have not been through a thorough design and cost review and value engineering process to mitigate design and construction risk.

The following venue analysis examines the risk identification, allocation and mitigation strategies, in addition to contracting strategies and project delivery methods, which VANOC has employed or proposes to deploy to reduce the effect of risk.

Richmond Speed Skating Oval

The Richmond Speed Skating Oval, Vancouver Village, UBC Ice Rink and Training Venues are examples of where VANOC has elected to allocate risk to the party best able to manage it. For each of these venues, the party to the venue agreement should generally bear a risk where the risk is within the party's control.

If the risk occurs, the loss falls on the party in the first instance. Under the aforementioned principle, it is expected that any additional expenses or uncertainty will not be transferred back to VANOC.

For example, the present construction conditions were a factor in VANOC's risk mitigation strategy by its award of the 2010 Olympic speed skating oval to the City of Richmond, who in turn contributed to the cost of the project and have accepted the risk of cost overruns.

The Richmond Speed Skating Oval is a 400-metre track being constructed as a multi-purpose building for winter, summer and community events. The City of Richmond has taken responsibility for the design and construction of the facility.

The procurement method is construction management[2] on a project budget of some $178 million. Contingency provisions for construction cost escalation, design and unforeseen changes in cost, totals approximately $20 million. Access to the ice surface is targeted for September 1, 2008.

The traditional construction management approach is that the manager provides construction services for a fee. The City of Richmond, as the owner, enters into the contracts with the trades and the construction manager acts as agent to the owner to coordinate the work. The construction management approach allows a significant focus on pre-construction services related to budgeting, constructability, sequencing and logistics.

VANOC has successfully mitigated its venue construction risk by contractual means with the City of Richmond. VANOC's contracted contribution is $62.7 million and the City of Richmond is responsible for $115.3 million. As a result of geotechnical conditions common to Richmond, the pre-loading schedule has been extended. Contingency plans have been developed to ensure the ice oval slab is within tolerances specified by the International Skating Union.

The predominant risk present in the Richmond Speed Skating Oval is a Force Majeure or catastrophic event where the City of Richmond, as a partner, is unable to deliver the venue within the time schedule and breaks their contractual obligation. For such an event, albeit unlikely, VANOC needs to have a back-up plan to ensure the sporting event can take place.

Vancouver Athletes' Village

VANOC is under agreement with the City of Vancouver to provide a capital contribution of $30 million to provide accommodation for some 2,800 athletes in Vancouver. The Vancouver Athlete's Village will consist of both permanent and temporary facilities. The City of Vancouver owns the False Creek area lands where the Vancouver Village will be situated. The land will be a large urban development with a mix of market and non-market housing, parks, community amenities, offices and retail shops.

The cost of constructing the permanent facilities is estimated to exceed $100 million which the City of Vancouver will construct as a public private partnership. Temporary Games facilities will include dining halls and related support facilities. These facilities will be removed after the Games and are considered operating budget items, not capital expenditures.

[2] For a comparative analysis of various construction management methods, refer to Appendix 3.

The risks to the venue capital budget are considered low but the risk to VANOC is that the City of Vancouver fails to deliver the venue within the time schedule. There is a remote risk to VANOC that the City of Vancouver is unable to meet its contractual obligation and as a result of a Force Majeure event. Such an event could not reasonably have been prevented by and is beyond the reasonable control of the City and causes the City to be unable to comply with all or material parts of its obligation to VANOC. VANOC needs a back-up plan to respond to that situation.

UBC Hockey Rink

UBC has entered into a venue agreement with VANOC to develop a winter sports complex to be used on an exclusive basis during the Games for men's and women's ice hockey competitions. The new facility, which will replace the existing Thunderbird Winter Sports Centre, will consist of a 5,500 permanent seat, flexible rink between International and North American ice surfaces. Games' spectator capacity will be approximately 1,500 more seats with the addition of temporary overlay seating.

UBC, through UBC Properties Trust, is responsible for developing the venue. VANOC has been successful in transferring risk to UBC and limiting its exposure to $37.6 million. UBC is contributing $10.3 million to the project and is responsible for any cost overruns beyond the total estimated budget of $46.1 million. UBC has, in turn, passed on its construction risk through a design/build contract containing a guaranteed maximum price with its design builder.[3] Performance incentive programs have been structured to strengthen the project team members' commitment to complete the project on schedule.

Unlike many other Olympic venues which are considered "Greenfield"[4] construction projects, the UBC venue is described as a combined "Brownfield" and "Greenfield" project. In other words, the project has both renovation and new building expansion components. Such projects are considered to have a more complicated risk profile than Greenfield construction projects. PBC's experience in structuring public-private partnerships indicates that building consortiums are more attracted to Greenfield projects due to the lower risk profile of such projects.

PBC has, as a result, examined in greater detail the capabilities of the owner to manage such a project. PBC also conducted a comparative benchmarking analysis of the UBC venue to other completed sports arenas for the purpose of identifying any significant components of the project which may be overbuilt as a result of the renovation and expansion overlap.

Figure 4 below shows that the cost of the ice venue is well within the expected range of comparative, unadjusted facility costs at approximately $210 per square foot for both hard and soft construction costs.

UBC has mitigated its risks of cost and schedule overruns by utilizing a design / build procurement approach and using the experience of UBC Properties Trust as the owner's consultant to bridge the gap between the owner and the design process run by the design / build contractor. This approach mitigates the risk of losing the advantages of the design / build project delivery system. The design / build procurement approach has the advantage of placing responsibility for delivery of the project on one party. The contractor is involved in the design

[3] See Appendix 3.
[4] "Greenfield" refers to a new building on a site where no building existed before. "Brownfield" refers to a site where there is some form of infrastructure that is being renovated, expanded or rebuilt.

process which enables alternative construction methods and materials, thereby decreasing costs. The procurement method is considered a fast-track approach to construction and is reflected in the price. UBC has negotiated a guaranteed maximum price of $46.1 million before taxes.

UBC indicated that the Thunderbird Winter Sports Complex would have required some $9 million in today's dollars to maintain the existing facility, irrespective of it being selected as a location for ice hockey for the Games.

Building audits were conducted by professional engineers who recommended maintenance expenditures on seismic roofing and other architectural upgrades as well as upgrades and repairs to electrical, mechanical, HVAC and plumbing components.

Various benchmark formulas for maintenance of sports complexes have been observed. They range from 1.5 per cent to two per cent of current building replacement value (CRV) . The Thunderbird Sports Complex has a CRV of $38 million and is 41 years old. PBC and its professional engineering advisors consider the deferred maintenance expenditure estimate reasonable given the condition and age of the building.

The UBC Hockey Rink can be considered a low risk venue project but some institutional risk with respect to the release of funding between partners nevertheless remains.

Training Venues

Training Venues are projects in support of short-track speed skating and ice hockey. The scope of the Training Venues has been reduced by the elimination of a venue and transferring the responsibility for the construction of one venue to the City of Vancouver in return for a fixed grant. The current combined provincial and federal contribution to the capital budget is $5 million (see Figure 3).

Whistler Nordic Competition Venue

The Nordic competition venue in the Callaghan Valley will provide the stage for cross country, biathlon terrain as well as the ski jump and associated structures. The Nordic Centre is considered a major legacy to the Resort Municipality of Whistler and funding is provided to assist with its long-term operations and access to the sport.

The project is presently under construction and represents the largest project under VANOC's direct responsibility. The venue has three major phases:

- In 2005, access roads, site clearing and sediment and erosion control was done, as well as recreational trail development.
- This continues through the 2006 season with the start of the ski jump construction.
- The 2007 season includes the completion of the ski jump, competition trails, buildings and complete site development.

The Nordic Centre is representative of VANOC's approach to risk mitigation strategies. The venue was one of the first projects to have a complete program definition report which summarizes the scope of work, fulfillment of Olympic commitments, estimated cost, schedule,

delivery strategy, status of sport federation approvals and opportunities for sponsor budget relief. Project definition reports are signed off by VANOC executive and Finance Committee of the Board before commencement of the construction process with design development and tenders.

VANOC management has conducted extensive analysis to reduce cost and construction complexity of the Nordic venue. Changes were made to the recreation components and size of the buildings and as a result the facility footprint and the environmental impact has been reduced. The ski jump facilities are currently designed for winter use only and practice jumps have been eliminated.

The Nordic Centre has advanced to the 75% stage of design development. Civil works designs are complete and tenders have been received by civil construction contractors and power service contracts are near finalization. The major contracts yet to be awarded include the ski jump in-run structure.

The overall risk assessment of the Nordic Centre at this stage of development is considered low to medium. Risk elements identified include the weather, unforeseen geotechnical conditions (acid-draining rock), and environmental cost pressures resulting from the Canadian Environmental Agency approval process. The civil contracts are awarded on a unit price basis and final costs will depend on final ground and site conditions.

Whistler Sliding Centre

The Whistler Sliding Centre contains a bobsled/luge track, related buildings and the refrigeration plant. Unlike many other Olympic venues, the Sliding Centre has minimal opportunity for scope or design reductions as the entire facility is the Olympic "field of play". It is reported that some 13 tracks exist in the world and, as a result, the design and construction attributes can be considered unique. Unlike some of the previous sliding centres built, the Whistler Sliding Centre will combine bobsled, luge and skeleton events.

The size and complexity of the project, the active construction market, and the high degree of risk associated with this type of project has limited the amount of bidder interest. As a result, the initial bid budget of $55 million has increased to $99.9 million.

The contract to construct the bobsled and luge track was awarded to a firm which has direct experience in the complex construction methods from the Lake Placid facility. In support of this direct experience, the contractor proposes to retain and house experienced crews from Ontario.

The VANOC management team has made, and continues to make, efforts to reduce the costs of the project by utilization of the natural topography to reduce the footprint of the track, minimizing over- and under-passes, revising lighting, retaining walls and shading support design. VANOC has also pre-purchased materials expected to increase in cost where storage costs are not a significant issue. Although further savings could be obtained from coordination of track construction and installation of the refrigeration piping, it is concluded that the project remains as a high risk venue and could affect the overall contingency allocation.

The present contingency has been identified at approximately $2.8 million and would appear to be inadequate for a project of this scale and complexity.

Whistler Alpine

The Whistler Alpine venues are consolidated at Creekside on Whistler Mountain and are projected to be more cost-effective than operating two alpine venues at Blackcomb and Whistler Mountains. Savings are estimated at $6 million compared to the adjusted bid budget. The alpine skiing venue also has a completed project execution plan.

VANOC has mitigated some risk by contracting the present operator of the Mountain (Intrawest Corporation) as construction manager[5]. Intrawest Corporation will take over all the improvements to be constructed under this project and provide for ongoing operation and maintenance.

The cost of the venue is almost entirely made up of snow-making equipment and course improvements to accommodate Olympic speed and technical requirements. There is a men's course and a women's course which converge to a common finish area. The snow-making design (reservoir, pumping stations, piping, water guns, etc.) are largely complete. Tenders have not yet been received and, as a result, the alpine venue could be considered at medium risk that the current budget forecast will exceed $26.2 million.

GM Place

GM Place would host men's and women's hockey events. GM Place is the home of the NHL Vancouver Canucks and a sports and entertainment complex. The cost of the venue is predominantly a result of expanding the ice surface to international size (20 feet wider than the NHL), and revisions to seating and the ice plant.

VANOC, however, has successfully negotiated an agreement with the International Ice Hockey Federation to retain GM Place at North American ice size. The venue costs have been adjusted downward by $9 million from the March 2005 forecast to reflect the scope change. An issue which remains outstanding is the venue agreement with the owners of GM Place to have access to the facility during the Games.

Hastings Park

The Coliseum and Agrodome at Hastings Park will hold the figure skating and short-track speed skating events for the Games and other Games-related uses. VANOC has the responsibility for upgrading the Coliseum and Agrodome. VANOC has reduced its exposure at this venue by providing a grant to the City of Vancouver to build a permanent short skating facility at Trout Lake. Vancouver voters approved borrowing funds for ice rink renovations at both Killarney and Trout Lake Community Centres.

The proposed capital budget of $25.7 million is a preliminary budget as detailed design and engineering work has not been completed. The overall risk assessment of this venue would be moderately high.

Hillcrest Curling Venue

VANOC is responsible for the design and construction of a 5,700 seat curling venue at Hillcrest Park, adjacent to Nat Bailey Stadium. The curling venue will be converted post-Games to a

[5] See Appendix 3 for procurement description.

multi-purpose community centre which includes a rink, curling club, library and the integration of the new Percy Norman Aquatic Centre.

The proposed agreement between the City of Vancouver and VANOC has VANOC acting as project manager for both parts of the complex. The City of Vancouver Parks Board maintains responsibility for the planning, funding and execution of the aquatic facility and VANOC maintains responsibility for the curling facility. The project architects have separate contracts for each facility and each component of the development is being structured to enable either component to proceed independently of the other. The current plans envision that a single building will be more cost effective than two separate facilities.

The Hillcrest curling venue is at the schematic design stage and preliminary costing estimates indicate significant cost pressures compared to other ice venues including UBC. The cost of constructing Hillcrest is 50 per cent higher than for comparable ice venues. Figure 4 shows that as benchmark comparators and with no adjustments for inflation, the Hillcrest venue project costs expressed as a dollar per foot basis appear to be outside the normal expected range for ice venues.

The target project costs for the curling venue is $37.1 million. Preliminary cost estimates, without detailed design or scope reduction analysis, indicate the cost of the curling facility could be as high as $46.1 million (which includes legacy conversion costs). No value engineering analysis has been completed to further reduce scope. The contingency budget of $3 million is considered to be inadequate at this early stage in the design.

The Hillcrest curling venue is perhaps the best example of a venue which could benefit from a more detailed review of risk allocation intentions with the owner, the City of Vancouver. More detail on the venue can be found in Appendix 3.

Figure 4

Comparative Project Costs
Ice Arenas

	Victoria Arena	Oshawa Arena	UBC Arena	Hillcrest Curling
Costs as of:	**Oct 03**	**July 05**	**Dec 05**	**Mar 06**
Construction Cost	24,180	23,799	35,260	34,019
Management and Design Costs	3,490	10,463	10,928	11,994
Total Project Cost	**27,670**	**34,262**	**46,188**	**46,013**
Total Sq. Ft.	186,000	180,000	220,000	116,000
$/sq. ft.	149	190	210	397

Cypress Freestyle and Snowboard Venue

The Cypress Freestyle and Snowboard venue accommodates all of the freestyle skiing events. The event will be held within the area operated by Cypress Bowl Recreation Limited with a target budget of $14.6 million.

The project is at conceptual design and detailed cost estimates have yet to be completed. The major cost of the venue deals with excavation and grading works.
The risk profile of this venue is considered to be moderate given that the operators of the mountain are proposing a design/build contract for the snowmaking system and additional design/build and construction management contracts will be prepared for lighting and venue buildings. VANOC is proposing to enter into a sole sourcing contract arrangement with Cypress Bowl Recreation to manage the procurement, design and construction works.

Whistler Athletes' Village

The Whistler 2020 Development Corporation was established by the Resort Municipality of Whistler (RMOW) to deliver the Whistler and Paralympic Athletes' Village. Work has advanced for clearing, grubbing and rough grading during the 2006 building season.

Negotiations are ongoing with Whistler 2020 to provide athlete accommodation within a proposed 251 unit village that is a mix of market and non market housing.

The risk to VANOC of this venue is considered high as the development agreement with Whistler and the Province has not yet been completed. If no agreement is reached with Whistler 2020 to build the village, VANOC would have to erect a temporary facility which would cost substantially more.

Whistler Athletic Centre

The scope for the Athletic Centre is still under development. The current forecast of $16 million reflects the number of athletes that would be accommodated in the Centre as part of the Whistler and Paralympic Village.

The risk of the project is considered moderate to high, as general construction conditions in Whistler would indicate high cost uncertainty.

Sledge Hockey Arena

There is an agreement with Whistler that a grant of $20 million will be provided for the development of the Sledge Hockey Arena venue. Whistler has the option of deciding whether or not to proceed with construction of the venue.

VANOC has limited its exposure to the venue in the form of a grant and, to date, there has not been approval by the RMOW to accept the responsibility of building the venue. If Whistler decides not to build the Sledge Hockey Arena, VANOC will have to find an alternate location. One possibility is to move the event to UBC.

Whistler Media

A grant of $3 million has been paid to expand the Whistler Conference Centre and the community has accepted all construction risks.

BC Place

A contribution of $3.8 million as been provided to BC Place for accessibility upgrades at the Stadium. The budget is, therefore, capped and the risk profile would be considered low.

International Broadcast Centre

This project has been moved to the Vancouver Convention and Exhibition Centre and VANOC has reduced its exposure by an estimated $23 million.

Risk Management

Risk and conflict are primary characteristics of the construction industry. One of the key areas in delivering infrastructure projects, especially under the conditions that VANOC finds itself (i.e. fixed deadline, mandated minimum scope), is a good understanding and thorough management of risks.

The Province's Enterprise-Wide Risk Management Guideline and the Capital Asset Management Framework both place a heavy emphasis on the identification and valuation of risks. PBC, in delivering infrastructure projects, has experienced that the cornerstone in delivering value for money to the taxpayer is the treatment and understanding of risk.

Based on its experience, PBC has developed Best Practices with respect to risk assessment and applied those principles when reviewing VANOC's venue program to ascertain whether the budget of $580 million is sufficient to build the venues.

Enterprise Risk Management Program

VANOC is in the process of implementing an Enterprise Risk Management (ERM) program and is basing the program on the Best Practices from several agencies. In addition, the Multi-Party Agreement states as a requirement that VANOC has to implement a risk management program.

The ERM program is a corporate wide risk management program. Risk is defined by the Enterprise-Wide Risk Management Policy as "the chance of something happening that will have an impact upon the achievement of objectives". Risk can be practically defined as the product of the probability of an event occurring and the consequences if the event does occur. Depending on the amount of information available, risk can be measured qualitatively or quantitatively.

To fully define a risk, it is necessary to understand its two component elements:

- the likelihood of a particular risk actually happening; and
- the impact or consequence if it happens.

Risk is inherent in every project, yet unlike most other procurement issues such as construction costs, bid prices and maintenance costs, risk has historically not been explicitly described or accounted for. The Province is hoping to change this trend.

The ERM program has four deliverables:

- identification and assessment of important risks facing VANOC for both construction and operations;
- analysis of risk;
- risk response and treatment, including placement of insurance coverage; and
- monitoring, evaluation and reporting on risk.

Current Situation at VANOC

Strategic Risk Management Plan

A preliminary risk management plan was developed as part of the Business Plan, Version I and outlined the principles, objectives, implementation schedule and organization/resources. According to the schedule in the Business Plan, the risk analysis was to be complete by March 2006 and a Strategic Risk Management plan was to be complete by June 2006.

The hiring of the functional risk manager was delayed until early March 2006. The process to complete the risk analysis and strategic plan has also been delayed and it is expected that the Strategic Risk Management Plan will go to the VANOC Board in the fall of 2006 for approval.

Identification and Assessment of Risks

Specific risks for each venue will be identified and described in Venue Plans (as stated in Appendix 3, Business Plan, Version I). However, project definition reports and project execution plans have only been completed for three of the venues for which VANOC is directly responsible for and the ones that have been completed contain high-level risk identification with limited description as to the impact of the risks. VANOC's plan is to complete venue reports for all venues.

Analysis of Risks

The risk analysis is the in-depth analysis of the impact and inter-relationships of risks on a specific project or functional area. Throughout the documentation provided by VANOC, there are very few references to the quantification of the risks. The only reference is in Appendix 5 of the Business Plan Version 1where it states *"It [the risk analysis] will also lead to an understanding of the quantitative potential range of outcomes that a risk may have on a project"*. All other references are to the effect that risks will be *"identified and mitigated"*. This leads PBC to believe that the focus is not on quantifying the risks or to use the risk analysis to assist in developing a more robust budget estimate of construction costs.

VANOC staff indicated in the interviews that the objective was to incorporate the results from the risk analysis, which is to be undertaken over the summer of 2006, with the capital budget. However, it was not clear how this would be done.

The lack of detailed, quantified risk analysis makes it difficult to determine the impact on the capital budget and the appropriateness of the contingency with any level of confidence.

Risk Response and Treatment, Including Placement of Insurance Coverage

VANOC is working closely with Risk Management Branch staff of the Ministry of Finance who are assisting VANOC by providing advice on the development and implementation of VANOC's risk management plan. Risk mitigation strategies are owned by each individual project manager and the development of these strategies is part of building the Strategic Risk Management Plan.

Monitoring, Evaluating and Reporting on Risks

VANOC has recently hired two internal assurance and auditing staff which will assist with the monitoring of risk management strategies and will also provide due diligence in risk analysis and developing the strategies. The reporting framework on risks was not yet developed as of late April 2006. VANOC stated that a reporting framework will be developed as part of the risk management plan and complete by fall 2006.

PBC Best Practices

VANOC appears to be implementing a thorough risk management program and has embarked on a comprehensive process to identify risks for each venue, assess them and develop mitigation strategies. However, the results from the risk analyses are not yet available and have not been incorporated into the capital budget. It is therefore premature to determine whether the $580 million budget is inadequate to deliver all the venues on budget and on time until the risk identification and analyses have been completed, along with the Strategic Risk Management Plan.

To provide more confidence in VANOC's capital budget, it is recommended that VANOC complete the risk analysis for each venue and develop an aggregate risk adjusted budget estimate which reflects the level of risk which the Province and Canada are willing to assume.

PBC, in consultation with the Risk Management Branch of the Ministry of Finance, have developed Best Practices with respect to risk identification and analysis. Outlined below are the steps to arrive at an aggregate risk adjusted budget estimate.

For Each Venue

Step 1: Develop a risk matrix
Step 2: Determine the probability of occurrence
Step 3: Determine the impact (in dollars if possible)
Step 4: Develop mitigation strategies and cost them where required
Step 5: Calculate the weighted cost of the risk

Figure 5 illustrates how Steps 1 through 5 could be documented. Numbers in the table are illustrative only.

Figure 5

Olympic Venue

Design Uncertainties

#	Factor Effecting Design Costs	Description including cause and effect	Effect on Budget: Lowest Budget Effect ($)	Most Likely Budget Effect ($)	Highest Budget Effect ($)	% Chance of this Event Occurring	Weighted Effect on Budget: Lowest Budget Effect ($)	Likely Budget Effect ($)	Highest Budget Effect ($)
1	Required Change to Design Change	**Changes to design requirements for safety standards** Change in regulation, safety standards, or political intervention *Delay in project, increase in design and/or construction costs*	$ -	$ -	$ 12.00	25%	$ -	$ -	$ 3.00
2	Required Change to Design Change	**Changes to design requirements for updated competition standards** New competition rules requires changes *Delay in project, increase in design and/or construction costs*	$ -	$ -	$ 5.00	12%	$ -	$ -	$ 0.60
3	Design Change	**Changes to design requirements to take advantage of knowledge or synergies from other venue designs** Accumulated knowledge is passed through to curling venue through other ice sheet facilities *Lower costs or increased schedule flexibility*	$ (12.00)	$ -	$ -	50%	$ (6.00)	$ -	$ -
		Total Budget Effects of Design Uncertainties					($6)	$0	$4

Construction Uncertainties

#	Factor Effecting Construction Costs	Description including cause and effect	Effect on Budget: Lowest Budget Effect ($)	Most Likely Budget Effect ($)	Highest Budget Effect ($)	% Chance of this Event Occurring	Weighted Effect on Budget: Lowest Budget Effect ($)	Most Likely Budget Effect ($)	Highest Budget Effect ($)
1	Weather	**Weather other than expected** Unexpected in climate weather (excluding Force Majure storms) impacts construction *The effects could be positive or negative depending on the event and its relationship to the overall schedule. Effects generally would be cost*	$ (5.00)	$ -	$ 15.00	25%	$ (1.25)	$ -	$ 3.75
2	Labour availability	**Availability of labour** Lack of required labour to construct the facility on time - NOTE this is separate to overall market labour availability this item pertains only to labour specific to this venue (ice sheet makers, or similar) *Delays in construction*	$ -	$ -	$ 7.00	12%	$ -	$ -	$ 0.84
3	Utility	**Utility relocation** New facility requires additional utilities *Higher costs and possible delays in construction*	$ -	$ -	$ 2.00	50%	$ -	$ -	$ 1.00
		Total Budget Effects of Construction Uncertainties					($1)	$0	$6

Commissioning Uncertainties

#	Factor Effecting Commissioning Costs	Description including cause and effect	Effect on Budget: Lowest Budget Effect ($)	Most Likely Budget Effect ($)	Highest Budget Effect ($)	% Chance of this Event Occurring	Weighted Effect on Budget: Lowest Budget Effect ($)	Most Likely Budget Effect ($)	Highest Budget Effect ($)
1	Availability of specialty commissioning staff	**Experts in commissioning curling venues not available as planned** Other venues opening at same time may draw resources away *Delay in project, increased costs as schedule gets tighter*		$ -	$ 5.00	20%	$ -	$ -	$ 1.00
2			$ -	$ -			$ -	$ -	$ -
3			$ -	$ -			$ -	$ -	$ -
		Total Budget Effects of Commissioning Uncertainties					$0	$0	$1
		Total Budget Effect for Olympic Venue Specific Uncertainties					($7)	$0	$10

VANOC's risk management plan includes Steps 1 through 4 (but with no dollars attached to Step 3).

In Aggregate

Step 6: Risk analysis is first done on an individual venue basis. Risks that are only likely to affect this venue should be considered at this stage. Once the risk analysis has been done for each venue, the results should be aggregated to arrive at a total. In addition to specific venue risks, there may be "global risks", such as inflation, labour shortage and equipment and materials shortage, which are universal and apply across the board for all venues. The key concept driving

separation of venue specific and “global risks” is the desire to avoid phantom diversification of risks amongst the venues.

As an example, if the cost of steel were to rise it is likely that all venues require steel and would affect each venue. If the risk of steel cost was considered separately venue by venue the exposure to the risk would be diversified through the simulation process where some venues would experience higher steel costs than others. This would understate the potential effect of the risk and therefore it is better considered at a “global” level.

Figure 6 illustrates how this step could be documented. Numbers in the table are illustrative.

Figure 6

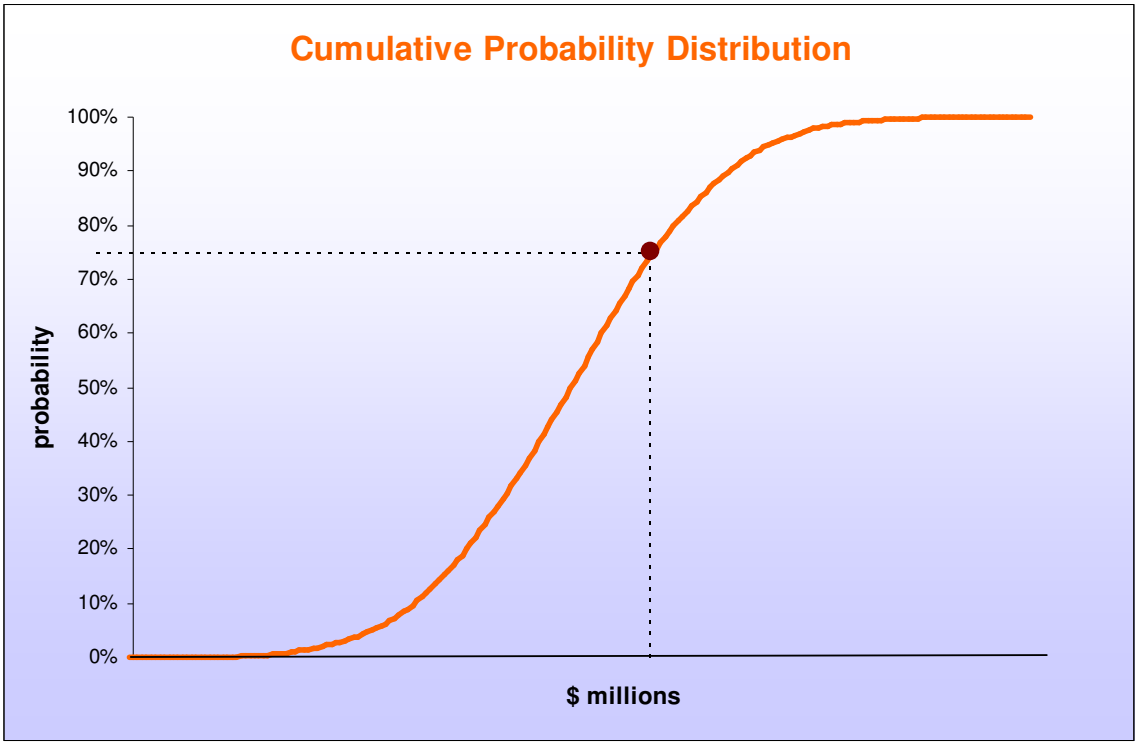
		Global Risk Adjustments				Specific Risk Adjustments				Risk Adjusted Costs		
			Min	Max								
			-20.00%	20.00%								
Venue	Forecast @ Completion	Exposure to Global Risk	Min	Max		Min %	Min	Max%	Max	Min	ML	Max
Richmond Oval	50.0	100.0%	(10.00)	10.00		-20.0%	(10.00)	20.0%	10.00	30.00	50.00	70.00
Vancouver Athlete Village	50.0	100.0%	(10.00)	10.00		-20.0%	(10.00)	20.0%	10.00	30.00	50.00	70.00
Killarney Training Centre	50.0	100.0%	(10.00)	10.00		-20.0%	(10.00)	20.0%	10.00	30.00	50.00	70.00
Trout Lake Training Centre	50.0	100.0%	(10.00)	10.00		-20.0%	(10.00)	20.0%	10.00	30.00	50.00	70.00
UBC Hockey Venue	50.0	100.0%	(10.00)	10.00		-20.0%	(10.00)	20.0%	10.00	30.00	50.00	70.00
General Motors Place	50.0	100.0%	(10.00)	10.00		-20.0%	(10.00)	20.0%	10.00	30.00	50.00	70.00
Hastings Park Figure Skateing and Short Track	50.0	100.0%	(10.00)	10.00		-20.0%	(10.00)	20.0%	10.00	30.00	50.00	70.00
Hillcrest Curling Venue	50.0	100.0%	(10.00)	10.00		-20.0%	(10.00)	20.0%	10.00	30.00	50.00	70.00
Cypress	50.0	100.0%	(10.00)	10.00		-20.0%	(10.00)	20.0%	10.00	30.00	50.00	70.00
Whistler Blackcomb Alpine Sking	50.0	100.0%	(10.00)	10.00		-20.0%	(10.00)	20.0%	10.00	30.00	50.00	70.00
Whistler Athletes Centre	50.0	100.0%	(10.00)	10.00		-20.0%	(10.00)	20.0%	10.00	30.00	50.00	70.00
BC Place	50.0	100.0%	(10.00)	10.00		-20.0%	(10.00)	20.0%	10.00	30.00	50.00	70.00
Whistler Olympic and Paralympic Village	50.0	100.0%	(10.00)	10.00		-20.0%	(10.00)	20.0%	10.00	30.00	50.00	70.00
Whistler Media Centre	50.0	100.0%	(10.00)	10.00		-20.0%	(10.00)	20.0%	10.00	30.00	50.00	70.00
Sledge Hockey Arena Paralympic Site	50.0	100.0%	(10.00)	10.00		-20.0%	(10.00)	20.0%	10.00	30.00	50.00	70.00
Whistler Nordic Centre	50.0	100.0%	(10.00)	10.00		-20.0%	(10.00)	20.0%	10.00	30.00	50.00	70.00
Whister Sliding Centre	50.0	100.0%	(10.00)	10.00		-20.0%	(10.00)	20.0%	10.00	30.00	50.00	70.00
Training Venues	10.0	100.0%	(2.00)	2.00		-20.0%	(2.00)	20.0%	2.00	6.00	10.00	14.00
Venue Planing and Scope Development	10.0	100.0%	(2.00)	2.00		-20.0%	(2.00)	20.0%	2.00	6.00	10.00	14.00
International Broadcast Centre	10.0	100.0%	(2.00)	2.00		-20.0%	(2.00)	20.0%	2.00	6.00	10.00	14.00
Other Sustainability Commitments	10.0	100.0%	(2.00)	2.00		-20.0%	(2.00)	20.0%	2.00	6.00	10.00	14.00
Total - Venue Capital	**890.0**									534.00	890.00	1,246.00
Contingency	89.0											
Total - Venue Capital	**979.0**											

Step 7: Determine the cumulative probability profile as illustrated in Figure 7 by running the risk register through a Monte Carlo simulation. (The data in Figure 7 is purely illustrative) The cumulative risk profile assists the decisions makers to select the appropriate level of risk they are willing to accept. For example, if the budget cannot for any reason exceed a certain dollar amount then this implies a very low risk tolerance level where the probability of achieving the budget has to be at the 100% probability level. If, on the other hand, the decision maker wants “reasonable” assurance that the budget is adequate they would select a probability level of 70-80%.

If the probability distribution shows a wide spread between the lower and upper end of the budget range and, from a decision maker’s point of view, a too high

budget at the 70-80% probability level, risk mitigation strategies have to be developed to reduce the range of the budget estimates.

Figure 7



Project Management and Oversight Analysis

A critical element of delivering a capital construction program is to have the appropriate tools and resources to measure and monitor implementation in order to be able to respond to unforeseen events and general deviations from plan and budget.

PBC has developed best practices with respect to project management and oversight as part of its mandate to implement infrastructure projects. These best practices serve as basis for this review to ensure that VANOC has the appropriate reporting and monitoring structure in place to manage the capital budget.

Project Oversight and Reporting

In a capital construction program, the tracking, reporting and reconciliation of capital costs in a consistent, timely and transparent manner is essential to ensure that the budget is well managed. It is also essential to track and report on costs, schedule and risks associated with each project to monitor their effect on schedule and budget. Mitigation strategies need to be developed and a suitable amount of contingency needs to be allocated in the budget that reflects the level of risk in the project.

The reporting should start at the project level to ensure that it is accurate. Reporting should be regular and consistent with a prescribed format to allow for comparison and progress monitoring. The project reports can then be used to summarize the state of the projects as well as the associated risks at the senior management/board level. Prescribing the requirements and format for these reports will provide management with the confidence that the information is complete and understood.

Management Reporting

Monthly or quarterly reports to VANOC management should include information that assists project managers to determine whether the project is on track or whether there are variances in costs and schedule, and if so, the impact of those variances and what to do about them.

An important part of cost control is to determine the cause and magnitude of a variance and whether it needs corrective action. The earned value method assesses progress against the baseline budget and clearly identifies any variance and magnitude.

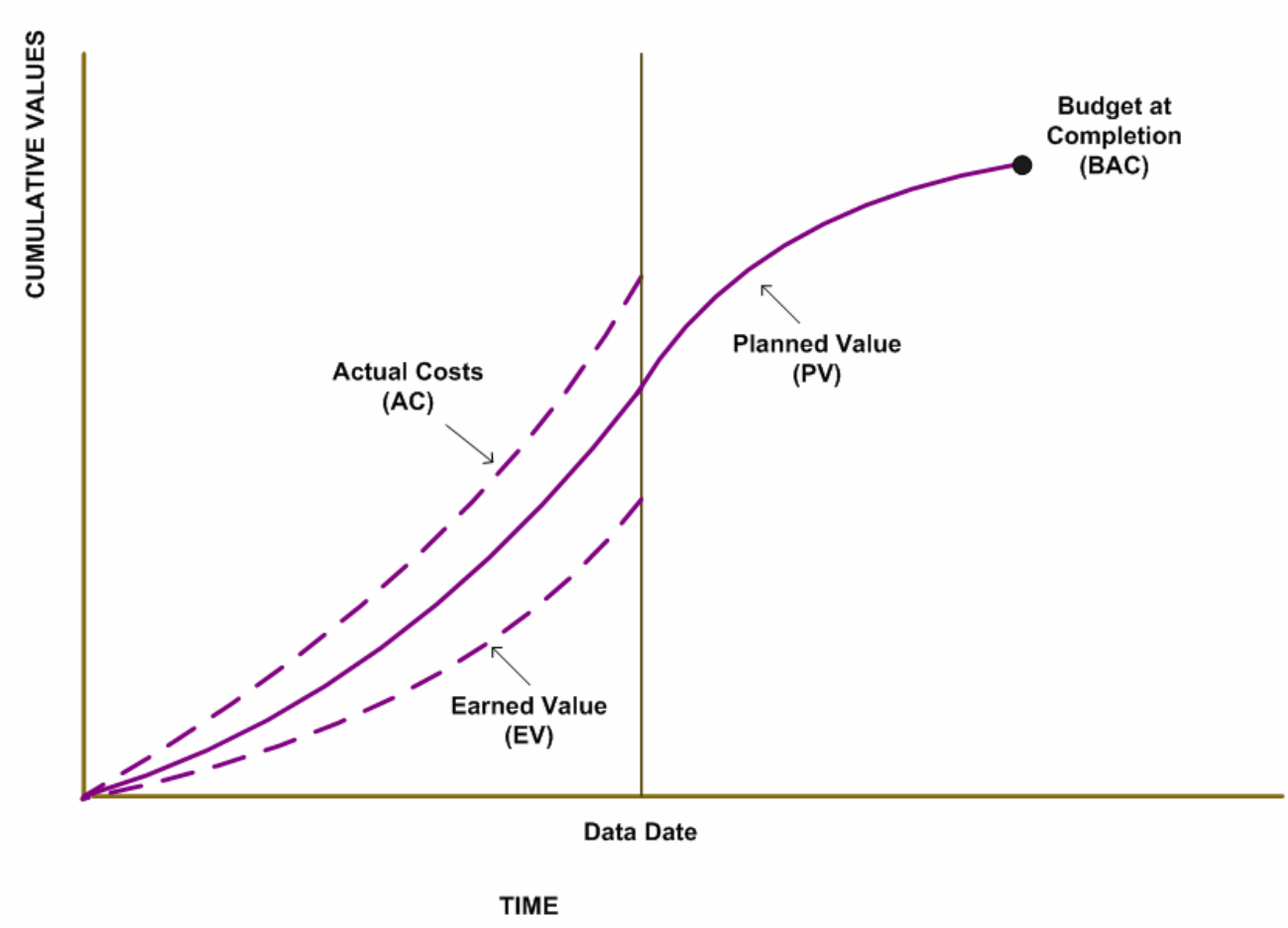
The elements of a project performance monitoring report should include the following:

- Planned Value (PV) – the budgeted cost for planned work by a certain time.
- Actual Cost (AC) – total actual cost incurred for work done during the time period.
- Earned Value (EA) – the budgeted cost for work actually done during the time period.

The relationship among these three variables is shown in Figure 8 below.

Figure 8

Earned Value Graph



In addition to the Earned Value reporting, the cost report has to record any changes to the baseline budget and a revised budget once the changes made have been approved by the VANOC Board. This will include forecast estimates at final completion (EAC) and forecast estimates to complete (ETC).

From this graphical presentation one can conclude that work completed is less than planned for and actual costs are higher. This project can be considered to be behind schedule and over budget at the reporting period. The ideal situation would be to have earned value and actual costs follow the planned value budget line as closely as possible.

Where there are variances, mitigation strategies have to be developed to close the gap.

Reports to the Board

Progress Reports to the Board should include similar information as the reports presented to management, but in a summarized form. The report should focus on the total capital budget and be reported on including original, last approved and any proposed variations on the total venue program. The key risks to the venue program should be reported on specifically with associated impact on budget and schedule along with mitigation plan.

An example of a reporting format that incorporates the aforementioned principles is presented in Figure 9 below.

Figure 9

Olympic Competition Venue – Monthly Project Communication Report
($ millions)

	Planned	Earned	Cost					Performance Index		Forecast	
				Cost Variance (CV)		Schedule Variance (SV)					
Work Element	Budget (PV)	Earned Value (EV)	Actual Cost (AC)	(EV – AC)	% (CV / EV)	(EV – PV)	% (SV / PV)	Cost CPI (EV / AC)	Sched. SPI (EV / PV)	ETC	EAC
Civil Works	23	20	23.5	-3.5	-17.5	-3.0	-13	.85	.87	53	50
Buildings	-	-	-	-						20	20
Utilities	5	5	4.7	+.3	+.06	0	0	1.06	1.0	9	10
Fees	5	5	5	0	0	0	0	1.00	1.0	8	10
Total Works	53									90	90
Contingency	10									5	10
Total	**63**									**95**	**100**

Figure 9 is a high-level example of the type of project communication report that could be useful for quickly viewing project cost and schedule status. In the example above, it shows that work completed for civil works is less than was planned and has a negative variance while work relating to utilities and fees has a positive variance at this point in the project delivery cycle

Building expenditures have not yet commenced, utilities are on schedule and under budget. Management fees are on schedule and under budget. This venue has an estimated cost of completion (EAC) of $100 million but is forecast at this point to be completed at $95 million (ETC)

The cost performance index was calculated as earned value divided by actual cost. Earned value measures the budgeted dollar value of the work that has actually been accomplished and actual costs measures the actual costs of getting that work done. When the EV and AC are the same, work on the project is being accomplished for exactly the budgeted amount of money. If actual costs exceed budgeted costs, the ratio will be less than 1.0. The CPI is also a measure of efficiency and in this example and index of .85 means that for every dollar spent on the project only 85 cents worth of work is actually accomplished. The final cost performance indicator is the EAC or forecast estimate at completion (i.e. budget). ETC is the forecast estimate “to” complete.

Current Situation at VANOC

The project reporting and monitoring falls under the Project Services group at VANOC. This centralized group is responsible for document control, scheduling, contract management and financial reporting on the venues. They assist the project managers in the administration of their projects. The project services group was recently enhanced with the addition of a Project Services Manager.

The financial reporting on the overall venue budget is based on the project execution plans. As only three reports have been completed to date, the basis for financial reporting is not as robust as it could be. It is expected that all major venues will have completed venue reports by the fall of 2006.

The cost control system is being implemented and presents a big step forward in terms of VANOC being able to track capital costs, but it is not yet complete and integrated in the development and tracking of the overall venue budget.

VANOC has approved Financial Policy and Procedures which allow for sole sourcing in order to be able to procure the projects faster. Sole sourcing increases the need for transparency and documentation. VANOC management needs to provide documentation as to why sole sourcing provides value for money.

VANOC is a new organization and is in the process of building up its team. Given the buoyant employment market VANOC has experienced challenges in finding the right people for vacant positions. In recent weeks, organizational changes have taken place and additional resources have been hired to assist with the venue program. Executive responsibilities have been realigned to reflect the urgency and importance of venue project delivery and more experienced construction project managers have been recently hired to fill vacant positions.

Summary of Key Findings

Capital Cost and Scope

- The approach to capital budgeting of Olympic venues is unique to all other forms of public infrastructure development. Historically, there has been greater cost exposure to the host government than what is normal for infrastructure projects as the government has limited ability to mitigate risks due to the fixed schedule and mostly prescribed scope. In BC, the process is further complicated by construction cost inflation, which is significantly higher than general inflation.

- By applying inflation adjustment to the Bid Book estimate without any other changes to scope would have brought the budget to $665 million. VANOC has managed through various scope reduction and value engineering measures to keep the venue costs within the $580 million estimated budget.

- However, it is unclear how the current capital cost estimate of $580 million in "as spent" dollars reconciles to the original bid budget as scope has changed and inflation has been added in. It is doubtful that without significant scope reductions and other measures to reduce costs, the original capital cost estimate of $470 million in 2002 dollars would have been achievable.

- VANOC's inflation adjustments, using quantity surveyors' estimates were based on the assumption that there is an open and competitive bidders' market responding to stipulated sum guaranteed contracts. This would appear to be optimistic.

- Decreasing labour productivity has not been adequately accounted for in developing the current capital construction budgets, especially for the Whistler venues, which further increases the risk of cost overrun for these venues.

- VANOC's reporting and definition of contingency are inconsistent and it is difficult to assess what is a "true" contingency (an amount to cover for unforeseen events) versus an allowance for discretionary changes in completing the venues. Confirmation is required of what the actual contingency is.

- A review of the venues was done in terms of whether it met or exceeded the minimum requirements and whether there were opportunities for scope reductions and value engineering. PBC concluded that in general, at this time VANOC has limited opportunities for design/ scope reductions and changes. Opportunities for value engineering and scope reductions have to be realized before the tendering of contracts.

    - However, VANOC still has opportunities to apply value engineering and do a review of the scope for the Whistler Athletes' Village and the Hillcrest Curling venue, both venues having scope and design which appears to be in excess of minimum requirements.

    - The design and scope for the Sliding Centre appear to exceed the minimum requirements while the scope and design for the Nordic venue appears to be reasonable. However, both venues are well underway and further scope reductions and value engineering options, therefore, appear limited.

- The scope and design for the UBC hockey rink appear to be comparable to other ice arenas in Canada and the US. As the project is well underway, scope reductions and value engineering options are limited.

- The requirement to obtain a Leadership in Energy and Environmental Design (LEED) designation for environmental sustainability adds a premium to the capital cost and should be applied with discretion. However, where appropriately applied the designation can be a small component of total capital costs, and should, in principle, generate value for money over the life of the project through reduced operating costs.

- Due to the technical nature of some venues and the tight construction market, VANOC has opted for a construction management procurement approach where the owner signs separate contracts with the general contractor, the architect, the engineer and the construction manager. Such an approach to project delivery requires experienced project managers and timely and responsive legal support. This procurement method adds substantial risk to the project as the construction manager is not motivated to keep cost under control and may lead to increased propensity for claims. The current contingency allocations do not take this higher level of risk into consideration.

Project Management and Oversight

- VANOC has recently made significant investments in project services support to effectively manage the venue projects under its control. Centralized project teams assist project managers in the administration of their projects. There is a concern that VANOC will not be able to implement this system in a timely manner. It also remains to be seen whether the system is properly implemented and used as planned.

- VANOC is making changes to its organization to address insufficient capacity in project delivery. Whether these changes will be sufficient to address the issues of limited "manpower" and provide more focused project management expertise remains to be seen. Given the tight market for talent and the nature of its business, VANOC has a challenge in attracting and retaining highly qualified people.

Risk Management and Analysis

- VANOC's preferred method of venue delivery risk mitigation is the provision of a fixed contribution to a third party best able to manage the risk. Given the present market conditions, this is both appropriate and desirable.

- VANOC is in the process of implementing an Enterprise Wide Risk Management program, which will assist project managers in better identifying, assessing and addressing risks in delivering the venues. A quantified risk analysis appears not to have been done to date, and, until such an analysis is performed, it is premature to determine whether $580 million is inadequate to complete the construction of the venues.

Recommendations

- VANOC should continue to complete project definition reports and project execution plans for all venues, including a complete quantitative risk register and analysis by October 31, 2006 and demonstrate how they will meet the proposed $580 million capital construction budget.

- It is recommended that the Province approve and release its share of the funding immediately for venues where risk mitigation strategies are in place—UBC Hockey Arena, Richmond Oval, Vancouver Athletes' Village and Training Venues to proceed. For the venues where there are no project definition reports and execution plans or risk mitigation strategies, the Province should not release its share of the additional funding until the proper documentation and reporting is complete.

- The Province's share of additional funding should be released on VANOC expressed agreement that it will provide regular progress reporting of earned value and contingencies taking into account the risk analysis and VANOC meeting any other funding conditions.

- The Province should monitor, on a regular basis, VANOC's progress on implementing project support services and risk management plans to ensure that they are implemented on time.

- VANOC should seek opportunities to mitigate construction and schedule risks by transferring risks to third parties with a fixed contribution. Venues where this strategy should be explored include the Hillcrest Curling venue, the Whistler Athletes' Centre and Whistler Athlete's Village. VANOC management should report back to the VANOC Finance Committee by October 31, 2006.

- It is recommended that a capital works or a construction advisory committee be established at the earliest possible date to receive, review and make recommendations on monthly status reporting, progress measurement and forecasting to the VANOC Finance Committee.

- Where "sole sourcing" and "construction management" is the procurement method, a documented and approved value for money approach is recommended for the VANOC Finance Committee to demonstrate that this is the preferred procurement method.

- Where VANOC has maintained project delivery responsibility, it is recommended that various project delivery options should be considered and incorporated into contract provisions to mitigate the risk of claims at the end of the process. Such contract provisions could include:

    - *Incentive Programs:* Incentive programs such as bonuses for early completion or coming under budget, assist in aligning the contractor's motivation and performance with the owner's objectives.

    - *Value Engineering:* This type of analysis is performed during the planning, design and procurement phases and can reduce claims during construction. The process can identify errors, omissions and impractical design details, if later uncovered by the contractor, would result in additional costs and delays to the venue.

- *Cost and Schedule Controls:* Contractors reporting with their monthly invoices should report any claims regarding the performance of the work. Each month before payment is made by VANOC, a cost consultant would complete a report based on the work performed during the month. The report becomes a monthly progress certificate, and is given to the contractor for review and approval. If the contractor fails to report a claim which has become apparent during the period, it loses its right to make that claim in the future. In every monthly report, the contractor must report any new claims as well as any outstanding ones from the previous months. The process ensures VANOC and its contractors are able to acknowledge the existence of any outstanding issues every pay period and forces quick resolution.

- *As-Built Schedule:* VANOC could require their contractors to submit an as-built (earned value) schedule every month before issuing a certificate for payment and before releasing final payment. By submitting a schedule which reflects the actual construction sequence and total duration will discourage the submission at a later date of delaying claims which were not previously shown.

- *Impact Claim Deadlines:* As contractors price change orders, they maintain the right to allow themselves the opportunity to make future claims for additional time or money to complete. If the contractor does not inform VANOC within the designated period of the cost and impact of the change orders, the contractor then waives the right to any additional time or cost resulting from the change order.

- *Economic Price Adjustments:* Some of the VANOC venues will be more than two years in duration, and to avoid claims if fixed price contracts are used, VANOC could set a limit on the price escalation to be carried by the contractor, leaving anything above a set amount to VANOC. If costs increase significantly during the life of the project, the contract would contain a formula and condition for compensating the contractor.

- *Procurement of Equipment and Materials:* For some venues, especially in Whistler and where there are a limited number of suppliers of materials, critical pieces of equipment and materials could be negotiated and procured before engineering takes place, based upon VANOC's detailed performance requirements. With suppliers on board early, the quality of design is improved and there is a more equitable allocation of risk. VANOC has used this process for the Sliding, Alpine and Nordic centres.

- *Realistic Contract and Performance Schedules:* VANOC places a high premium on project schedule. For better planning, obtaining contractor input on setting realistic schedules for the venues is recommended.

- *Timing of Construction:* VANOC may be able to select closing bid dates on its venues such that more competitive bids are likely to be received or a period when labour and material resources are less likely to be tight.

- *Tendering Document Quality:* Tendering laws require owners to reject low bids if they are non-compliant. VANOC requiring additional diligence from its legal support to make sure tender documents are simple and well organized is recommended.

- *Securing Experienced Personnel:* In addition to the cost pressures facing the construction of VANOC venues, experienced personnel fully committed to carry the project from the design to construction stage are required. Human resources policies on staff retention and performance could be given a high priority. VANOC may consider establishing an HR committee reporting to the board.

Appendix 1 – Team Resumes

Al Sakalauskas

EXPERIENCE:

Since April 2004

Partnerships BC, Vancouver, British Columbia

Chief Project Officer

- Reporting to the CEO, responsible for the business case preparation and government approval process for the development of a large acute and academic health care complex in downtown Vancouver.
- Responsible for the business case preparation and government approval process for the relocation and development of a major university college.
- Senior company representative coordinating various value for money audits with the Office of the Auditor General.

July 2002 - April 2004

Partnerships BC, Victoria, British Columbia

Chief Operating Officer

- Lead executive responsible for the creation, organizational design and start up operations of Partnerships BC Inc, a company responsible for bringing together ministries, agencies and the private sector to develop projects through public-private partnerships. As a company registered under the Company Act, Partnerships BC is wholly owned by the Province of British Columbia and reports to its shareholder the Minister of Finance**.**

Nov 1996 - July 2002

Ministry of Finance & Corporate Relations, Treasury Board Staff, Victoria, British Columbia

Assistant Deputy Minister, Capital Division

- Responsible for recommending to the Minister and Cabinet, major policies and priorities and for subsequent planning, financing and implementation of integrated capital delivery programs throughout the Province for all educational, health, correctional and transportation facilities, infrastructure and other capital assets currently valued at over $42 Billion with annual budget expenditure exceeding $1.8 Billion.

- Maintain authority to approve or delegate approval for implementation of all capital projects after they have been established in Government's Long Term Capital Plans**.**

- Responsible for the design, development and delivery of a comprehensive four year capital pilot program that mitigates the seismic risks identified in public buildings. Program outcomes will determine the province's long-term policy options.

- Responsible for contributing to the annual provincial budget development process. In the absence of the Minister of Finance, the government's communications and media contact regarding capital expenditures.

- **Project Sponsor: --** Development and implementation of a comprehensive capital asset management policy framework to be used by ministries, crown corporations and agencies.

- **Co-Chair: BC Green** – Building retrofit program.

- **Secretariat: Government/Industry Negotiating Team - Jobs and Timber Accord:** Assigned to the Deputy Minister to the Premier to conduct negotiations with forest industry CEO's. The accord is an agreement that requires B.C. forest companies to create jobs as a condition of access to Crown timber.

- **Secretariat: Deputy Minister Committee on Program and Fiscal Management:** -- Provide coordination/review and variance monitoring of 1997/98 expenditure budget implementation plans.

- **Director B.C. Systems Corporation:** -- Implement the government directive of an orderly wind down of the Crown Corporation and transfer all systems support to Information Technology Services Division.

Jan 1990 - Nov 1996 **Ministry of Agriculture, Fisheries & Food, Victoria, British Columbia**

Assistant Deputy Minister, Financial Programs and Administration Div.

- Accountable to the Deputy Minister for the formulation, development and evaluation of financial programs delivered by the Ministry, and as the Executive Financial Officer provided leadership and direction to the Department Branch Directors to develop, implement, manage and evaluate all financial and corporate support services with the ministry.

- The position is accountable for the outcome of all aspects of the financial process including budgeting, revenue and expenditure accounting and controls, and financial accounting in accordance with the Financial Administration Act; all aspects of human resources management including staffing, classification, compensation, training, discipline and occupational health and safety in accordance with the Public Service Act; information systems, information management; corporate support services to the B.C. Agricultural Land Commission, Freedom of Information Office, Equity and Diversity, administrative policy development and materials management in accordance with relevant legislation. Senior ranking executive member in the absence of the Deputy Minister.

Oct 1986-
Dec 1989 **Ministry of Agriculture, Fisheries & Food, Victoria, British Columbia**

Director, Agricultural Finance Department

- Reporting to the Assistant Deputy Minister was accountable for the development, implementation, monitoring of credit programs, policies and legislation, and other forms of direct, indirect and ad-hoc financial assistance and economic development programs targeted to agricultural producers and food processors.

Dec 1983-
Sept 1986 **Bank of British Columbia, Vancouver, British Columbia**

Manager

- Reported to the President of Canadian Banking Operations, responsible for agriculture and food industry credit policy in Western Canada. Duties included credit analysis of new or existing customers, training of bank staff and providing financial analysis to commercial credit.

Apr 1981-
Dec 1983 **Price Waterhouse, Vancouver, British Columbia**

Manager

- Member of a national management consulting team specializing in primary resource industries.

Al Sakalauskas

Mar 1978-
Mar 1981 **Foodwest Resources Consultants, Vancouver, British Columbia**

Partner

- Directed and participated in a wide range of technical, management, economic and marketing assignments.

EDUCATION:

1973 – 1976 **Master of Science**
UNIVERSITY OF BRITISH COLUMBIA
Faculty of Graduate Studies
Department of Agricultural Economics

1969 – 1973 **Bachelor of Science Degree**
UNIVERSITY OF BRITISH COLUMBIA
Faculty of Agricultural Sciences

ACADEMIC / BUSINESS / SERVICE AFFILIATIONS

- **Past President**, The Institute of Public Administration of Canada - Victoria Chapter
- **Member**, Article 21 - Labour - Management Joint Committee
- **Member**, Deputy Ministers' Advisory Committee on Accountability
- **Member**, Executive Financial Officers Council
- **Director**, Oak Bay Tennis Club
- **Member**, Executive Steering Committee, Freedom of Information and Privacy Legislation Review
- **Member**, Executive Steering Committee, Government Corporate Accounting Systems Project
- **Graduate**, Hastings Institute – "Kingswood"
- Project Management Institute Certification

Eva M. Hage

Ms. Hage joined Partnerships BC in May 2003. She is currently the procurement director for the Gateway Program and is responsible for developing the business case including financial and risk analysis and Treasury Board submissions for the Port Mann Highway 1 and South Fraser Perimeter Road projects. Eva was also the procurement advisor to the Golden Ears Bridge and the chair of the financial evaluation committee on the Kicking Horse Canyon project.

Eva has assisted clients with financial and economic analysis in the transportation and public sectors for 14 years. Her clients include many of the large corporations in B.C. such as BC Ferries, TransLink, BC Hydro and BC Buildings. She has extensive experience of government capital policy and process through her work as an independent consultant to the B.C. Government overseeing business planning and capital spending in various Crown Corporations.

EDUCATION

1986 - 88 **Master of Business Administration**, University of Western Ontario, London, Ontario

1982 - 85 **B. Comm.**, University of Alberta, Edmonton, Alberta

EXPERIENCE

Since 2003 **Partnerships BC, Vancouver, British Columbia**

Assistant Vice President (Since 2005)
Project Director (2003-2005)

- Provide leadership in successfully developing and implementing public private partnerships in infrastructure projects, primarily with focus on the transportation sector.
- Responsible for developing and implementing business cases including financial and risk analysis.
- Provide project management services to clients, including procurement, governance and structuring of project teams, progress reporting and approvals.
- Major projects include the Ministry of Transportation's Gateway Program (ongoing); advising TransLink on private public partnerships finance and procurement issues with respect to the Golden Ears Bridge (2003-05) and; chairing the Financial Evaluation Committee on Kicking Horse Canyon Project (2004-05)

2001 - 2003 **Greater Vancouver Transportation Authority (TransLink), Vancouver, British Columbia**

Eva M. Hage

Special Projects Advisor

- Provided advice to the Senior VP of Strategic Planning and the Chief Financial Officer on major projects.
- Negotiated with Bombardier on operating contract for SkyTrain, conducted financial analysis on the Canada Line and the Golden Ears Bridge; negotiated AirCare contract and assisted with the funding strategy and consultation for TransLink's 3-year plan.

1995 - 2000 **Eva Hage & Associates, Vancouver, British Columbia**

Consultant

- Prepared business cases and economic justification for infrastructure projects including financial, economic and risk analysis.
- Advised on and developed corporate performance management systems.
- Participated in the Provincial Core Services review of BC Ferries.
- Advised the provincial government on restructuring of BC Ferries including a cost and service rationalization impact study on the minor ferry routes.
- Assisted Chief Negotiator with due diligence and in-dept financial analysis in the creation of GVTA.
- Conducted Multiple Account Evaluations on increasing Amtrak service between Seattle and Vancouver; replacement of the Kootenay Lake ferry; construction of a new pipeline in BC for BC Hydro; and new convention centre in Vancouver.

1992 - 1995 **BC Crown Corporations Secretariat, Provincial Government, Vancouver, British Columbia**

Special Projects Advisor

- Responsible for overseeing the development of business and strategic plans in the transportation Crown Corporations (BC Transit, BC Ferries, BC Rail). Developed policies and strategic plans together with senior Crown management and advised government on Crown Corporation investment plans and strategic initiatives.

1988 - 1992 **Indevo Management Consultants AB, Stockholm, Sweden**

Associate Consultant

Eva M. Hage

- Business analyst specialising in competitive and market analysis. Worked in the Madrid office in 1990.

LANGUAGES

Swedish, English and Spanish

COMMUNITY ACTIVITIES

2001 –2003 Commissioner, Vancouver Economic Development Commission

2001 -2003 Board member, JD Fundraising Committee, Children's Hospital

TOM SIMPSON

EXPERTISE

- *Stakeholder consultation*
- *Strategic planning*
- *Public/Private partnerships*
- *Consultant coordination*
- *Team leadership*
- *Communication*
- *Municipal liaison*
- *Public presentations*
- *Project management*
- *Budget preparation*
- *Risk management*
- *Negotiation*

CAREER EXPERIENCE

Capital Programs Manager — 2004

BC MINISTRY OF TRANSPORTATION

- Management of +$90M capital budget
- Infrastructure partnership agreements
- Capital project strategic planning
- Stakeholder consultation

Executive Vice-President — 2003

URBANICS CONSULTING LIMITED, VANCOUVER

- Cultivated client relationships focused on planning and development
- Account Executive for Woodward's Redevelopment Project - negotiated client agreement, led stakeholder consultation process, structured pro-forma budgets

Consultant - Real Estate	BRITISH COLUMBIA BUILDINGS CORPORATION • Team leadership, stakeholder consultation, project management, deal structuring, risk management for projects with a combined capital budget of +$250M • Strategic planning and community consultation • Negotiated client, municipal and Treasury Board agreements • Project Team Leader, Robson Square Revitalization, a $75M redevelopment and leasing initiative • Project Team Leader, Jericho Lands project, a $70M land development initiative • Project Team Leader, Willingdon Lands Project, a $30M strategic land disposal and development project • Team member, Selkirk Waterfront Public/Private Partnership, a $32M "P3" sale/leaseback transaction • Guided projects through all phases of planning, development and construction – see Appendix I	1993-03
Director of Development	THE SHON GROUP, VANCOUVER Working in tandem with the VP of Development: • Land acquisition, financing, rezoning, project management, marketing and sale of retail and office projects in British Columbia • Cathedral Place – managed all phases of development planning, consultant coordination, municipal approvals, tenant coordination, $40M general contract negotiation and construction contract administration for a 23 story office tower • Hornby Professional Centre – project management, consultant coordination, leasing, approvals, general contract negotiation, marketing and sale of a 85,000 sq. ft. retail/office project – see Appendix II	1986-92
Senior Project Manager	EDGECOMBE INVESTMENT SERVICES, VANCOUVER • Project management, pro-forma budgets, consultant coordination, contract negotiation, site supervision and tenant coordination for commercial projects	1986

Project Manager	WESTMOUNT DEVELOPMENTS, RETAIL DIVISION OF THE SHON GROUP, VANCOUVER Working in tandem with the VP of Development: • Delta Shoppers Mall and Sunshine Hills Shopping Centre – development planning, consultant coordination, contract negotiation and on site project management for a combined 235,000 square foot retail development • Site acquisition, rezoning, development planning, leasing, consultant co-ordination, contract negotiation, project management and sale of retail projects in British Columbia • Managed leasing programs and conducted lease negotiations with over 50 national and local tenants	1981-86
Regional Administrator	BRITISH COLUMBIA MINISTRY OF LABOUR • Administered a $10 million budget • Supervised, trained and evaluated 23 staff • Managed computerized program delivery • Program evaluation	1978-81
Executive Director	RAY-CAM CO-OPERATIVE ASSOCIATION Working with community groups and municipal officials, created and implemented a community development strategy for Vancouver's Downtown Eastside. • Fifteen staff, $2 million annual budget • Program planning and evaluation • Negotiation with all levels of government • Funding proposals, staff training, community consultation	1976-78
Regional Director	COMPANY OF YOUNG CANADIANS Identified, hired and trained community development workers. Devised community organization and development strategy. • Developed over 300 units of cooperative housing in GVRD • Residential rezoning, interim and permanent financing, contract negotiation, contract administration • Community planning and consultation	1970-76
Consultant	MINISTRY OF COMMERCE AND INDUSTRY (CUSO) Organized and implemented a study of retail trade in rural Tanzania. • Presented study findings to the Ministry and assisted in drafting revised retail and wholesale trade legislation.	1967-68

EDUCATION

Bachelor of Commerce	UNIVERSITY OF BRITISH COLUMBIA Finance major Graduating thesis analyzing real estate financing and investment strategies of selected Canadian pension funds

RECENT PROFESSIONAL DEVELOPMENT

Public Private Partnerships	CANADIAN COUNCIL FOR PUBLIC PRIVATE PARTNERSHIPS Public- Private Partnerships: Focusing on the Nuts & Bolts	2003
Transportation Planning	BC CONSTRUCTION ROUNDTABLE Seminar on Richmond/Airport/Vancouver Rapid Transit Project - A Status Report	2003
Public Private Partnerships	BC CONSTRUCTION ROUNDTABLE Seminar on Public-Private Partnerships and the BC Infrastructure Agenda	2002
Public Private Partnerships	PACIFIC BUSINESS & LAW INSTITUTE 2 day workshop focused on implementing public/private partnerships in British Columbia	2001
How to Avoid Indecent Proposals	NATIONAL EDUCATION CONSULTING 2 day workshop on the legal implications of Requests for Qualifications, Requests for Proposals and Tender Documents	2000
Creative Financing	THE CANADIAN INSTITUTE Workshop on real estate joint venture, syndication, pension fund pooling and tax deferral financing structures	1998
Leadership	MICA MANAGEMENT RESOURCES Seminar series on developing leadership capability including assessment of organizational structures required to foster team oriented leaders	1997
Team Leadership and Development	QUINN BESNER AND ASSOCIATES Workshop series aimed at the creation of cross-functional team productivity	1996

COMPETENCIES

Leadership	My public sector work includes forming and leading cross-functional teams focused on strategic planning and development of public initiatives. In the private sector, I've led teams focused on profitable commercial real estate development. I've coordinated skilled professionals during the creation of complex 'P3' projects, worked with community groups to build affordable housing and I've managed retail developments. I'm able to foster a project vision, attract project champions, forge stakeholder bonds, devise public consultation strategies and represent public and private initiatives before public meetings, municipal councils, agency Boards of Directors and the provincial Cabinet. I provide leadership founded on clear goals, defined roles, cooperation, inspiration and accountability.
Stakeholder Consultation and Negotiation	Forging agreements with stakeholders, partners and tenants depends on an ability to understand their needs, on good communication, research, analysis, clear objectives and an ability to negotiate. I've structured deals able to resolve conflicting stakeholder objectives – agreements designed to achieve innovative development solutions – deals requiring complex negotiations with First Nations, municipal governments and an array of public and private stakeholders. I've negotiated consulting contracts with architects, engineers, appraisers, leasing agents and other real estate professionals, and, I've negotiated construction contracts and complex leases with retail, office and institutional tenants. In addition, I've structured and negotiated complex real estate sale/leaseback transactions that have set the standard for public/private partnerships in British Columbia. My negotiating skills are predicated on active listening, hard financial analysis, a continuous search for new possibilities and the assumption creative solutions are always available.

Communication	I have shaped and implemented public consultation strategies for both public and private sector initiatives. I've authored issue papers and prepared business cases for real estate development, asset management and P3 opportunities utilized by provincial Ministries, Crown Corporations and Treasury Board. I have represented private sector land owners at controversial public hearings and I have advocated for the development of public facilities before municipal councils. And, I've briefed provincial Ministers and agency Directors on complex deal structures in a language understood by decision makers. I'm able to describe and promote public sector initiatives, and, more importantly, I am able to achieve them.
Public-private partnerships	Essential to successful public-private partnerships is the allocation of risk between partners. I have led public sector P3 initiatives and structured agreements that place risk with the entity most able to manage it while also managing stakeholder expectations during the process.

149 Rumsey Road
Toronto, Ontario
M4G 1P3

Phone 416-424-1868
Fax 416-424-4059
E-mail
m2pm@rogers.com

Mark Miles

Professional experience

M2PM Limited, President
1998 - Present

Director of Design and Construction for the University Health Network:

- $349 Million – Project 2003 - Expansion and Renovation of Toronto General Hospital/Toronto Western Hospital
- $50.0 Million - East Wing Project - Toronto Western Hospital
- $49.0 Million – Transplant Institute at Toronto General Hospital, New Clinical Services Building
- $9.0 Million – Diagnostic Imaging Project – Toronto Western Hospital
- $100.0 Million - Mars Medical Research Tower
- $6.0 Million –Chiller Plant Upgrade - Toronto Western Hospital
- $8.0 Million - Parking Garage Expansion – Toronto General Hospital
- $1.0 Million – Hyperbaric Chamber Facility - Toronto General Hospital

Additional Construction Project Management Services:

- $25.0 Million - C.H.A.T./U.J.A. Vaughan Campus Project
- $60.0 Million - U.J.A. Community Centre and Parking Facility – Vaughan Campus Project
- $8.0 Million - O'Gallagher Residence
- $1.0 Million - Toyne Residence

Ellis-Don Corporation Limited
1984-1998

Construction Projects including:

- $100.0 Million - Famous Players Expansion – Project Management – New Construction of Several Theatres throughout Ontario
- $100.0 Million - IBM – Construction Management - Renovation of properties across Canada and in the Caribbean
- $70.0 Million - William Davis Brampton Court House – Design Build Contract
- $15.0 Million - Princess Margaret Hospital – Centres of Excellence – Construction Management
- $70.0 Million - Sunnybrook Hospital M Wing Expansion and Surgical and Diagnostic Building – Lump Sum
- $5.0 Million - Sunnybrook Hospital Chiller Plant Upgrade – Lump Sum
- $50.0 Million (US) – University of Michigan, School of Social Work – Lump Sum
- $210.0 Million - Princess Margaret Hospital Construction – Lump Sum
- $6.0 Million - AMGEM Institute – Construction Management
- $1.8 Million - Mount Sinai/ Princess Margaret Micro Biology Lab – Construction Management
- $110.0 Million - Metro Hall Construction – Design/Build Core and Shell Construction Management Tenant Fit-out
- $527.0 Million – Sky Dome and Sky Dome Hotel – Design/Build – Construction Management
- $200.0 Million – General Motors C/K Truck Plant – Expansion and Renovations – Lump Sum

Appendix 2 – List of Documentation and Interviews

Documents:

Business Plan, Version 1, October 2005
Project Definition Report, Whistler Sliding Centre Project
Project Execution Plan, Whistler Sliding Centre Project
Project Definition Report, Whistler Nordic Competition Venue
Project Execution Plan, Whistler Nordic Competition Venue
Project Execution Plan, Whistler Creekside Alpine Skiing Venue

2005 Venue Program
2010 Games Venue Agreements
Whistler Athlete and Neighbourhood Marketing Plan
Ornicron – Thunderbird Winter Sports Centre Audit Summary

List of Interviewees:

Stacey Bjornsen
John Eastman
John English
Doug Ewing
Ron Holten
Jan Jensen
Todd Kobus
Terry Levins
Steve Matheson
Jim McLaughlin
Rod McLeod
Carol Rowen
Barry Thorsen
Jim Waugh
Terry Wright
Kathy Young

Joe Redmond, UBC Properties Trust
Daniel Bock, UBC Properties Trust

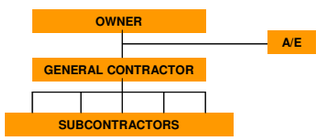
Whistler 2020

Appendix 3 – The Developer Spectrum

CONTRACTOR

- Linear process
- Plans and specs completed
- Two separate contacts for design and construction
- Contractor bids to design
- Lowest bidder awarded the work

STRUCTURE



SCHEDULE

ADVANTAGES

- Defined scope
- Easy to manage
- Single point of accountability
- Lowest price accepted
- Good for uncomplicated projects but are not schedule-sensitive or subject to change
- Government preferred approach
- Familiar delivery method

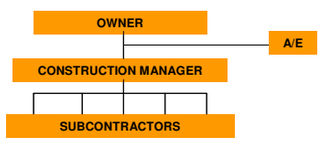
DISADVANTAGES

- Longer schedule
- May need redesign or re-bid
- No control over contractor or sub-contractor selection
- No budget input from contractor
- Not suited for projects which are schedule or change sensitive
- Owner accepts liability for design in its contract with the contractor
- Owner provides oversight and quality review

CONSTRUCTION MANAGER AT RISK

- Owner selects a fee-based firm to manage construction before design is complete
- CM and architect work together to develop, design and price
- Owner select architect, CM separately
- GMP provided by CM
- CM awards contracts to subs
- Typically contractors operate on "open book"
- Price is CM's fee and subs' bids
- Owner will not pay more than GMP and retains any savings or share savings with CM

STRUCTURE



SCHEDULE

ADVANTAGES

- Control based on quality
- CM early involvement in pre-construction phase
- All work except CM fee is bid
- CM at risk signs contracts with subs
- GMP
- Fast track schedule, construction begins before design is complete
- Good for large complex projects

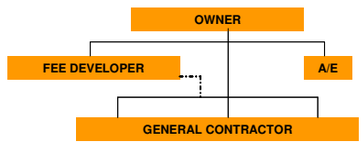
DISADVANTAGES

- CM fee negotiated, not bid
- Government approval to use CM
- Require strong staff capabilities of owner
- CM converts advisor to gen. contractor

FEE DEVELOPER (AGENCY CONSTRUCTION MGMT)

- Owner contracts both a developer and A/E
- No GMP
- Owner signs separate contracts with CM, A/E, GC
- Developer is owner's principal agent

STRUCTURE



SCHEDULE

ADVANTAGES

- Developer selected on quality
- Owner selects A/E and prime contractors
- Fast track delivery
- Fee developer responsible for delivery of project in budget and on schedule
- Developer has no vested financial interest in the project

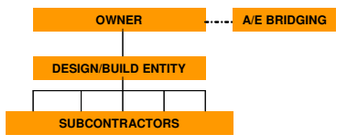
DISADVANTAGES

- Developer has no contractual responsibility with subcontractors
- Final price not established until all packages are bid
- No GMP
- Owner responsible for adequacy and completeness of design
- Developer fee tied to size of project and risk
- Owner needs strong staff capabilities
- Fee developer lacks the contractual authority to dictate the schedule of another contractor

DESIGN / BUILD (POSSIBLE LEASEBACK)

- Owner hires A/E and builder team – one contract
- GMP based on owner specs and design criteria
- A/E – Contractor develops design that meets specs and below GMP
- Building can be turned over or leaseback, if financed

STRUCTURE



SCHEDULE

ADVANTAGES

- Single point of accountability for design and construction
- Construction begins before design complete
- GMP with collaboration
- Can extend to equipment and maintenance

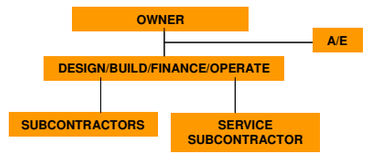
DISADVANTAGES

- No check and balance between architect and builder
- Owner must select team rather than best architect and builder
- Design completed after GMP is given
- Difficult to control quality because design / build team must only meet minimum criteria standards
- Much diligence of owner's staff
- Difficult for owner to verify receiving best value for money
- Initial scope/prel. design must be accurate

AT RISK DEVELOPER (LEASEBACK & MAINTAIN)

- An extension of the Design Build approach the developer provides financing for the project
- Can be non-recourse project financing
- Lease/leaseback or sale/leaseback transaction
- Developer obtains financing for construction by the developers interest in land, rent payments and commercial opportunities
- GMP, lifecycle risk transfer, equity exposure

STRUCTURE



SCHEDULE

ADVANTAGES

- Full transfer of risk to developer
- Quickest delivery, pay when occupied
- Bundling ability, project flow potential
- Cash flow / revenue sharing
- Creates tax revenues
- Developer provides GMP for full lifecycle
- Single point of resp. for design, construction
- Owner can negotiate obtain best value for project
- Designer constructor tension eliminated
- Potential for off-book treatment

DISADVANTAGES

- Higher transaction costs
- Long term relationship with developer
- Owner must have exceptional staff devoted to process or engage a consultant who is
- Requires upfront diligence on output & perf specs
- No adversarial relation between designer and builder.

Appendix 4 – Hillcrest Curling Venue

PBC examined the scope and costing of the curling venue and benchmarked it to various ice-related sports facilities. The benchmarking comparison is only an indicative analysis of the relative costs of the Hillcrest curling venue to other ice rinks which are categorized as ice hockey sports entertainment complexes. As such, it is important to understand that these are significant permanent commercial operations with such features as arena seating, club seating boxes, restaurants, etc.

Scope

There is considerable room for variations in scope for the project which will have considerable impact on costs and some of these issues are as follows:

- number, size and pitch of seats;
- building height and span;
- the building area;
- number of concourses;
- back of stage facilities; and
- other amenities.

Schedule

Schedule is a key factor in assessing construction costs. An optimum schedule for the construction of ice arenas is between 15 and 18 months. Any fast-tracking of this schedule would likely result in a substantial cost increase.

Construction Type and Materials

It is assumed that the roof structure would be composed of steel trusses. The use of wood trusses, even if practical for the rigging loads at this span, would likely result in very significant cost increases. Other construction materials and types may depend on sub-surface conditions.

Construction Quality

Some of the facilities we investigated, such as Everett, Washington had substantial amounts of brickwork, glazing and architectural features. High quality architectural finishes will add to costs.

Site Conditions

The impact of site conditions will have the potential for changes in costs. Some of the following factors must be considered:

- Topography (the right topography can facilitate multiple concourses by permitting entries at different elevations).
- Soil load bearing characteristics.

- Site contamination – frequently these types of facilities are located on reclaimed industrial sites which can lead to expensive clean up.
- Demolition – as an indication of costs, the demolition of the old Victoria Memorial Arena was approximately $2 million.

Market Conditions

The construction market conditions will be an important factor impacting costs. These comprise:

- capacity in the marketplace; and
- geographic location.

Delivery Method

In recent years, the preferred delivery methods for this type of building has been a design / build / operate format with some financing often included. A traditional architect design, low bid tender or even construction management, could result in significantly higher costs.

There is considerable room for innovation and creativity in the design and construction of these buildings and there is a well developed design / build marketplace to respond to a proposal calls. In Figure 3, the preliminary budget of the Hillcrest curling venue is compared to Save-On-Foods Arena in the City of Victoria, Oshawa Arena in Ontario and the UBC hockey rink.

The Victoria arena was a design/build contract for a 7,000 seat NHL-sized arena. The contract was signed in October 2003 at a value of $28 million and opened in April 2005. The facility is approximately 186,000 square feet and was completed for a cost of $149 per square foot.

The Oshawa arena has a 5,400 seat main bowl with a second NHL-size sheet with 300 seats attached. The Oshawa project is now under construction using a fixed price design/build contract. The date of start of construction was July 2005 and the total cost is approximately $194 per square foot on a floor area of 180,000 square feet. The contract price is $34.8 million.

Further analysis examined ice venues which have more recently opened and they include Chilliwack Prospera Place, South Okanagan Events Centre, Everett Events Centre, and Verizon Wireless Arena (Manchester, New Hampshire).

Chilliwack Prospera Place

In 2003, the City of Chilliwack entered into a design/build GMP contract for an arena which now contains 6,000 seats after a recently completed expansion. A second ice was added with minimal seating. The GMP for the facility (both sheets) was $20.3 million on a floor area of 152,000 square feet or a unit cost of $134 per square foot.

South Okanagan Events Centre, Penticton

The City of Penticton has recently sought competitive proposals through a design/build/operate competition for a 5,200 seat arena to be attached to the existing Penticton Trade and Convention Centre. While details of the winning proposal are still confidential, Partnerships BC's information sources indicate the cost of the facility is on the order of $192 per square foot.

Everett Sports Complex (Everett, Washington)

The 8,250 seat Everett Events Centre in Everett, Washington opened in October 2003. The facility has both a main bowl and a secondary ice sheet together with conference centre facilities. The facility is considered to be of high architectural quality as it has an elaborate roof structure and has large amounts of brickwork. The site topography is considered challenging with a site elevation difference of 60 feet across the site. The 350,000 square foot centre was delivered on a design/build for a total project cost of $71 million or $205 per square foot.

Verizon Wireless Arena (Manchester, New Hampshire)

The Verizon Wireless Arena has 10,000 seats and opened in 2001. The total gross footage is 256,000 with a construction cost of $47.3 million or $167 per square foot.