13. Next I'm going to read some factors that may or may not influence your decision to use the streetcar service. Please rate each on a 10-point scale, where "10 means that this is of highest importance" and "1 means of no importance at all" in your decision to use the streetcar. READ. ROTATE ORDER.

✔	CHECK ROTATION START POINT	Rating: No Importance ◄——► High Importance										DK
❑1	Cost of the fare	1	2	3	4	5	6	7	8	9	10	98
❑2	Availability of day passes	1	2	3	4	5	6	7	8	9	10	98
❑3	Service frequency	1	2	3	4	5	6	7	8	9	10	98
❑4	Ability to use fare to transfer for free to other transit services, such as SeaBus, SkyTrain and buses	1	2	3	4	5	6	7	8	9	10	98
❑5	Ability to use fare to transfer for free to False Creek ferries (POINT OUT FALSE CREEK FERRIES ON MAP)	1	2	3	4	5	6	7	8	9	10	98
❑6	Early morning streetcar service (before 10am)	1	2	3	4	5	6	7	8	9	10	98
❑7	Late night streetcar service (after 8pm)	1	2	3	4	5	6	7	8	9	10	98
❑8	Use of heritage style vehicles	1	2	3	4	5	6	7	8	9	10	98
❑9	Use of modern style vehicles	1	2	3	4	5	6	7	8	9	10	98
❑10	Tourist Destinations served	1	2	3	4	5	6	7	8	9	10	98

Demographics

And, I have just a few more questions for classification purposes ...

14. Into which of the following age categories do you fall?

- ❑1 18 to 24 years
- ❑2 25 to 34 years
- ❑3 35 to 44 years
- ❑4 45 to 54 years
- ❑5 55 to 64 years
- ❑6 65 or better
- ❑98 REF

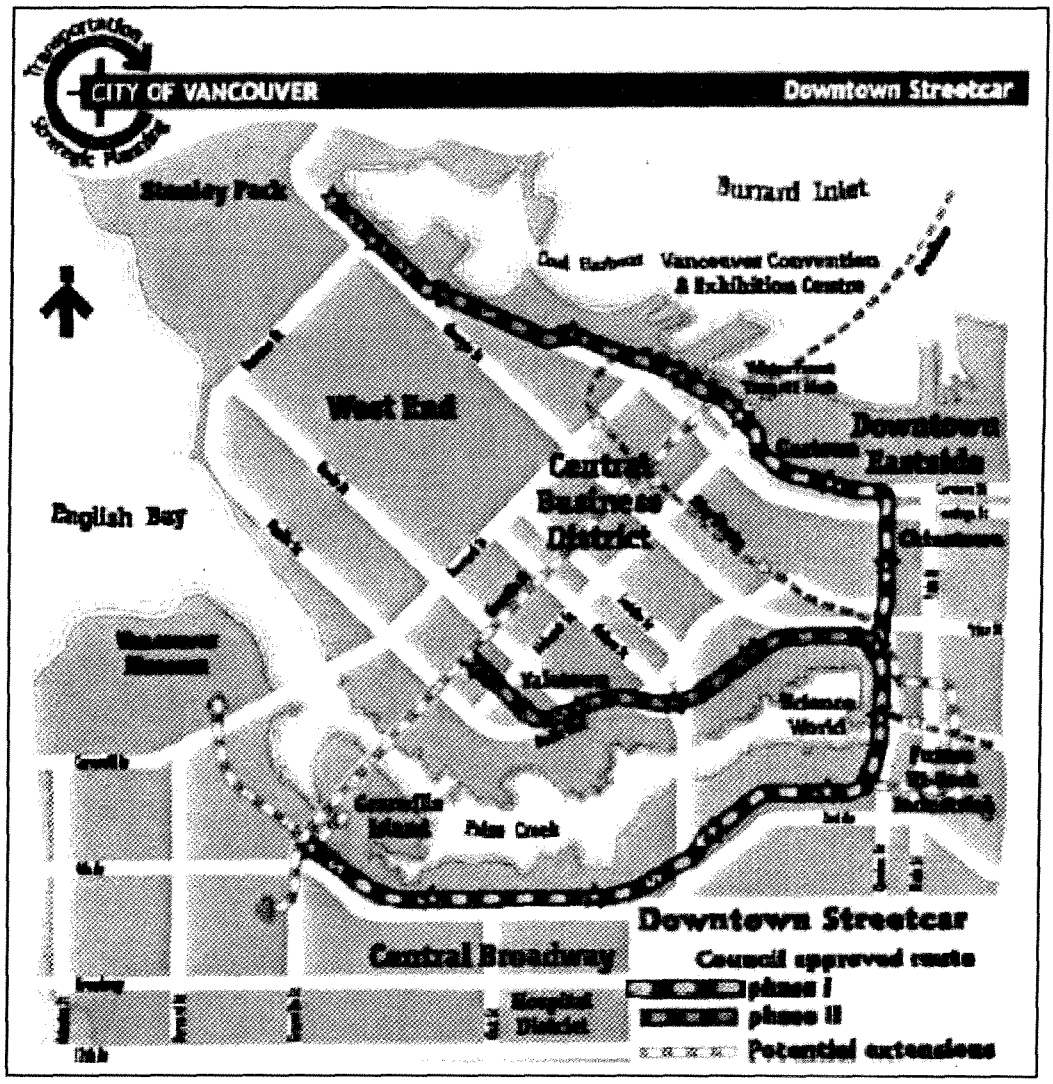
15. Where is your home residence? (Province/State/Country)

BC → PROBE:

- ❑1 Vancouver Island
- ❑2 Interior
- ❑3 Other BC
- ❑4 Other Province/Canada → RECORD PROVINCE _____
- ❑5 **USA** → RECORD STATE (and city if mentioned) _____
- ❑6 **Europe** → RECORD COUNTRY _____
- ❑7 **Asia** → RECORD COUNTRY _____
- ❑8 Mexico/Central/South America
- ❑9 Africa/Middle East
- ❑10 Australia/New Zealand
- ❑96 **Other** (specify) _____
- ❑98 **REF**

Thank you. That completes our survey. In case my supervisor may wish to verify this survey, may I please have your first name or initial? _____

Phone #: _____



Approximate Running Times: Every 10 minutes
Approximate Journey Times: Waterfront to Science World – 10 minutes
Science World to Granville Island – 8 minutes

CITY OF VANCOUVER
ENGINEERING SERVICES
D.H. Rudberg, P.Eng., General Manager
T.R. Timm, P.Eng., Deputy City Engineer

July 26th, 2004

RE: Downtown Vancouver - Tourist Travel and Transportation Survey

The City of Vancouver has commissioned Mustel Group Market Research, a professional polling firm to conduct intercept surveys among tourists to Downtown Vancouver. The purpose of the study is to better understand tourists' needs and preferences regarding transportation options.

We very much appreciate your participation, as your input will assist the City Engineering Services Department in planning transportation services for the Downtown area.

Surveying will be conducted during the period July 29 to August 11, 2004 in the following areas: Stanley Park, Waterfront Station/Canada Place, Gastown, Chinatown, Science World and Granville Island. If you have any questions concerning this study, please contact me directly:

Dale Bracewell
Downtown Streetcar Project Manager
City of Vancouver
Strategic Transportation Planning Branch
604-871-6440

Sincerely,

Dale Bracewell, M.A.Sc., P.Eng.
Transportation Engineer

DJB/db

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2. Report of Calls

Report of Call Summary

Report of Calls Recreational Resident Telephone Survey		
	Main Sample Total	Over-sample Total
Total Attempted	**9,076**	**2,934**
Out of Scope	**1,747**	**637**
Not in service/number changed/moved	1,350	504
Modem/fax line/business	397	133
Total Potential:	**7,329**	**2,297**
Non Contacts	**2,952**	**861**
No answer/busy	1,028	361
Answering machine	1,517	368
Respondent not available	407	132
Contacts	**4,377**	**1,436**
Refused/terminated partway	3,120	880
Language/communication problem	175	112
Willing participants	**1,082**	**444**
Non-qualifier (occupation/ other)	182	144
Total Completions	**900**	**300**
Contacts (% of potential)	60%	63%
Willing to participate (% of contacts)	25%	31%

3. Population Statistics

REGION CODE:		1	2	3	4 & 5	6	7	8		
Population 16+	TOTAL GVRD	CBD - Downtown	West of Main (excluding CBD)	East of Main	Burnaby, New West., Richmond	North Shore (N.Van, W. Van incl Lion's Bay)	Northeast Sector (Coq, PoCo, PoMo incl. Belcarra/ Anmore/ Ioco) PLUS Pitt Meadows, Maple Ridge	Surrey, WR, Langley, Delta	Total GVRD Pop.16+ Distribuiton	
Male										
16-24 yrs	**120236**	3,181	11,529	17,366	26,548	9,614	16,204	35,793	**7.55%**	
25-34 yrs	**144573**	10,238	18,780	24,660	29,670	8,885	16,868	35,472	**9.07%**	
35-44 yrs	**170192**	7,885	15,496	27,227	34,640	13,275	24,722	46,948	**10.68%**	
45-54 yrs	**149757**	5,536	14,666	21,025	32,060	13,595	20,830	42,045	**9.40%**	
55-64 yrs	**88747**	3,365	8,201	11,981	18,215	9,040	11,145	26,800	**5.57%**	
65+ yrs	**103970**	3,261	9,883	17,247	22,745	10,600	10,635	29,600	**6.52%**	48.79%
Female										
16-24 yrs	**119122**	3,528	12,507	17,054	26,548	9,480	15,310	34,696	**7.48%**	
25-34 yrs	**150944**	8,853	20,641	25,606	29,670	9,980	18,230	37,965	**9.47%**	
35-44 yrs	**174398**	5,241	17,343	26,634	34,640	15,390	26,240	48,910	**10.94%**	
45-54 yrs	**152359**	4,112	16,375	21,222	32,060	14,570	20,635	43,385	**9.56%**	
55-64 yrs	**89815**	2,731	8,750	12,794	18,215	9,425	11,220	26,680	**5.64%**	
65+ yrs	**129401**	4,047	14,956	21,713	22,745	14,365	13,935	37,640	**8.12%**	51.21%
Total	**1,593,514**	**61,975**	**169,127**	**244,529**	**327,755**	**138,219**	**205,974**	**445,935**	100.00%	
Pop. Distribution	100.00%	3.89%	10.61%	15.35%	20.57%	8.67%	12.93%	27.98%		
check	1,593,514	61,975	169,127	244,529	327,755	138,219	205,974	445,935		

Lon LaClaire, M.Eng., P.Eng.

Transportation Engineer
Strategic Transportation Planning

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CITY OF **VANCOUVER** Engineering Services

PPP Review of Vancouver Streetcar Project

MACQUARIE

Macquarie North America
Jane Bird

Report

May 2002

Strictly Private and Confidential

1. OVERVIEW AND KEY FINDINGS

1.1. BACKGROUND AND SCOPE

Over the last decade, significant steps have been taken towards re-introducing a streetcar system within the downtown Vancouver peninsula and the False Creek development area.

The Downtown Heritage Streetcar initiative (the "Streetcar" or "Project") is designed to provide a transit alternative to the automobile for commuters, tourists, shoppers and a variety of other users in the downtown region. It is intended to link into other transit services, including SeaBus, SkyTrain, West Coast Express and regular bus services, and provide a seamless transit network.

Since the summer of 1998 a demonstration line from Quebec Street to Granville Island has been operated by volunteers on weekends during the summer months. This demonstration line has attracted considerable public and rider support.

Following a consultant study on route options[1], Vancouver City Council in 1999 approved a number of recommendations in respect of a medium to long-term vision for the service:

- It endorsed a routing from Science World to Waterfront Station via Quebec, Columbia and Cordova Streets as Phase I, and a general routing from Science World to Roundhouse Community Centre, along Pacific Boulevard and Davie Street, as Phase II of the Downtown Streetcar system;
- It instructed staff to consider the proposed Streetcar corridors when undertaking rezoning, development permit applications, area planning studies, or other projects that affect roads in locations that are affected by the study; and
- It authorized the General Manager of Engineering Services to seek senior government funding for a portion of the first part of the Streetcar project, from Granville Island to Waterfront Station.

The focus of this Report is to advance the understanding of public private partnership ("PPP") funding and delivery strategies as a possible means of developing the Streetcar. Specifically, this Report, as a preliminary review of PPP options, aims to:

- Review past work, including ridership and capital and operating cost assumptions, noting the impact of changes in land use patterns (if any) on previous ridership analysis;

[1] Baker McGarva Hart, SNC/Lavalin and Ward Consulting, *Vancouver Downtown Streetcar Study*.

- Assess the Streetcar Project's finances, based on capital and operating cost assumptions developed in previous work;
- Examine the experiences of comparable systems worldwide, particularly those incorporating a PPP; and
- Review PPP options and opportunities relative to their possible application to a Streetcar. This will include an outline of future actions should the City elect to pursue this model.

1.2. KEY FINDINGS

The key findings of the Report are as follows:

- The Streetcar Project could be developed as a PPP given its strong levels of expected ridership and the "self-contained" nature of the system (i.e. absence of significant systems integration issues with pre-existing transit operations), however, further analysis is required to evaluate the value of a PPP versus a public sector project. Specifically the City should develop, for comparative purposes, a cost estimate if the project were delivered by the public sector, called a "public sector comparator".
- Regardless of the structure chosen to deliver the project, a government contribution will be required. This contribution may be made either as an up-front capital contribution, ongoing revenue support or as a combination of both depending on the public sector's availability of funds. The level of this government contribution will vary depending on Project cost (the scope of the Project), revenue (a combination of ridership, fares, and the portion of the fare attributed to this Project), and the level of risk assumed by the private sector.
- Current financial analysis undertaken by Macquarie, based on the data available, estimates the level of government contribution to be:
    - $25 - $54 million – at a $1.00/$2.00 commuter/tourist fare
    - $11 - $35 million – at a $1.50/$2.50 commuter/tourist fare
- The City should confirm the availability of required capital/operating funding before seeking significant private sector involvement. This will be necessary to generate private sector confidence that the Project will be completed and provide guidance to the private sector regarding the preferred financial structure for the City.
- Any funding and operating arrangements with TransLink that are required should be agreed before private sector partners are solicited. The private sector will require a high level of certainty with regard to any transfer and revenue allocation arrangements between the Streetcar operation and TransLink as their impact on the Project's commerciality will be significant.
- Possible PPP models for the Streetcar project include:
    - Outsourced infrastructure delivery and management
        - *DBM (design, build, maintain)*

        - *DBOLT (design, build, operate, lease and transfer)*
    - Operations franchise
        - *DBMO (design, build, maintain, operate)*
    - Long-term concession
        - *DBOOT (design, build, own, operate, transfer)*

- Further project definition work and policy analysis will be required by the City in order to assess and select the most appropriate PPP model for the delivery of the Project. This will include risk transfer analysis and assessment of the Project's control requirements all of which will influence the selection of the PPP model.
- Macquarie recommends partnering with the private sector during the initial project development stage. This method of delivery would allow the City to maximize the benefits of third party expertise with respect to system configuration, design, "whole of life" costing, fare integration and revenue sharing with other parts of the transit system, and commercial revenue opportunities. While there may be benefits to competitively tendering the Project at a more developed stage, bidding groups are unlikely to spend significant resources in, or be attracted to a competitive tender for, a project the size of the Streetcar Project, without significantly more work on these issues. There are significant benefits and efficiencies of addressing these issues in conjunction with a private sector partner.
- Further analysis around ridership, Project definition, phasing options, corridor selection and engineering specification will be necessary in order for the Project to proceed as a PPP. Should the City choose to adopt the private sector "development partner" model as recommended by the Report it would be appropriate for this work to be undertaken following the selection of a development partner.

2. PROJECT OVERVIEW

Over the last decade, significant steps have been taken towards re-introducing a streetcar system on the South side of False Creek that would ultimately link the downtown Vancouver peninsula with the developments around False Creek. As described in Section 5, downtown streetcar systems are used effectively in a number of international cities as a component of a multi-modal transit system.

Downtown transit circulator services, such as the proposed Streetcar, can significantly improve mobility in the central business district ("CBD"). If properly configured, they can provide frequent, accessible, high-quality services relative to other CBD transportation modes. Further, if well-integrated with other longer-service transportation modes (such as TransLink's bus and SkyTrain services), this service can also relieve congestion by providing a viable transit option (to automobiles) for people living or working downtown.

This section provides an overview of the proposed Streetcar system as well as the transportation and urban planning context surrounding it.

2.1. PROJECT HISTORY

Streetcar systems were a significant part of Vancouver's public transportation system for the first half of this century. The first streetcar system commenced operations in July 1890 with 6 cars on 9.6 kilometres of track. In the years that followed, this system was further developed and enhanced. However, with the growth of private motor vehicle traffic, demand for the streetcar declined. In 1947, Vancouver began switching its transit system over to buses, with the streetcar system ceasing operations in 1955.

2.1.1. The Downtown Streetcar

In 1991, B.C. Transit commissioned a study which demonstrated that the development cost for a streetcar system from Granville Island to Science World could be largely or completely offset by the revenue derived from land development along the corridor.[2]

Interest in the re-introduction of the Streetcar to Vancouver was re-ignited and, in 1994, the City of Vancouver commissioned a complementary study to the 1991 study.[3] This study assessed four route alternatives for the Streetcar corridor along the south shore of False Creek and running between Vanier Park and Science World.

Following this study, Vancouver City Council authorized the purchase of the 1.5 kilometre False Creek South rail corridor from CP Rail for $9 million. This right-of-way, extending from Granville Island to just west of Cambie Street Bridge, was purchased as the first component of the proposed Streetcar line.

[2] Feasibility Report: False Creek Heritage Streetcar and Transit Centre Development.
[3] False Creek South Rail Line Study, November 1994.

This system, ultimately linking key destinations such as Granville Island, Chinatown, Yaletown, Gastown and Stanley Park with the downtown core, was expected to provide an attractive alternative to automobile travel for both residents and tourists.

At the same time, the City began negotiations to acquire a historical Vancouver streetcar, Interurban Car 1207.

2.1.2. 1997 Downtown Streetcar Study

In 1997, Baker McGarva Hart, SNC Lavalin, and Ward Consulting were commissioned by the City of Vancouver to undertake the "Vancouver Downtown Streetcar Study" (the "BSW Report"). This Report provided further assessment of the options available for the Streetcar's development. This study had two objectives:

- Identify potential destination and generate preliminary alignments for the streetcar system with possible station/stop locations identified; and
- Identify a range of capital and operating costs and financing options.

Work undertaken by the technical team, city planning and engineering staff associated with the BSW Report involved the development and analysis of various corridors for the Streetcar system as well as extensive public consultation.

As part of this work, the BSW Report provided a vision statement for the Streetcar:

Downtown Streetcar Vision Statement

- The Downtown Streetcar will be an alternative mode of transportation with similarities to the Streetcar System that operated in the City earlier in this century
- Great Cities are about bringing people together; serving resident and visitor for both work and leisure
- The Downtown Streetcar will provide a service that links the downtown neighborhoods, districts, services, and attractions
- The Downtown Streetcar will be a natural fit with the urban identity of Vancouver and will generate excitement, public involvement and commercial interest
- The Downtown Streetcar will allow for growth and evolution to respond to the Downtown's changing needs and new opportunities
- If these things are accomplished, getting around the Downtown will become easier and more enjoyable; a great benefit to all those who use our City.

The BSW Report modelled and evaluated a total of 13 alignment networks and subsets. Following analysis of the comparative cost and ridership parameters for alignment options, the report recommended two base options: from Granville Island to Science World and then on to either the Waterfront SkyTrain Station (Option 1) or the Round House located in North False Creek (Option 2).

2.1.3. Streetcar Demonstration Project

From July 29th until October 25th, 1998, Interurban Car 1207 made weekend demonstration runs between Anderson Street and Leg-in-Boot Square. Run by volunteers from the Transit Museum Society ("TRAMS"), the demonstration project attracted considerable public interest and carried 8,242 passengers during the period. A second historical car was added (Interurban Car 1231), and in 1999, a similar demonstration (from May to October) attracted 12,589 riders.

Based on the success of and support for these demonstration projects, City Council in 2000 voted to extend the demonstration project to Science World and closer to the Main Street SkyTrain Station. The most recent summer demonstration showed continued support with 13,490 riders using the system between May and October in 2001.

2.2. THE STREETCAR SERVICE

2.2.1. Proposed Alignment and Corridor

As noted in Section 2.1.2, the BSW Report recommended two base options based on the 13 alignments it reviewed. Both routes commenced operations at Granville Island, carried on to Science World and then proceeded to either:

- Waterfront SkyTrain Station (Option 1 – "Waterfront Route"); or to
- the Roundhouse located in North False Creek (Option 2 – "Roundhouse Route").

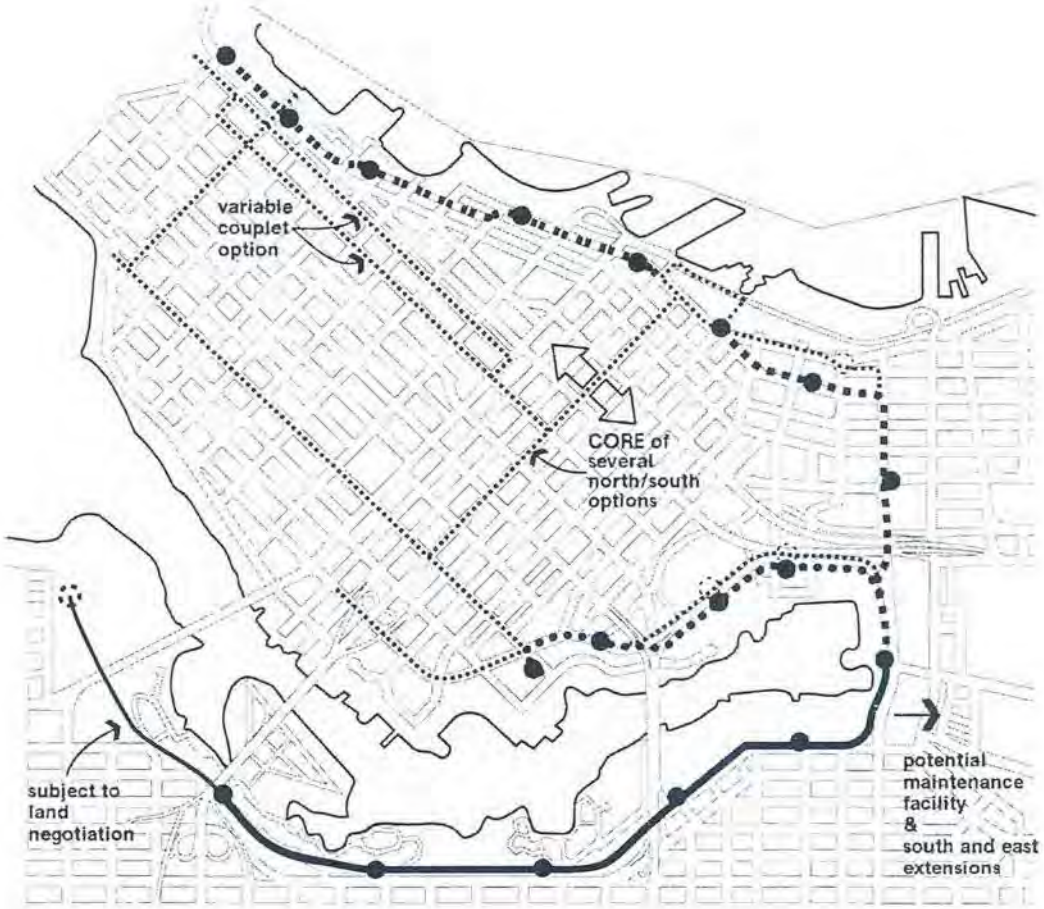
These options are illustrated in the map below.

The BSW Report concluded that Options 1 and 2 would be the most successful based on the ability of these options to:

- connect with the existing Granville – Science World rail corridor;
- service key tourist and commuter areas in the City; and
- optimize ridership and overall cost recovery (this stemmed from the ability to leverage existing infrastructure and expected development charges associated with the development of Southeast False Creek Flats).

The BSW Report identified Option 1, the Waterfront Route as the preferred option as the higher ridership levels achieved on this corridor would provide the optimal cost recovery and revenue in the more immediate term. Tourist travel to and from the central transportation hub at the Waterfront station (and passing through Chinatown and Gastown) was forecasted to have a positive impact on ridership and revenue. In addition, the Waterfront Route also serviced an established employment base, whereas ridership on the Roundhouse Route grew with new employment being added along the Roundhouse alignment over the life of the Streetcar project. Both options were projected to achieve similar ridership levels by 2021.

Composite Array of Ultimate Alignment Options



Granville Island	to	Science World	
Science World	to	Roundhouse	
Science World	to	Waterfront	
Waterfront	to	Stanley Park	
Potential alignment extensions (Vanier Park)			
Potential alignment extensions (Downtown)			

Note: Potential extensions out of the downtown peninsula to the south, west and east to be considered in the context of overall regional planning.

BAKER McGARVA HART
VIA ARCHITECTURE

The BSW Report also identified high ridership levels associated with the extension of the Streetcar from Waterfront to Stanley Park (the "Stanley Park Route"). This extension would be expected to capture ridership associated with a number of new developments including:

- two residential and business developments in the new Coal Harbour neighbourhood on Burrard Inlet (next to Stanley Park); and
- new developments in the West End, such as the Lord Stanley, the Park, the Robson Pacific Palais and the Residences on Georgia.

This increased ridership on the Stanley Park extension would be expected to flow through to the Science World – Waterfront Station corridor, by providing improved access to SkyTrain and Seabus connections and to employment opportunities in the planned Burrard Landing area. However, despite the considerable increase in ridership, the capital costs associated with the Stanley Park extension reduced the overall cost-effectiveness of the system.[4]

2.2.2. Infrastructure and Capital Costs

Given the large number of options that were considered as part of the BSW Report, the cost estimates developed for the Streetcar system as part of this analysis were based on a simple "unit costing" approach. Capital costs were divided into fixed and capital costs with fixed costs covering maintenance and support facilities and variable costs estimated at $2.5 million per kilometre. Fixed costs, as a proportion of capital costs, ranged from 10% up to as much as 25% for some of the smaller options.

The base line costing matrix provided by the BSW Report also assumed that the section of the system between Granville Island to Science World (Phase Zero) was already in place using two existing refurbished interurban streetcars. This was for the purpose of providing a cost comparison analysis of the different options. The following table summarises the relative costs for each of the 13 options contained in the report[5].

Option	Length	Track Capital Cost ($m)	Fixed Capital Costs ($m)	Fleet Capital Costs ($m)	Total Capital Costs ($m)
1. Waterfront	3.8	$9.50	$5.00	$7.50	$22.00
2. Roundhouse	3.8	$9.50	$5.00	$7.50	$22.00
3. Both	7.7	$19.25	$5.00	$12.50	$36.75
4. Waterfront/ Stanley Park	8.0	$20.00	$5.00	$17.50	$42.50
5. Stanley Park/ Roundhouse	11.8	$29.50	$5.00	$22.50	$57.00
6. Inner Loop	11.4	$28.50	$5.00	$20.00	$53.50
7. Waterfront/ Robson	9.4	$23.50	$5.00	$22.50	$51.00
8. Homer/ Richards	8.1	$20.25	$5.00	$10.00	$35.25
9. West End Loop	15.6	$39.00	$5.00	$42.50	$86.50
10. Stanley Park + Robson	16.1	$40.25	$5.00	$25.00	$70.25
11. Inner Loop + Robson	15.4	$38.50	$5.00	$30.00	$73.50
12. Stanley Park + Roundhouse/Robson	18.0	$45.00	$5.00	$30.00	$80.00
13. Inner Loop plus Stanley Park	15.6	$39.00	$5.00	$22.50	$66.50

[4] The traffic analysis done for the BSW Report assumed build-out of False Creek North and South, the Coal Harbour/Portside developments, as well as the Trade and Convention Centre.
[5] The information contained in this table has been extracted from the BSW Report, table 8.1.7; Relative Costs for Streetcar Options.

The system proposed in the BSW Report would be a single track with passing sidings used where possible to reduce costs and limit the land required for rail infrastructure. In most cases the tracks would run in the parking lane and be segregated from other traffic.

Passing tracks for single track segments would be phased to allow 10 minute headways and an initial peak capacity of 500 – 600 passengers per hour. Additional capacity could be achieved when necessary by increasing the size of the consist (train), however the BSW Report did not believe this would be required until 2010.

2.2.3. Service Description

The Streetcar systems would be planned for cost effective incremental expansion. The initial fleet size would range from three to eight replica heritage cars depending on the length of route and proposed frequency of service. For Options 1 and 2, the BSW Report assumed three replica heritage cars would be required in addition to the two existing heritage cars.[6] Existing historic interurban streetcars would be limited to the track section between Granville Island and the Leg-in-Boot section, unless modifications are made to their wheels which are unsuitable for modern in-street running.

In the BSW Report, it was assumed that the Streetcars operated at 30km/hr between stations, with a dwell time of 30 seconds added for each station stop.

It was further assumed that the Streetcar would operate 365 days a year and for 17 hours on weekdays (6 a.m. to 11 p.m.), and 14 hours on weekends and public holidays. It was also assumed that the streetcar could complete a round trip between Granville Island and Waterfront Station (including layover time) in 30 minutes. A minimum frequency of 10 minutes in the morning and afternoon rush hours was planned with 30 minute frequencies in off-peak times.

Operating costs for the system was estimated to be at $80 per hour.

2.2.4. Ridership and Proximity to Trip Generators

Macquarie's estimates for long-term ridership, based on the data provided in the BSW Report, exceed 35,000 riders per day for the initial phases. Much of this is attributed to tourists.

For tourists, the Waterfront Station, Round House and Stanley Park routes provide transport directly to or near to key downtown attractions, such as:

- Granville Island to Science World: Granville Island Seawall, Science World;
- Waterfront: Waterfront attractions, Gastown, Canada Place, Convention Centre (planned), Chinatown;
- Roundhouse: Roundhouse Community Centre, David Lam Park, Yaletown, BC Place Stadium; and

[6] These are not accessible to wheelchairs

- Stanley Park: Coal Harbour (seawall and amenities), Vancouver Aquarium, Stanley Park.

A more detailed discussion of ridership levels follows in Section 6.

2.3. INTEGRATION WITH DOWNTOWN PLANNING

2.3.1. The Downtown Transportation Plan

The City of Vancouver is currently in the process of finalizing its Downtown Transportation Plan ("DTP") which is designed to provide a "multi-layer" plan to accommodate the increased level of people living and working in Vancouver's downtown core.

The 2001 Census showed that 73,000 residents lived downtown in 2001 (a 54% increase from 1991). This is expected to grow to 100,000 residents from 1996-2021 (a further 37% increase from 2001). Employment levels are similarly expected to grow from 132,000 (1996) to 175,000 jobs by 2021. Maintaining mobility and quality of life in the downtown core is expected to require significant growth in the number of pedestrian and transit trips. It also expects, relative to 1996 levels, a 35% increase in total trips to, from and within the downtown by 2021.

To accommodate this increased capacity, the DTP promotes a number of strategies including promoting a "walkable" downtown, creating a network of downtown bike lanes, developing an improved network of downtown bus routes and building a rapid transit line to connect to Central Broadway and Richmond.

The Streetcar is expected to complement these transit systems. It will play an important role in increasing overall transit capacity to and within the CBD, and, perhaps more importantly, shifting downtown trips away from automobiles by facilitating transit commutes into/out of the CBD using other transit systems including SkyTrain, SeaBus, and trolley buses.

Many destinations in the core of downtown Vancouver are too spread out to be within comfortable walking distance, contributing to a reliance on automobiles even for relatively short trips. The Streetcar system provides an attractive transit system to help alleviate this problem and help develop a more walkable town. The proposed Streetcar route will also play a large part in the development of an easy-to-use network of downtown transit routes that serve the existing and emerging neighbourhoods. It will link together False Creek south and the newer commuters of False Creek North with the rest of the downtown peninsula, as well as connecting many tourist sites and destinations. It will also improve the frequency of overall transit service.

The Downtown Transportation Plan recommends proceeding with further analysis to confirm the financial and operating arrangement for developing the downtown Streetcar. At the same time, the design of the potential Streetcar route should proceed to enable better coordination with other elements of the Plan (traffic circulation changes, transit service, streetscape design, and pedestrian and bicycle network developments).

The following section contains a brief review of several of the neighbourhoods through which the Streetcar would pass and summarizes current and future land use development that would reinforce, and be reinforced by, a Streetcar.

2.3.2. South East False Creek

50 acres; estimated 5,000 residential units; 8,100 people

Planning is underway for an environmentally sustainable urban neighbourhood on this 50 acre parcel, currently owned by the City. The location on the south shore of False Creek, between Cambie and Main Streets, is a natural extension of the existing (demonstration) line. The design for SEFC contemplates a streetcar connection, reinforcing a transit focussed style of urban living. Early Olympic planning indicates that this parcel may be the site of the Athlete's Village. The Streetcar could connect Athlete's Village (and ultimately the future neighbourhood) with BC Place and the downtown.

2.3.3. North Shore of False Creek

204 acres; estimated 8,500 residential units, 14,500 people; 2.6 million square feet of commercial development

This area was conceived as the largest project within the False Creek area. The rate of growth in this area has exceeded early predictions. A full mixed use neighbourhood is well underway, including residential buildings, commercial and retail space, the Roundhouse Community Centre, a new school, and park facilities. Pacific Boulevard dissects the community – it was designed to accommodate the streetcar, to connect this fast growing neighbourhood with Chinatown, Gastown and the financial district, as well has rail connections to eastern municipalities.

2.3.4. Yaletown

The historic district of Yaletown, now home to a growing, vibrant mixed use community, would be well served by the Streetcar. Yaletown borders Pacific Boulevard on the north side, providing easy access to the Streetcar, with connections to the heart of downtown and other regional transportation modes. The Opus Hotel, now under construction in the heart of Yaletown, will reinforce the appeal of this neighbourhood for visitors.

2.3.5. False Creek Flats

The largely undeveloped 300 acre parcel east of Main Street has been partially zoned I-3 to allow the development of high-tech industries. The Streetcar route would skim the western edge of this parcel (with a possible extension further east – see alignment map in section 2.1) providing a complementary service to the existing SkyTrain (VCC and Main street stations) and the SkyTrain extension proposed for the area. The False Creek Flats will be the future site of new facilities for Emily Carr College, UBC, SFU and BCIT. Part of the Flats remains zoned I-2 industrial. Two biotech lab buildings are currently under construction by Discovery Parks, and a second phase is planned. The Streetcar would provide greater transportation choice for that area.

2.3.6. Triangle West

Estimated 4,000 residential units, 7,000 people

Triangle west is immediately adjacent to the financial district. High density housing is under construction. The Stanley Park Route would provide convenient Streetcar service to this area, connecting to the financial district, and regional transit connections to eastern municipalities, the North Shore and Victoria. As noted later in the Report, the development in Triangle West and Coal Harbour account for significant ridership projections for the Stanley Park Route.

2.3.7. Coal Harbour (Marathon and Bayshore developments)

Marathon: 80 acres total; up to 41 acres of land; estimated 2,000 residential units, 3,500 people, 2.25 million square feet of commercial space

Bayshore: 22 acres total; up to 16 acres of land; estimated 980 residential units; 1,800 people

These developments are the first downtown residential neighbourhoods on Burrard Inlet. Rights of way have been reserved for the Streetcar. This neighbourhood, like Triangle West, lies between the financial district and Stanley Park, and is ideally suited for Streetcar service. Tourist facilities, including the Bayshore hotel, the extraordinary new seawall and park areas, and the marina and restaurant facilities, would also be well served by the Streetcar.

2.3.8. Gastown/Chinatown

As noted in this Report, the Streetcar would service Chinatown and Gastown, offering an opportunity to enhance the streetscape and connect those areas to each other and to the rest of the downtown. In particular, tourist travel to and from the central transportation hub and hotel concentration at Waterfront will increase exposure for these areas, and reinforce the initiatives currently underway to secure the long term viability of the businesses in these communities. The Portland Streetcar, noted as a case study in

this Report, provides an example of the relationship between the downtown business community and the Streetcar. In that case, a group of property owners responded to the City of Portland's request for an independent organization to design the Streetcar.

2.4. INTEGRATION WITH OTHER TRANSIT SYSTEMS

The proposed route for the Streetcar from Science World to Waterfront will intersect with the Sky Train at Waterfront Station and Main Street. It will also stop near the SeaBus station, as well as the West Coast Express Commuter Rail Station.

As a result, the Streetcar is expected to provide an important commuter link to Vancouver's SkyTrain, West Coast Express, Sea Bus and regular bus services for people living and working in the CBD.

There is growing discussion of a multi-modal transportation "hub" centred around Waterfront Station. The Streetcar system - which would link to this hub – would gain ridership from, and generate ridership for, the other transportation elements supporting this hub.

2.4.1. System and Fare Integration Issues

Integrating the Streetcar system with other transit systems serving Vancouver's CBD is extremely important. Ridership modelling undertaken by the City of Vancouver has demonstrated that a significant number of the commuters expected to use the system will either originate or terminate their journey on another transit system such as SkyTrain. Experience with other streetcar systems around the world has shown that one of the critical success factors is the degree to which the system is integrated with other transit and transportation modes.

The issues associated with integrating transit systems (especially where one or more is provided under PPP franchise by different operators) are often complex and involve both operational and financial considerations. In the case of the Streetcar, the primary issues revolve around its coordination with TransLink SkyTrain and bus services. The major integration issues are summarised below:

- Ability to sell integrated fares across the Streetcar and TransLink networks;
- Consistent fare levels and structure across the Streetcar and TransLink networks;
- Commonality of branding and service standards;
- Effective timetabling of services to facilitate interchange;
- Effective physical interchange between the services at key station nodes (Main Street and Waterfront);
- Common corporate, operations, and maintenance functions (to the extent possible) to share overheads; and
- Common passenger information systems.

The primary issue is fare and transfer integration as commuter ridership is expected to be sensitive to the cost and time delays associated with transferring between the Streetcar and the TransLink system.

While detailed discussions with TransLink will be required to address/resolve these issues, the following is an example of the Melbourne system where several modes, and several operators provide an integrated transit system.

Melbourne MetCard System

Since 1983 the Melbourne trains, trams and buses have operated on a multi ticket system known as the Metcard system.

Tickets are sold through a variety of outlets such as milkbars, automated machines at stations or from the bus driver or on trams (although the tickets available on buses/trams are limited). Tickets are also available over the counter at major railway stations or by phone.

The Metcard system is a time based/zonal system which requires the ticket to be validated at the beginning of the period and allows any number of transfers within that time, within the zone/s of the ticket. There are 3 zones which roughly correspond to inner, middle and outer suburbs). Concession fares are available and are roughly half price of full fares (under franchise agreements government subsidises these to 75%).

In broad terms, the revenue allocation system that has been established between the various operators aims to reward MetCard Operators by ensuring that revenue is allocated according to the relative usage of each MetCard Operator's services in terms of passenger boardings and distance traveled. An extensive continuous program of one-day travel diary surveys has been undertaken to measure the usage of different MetCard types.

In the long term total MetCard Revenue for each MetCard type will be allocated among the MetCard Operators and V/Line Passenger so as to reflect as nearly as possible the "Allocation Principles" in any survey period.

A survey has been designed and has been in operation since February 1998 to establish ticket usage characterisiics. These characteristics are used to determine the proportion of the total MetCard Revenue that each operator receives. For the purposes of the revenue allocation process the bus operators have been be grouped as a single entity.

The revenue allocation factors are determined on a quarterly basis. The set of interim revenue allocation factors below has been calculated from the Transport Research Centre's revenue allocation survey undertaken between February 1998 and April 1998. The total number of tickets that were surveyed and have been used in the revenue allocation process is approximately 9,500, which include around 29,700 individual trips.

3. BENEFITS OF PRIVATE SECTOR INVOLVEMENT

Increasingly over recent years Governments have recognised the valuable role that the private sector can play in the delivery and operation of public infrastructure and services. Traditionally the private sectors involvement in public infrastructure development has been limited to the design and construction side of the development, however with the growth of PPP's private sector are now becoming responsible for the financing, maintenance, operation and ownership of these assets. As the role of the private sector has increased, so too has the risk that they have taken on which ultimately results in reduced risk for the Government.

Private sector involvement in the development, construction and financing of the Streetcar can potentially deliver significant benefits to the public sector and the wider community. This is specifically achieved through:

- risk transfer;
- innovation;
- improved management and operational flexibility; and
- synergies between design and construction, and depending on the PPP model, operations and maintenance.

This section outlines the key benefits available to the public sector and wider community through the involvement of the private sector in the delivery and financing of this Project.

3.1. VALUE FOR MONEY

Involving the private sector does not generally *increase* the money available for public projects (unless the relevant public agency has a limited ability to raise taxes or borrow). Rather, the question is whether the private sector can increase the *value* to the public sector of its investment. Therefore, in assessing whether a PPP is an appropriate model for a project, the question becomes: to what extent does the involvement of the private sector result in increased value for money ("VFM") over a conventional, government delivery model?

VFM represents the value returned to a government, often through services provided to the public, through a particular financial expenditure. The "value" is most often not financially quantifiable, and hence is not always readily apparent, i.e., the cheapest option is not always the best as the value may be in the method of delivery or quality of service. For a PPP solution to be acceptable, the private sector must be able to generate greater VFM than the public sector.

VFM can be difficult to evaluate in a vacuum. Therefore, the UK Private Finance Initiative created the concept of a public sector comparator ("PSC") in order to aid in determining VFM from a PPP. [7] This is discussed in greater detail in section 4.2.

3.2. APPROPRIATE RISK ALLOCATION

One of the defining characteristics of a PPP is the transfer of "risk" from government to the private sector. The nature and level of risk to be transferred represents a significant element of any PPP analysis and negotiation.

Ideally, in any infrastructure project, risks should be borne by those best able to manage and mitigate them. This is a key principle on which the success of a PPP is judged. Optimal risk allocation in a PPP will maximize the benefits for all parties involved in the project. Often it is the private sector that is best suited to assume various key risks involved in a project like the Streetcar.

The potential for appropriate risk transfer to the private sector is significant and recent international and Canadian experience has proven that increasingly, developers have shown a willingness to assume a greater level of development, construction and operations risk.

Traditionally, development and financing of transport infrastructure by the public sector has involved a limited level of private sector involvement. Under this scenario, the public sector bears almost all risks as it purchases discreet units of output from the private and public sectors. However, the involvement of the private sector in the delivery, operations and financing of transport infrastructure provides the opportunity to transfer a significant amount of risk to the private sector.

The table below lists the types of risk that accompany a project, and demonstrates how the allocation of risk may change from that achieved under a traditional public sector delivery structure compared to a PPP structure.

Risk	Public Sector Delivery		PPP Structure	
	Public Sector	Private Sector	Public Sector	Private Sector
Cost	❖			❖
Construction	❖	D&C contract can include penalties for delay in delivery		❖
Technology	❖			❖
Tax	❖			❖
Approvals Processes	❖		❖	often shared between the two
Operations & maintenance	❖			❖
Revenue	❖			❖

[7] For a more detailed discussion see Technical Note No. 5 *How to construct a Public Sector Comparator*, published by and available from the UK Treasury Taskforce Private Finance

Risk	Public Sector Delivery		PPP Structure	
	Public Sector	Private Sector	Public Sector	Private Sector
Finance	❖			❖
Ridership	❖			❖
Residual Value	❖			❖
Land Assembly	❖		❖	
Legislative Changes	❖		❖	
Native Title	❖		❖	
Environmental	❖		❖	
Political	❖		❖	

Evidence of large-scale transportation projects undertaken without sufficient risk transfer that resulted in severe, negative consequences for the public sector (and by extension, the general public) can be found across Canada and throughout the world.

Increasingly, governments throughout the world have learned from experience and have developed their PPP policies specifically to assess the type and level of risk that should be borne by the private sector, versus the risk that remains with the public sector. The evolution of PPP structures associated with Sydney Australia's tollroad system is a clear example of this.

Tollroad financing in Australia has developed overtime through the successive projects of the Sydney Harbour Tunnel, M4, M5, M2, Melbourne City Link and Eastern Distributor, over which time risk has increasingly been passed over to the private sector.

Sydney's first privately owned tollroad, the Sydney Harbour Tunnel was financed on government guaranteed traffic revenue that enabled fully secured debt at low margin. The deal was initially criticised as placing too much risk on government, especially as initial traffic levels were below forecast in the early stages. However traffic exceeded forecasts dramatically on opening and the Government has since benefited from the surplus revenue achieved under the deal ever since.

Following the Harbour Tunnel experience, the Government sought to shift traffic risk over to the private sector, as has been the case ever since. The financing packages for the M4 and M5 tollroads achieved this shift in risk allocation and used all bank financing for the projects debt as well as 100% private sector equity, with characteristic short concessions of around 30 years. The small equity level resulted in large capital gains prior to sale and refinancing.

The Western extension of the M5 saw the first use of infrastructure finance, a Government initiative that was designed to boost infrastructure delivery. Typically, previous investment in private infrastructure did not provide returns to investors until much later than other business investments. Infrastructure finance was designed to correct this bias.

The M2 project added equity to the tollroad financing equation, which along with limited use of indexed bonds and infrastructure finance saw greater public returns for the tolls collected. The Eastern Distributor and the Melbourne CityLink built on these strengths, maximising the benefits of infrastructure finance and delivering better value for money to the Government and taxpayer.

The private sector is not immune to financial disasters: however under a PPP structure, depending on the contractual arrangements, the risk of financial loss associated with construction, and often with operating revenue, is a risk borne primarily by the private sector participant. Below is a summary of the key types of risk associated with the development and operation of a major infrastructure project and how they can effectively be transferred to the private sector under a PPP structure.

3.2.1. Ridership and Revenue Risks

These include the risk that the projected number of riders will not materialize (or will materialize more slowly than projected), such that fare revenues are not as large as anticipated. That means the money to pay operating costs and repay the debt associated with the cost of construction may be less than anticipated.

Ridership and revenue risks are often seen as the most significant risk in the development of transport infrastructure projects.

Often under a PPP structure the private sector will take the full risk that ridership and revenue levels meet its forecasts. In assuming this risk, the private sector will rely on its own assessment of projected revenues. In those cases, again depending on the arrangement, government may not be required to provide guarantees or subsidies to support those revenues. If the revenue forecasts are not achieved, the private sector's return on its investments (and its ability to repay debt borrowed to support the project) will be reduced.

Sydney Airport Rail Link was established as a PPP where the private sector owns and operates the railway stations on the link and the public sector owns the tunnel and track and operates the trains. Ridership projections have been well below forecasts for a range of reasons. However, the risk associated with these poor ridership levels and the resulting poor financial performance is an issue for the private sector. For the public sector and wider community, services required are still being provided by the private sector operator and no additional funding has been required for the stations continued operation to date.

3.2.2. Design and Construction Risks

These include failure to meet specified requirements and cost and time overruns.

A PPP allows the government to transfer the entire design and construction risk to the private sector. In turn, the private sector will enter into a fixed price and term contract for construction of the project, supported by appropriately creditworthy guarantees from the construction contractor.

Increasingly, governments are including the construction period in the term of the concession, that is a concession period of 22 years will include 2 years of construction and 20 years of operation and revenue. As a result, the private sector bears the risk of construction delays as any increase in the construction period will result in a reduced concession and therefore a diminished revenue stream for the private sector consortium.

3.2.3. Operating and Maintenance Risks

These include operation failures or costs that are greater than anticipated, or maintenance costs that are greater than anticipated.

Generally, this risk is only fully transferred to the private sector where the private sector partner is responsible for all aspects of operation and maintenance of the asset including liability of latent defects. Under this scenario the concession agreement will set out any requirements which government may seek to place on the operator in relation to the operation of the project.

The contract/concession agreement will also stipulate the ongoing quality of the asset required by the government and the final state of the asset when handed back to the government at the expiration of the concession.

Additional efficiencies are achieved in the transfer of this risk when it is part of the initial tender for the design, build and financing of the project. By including operation and maintenance of the asset in the project and the initial bid price, there is additional pressure on the private sector to ensure a very competitive maintenance price is achieved. Once this price is set, any operational or maintenance costs required to meet the output specifications of the contract which are not originally provided for in the bid price must be borne by the private sector.

3.2.4. Technology/Obsolescence Risk

This is the risk that the asset will cease to be the technically best way of delivering the service during the contract. For example, the government may require the private sector participant to ensure that the revenue collection and ticketing system continues to be upgraded and adapted to the changing demands of the customer. The costs associated with achieving this will be estimated and calculated into the initial bid price. Any increase in this cost will be a risk borne by the private sector in agreeing to the conditions of the contract.

3.2.5. Legislative Risk

This is the risk that applicable laws will change in a way affecting the operation of the service. The private sector normally accepts the risk of changes relating to the overall business environment (such as income tax, inflation, interest rates) but not "project specific" changes (e.g. construction of a new competing transport system by government or a tax exclusively on rail systems).

3.2.6. Finance Risk

This is the risk associated with the cost of finding money to build and operate the project. Under a PPP structure the private sector will assume risks associated with the financing of the project, including interest rates, foreign exchange rates and insurance costs should be managed by the private sector partner and its financiers. Any movement that occurs with any of these factors out side of the forecasts made by the private sector will be a risk for the private sector to bear.

3.2.7. Political Risks

There are almost always significant government policy objectives that underpin a "government" project – whether it is done in partnership with the private sector or not. For that reason, governments can never effectively transfer political risks. This applies to major transit projects (though private sector participation can mitigate these risks under some circumstances). While not transferable, governments can in many cases *assess* this risk with a reasonable level of accuracy prior to undertaking the project. For example, one risk is that the project go into financial default and there will be political pressure on the contracting government to intervene with financial support to ensure that the project service is maintained. In this case with appropriate contract terms, the need for government financial support can be minimised. It is likely in any event that the project lenders will have exercised step-in rights and will be running the project.

The project lenders' interests will be to continue to run the project so as to recover the outstanding debt from project operating revenues. If the operating costs are not met from operating revenues, lenders may choose not to continue to operate the project. In this case the contracting government may be under political pressure to subsidise the operation.

It is very important for government to contribute the resources to complete the due diligence necessary to fully understand, define and analyze the project risk. As a basic example, government should verify for its own analysis, the financial viability of the project, and the financial strength of its private sector partner. Secondly, government should undertake in the contract to mitigate against those risks, to the extent possible. For example, government may include non-performance penalties in any infrastructure concession agreements, therefore ensuring that should the private sector operator not meet the requirements or expectations of the government and community, they have a mechanism through which this non-performance can be punished.

3.2.8. Approval Risks

A multi-faceted governmental approval process involves many layers of government, different government agencies and the community. In some areas there is no clear process or demarcation of authority, creating the risk of potential legal challenge and delays. Any governmental approval process will have to be accepted by the various layers of government and the community, or steps must be taken by the senior level of government to force the various other parties to conform to and operate under the process selected by the senior level of government.

3.3. COMMERCIALISATION OF REVENUES

This reflects the ability of the private sector, given its commercial focus, to maximize project revenues and identify additional, ancillary revenue sources.

Assessing the incremental impact that the incorporation of private sector finance will have on commercialisation of revenues is an important part in determining whether the involvement of the private sector provides a value for money outcome.

The prospects for commercialisation of revenues are significant, but may have policy implications that government will want to fully assess. For example, opportunities exist to lease of access rights within the corridor to utilities or to sell advertising rights in the corridor or on surrounding lands.

Revenues from these sources may vary from relatively certain, i.e. a commercialisation opportunity that government is already employing, to highly speculative, i.e. value capture through a new housing or commercial development with improved access through the Streetcar.

The incorporation of private finance brings with it private sector initiatives and a much keener focus on developing commercialisation opportunities. While it is still difficult to quantify value capture proposals, market experience throughout the world has shown significant increases in the level of revenues generated from commercialisation sources once private sector equity is involved. For example:

- **Yarra Trams Victoria, Australia:** claims that non-fare box revenue now stands at $5m per annum, a 60% increase in revenues relative to that immediately before the creation of the franchise;
- **Australia:** The value of merchandising sales on the Ghan, Overlander and Indian Pacific long distance services increased several fold when these rail services were sold to the private sector.
- **Brisbane Airport Railway:** has contributed approximately 2% of the capital cost through deals with utilities on its $220m viaduct structure.

International experience has shown that competitive pressures arising from the tender will encourage bidders to "bid" a significant portion of this incremental revenue as a reduction to the availability payment required from government. Whilst not directly comparable to this project, the examples above demonstrate the ability of the private sector to improve commercialisation revenues.

Under an option with no private sector financing the private sector has no motivation to focus on driving these revenues. Instead their focus will be on delivering the infrastructure at the lowest cost. This will inevitably result in opportunities to increase long term revenues being sacrificed in order to minimise construction cost.

3.4. LOWER COST TO THE PUBLIC SECTOR

A PPP structure will often result in improved efficiency and commercial focus in the delivery of the infrastructure as well as its operation over the life of the concession period than what would otherwise result under public sector delivery.

Private sector efficiencies in the provision of infrastructure are largely a result of better project management through an increased commercial focus, increased flexibility and better ability to perform long-term planning. At an employee level, the private sector performs the same work at the same level as the public sector. However, private sector employees often benefit from a different set of incentives and improved access to resources.

This was demonstrated with the London Underground (UK), originally estimating that a PPP for the provision of the infrastructure could achieve long-term cost savings of approximately 30-40% compared to the public sector, resulting from:

- Steady funding (and improved planning of capital renewals);
- Design and technical innovation efficiencies;
- Whole life costing and value management;
- Reduction in over-specification of engineering standards and changing output requirements; and
- Better maintenance access efficiencies.

Though not without controversy, London Underground recently elected to proceed with a PPP for the upgrade and maintenance of stations, trains, tracks and signals.

Similar studies have found that the private sector can realize efficiencies of 20-30% relative to public sector delivery. Examples include:

- UK government studies have estimated that contracting out services have realised savings from 18% to 34%;
- Contracting out a range of municipal services in the US were estimated as providing cost savings of between 15% and 29%;
- A US study identified cost savings between 9% and 23% resulting from transportation privatization experience in the US; and
- A study of the privatization of the Japanese National Railway found privatization resulted in substantial labour productivity gains, for example, 23% for stations, 16% for track maintenance, 62% for train maintenance and 35% for administration and engineering.

3.5. ACCESS TO CAPITAL

While government in Canada generally has the credit strength to be able to borrow money on the capital market, government revenues and the capacity to raise general obligation debt (i.e. debt supported by the government's ability to tax) are not limitless. The ability to source additional funds via PPP projects can relieve a government's fiscal pressures as noted below:

- Private finance raised on the basis of revenues attributable to particular projects will not draw upon the government's budget, capital capacity, credit rating or general obligation borrowing capacity;
- Private finance may allow the undertaking of projects that would otherwise not have been pursued as well as the acceleration of the start-up date for other projects;
- Through a competitive process, subordinated debt and equity can be raised in support of a project from an investor base that typically would not invest in government bonds; and
- Governments must set priorities according to the limits of their funds (taxes and debt) available, meaning that socially desirable projects may not proceed due to a lack of funding – private finance can alleviate this funding constraint.

The private sector's flexibility in budgeting and financing operations can be a significant advantage in operations and maintenance over the life of the asset. Experience in other countries has been that the public sector's operations and maintenance planning are driven by availability of funds, budget restrictions and political cycles and priorities. This makes it extremely difficult to plan effective routine and major periodic maintenance programs. The flexibility available to the private sector and their priority of maintaining the asset to ensure future returns are available overcomes any budgetary constraint issues they may experience.

3.6. ACCOUNTABILITY AND ON TIME DELIVERY

While no definitive study has been recently done in Canada, public infrastructure projects have a history of running over budget and over time. A significant and understandable contributor to this is the lack of a direct "ownership interest" (i.e. a bearing of risks and rewards) by the public sector. For example, the first eight shadow toll roads undertaken in Britain under the PFI generated estimated savings of 17% over the Public Sector Comparators for the life of the concessions. [8]

Private finance (i.e. private equity and debt at risk if the project does not perform as projected) imposes a level of market discipline that increases the likelihood that:

- Project economics and risk allocation are viable;

[8] Review of the UK Private Sector Model for Highways for Transport Canada, prepared by Hambros Bank Limited, March 1996.

- Projects are completed on time and on budget;
- Operating budgets are met;
- Revenues are collected; and
- Expenses and operations are continually monitored for variances and areas of improvement.

The enhanced scrutiny of the economic viability of individual projects by the private sector partners and their lenders should increase the likelihood of avoiding "white elephant" projects (e.g. Mirabel Airport).

3.7. COST OF FUNDS

Investors evaluate investment opportunities using traditional risk-reward analysis. As such, they are prepared to purchase general obligation government bonds at prices that reflect the governments' taxing powers (i.e. an implicit guarantee from all taxpayers). Private finance for specific projects or enterprises will typically be priced at a premium above general obligation government debt. This reflects the risks associated with the project and the fact that the investors in the project do not have recourse to the taxpayers' guarantee.

Some points to consider in evaluating the actual cost of funds to the private sector are:

- Cost reflects risk and under a general obligation bond, taxpayers ultimately bear the risk if a government financed project or enterprise is unable to repay its debt;
- The cost of self-insuring (e.g. environmental or third-party damages, business interruption) by governments is rarely taken into account;
- There is an opportunity cost associated with using public debt for enterprises or projects that could otherwise be financed on a stand-alone basis;
- Private finance may involve previously non-taxable income streams becoming taxable and thereby creating new revenues for the government;
- Private finance may engender the use of federal tax deductions not available to the public sector (e.g. Capital cost allowance, full recovery of GST); and
- The level of general obligation government debt can over time have a negative impact on credit ratings translating into significant cost implications on future government debt issues.

Additionally, the less expensive capital often provided by governments does not account for risk associated with the project that it included in the cost of capital by the private sector.

3.8. PUBLIC SECTOR COMPARATOR

To assess whether a PPP offers value, the PPP model must be measured against the cost of government providing the same project.

This assessment should consist of more than a simple comparison between the "expected" level of government contribution required under a privately financed model and the "expected" contribution required under a publicly financed model – risk transfer should also be considered. To thoroughly assess the benefits of private sector involvement in this Project it would be necessary to adopt a two staged approach:

- **Stage One:** Identify the differences in direct funding costs to the government between private sector finance options and government financing;
- **Stage Two:** Consider the impact of construction cost savings, tax benefits and incremental revenues generated under a model involving private sector finance; as well as the risk transfer achieved under a PPP approach.

The Public Sector Comparator (PSC), established as part of the UK Private Finance Initiative (PFI) launched in 1992, now stands as an internationally recognised and well-established methodology for assessing the benefits of PPPs.

3.8.1. Key Features of the PSC

The UK Treasury Taskforce defined the PSC as a hypothetical risk-adjusted costing, by the public sector as a supplier, to an output specification produced as part of a PFI procurement exercise. The following items were identified as key features:

- Expression in Net Present Value terms;
- Basis upon recent actual public sector methods of providing defined outputs;
- Complete account of all risks associated with the development and delivery of the project;
- Full account for the impact of risks on costs, estimation of their probabilities, and exploration and appreciation of the sensitivity of these estimates;
- Institution of a far benchmark - tendency to initially underestimate costs of the project and not account for the full scope of ongoing and potential cost increases; and
- Proper account for the principle of value for money, that is, a de-emphasis of the notion of cost.

The Taskforce that established the PSC stressed the importance of proper accounting for the concept of **"value for money"** between the public and private financing option. As previously stated, it would be tempting to merely compare public and private financing alternatives in relation to the difference in the cost of capital and the impact that this will have on the required level of government contribution. However, in establishing and using the PSC in the assessment of the PFI it is necessary to account for the "value for money" component of the private sector option. By considering this

factor in the assessment process it becomes clear that the lowest bid should not always be the successful bid.

If the City of Vancouver adopts this concept of PSC in assessing private sector financing options it is essential that the methodology used in establishing the chosen benchmark and the process to be undertaken in evaluating bids must be made public and transparent. This will ensure that the government is accountable in terms of the methodology and process and that all information relating to this is available to all parties. Parties will also be able to assess the outcome of the bid process against an already established guide.

The process for evaluating bids and establishing the detailed criteria against which they would be rated – including the PSC – must be developed in detail if the City of Vancouver chooses to pursue a private sector financing option.

3.9. DELIVERING ON THE GOVERNMENT'S KEY FINANCIAL OBJECTIVES

3.9.1. Defining Government's Financial Objectives

In determining the appropriate level of government contribution and the associated financing option, it is critical that the government's PSC is established in conjunction with a clearly defined list of key financial objectives.

Central to establishing these objectives, and articulating these to the private sector, the government must state clearly their desired level of risk transfer to the private sector and the physical and functional components of the project to be under private sector ownership and control.

If the City of Vancouver chooses to pursue private sector financing options for the project it is necessary that the City of Vancouver clearly describes its key financial objectives. Included in these should be the following:

Optimizing private sector involvement:

To achieve this objective, a solution must demonstrate an appropriate balance of rewards and responsibilities between government and the private sector that, overall, produces a better whole of life outcome (i.e. over the whole of the life of the Streetcar) for government than that achievable under a public sector delivery process. At the same time, solutions need to address the other objectives, in particular that of providing a value for money solution.

Providing a value for money solution to Government's needs, giving due consideration to the value of risk transfer:

To achieve this objective, solutions must demonstrate that private sector funding provides a better value for money outcome than that achievable utilising public sector funding.

Risk Transfer:

The government must clearly state the required risks that they wish to transfer to the private sector.

Providing a clearly determinable cost over the contract period for achieving the specified outcome:

To achieve this objective, solutions must include a mechanism that enables government to accurately determine its cash flows over the whole of the project either in real or nominal terms.

Ensuring that any payments by Government are reflective of the asset and the period over which the benefits will accrue, ensuring inter-generational equity:

To achieve this objective, private sector financing solutions could incorporate a residual balloon payment in their financing structure. This cannot be achieved with equity alone as the cost would adversely impact the value for money objective.

Rather, the government's objective to achieve inter-generational equity could be met through the creation of a residual at the end of the term. There are several different approaches available to the private sector in determining what that appropriate residual should be.

Macquarie's view is that evaluation of the private sector financing option will demonstrate that the government's key financial objectives can be better met through a private sector financing option particularly in terms of risk transfer and value for money. Combined with the competitive pressure that results from a tender process, these factors can reduce the level of government subsidy and produce a level equal to the cost of a "like for like" government financing.

4. EVALUATING PPP MODELS

There is a wide range of PPP models that have been used for developing and financing transit projects throughout North America, Europe, Asia and Australia. The appropriate option in each instance depends entirely on the characteristics of the actual project and preferred risk allocation of the sponsoring government.

This section describes the range of PPP options available to the City of Vancouver and some of the significant project characteristics that will need to be considered in selecting a PPP model.

4.1. OVERVIEW OF PPP MODELS

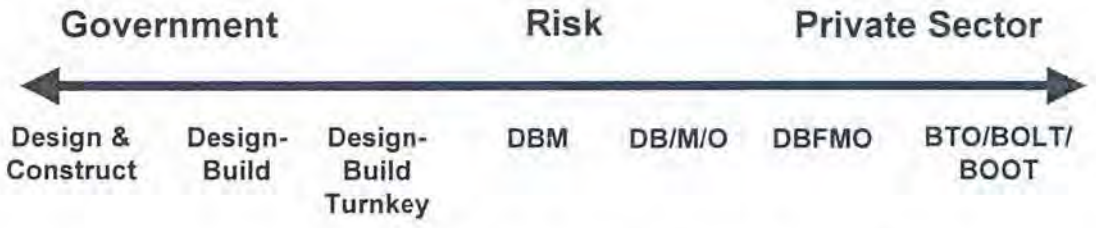
While each PPP model is unique, PPP models for transit infrastructure can broadly be categorized by:

- Aspects of the project delivery that are to be *provided* by the private sector (i.e. design, construction, operations, maintenance, and/or finance/ownership); and
- Physical and functional components of the project that are to be *under private sector ownership and control* (e.g. stations; infrastructure, rolling stock).

4.1.1. Degree of Private Sector Participation

There is a continuum of options for the transfer of project risks to the private sector covering Design (D), Build (B), Maintain (M), Operate (O), Operate and Own (OO), Finance (F) and Lease (L).

This is illustrated below:



There is a significant change in the nature of risk transfer when private sector financing is introduced into the PPP. At this point, risk transfer begins to move from a contractual basis to an "ownership" basis. This is particularly true when the private sector is accepting or sharing in ridership risk.

The further along the transfer of risk continuum, the less government needs to specify (and the less government should specify from an input perspective to ensure effective

risk transfer) By the Build Own Operate Transfer end of the spectrum, government should be allowing as much flexibility as possible for the private sector and focusing on specifying mainly service levels.

The following table illustrates which of the potential improvements to a Project's commercial viability are likely to be achieved under the various alternative PPP structures.

Commercial Viability Improvements

	Design-Build	Design-Build Turnkey	DBM	DBMO	DBFMO	(D)BOLT/ (D)BOOT
Construction Cost Savings:	Partial	Full	Full	Full	Full	Full
"Whole of Life" Cost Optimization	Limited	Partial	Partial	Partial	Partial	Full
Shorter Construction	Unlikely	Limited	Limited	Limited	Partial	Full
Higher Commuter Mode Share	Unlikely	Unlikely	Unlikely	Limited	Partial	Full
Higher Tourist Mode Share	Unlikely	Unlikely	Unlikely	Limited	Partial	Full

4.1.2. Scope of PPP (by Physical/Functional Components)

Public transport provision can be broken down into a series of component functions, each of which can be provided by a private sector PPP partner, including: infrastructure supply, infrastructure maintenance, rolling stock supply, service delivery, operator, and ticketing and revenue collection.

There is a substantial overlap between these different scope elements. The type of PPP that is implemented in many instances is determined largely by the type of the role the government chooses to assume and whether the government is required to provide an up-front or ongoing contribution to the project. In most PPP models, the government remains the "purchaser" or "specifier" of the transit service unless the project is both stand-alone and fully self-supporting.

Depending on what functions are transferred to a private sector provider, it is possible to develop a methodology for payment and/or cost recovery where the appropriate price and other signals are created to ensure that the private sector partner(s) are incentivised towards delivering the required outcome.

Typically private sector functions are provided by a single private sector consortium, although, for larger projects, there may be benefits of tendering its physical and functional components to different providers (i.e. separating contracts for rolling stock, infrastructure and operations/maintenance).

For a project the size of the Streetcar, a "turnkey" tender to a single private sector partner/consortium is likely the most appropriate as any benefits of specialization would likely be more than outweighed by the difficulty of coordinating the development of system components and maximizing "whole of system/life" economies.

4.2. POTENTIAL PPP OPTIONS FOR THE STREETCAR

Of the range of delivery options available to the City of Vancouver, we have described three options that are most appropriate for the Streetcar:

- Infrastructure delivery and management (DBM or (D)BOLT);
- Operations franchise (DBMO); and
- Full concession ((D)BOOT)

4.2.1. Option One: Infrastructure Delivery and Management (DBM or (D)BOLT)

Under this option, the public sector would own the Streetcar infrastructure, but the private sector would be contracted to design, build and maintain it. Specifically, it would take responsibility for delivery of infrastructure (at its cost) to certain pre-determined government requirements embodied within the contract. To obtain the most value from this structure, the concession (i.e. the term of the maintenance contract) would need to be long term, reflecting the long-lived nature of the infrastructure assets.

Alternatively, a shorter term concession could be contemplated with appropriate "buy-back" provisions, although this is likely to create greater risk and dilute the incentives for the delivery organisation to design and construct the new infrastructure so that it minimised overall life cycle costs.

This option also allows for a (D)BOLT structure to be adopted. Under this scenario, the private sector constructs and *owns* the infrastructure and leases it to the public sector to operate for the term of an agreed concession period in return for a rent payable by the public sector. Ownership of the infrastructure is transferred to the public sector without charge on expiry of the concession period.

The major advantages of this option are:

- Incentives for the delivery organisation to construct with minimum delay;
- Incentives for the delivery organisation to design and construct the new infrastructure so that it minimises overall life cycle costs; and
- By separating long-lived infrastructure assets from train operations, it may allow more frequent concessioning of Streetcar operations, generating greater competitive benefits.

The major disadvantages are:

- A long-term concession will be required, given the often long-term nature of infrastructure assets; and

- "Condition risk" for pre-existing infrastructure can advantage the current maintainer or be accepted by the private sector only at a significant premium. This has the potential to reduce the scale of benefits from integrating pre-existing maintenance work.

4.2.2. Option Two: Operations Franchise (DBMO)

Under this option, the government would contract the *operations* of the infrastructure to the private sector under a concession agreement over a defined period. The concessionaire may take demand or ridership risk depending on the nature of the operation and the agreement with the government. There are several international examples where an operator is contracted to supply a certain service (timetable) to a defined minimum standard as would be dictated by the government (government often keeps the farebox revenue and pays the contractor a fixed annual fee based on the service purchased although performance incentives can be negotiated). In other cases (e.g. the UK), the contractor has taken demand risk and incorporated ridership and revenue forecasts into their subsidy bids.

The issues surrounding separation of operations and infrastructure are complex. Replacing command relationships with contractual relationships for critical interfaces can add administrative complexity and undermine the operational robustness of the system. In this respect, the franchising of rail operations is substantially different from a bus service franchise.

In franchising operations to the private sector, the government would need to ensure that incentives for the operator are aligned with its own. For example, if farebox revenue alone is insufficient to encourage private operators to carry more passengers on the system (especially in the peak periods where extra capacity costs might be incurred), then a per passenger subsidy or some other subsidy mechanism might be required. This may mean government could lose control of its committed expenditure, depending on the nature of the agreements. The work undertaken in the stakeholder analysis may determine that capacity decisions will remain with the government effectively capping the subsidy level. The private sector will only be able to influence utilisation across the system.

The major advantages of an operational franchise are:

- Private sector entrepreneurship and expertise to promote ridership and customer service subject to government policy;
- Private sector focus on operating efficiencies; and
- There can be a relatively short franchise (say 7-14 years, depending on arrangements for rolling stock and infrastructure) generating benefits from regular re-tendering.

The major disadvantages of an operational franchise are:

- Separation of operations from infrastructure and implications for complexity, administration costs and operational robustness;

- Possible transport integration issues with other modes (e.g. revenue distribution from zoned fares, service co-ordination responsibilities); and
- The subsidy mechanisms required to provide the right incentives to the private operator (e.g. per passenger subsidies) may mean the government could lose control of its committed expenditure.

4.2.3. Option Three: (D)BOOT

This option involves a DBOOT structure – private sector designs, builds, owns, operates, and ultimately transfers the asset back to government. In this case, the government grants a long-term concession to the private sector sufficient to allow the private sector to generate an adequate return on its investment. The appropriate period for the concession would require considerable analysis of the various trade-offs such as asset life, competitive benefits from frequent tendering and calculation of asset residual values.

The private sector has overall responsibility for delivering the Project and the majority of the Project risks are transferred to the private sector as part of the competitive process. The private sector acts as head contractor, taking risks for overall system integration and performance.

The major advantages of a DBOOT-type project are:

- Transfer of most risks to the private sector at a fair price; and
- Private sector focus on ridership and efficiency, subject to government policy.

The major disadvantage is:

- Typically requires a long-term agreement, given the long-term nature of many of the assets.

4.3. DETERMINING THE EXTENT OF PRIVATE SECTOR INVOLVEMENT

The important message to be drawn from these diverse examples is that there is no 'one size fits all' solution. The solution for each project must have regard to the requirements of all stakeholders, the political and legislative framework and the available means of value capture at the time.

4.3.1. Canadian Transit PPP Experience

While PPPs have been done over transit in a number of international jurisdictions, their use in North America has been limited until recently. PPPs planned (or in progress) for transit projects in Canada include the Millennium Line extension of SkyTrain, the northwest extension of Calgary's C-Train, and the Niagara Falls People Mover.

While international experience with transit PPPs has been favourable, Canadian PPP's to date have primarily been design-build approaches with limited operating and revenue risk transferred to the private sector. Part of this has been a result of the need for

sponsoring agencies to become more comfortable with the mechanisms and implications of PPP structures.

Reluctance to initiate PPP processes in Canada (and North America) has often been a result of concerns with loss of control and technical issues associated with a private sector operator. Issues include:

- Loss of planning and design control: Where PPPs have been introduced, there has often been a strong reluctance by governments/authorities to leave design work to the private sector. This has often resulted in significant re-specification of design requirements with correspond cost overruns and delays.
- Operating control: Many transit authorities have been reluctant to pursue PPP processes on the basis that it will lead to a loss of control over operating and service standards. In addition, there has been a general reluctance to facilitate the outsourcing of existing transit operations.
- Systems integration issues: Coordinating operations and systems with a private sector franchisee.

However, the reluctance to transfer control to the private sector is changing as public sector entities become more familiar with private sector solutions and their ability to meet public sector design, output and service specifications. In addition, governments are recognizing the ability of the private sector in certain circumstances to deliver projects more quickly and potentially at lower cost.

One of the other difficulties to date in involving the private sector in transit projects in North America has been the high level of uncertainty surrounding the approval and funding mechanisms for transit projects. A number of transit projects have been delayed, undergone significant project re-specifications, or ultimately cancelled because of funding shortfalls and changing political priorities. The impact of such delays on a PPP process can be significant as such delays and re-specifications can be extremely costly to the private sector.

4.4. TIMING OF PRIVATE SECTOR INVOLVEMENT

Full public sector provision of infrastructure is now a rare occurrence. Even when the public sector dominates an infrastructure project, there is still room for private sector involvement. This is usually in the form of inputs or construction debt finance from private sector financial institutions.

Once the government has accepted that the private sector is to be involved in the provision of public infrastructure, there is a wide array of arrangements with differing levels of innovation and flexibility available to the government and private sector.

Selecting the most appropriate arrangement for each individual infrastructure project is a critical decision. What option is adopted depends on the scale of the project, its complexity and the opportunity for risk transfer.

Once the government has established the most appropriate delivery option for the project, they must then determine when, how and on what terms do they involve the private sector in the project development.

4.4.1. Competitive PPP Process

The following figure details the broad framework most government's introduce when choosing to develop and implement a project, particularly as part of a PPP.

When undertaking this process, the primary concern of most governments is to ensure the involvement of the private sector is on the most cost efficient and effective basis. In most instances, governments believe that the most effective way of achieving these priorities is by ensuring competition between the various private sector proponents is maximized at all stages of the selection process. Often governments will continue to have more than one proponent involved in the negotiation and proving up phase to ensure that the competitive pressure is continued until the point at which an MOU is signed.

While competition does tend to keep its central place in public procurement, its form does vary according to the value and complexity of individual cases. The government can choose to select a single preferred tender as early or as late in the process as it desires. Obviously the earlier in the process they choose to select a partner, say at the conclusion of the EOI process, the more detailed that process tends to be in order for the government to be provided with the correct information from the proponents to enable them to make an informed assessment and selection of the preferred proponent.

As part of the competitive tender process, governments can choose to offer specifications based on final outputs or even the delivery of outputs defined by broad functions, policies or activities, rather than being too prescriptive. This has the benefit of leaving the private sector the opportunity to provide innovative solutions for government.

In pursuing a competitive process, the government should also establish from the outset a level playing field, clearly setting out how solutions will be evaluated and including few variable factors in the award criteria.

It is also preferable for the competitive process to be undertaken within a definite timeframe, provided satisfactory bids are received, to demonstrate the government's commitment to the project and limit the amount of unnecessary resources dedicated to the project by the private sector bidders.

As previously stated, the main objective of this process is to produce the best price and most efficient delivery process for the project as a result of the competitive pressure that is applied to all bidders through the selection process. However, in order to adequately assess all proposals, the government must also undertake extensive work itself to ensure they have the appropriate information and expertise to make an informed decision regarding the preferred proponent. This is often a costly and timely process in itself.

4.4.2. Directly Negotiated PPP

An alternative strategy to government undertaking the preliminary design work and incurring the development expense as preparation for a competitive process, is for government to select a "Development Partner" and negotiate a cost/reward sharing at the conceptual stage of the project. This could result in the Development Partner rather than the public sector being responsible for all development costs, to be recouped during the delivery phase of the project, or potentially later. This would also allow for the project to benefit from the innovative input of the private sector from the beginning.

There are several instances where governments have chosen to appoint the private sector to the position of preferred proponent or joint partner without competition. Occasionally, governments believe that the advantages in terms of stimulating innovation may, in exceptional cases, justify alternatives to competitive tendering and opt to pursue the unsolicited proposal directly with the proponent.

The most common circumstance under which governments choose to consider proceeding direct to negotiation with a single promoter, is where the private sector has come forward with an entirely new project for development or where an individual private sector promoter's method of delivery has a genuinely innovative element.

However, it is only in exceptional circumstances, even with unsolicited proposals, that governments will engage a proponent without undertaking some type of competitive tendering process. In fact, in the case of most Australian state governments, specific policies now exist requiring a tender to be held even if a fully developed, innovative unsolicited proposal is submitted.

Usually in the event of an unsolicited proposal being pursued by a government, a competitive process of some type will be undertaken to establish the financial, commercial and technical capacity of promoters and their general professional expertise.

The government may also choose to introduce competition at the conclusion of the development process by requiring the private sector partner to take part in a tender process for the construction or delivery of the project.

However, it would be extremely difficult to persuade other parties to undertake a competitive tender against the Development Partner. As such, there is a question of the competitiveness and transparency of this type of process. One solution to this would be to have the Development Partner undertake a "head contractor" role. The head contractor would then be required to sub contract all the work as a number of contested turnkey packages, with the Development Partner earning a fixed margin over the tendered price.

Often, if there is no competition allowed for in the process, governments will also choose to keep the competitive tendering option in reserve in case negotiations fail.

The main issues for the Development Partner will be the terms of the commercial agreement under which it is rewarded, in particular what happens if the project does not proceed or in the case of a competitive tender process, they are not awarded the contract. In recognition of the risk this involves of abortive work, governments should be prepared to consider compensation if the Development Partner does not proceed with the project.

Where the government has chosen to pursue direct negotiations with one private sector promoter, it is essential that they consider appropriate means of safeguarding public funds by way of limiting contributions to joint ventures and levels of spending on services. Even where the private sector has been taken on board early as a joint development partner, the government may still wish to consider undertaking independent checking of cost estimates, monitoring of actual expenditure and possible later adjustment of sums paid. These arrangements will be additional to safeguards needed to ensure that capital investment supported by public sector payments is actually undertaken. The need to undertake this work will mean the government will still be required to have the appropriate knowledge and expertise – therefore incurring some additional cost.

Ensuring the appropriate selection of the right Development Partner is critical for the government as the Development Partner's work may determine significant elements of the project's attributes. The outcome of the development work could narrow the scope in a number of ways; in particular, it may extend to selecting a horizontal and vertical alignment and the selection of station locations. This raises a dilemma for the public sector of reaching a balance between developing a sufficiently prescriptive tender process that enables responses to be readily evaluated against each other and forgoing the flexibility that enables tenders to put forward a range of innovative ideas. Clearly, it will be important that the Development Partner has strong project management skills.

Croydon Tram Link (described in the next section) is a recent PPP where a development partner was selected by a government for the development of a transport infrastructure.

The table below summarises the implications the public sector should consider in selecting a private sector partner at the various stages in the development process .

	Engage Development Partner at Beginning of Project	Engage Private Sector Partner Following EOI	Engage Private Sector Partner Following Full Tender
Development Cost	Ability to shift some or all of the development cost to the private sector. Private sector partner may be willing to take this cost if they know they will be delivering the project & benefit in the long term.	Public sector will still be required to take development costs to EOI – likely to be significant if they wish to select a partner from this process. Private sector less likely to contribute to this upfront if they are unsure of the benefits to them or have little control over where the money is being spent.	Public sector will have to take all development costs – very significant costs. Public sector may be able to recoup these once the private partner has been selected as part of the competitive tender process. Private sector is likely to be unwilling to contribute prior to this point given that they may not benefit from the work.
Project Cost	No competitive pressure on development partner. However, reduced cost can be achieved through private sector desire to save costs or through an agreement to tender following scoping of project.	Competitive pressure in EOI process will have some effect on project cost estimates. However this is minimal given that further project definition will occur after the EOI, therefore cost variations are likely. Without the competitive pressure after this point the public sector may not be able to achieve the optimal cost outcome.	Highly competitive process likely to result in low cost due to competitive pressure.
Competition	It would be unusual to appoint a development partner without some competition. However, this would be minimal. Competition could be introduced later in the process, however the likely success of this may be questionable.	High level of competition achieved up to EOI process. However beyond this it is minimal.	High level of competition to the end of the process.
Private sector innovation	Government & private sector can work closely together. Private sector expertise & innovation can be maximized at all points through the project development process.	Private sector & government working together through the final development stages post EOI allows both to share expertise. Competitive process allows the government to compare the innovative ability of different private sector parties prior to committing to one.	Innovative private sector input into project development minimal. While suggestions may be sought, private sector would be reluctant to reveal any ideas that may give them 'the edge' in a competitive process.
Selection process	Relatively simple selection process. Government's ability to compare capabilities of private sector proponents with regard to their performance on the project limited. Judgments likely to be made on past performances.	Detailed development of the project will be required. Proponents will have to provide a reasonable level of detail on their development proposals. Reasonable comparison will be possible, however not all the information regarding the specific project will be available.	Very complex negotiation and selection process required.

4.5. CASE STUDY: CROYDON TRAMLINK

The Croydon Tramlink, which is still under construction, is also being developed as a PPP but has involved the private sector at a much earlier stage permitting private sector input into project specifications. While the performance of this system (and PPP structure) is harder to gauge, this PPP structure may be appropriate for the Vancouver Streetcar where the size and uniqueness of the project may favour a "partnership" model over a "tender" model.

4.5.1. Overview of System

Croydon is approximately 16 kilometres from central London and is the 10th largest UK population centre outside of central London. The Croydon Tramlink, designed to meet a longstanding need for improved transit services, sees the return to London of a tram system after an absence of 50 years.

The new system is 28 kilometres long, connecting central Croydon with Beckenham, Elmers End, New Addington and Wimbledon. Three routes are operated; Croydon-New Addington, Croydon-Beckenham Junction, and Wimbledon-Elmers End. Approximately 18 kilometres of the system is on existing, but disused, railway trackbed, with the rest being either on street or new dedicated tram tracks.

The Tramlink provides a high frequency of service, up to 21 per hour, with trams taking approximately 25 minutes from the end of any branch line to reach the centre of Croydon even during peak periods. The system is connected to central London by 'mainline' rail at up to five minute frequencies. To date, the system has been highly successful and carries approximately 60,000 riders/day (24 million/year). It is the busiest tram system in London

4.5.2. PPP Planning Structure

The decision to proceed with the Croydon TransLink was the result of a number of planning studies. Following a 1987 study that concluded that an LRT service was "needed", a subsequent 1990 report recommended project design and proceeding with the project.

As part of the UK Private Finance Initiative ("PFI"), the decision was taken to proceed with the project as a public private partnership. In 1992, a project development group was formed that included both London Transport ("LT") staff and a private sector operator, equipment supplier and civil engineering contractor. These participants were chosen through a tender competition and were supplemented by an independent group of railway consultants.

This group worked until 1994 to prepare performance specifications (i.e. speed, capacity, frequency, comfort, etc.), determine right-of-way needs, utility requirements, etc., and estimate ridership. In 1995, a 99-year concession was tendered to the private sector.

4.5.3. PPP Concession

In 1996, after a tender process involving eight bidders, the successful consortium, Tramlink Croydon Ltd ("TCL"), was awarded a design, build, maintain, operate and finance ("DBMFO") concession for the system. The Tramlink is operated by FirstGroup, one of the UK's leading rail and bus operating companies.

The original private sector Project Development Group bid for the concession but was ultimately unsuccessful. Instead, the group was compensated for the resources spent developing and progressing the project.

The total project costs were approximately £225 million with at least £125 million coming from the private sector. TLC acquired 34 trams from Bombardier under a lease arrangement which also encompassed a long term maintenance agreement. A further element of the finance came through an infrastructure lease. Government provided a grant which was approximately equal to the private sector debt and equity raised.

Revenues are derived from ticket sales and there is no government operating subsidy for normal fares. As such, TLC is fully exposed to ridership risk.

The concession has a term of 99 years (rather than the more typical 20 –30 years), deemed the effective life of the asset. This lengthy term was the subject of much discussion with government, with government finally accepting the position that whilst it had to be able to control and regulate the service, it never needed to own the tram system. The lengthy concession combined with ridership risk ensures that TLC has a long term motivation to ensure the performance of the operator and a continual upgrading of the assets. In addition, the "life" term overcame the issue that the asset might not be fully maintained as the concession reaches expiry.

4.5.4. Fare System

The fare system is based on a two zone arrangement and the tickets are compatible with main line and underground operations, although the ticket structure is stand alone (i.e. no transfers to LT). However, "Travel Passes" can be used across all modes, with a centralized clearing house dividing pooled revenues.

Failure to provide the service requirements of the concession will result in withholding of elements of Travel Pass revenue, and possibly termination of the concession.

4.5.5. Benefit of Early Private Sector Involvement

Involving the private sector early, permitted LT to get the benefit of private sector experience in respect of concept/design, "whole-of-life" costing, PPP processes, etc. early on the Project. One of the benefits of this is that it ensures that a commercial proposal is ultimately structured and put forward to the private sector. However, by involving one group early, there is some risk that the project inadvertently becomes "captive" to one design or technology too soon (thereby losing the innovation advantage that accompanies consideration of the project by several potential private sector

partners) unless care is taken to focus on performance specifications (not design specifications).

5. REVIEW OF INTERNATIONAL PRECEDENTS

5.1. INTRODUCTION

The following section provides a detailed overview of the following three case studies:

- Manchester Metrolink;
- Melbourne Trams; and
- Portland Streetcar.

These case studies have been chosen as they are all light rail intra-urban transit system servicing busy downtown residential/employment/tourist areas. Portland's recently developed streetcar also involved the private sector, though not in a PPP. Manchester Metrolink was the first of the major light rail transport projects undertaken by the UK Private Finance Initiative. An extensive network of commuter and intra-CBD services is operational and further extensions are now underway. It is an example of a light rail project that successfully involved the private sector from the design, build and finance phase through to the operations and maintenance phase.

Although already an established network when franchised to the private sector, Melbourne Trams is an excellent example of the benefits of risk transfer to the private sector, as well as the significant savings to the public sector from expected private sector efficiencies and commercialisation of revenue.

Portland Streetcar is the first modern streetcar in the USA. It commenced operations quite recently, and is experiencing some early success. It is included as a case study because of its similarity to the proposed Vancouver Streetcar, not as an example of a PPP. It is publicly owned and operated. As such, it is a good comparator in that it provides an illustration of the cost to the public sector as compared to a public/private model which allocated ridership risk and cost to the private sector. It is also an example of innovative sources for government contribution, including the use of funds raised from related development projects.

5.2. SELECTED INTERNATIONAL CASE STUDIES

The case studies illustrate the benefits of a PPP for a light rail system. They show that there are many benefits for the public sector and community from entering into PPP projects like the Vancouver Streetcar.

The following is a broad overview of the system characteristics and what makes them comparable to Vancouver. Comparison of relevant characteristics is made, including:

- System descriptions (including integration with other transit systems)
- Ridership levels
- Capital costs
- Funding mechanisms
- Private sector participation
- Development of PPP model and political support for system (i.e. what agency sponsored the system, how were appropriate government, community and business stakeholders brought "on-side", etc.

5.2.1. Manchester Metrolink

As mentioned above, Manchester Metrolink was the first of the major light rail transport projects undertaken under the UK Private Finance Initiative. The project's size and forecast revenues meant that a government contribution was required for each stage of development. This contribution was provided in the form of a capital grant. This money was provided to the private sector who in turn committed to the design, construction and operation of the project over a determined period.

The Project has been developed in three phases, with a new tender process and a new private sector partner in each of the phases. An extensive network of commuter and intra-CBD services is operational and further extensions are now underway.

NAME	Manchester Metrolink
Description	• Manchester was the first British city to reinstate the tram in a 21st century form • Metrolink was Manchester's revolutionary new transport system, which has become the model for many other similar schemes throughout the UK (Wolverhampton and Sheffield, for example) and the world • There are 3 phases: • Phase 1 opened in 1992. It is a 32.7km 2 line tram system with both sections meeting on-street in central Manchester in Piccadilly Gardens. Operates from Bury in the North to Altrincham in the South via Manchester City Centre. Utilised a lot of existing infrastructure: 25km of track and 18 stations were converted from 2 former British Rail suburban lines • Phase 2 was a 6.4km Extension to Eccles via Salford Quays. It opened in March 2000 (commenced full operations in July). It added 11 new stops and completion was staged • Phase 3 is currently out to tender, with tenders due in around the end of January 2002. It has been dubbed the "Big Bang" and will more than double the size of the system. It includes extensions to Rochdale and Oldham, Manchester Airport and Ashton-under-Lyne. It may include the extension to the Trafford Centre subject to private funding being made available. Tender prices were also sought for extensions to East

NAME	Manchester Metrolink
	Didsbury and The Lowry. Construction is expected to take 5-6 years – probably will be phased by concessionaire. The complete network is expected to carry around 50m passengers/year.

System Operations	• Rail network is 39.1 km (Phase 1 & 2)
	  ○ 36 Stations (many shared with rail franchise holders)
	  ○ 303 Staff
	  ○ 32 Trams of which 26 were for Phase 1
	  ○ Revenue in 2000/2001 of £18m
	• The trams run from 6.00am to 11.30pm from Monday to Thursday, and later until half an hour past midnight from Friday to Sunday evenings. Trams run at an increased frequency of every six minutes from 7.15am until 6.30pm on weekdays and Saturdays, and from 10.00am until 5.00pm at 12 minute intervals on Sundays. Every other tram goes directly to Piccadilly Mainline Rail Station, except on Sundays when all trams go via Piccadilly
	• There are connections with other public transport: Metrolink trams stops connect directly with bus and coach interchanges at: Bury, Whitefield, Victoria, Piccadilly, Altrincham and Eccles. A shuttle bus is available at Stretford Station for a direct link to the Trafford Centre. Metrolink trams have interchanges with mainline rail stations at: Bury, Victoria, Piccadilly, G-Mex and Altrincham
	• All trams are fully accessible to wheelchair users from every platform and station. Special reserved places are available on board for wheelchairs and for mothers with prams. All trams and station platforms have CCTV and stations and carriages are constantly monitored by Metrolink central control on a 24 hour basis

Ridership	• Ridership was 6.2m passengers per year in the first year of operations, increasing to just under 13m by 95/96. Stayed around 13m until 99/00 when it increased to 14.2m. Following the opening of phase 2, ridership in 00/01 increased to 17.2m • Private sector assumed ridership risk and is intended to again under Phase 3 agreement
Fares	• Stand-alone fare system • The single **fare** for crossing one zone is 90p (£1.10 including the city centre), for two zones it is £1.30 (£1.70 including the city centre), and for three, £1.70 (£2.10 including the city centre). • As an example of costs, a journey on Metrolink from Bury to Manchester Piccadilly would cost: Single = £2.60 Peak Time Return (i.e. before 9.30am) = £4.50 Off Peak Return (after 9.30am) = £3.00. Ticket dispensing machines are available at all train stops and accept the following coins : 5p, 10p, 20p, 50p, £1 and £2. Notes are not accepted. Change is given from all machines. Various discounted and concessionary tickets are available such as Season Tickets, Reduced Fare and Free Travel, Integrated Tickets (with other rail and bus services), and Group Tickets • Fares are set by the operator (likely to be a regulator and conditions for phase 3) • Metrolink operates on an honour system. There are no ticket collectors

NAME	Manchester Metrolink
	at stations or on board trams, but Inspectors frequently board at random and there are hefty fines for anyone traveling without a valid ticket
PPP Structure	• Phase 1: Design, Build, Operate and Maintain (DBOM) Contract for 15 years was awarded to the GMA Group (a consortium formed by GEC Alsthom; Mowlem; Amec; GM Buses) • Phase 2: The first contract with GMA Group was terminated, compensation paid and a second DBOM Contract for 17 years was awarded to Altram Consortium, consisting of Laing, Serco; Ansaldo Transporti and 3i Group to design, build, operate and maintain the extension and take over operations and maintenance of Phase 1. • Phase 3: intended to be a DBOM for 25 years (the Phase 2 contract will be terminated and compensation paid). The Phase 3 contract will include the operations and maintenance of Phase 1 and Phase 2. Four Consortia were short listed in March 2001 for the project to design, build, operate and maintain the extensions as well as take over the responsibility for phase 1 and 2. The 4 consortia are: GMRT Co, Great Manchester Tramways Ltd, Maintram, and the Manchester Train Company. GMRT Co is made up of Amec Project Investments, Bombadier Transportation and First Group plc. Greater Manchester Tramways Ltd is made up of Stagecoach Group Holdings plc, Alstom Holdings SA, John Mowlem and Company plc, Edmund Nuttall Ltd, Virgin Group Ltd. Maintram is Bechtel Enterprises (UK) Ltd, Amey Ventures Ltd, Group 4 Falck Global Solutions Ltd, MTR Corporation Ltd and Semaly SA. The Manchester Tram Company consortium is a partnership between Serco and SNC Lavalin. • The private sector was also responsible for financing the project to differing degrees in each phase (see Funding g section below) • The infrastructure and assets are owned by the Greater Manchester Passenger Transport Executive (GMPTE)
Role of Government	• Responsible for its share of the funding • Greater Manchester Passenger Transport Authority is a body made up of councils that makes policy on transport plans; pays concession shortfalls and ensures private sector compliance with specifications in concession agreements. The Authority's policy is carried out by the GMPTE
Role of Private Sector	• Design, Build and Operate system (for 15 years under original Phase 1 agreement and 17 years under revised Phase 2 agreement and potentially 25 years under Phase 3 agreement) • Finance private sector contribution • Take on Ridership and Operating Risk • Comply with specifications in agreement – Phase 3 is intended to have detailed service delivery requirements
Cost	• Phase 1: Total cost of £145m. Operating costs of around £10m/yr and Revenues of around £15m. • Phase 2: Total cost of £110m. Operating costs had been estimated at £3m/yr and revenues at £5m/yr. • Phase 3: Estimated cost: £500m. Tenderers also required to consider extra extensions (see Description above) which could raise this to £593m.

NAME	Manchester Metrolink
Funding	• Phase 1: Very little private sector funding (around 4% of total £145m). However the private sector had to run it without a subsidy – the GMPTE had previously sunk ££4m / yr into the suburban rail lines to Altrincham and Bury. The Great Manchester Passenger Transportation Authority (GMPTA) contributed ££69m, ££48 came from the Central Government and the balance from European Grants. • Phase 2: Around £40m came from private sector through cash and land gifts and the fee for the concession to operate the extended network. Altram was backed by 3i Group (who have a minority shareholding) and Bank of America. GMPTE contributed £25m, The European Regional Development Fund £10m and the Central Government £12m. • Phase 3: The government has committed around ££250m in grants. Tenderers have been requested to bid on level and timing of government grant required as well as the possibility of an annual performance fee.
Success Factors	• Original forecast for passenger figures for Phase 1 was estimated at 10m passengers/year. The Actual numbers of passengers using Phase 1 each year is 3m higher than this estimation at 13m • Surveys suggest 43% of Metrolink journeys are by passengers who would have a car available for the same trip. This translates into an estimated reduction of 1m vehicles on the streets of Manchester. • In a GMPTA survey of 3000 people in 2000, Metrolink got a "massive thumbs-up"
Failures	• It has been suggested that Phase 2 is below ridership forecasts. However, given that the private sector assumed patronage risk this is good for the GMPTA. • Fares are among the highest of any light rail network in Europe and there has been public outcry about ticket prices. It appears that the GMPTA has learned from this and Phase 3 is likely to have fare caps and a watchdog. • Many believe that the Metrolink is too overcrowded in peak times • A GMPTA survey of 3000 people in 2000 found that passengers wanted more frequent, reliable services • Lack of uniform tickets has also been an issue, with passengers in the above mentioned survey saying that uniform tickets should be introduced which allowed travel on all buses, trams and trains. • Fair evasion is still a major problem – it is estimated that 1 in every 7 tram passengers is traveling for free • The Metrolink has been undertaken in 3 phases, with a tender and then termination at each phase. This may have involved unnecessary costs and made the GMPTA less credible.

5.2.2. Portland Streetcar

While the Portland Streetcar system has been developed as a wholly publicly owned and operated system, the similarities in the project's size and scope means it is a useful case study when considering the development of the Vancouver Streetcar. It also demonstrates the risk that is borne by the government when they chose to take full responsibility for the delivery and operation of the service.

The table below outlines the key elements of the Portland streetcar project.

NAME	Portland Streetcar
Description	• Dubbed "first modern streetcar in the United States" • Construction began in April, 1999 • Line officially opened on July 20, 2001 • Streetcars run from Legacy Good Samaritan Hospital at N.W. 23rd Avenue, on Lovejoy and Northrup, through the Pearl District and on 10th and 11th Avenues to a S.W. 5th and Montgomery Terminus at Portland State University • Possibility of extension beyond the boundaries of the "Central City" in the future
System Operations	• Initial fleet of five cars to start operations, with two more coming by mid 2002 • Route length of 2.5 miles total with stops every two or three blocks • Staff: 13 operators; 3 superintendents; 2 maintenance technicians (from Tri-Met); 1 manager of operations and safety; 1 maintenance manager; 1 project manager; 1 community relations manager; 1 executive director • Forecast Farebox Revenue of US$100,000 in first year of operations • Streetcars run every 12 to 15 minutes during the week • Streetcars run 5:30 am to 11:00 pm, Monday through Thursday; 5:30 am to 12:30 am on Friday, 8:00 am to 12:30 am on Saturday, and 8:00 am to 10:00 pm on Sunday • Portland Streetcar has been integrated with MAX and rest of Portland's regional and local public transportation • Low floor trams for wheelchair access
Ridership	• Daily ridership forecasts of Portland Streetcar Inc (the not for profit organisation set up for the Portland Streetcar project – see below) were 5,000 passengers per day – this was 1,300 passengers per day higher than the first professional estimate • The streetcar has been in operation for just over 5 months and Ridership estimates so far are as follows: o For the months of July and August - 6-7,000 average daily riders weekdays and Saturdays and 4-5,000 on Sundays. o Ridership leveled out in September with a daily average of 4,000 weekdays, 4,600 Saturdays and 3,300 on Sundays

NAME	Portland Streetcar
	○ October – Weekday average was 3,700, with an average of 3,300 on Saturdays and 1,200 on Sundays • Public sector assumed all ridership risk • Estimated that 60% of riders live within three blocks of the line, 20% are tourists, and 20% transfer from the Tri-Met MAX or bus.
Fares	• Fares are the same as Tri-Met fares, with riders able to use Tri-Met passes and tickets, bus transfers, or US$1.25 cash • There is no charge to riders who travel only within Tri-Met's Fareless Square. Fareless Square extends from NW Irving through Portland State University. Most of the line is in the Fareless square • Tickets are sold on Streetcar at fareboxes • Fareboxes on the Streetcar accept coin only • Fares effective September 1, 2001: ○ Zone 1 & 2: US$1.25 ○ Youth: 95c ○ Honored Citizen: 60c • Annual passes are available at selected locations for US$50 (can only be used on streetcar)
Role of Government	• Public sector funded and owned • Assume full ridership and operations risk
Role of Private Sector	• In 1995, the City of Portland issued a Request for Proposals for an independent organization to design the streetcar line and possibly also to manage construction and to operate the Streetcar when completed. A group of interested citizens and property owners along the alignment set up Portland Streetcar, Inc. (PSI) as a non-profit organization, to respond to the City's request. The PSI proposal was accepted by the City. Its volunteer board of directors and technical consulting team led the streetcar project – from construction oversight to decisions on vehicles. • A private sector firm was contracted to construct the streetcar system: Stacy and Witbeck, Inc. was awarded the general contract for constructing the project
Cost	• Total Cost of US$56.9m • Forecast operating costs in first year of US$2.4m • Forecast farebox revenue in first year of US$100,000 (Little farebox revenue as most of line is in fareless square) • Forecast sponsorship revenue of US$100,000
Funding	• Funding Breakdown: Amount – Source US$28.5 million – Bonds backed by city parking revenues US$9.6 million – Local Improvement District US$7.5 million – Tax increment financing (Urban Renewal District) US$5.0 million – Federal funding US$2.0 million – Revenues from city-owned parking garages US$850,000 – Tax breaks on tax advantage lease/sales agmnt US$500,000 – U.S. Department of Housing & Urban Development

NAME	Portland Streetcar
	US$500,000 Portland Department of Transportation US$355,000 Interest earned on project funds US$160,000 From helping Sound Transit System in Seattle US$1.9 million City of Portland for purchase of 7th streetcar • A 20% increase in city parking garages hourly rates was used to back bonds • Tri-Met (Tri-County Metropolitan Transportation District of Oregon), a public regional transit agency and operator of the MAX light rail commuter system, is responsible for most annual operating funding – ie. two thirds of the US$2.4m annual operating costs • US$600,000 of the annual operating costs comes from parking meter and fine revenue
Success Factors	• The system has only been running for just over 5 months, so it is hard to assess • According to the City Commissioners Office it is already having the intended effect on development. • More than 2,000 residential units have been built or are under construction along and near the new streetcar line in the River and Pearl districts
Failures	• Construction delays of up to 3 months • Around 2 month delays for delivery of streetcars from Czech Republic • Early ridership results down 25% from predictions; may improve with ramp up • Fare machines are coin only, which has caused complaints since the US does not have dollar coins. The fare machines are being modified to accept one and five dollar bills

5.2.3. Melbourne Tram Systems

The Melbourne tram network is extensive and has remained in operation as part of the public sector transport corporation for over 100 years. It provides both a commuter and an intra - CBD service. In 1998, the network was restructured into two separate geographic franchises, which were then let to private sector operators for a period of 12 years. The system is currently being extended and new rolling stock purchased as part of the conditions of the franchise arrangements. Government provides a declining subsidy profile against strict operational performance standards. Performance has been mixed with substantial ridership growth and operating improvements but lagging the original projections of the bidders.

While the Melbourne tram system is significantly larger than the proposed Vancouver Streetcar, the franchising model represents one of the most complete (and successful) transfers of ridership risk to the private sector.

NAME	Melbourne Trams
Description	• Commuter and Intra CBD service • Been in operation as part of public sector transport corporation for over 100 years • In July 1998 Melbourne Trams were divided and corporatised into two organizations - Swanston and Yarra Trams. • In June 1999, Swanston (now called M>Tram) and Yarra Trams were franchised to private operators under fixed term service contracts.
System Operations	• At franchise date Yarra had 201 trams on 10 routes and Swanston had 275 trams on 18 routes (as part of franchise agreements this has increased – see below) • At franchise date Yarra had 725 staff and Swanston had 935 • Yarra's Rail Network is 103km and Swanston's is 137km • Revenue in 98/99 was AU$38m for Yarra and AU$47.2m for Swanston • Operating Subsidy required in 98/99 was AU$30m for Yarra and AU$42m for Swanston • Integrated with Victorian Public Transport System, consisting of metropolitan train service, tram and bus services, and country train and coach services • Operates 7 days per week. Weekday and Saturday service is typically from before 6am to after 11:00 pm. Sunday services start later. Service frequencies on most routes range from 15 or 20 minutes during weekdays to 20 to 40 minutes on evenings and weekends. Services become less frequent on the outer extremities of some lines
Ridership	• In 98/99 Ridership was 50m passengers for Yarra and 68m for Swanston • Considered to be very low with little growth under government ownership and operation • Ridership remained around the 100m mark for the whole system over the past 10 years. • Ridership has significantly increased since franchising however not as much as forecast by private sector franchisees • Under Franchise agreements private sector assumed all ridership risk • Around 8% of passengers are tourists (tram routes include most major tourist attractions and destinations) • Around 34% of passengers are unemployed • Around 20% of passengers are studying full time • On Swanston, 27% of total patronage is for shopping, social and recreational trips
Fares	• Since 1983 Melbourne has had a multi ticket system (ie. An integrated system) for trains, trams and buses • Tickets are called "MetCard" • Tram operators main source of revenue is its allocation of MetCard revenue

NAME	Melbourne Trams
	• When franchised, system was implemented to allocate revenue between transport companies • Surveys are conducted on a quarterly basis to gather information to establish ticket usage characteristics which is then used to determine the proportion of revenue that each operator receives on the basis of the number of equivalent passenger kilometers traveled on each MetCard Operator's services using those MetCards • Tickets available at milk bars, machines at stations or from the bus driver or on trams (limited tickets though + coins only). Tickets are also available over the counter at major railway stations or by phone. • Most MetCards are valid for a particular period from validation (ie. Passenger needs to validate ticket) and allow any number of transfers within that time, within the zone/s of the ticket. • Zonal system – higher fares for longer trips (3 zones, roughly correspond to inner, middle and outer suburbs) • Tickets start at AU$1.90 (full fare) for 1 zone for 2 hours and up to AU$6 for 3 zones for 2 hours. • There are weekly, monthly and yearly tickets, as well as various other ticket products such as night rider tickets and short trip tickets that result in better value for customers • Most popular tickets are: Standard '2 hour'; 2 hours x10; daily ticket and weekly ticket • Concession fares are roughly half price of full fares (under franchise agreements, the government subsidizes these to 75%) • Under franchise agreements franchisees are allowed to provide additional ticket types, with revenue going directly to the operator, however these are not very popular and generally do not provide the same value for money as Metcard • Under franchise agreements operators cannot increase ticket prices above inflation
PPP Structure	• Franchise agreement for the operation and maintenance of Melbourne Trams • Contracts for 12 years – after which expected to be re-tendered • Contracts impose specific conditions and specifications on gov't and franchisees (see below) • Penalties, including large financial penalties for non compliance • Incentive payments and bonuses for exceeding obligations • Agreement included the private sector investing in and financing new rolling stock (see below • Vertically integrated – i.e. Effective ownership of both infrastructure and rolling stock transferred to the franchisees for term of franchise • The Yarra Trams Franchise was awarded to a consortium called Metrolink comprised of Transdev and Egis in June 1999 • Swanston was awarded to British listed company National Express Group – one of Europe's leading mass passenger transport companies in June 1999

NAME	Melbourne Trams
	• Tenderers bid on the basis of a declining subsidy (see below), the purchase of new assets and service standards
Role of Government	• Pay declining subsidy • Make incentive payments for exceeding patronage growth forecasts (50c for every extra $1 of fair revenue) and for exceeding punctuality and service reliability targets. • Fine private operators for non –compliance. • Supervise the adherence to conditions of franchise agreement (Victoria's Director of Public Transport (DOPT) does this) • DOPT can fine private operators up to $1m for failure to meet guarantees • Other Responsibilities of Office of DOPT are: o monitoring and adherence to Passenger Service Requirements; o approving timetable changes; o approving changes to regulated fairs; o approving expenditure on new rolling stock; o monitoring overcrowding and loading standards; o monitoring compliance with various franchise commitments; o assessing franchisees initiatives; and o coordinating special events.
Role of Private Sector	• Own, operate and maintain tram assets for the 12 years • Finance initial capital contribution and finance purchase of new trams and improvements • Assume full ridership and operations risk • Comply with infrastructure lease agreement which requires the establishment of quality systems and ensuring that at the end of the franchise period each asset type passes pre-determined minimum condition specifications • Transfer assets to government at the end of franchise period • Metrolink's (Yarra) obligations under agreement: o spend AU$100m to buy 31 new low-floor trams by Sept 2001; o spend AU$50m upgrading +200 tram stops; modernizing existing fleet (147 trams); improved passenger facilities & passenger information services; o increase frequency (to every 10 minutes on Mon-Fri between 7.30am and 6.30pm); o must meet predetermined targets for punctuality and service reliability or face fines (incentive payments if exceed); o extend route 109 to Boxhill (AU$9m) by 2002; o cannot reduce level of services; o cannot increase ticket prices above inflation; o retain Heritage W class trams; and

NAME	Melbourne Trams
	○ continue to provide city circle tram for free. • National Express's (Swanston) obligations under agreement: ○ buy 59 low-floor trams between 2002-2004; ○ spend AU$7.2m refurbishing trams; ○ spend AU$6m on real time passenger info systems; ○ spend AU$6m on traffic management measures to improve flow of trams and other traffic at congestion hotspots; ○ Must meet predetermined targets for punctuality and service reliability or face fines; ○ cannot reduce level of services; ○ cannot increase ticket prices above inflation; and ○ retain Heritage W class trams.
Cost	• Franchisees bid on the basis of a declining subsidy (significantly less than pre-existing government subsidy levels • In 98/99 combined Operating Costs were AU$153.3m and combined Revenues were AU$85.2m
Funding	• Operators required to inject AU$10m of capital at beginning of franchise and to post a performance bond of AU$15m for gov't in case of default • Metrolink (Yarra) obligated to spend AU$150m on 31 new low-floor trams, modernizing existing fleet (147 trams) and upgrading +200 tram stops • National Express (Swanston) obligated to: order 59 low-floor trams between 2002-2004; spend AU$7.2m refurbishing trams; spend AU$6m on real time passenger info systems and spend AU $6m on traffic management measures to improve flow of trams and other traffic at congestion hotspots. • Subsidy: ○ Metrolink (Yarra): AU$38.9m in year 1, reducing to $0 over the 12 year contract ○ National Express (Swanson): AU$42m in 1st year reducing to $0 by the 10th year • Part of each subsidy goes into an escrow account and can only be used for infrastructure maintenance and renewal • Gov't makes reimbursements for mandated tickets sold at concession process ie. Gov't funds half of difference between full fare and concession tickets → franchisee receives 75% of fare
Success Factors	• Government had high degree of specifications and mechanisms to enforce them • Large degree of risk transferred to private sector • Gov't claimed that Metrolink deal (Yarra Trams) would save taxpayers AU$290m • As a result of train and tram PPP's, in 10 years time, transport is expected to cost taxpayers AU$129m compared with AU$325m for 1998-99

NAME	Melbourne Trams
	• Improved service quality and facilities to be provided by private sector • Improved patronage
Failures	• Ridership has increased since franchising however not as much as forecast by private sector franchisees and major increases in patronage are required in order to offset declining subsidy – e.g. Metrolink need to increase patronage by 60% by 2011 and National Express 40% to offset declining subsidy • Yarra and Swanston have been fined millions of dollars for failing to run trams on time. Swanston did not receive a bonus for its entire 1st year • While the above two points present issues for the private sector, they illustrate the benefits of a well designed contract for the public sector. Although National Express faces earnings of $160 less than bid estimates (this includes Mtram, Mtrain (Swanston) and V/Line) by 2004 and Yarra faces a decline of $20m from original estimates by 2004, the government has transferred much of the associated risk to the franchisees. • Fair evasion is still a major issue to tackle (estimated level in 1999 was 15-20%) • Fear of traveling at night for safety reasons and inherited public perception that tram services are unreliable

5.3. KEY AREAS TO NOTE FOR VANCOUVER STREETCAR DEVELOPMENT

The above case studies contain many relevant factors when considering the development of the Vancouver Streetcar.

5.3.1. Risk Transfer

As discussed in Section 3 of this Report (Benefits of Private Sector Involvement) the benefits of private sector involvement in the provision of public infrastructure is the ability to transfer risk to the private sector, particularly ridership risk. The Melbourne case study is a clear illustration of this. In Melbourne the franchisees have failed to achieve the ridership levels they forecast when making their bid, however the losses that have resulted from this are borne entirely by the private sector.

Similarly, the lower than forecast patronage that has been suggested for the second phase of the Manchester Metrolink, also resulting in reduced revenue. It is a risk borne by the private sector. While the private sector is required to bare the loss, the public sector and wider community still receives the benefit of the specified service and infrastructure required to be provided by the private sector under the concession agreement with the private consortium.

In contrast to Melbourne and Manchester, the lower than forecast ridership that has resulted with the operation of the publicly owned Portland Streetcar and associated costs will be borne completely by the public sector.

The Portland Streetcar case study also demonstrates how under a traditional public sector delivery mechanism all delays in construction and associated costs are borne by the government. The Portland project encountered construction delays of up to 3 months, as well as around 2 month delays in the delivery of the rolling stock. Apart from the public criticisms of the government as a result of a delay in the delivery of the project, the government also took the loss on the delayed revenue from the project.

Under a PPP mechanism not only would the government be able to push some of the blame for the delay to the private sector, the private sector would also have the additional incentive to avoid these delays as any delay in delivery would most likely result in a reduction in the projects revenue stream by an equivalent amount. In more recent PPP's, the government is choosing to set the concession term at a period which includes the construction period. This has been the approach adopted in the recent tender for the Sydney Cross City Tunnel toll road where the concession period for the PPP was 33 years, which included a three year construction period. Under this structure a delay in delivery of one year reduced the concession period (and therefore the projects revenue stream) to 29 years.

5.3.2. Efficiency in Delivery

The benefits of private sector business capabilities and efficiencies are also clearly evident from the case studies. The Melbourne Trams franchising process has resulted in the Victorian Government saving hundreds of millions of dollars in subsidies because the private sector believed it could achieve great efficiencies and ridership than the public sector. The private sector bids were based on aggressive ridership forecasts, whether or not these were achieved was a risk for the private sector operator. In addition to this as part of the Melbourne Trams franchise agreements, the operator is required to improve services and facilities on the network regardless of the ridership levels.

The Manchester Metrolink has been run at an operating profit since the private sector commenced operations in 1992. These benefits are not necessarily only measurable in financial terms. Like Portland, Manchester Metrolink for example has received overwhelming approval from the public.

5.3.3. Government Method of Contribution

One fact that is common for all three case studies outlined above is that even with the involvement of the private sector a government contribution is required. In each case study the government has chosen to involve themselves in the project in different ways.

The franchising arrangements for the Melbourne Trams PPP included the provision of diminishing government subsidies over the term of the franchise. Bids for rights to operate the system were, amongst other things, assessed on the basis of what the required government subsidy was for each of the operators. The result of the bid process was that the contribution required from government over the term of the franchise was substantially less than the amount that the government would have contributed should they have remained the tram operator.

Under the Manchester Metrolink case study, the private sector made its contribution to the project up front in the form of a capital grant. This has proved a successful method of government involvement for each of the three stages of development of the Manchester Metrolink. The level of government involvement has been clearly defined and limited to the capital contribution, with the private sector being responsible for the ongoing operation of the project.

With the Portland Streetcar development the government has had to provide both the upfront capital contribution as well as a larger than expected operating subsidy. Much of this unexpected increase in operating costs was largely due to much of the streetcar corridor being a fare free zone. The public policy objectives that favour a fare free zone may outweigh the commercial consequences. It is unlikely that a private sector operator would have implemented a fare free zone without a corresponding subsidy from government.

The method of government contribution provided in each of these scenarios was significantly different each time depending on the financial circumstances of the government of the time. In considering the way in which the private sector will be involved in the delivery of the Vancouver Streetcars, it is critical that the government determine the preferred method of contribution and allow the private sector to structure their concession arrangements accordingly.

In considering this issue of method of contribution, the government must also be mindful of the sources of funds available for the project and what additional funding sources can be created.

The case studies show that the source of these funds can be a mixture of various levels of government, and that funding can be provided in the form of upfront capital funding or can be raised through ongoing taxes and charges over the entire concession period. The Portland Streetcar funding included funds raised on an ongoing basis from an increase in city parking garage hourly rates by 20% and issuing bonds based on this increased revenue. Revenue from parking meters and fines also provides a large part of the operating contribution. The added benefit of this was that it indirectly discouraged vehicle use in the city area as the increased costs involved in bringing the car into the city.

The Portland study provides a good example of how alternative public funding sources may be tapped for the funding of the project that may be relevant to the government in considering the funding sources available for the Vancouver Streetcar system.

5.3.4. Fare Structure and Operations

In developing the Streetcar system the government must also consider the level of service, fare and maintenance specifications they wish to achieve. By developing the project under a PPP arrangement the government can set these output specifications in the concession agreement, with strict penalties for the private sector should they not be achieved.

Under the Melbourne Trams case study the franchise agreements set out well designed specifications and with strict methods of enforcement for the government should they not be met. Under this structure service levels have to be improved and maintained and a quarterly review is conducted to determine whether the operator has met the requirements of the agreement. Failure to achieve the required service level results in financial penalties. However, exceeding some levels of performance, specifically patronage, will result in bonuses for a operator.

In order to ensure that infrastructure is returned at the end of the period in an acceptable condition, various measures were employed. These included a portion of the government contribution being available solely for infrastructure maintenance and renewal purposes, as well as a requirement for the franchisees to establish quality systems. There are also conditions placed on fare systems and prices. The system is the multi-ticket system and increases in fares are capped at the rate of inflation.

In the case of Manchester Metrolink, there appear to have been less service specifications and relatively ineffective methods of ensuring compliance. This has resulted in less frequent and reliable services than the public would like to see. Fares are unregulated and are amongst the highest in Europe. This has led to a public outcry over ticket prices. It appears as if a lesson has been learned for phase 3 with the possibility of a fare regulator. There is also a stand alone ticket system. The public has demonstrated a preference for a multi ticket system, integrated with the rest of the public transport network.

5.3.5. Conclusions

The above would tend to suggest that the most ideal form of structure for a PPP for the Streetcar would be one where risks such as ridership are substantially or completely transferred to the private sector in exchange for a portion of the potential profits. Operations and operational risk and a viable portion of the financing could also be undertaken by the private sector. A key lesson for the Streetcar is to ensure well designed specifications and penalties for service levels, fares and maintenance of infrastructure. Synergies between design and construction and a whole life view of the project are also important success factors. A structure such as Design, Build, Operate, Maintain and Transfer may be an appropriate structure.

The Streetcar project forecasts used in this Reports' financial analysis rely on a significant amount of tourist ridership. In this respect, it is pertinent to consider the Melbourne Trams. Both tram operations service many of the most popular tourist sites, however only 8% of annual riders were tourists at the time of franchising. The Melbourne Tram system is however a much larger system than the proposed Streetcar and services the suburbs of Melbourne. Therefore the 8% proportion of riders who are tourists may be misleading and if riders in a more limited area, that is, closer to the CBD were considered, it is possible that this number would be higher than 8%. At franchise date, 27% of the Swanston operations total patronage was for shopping, social and recreational trips. This is a significantly higher recreation ridership proportion than contained in the Streetcar project forecasts used in this Report.

6. RIDERSHIP ANALYSIS

The biggest risk that either a private or public operator of the Streetcar system will face is ridership risk as fare revenues typically account for the vast majority of transit revenues.

The method of delivery chosen for the project will determine who ultimately bares this risk. Should the City choose to have the private sector finance the project, ridership risk can be transferred entirely to the private sector (even with a capped government contribution made up-front or as an operating subsidy).

The ridership analysis on which the Macquarie financial analysis has been based is the preliminary ridership analysis that was produced as part of the work done for the BSW Report. This section reviews the BSW Report ridership analysis and discusses remaining areas of significant ridership risk. It further describes additional analysis that would need to be done if the City of Vancouver chose to proceed with the Streetcar project.

6.1. SOURCES OF RIDERSHIP RISK

The complexity and uniqueness of transit systems such as the Downtown Streetcar contributes significantly to the level of ridership risk.

The alignment, stop locations, travel times, integration with existing transit modes and the fare system will all impact the actual ridership of the Streetcar project. What each of these are and how the system compares with the other transport modes available, including private vehicles, will all impact Streetcar ridership levels.

Finally, the significant number of tourist and recreational riders expected to use the Streetcar makes it necessary for the system to cater to the very different needs of commuters and tourist/recreational travellers. This further complicates ridership forecasting relative to typical commuter/light rail systems.

Inaccurate ridership forecasts have accompanied a number of public and private rail developments throughout the world. A recent study by the U.S. Federal Transit Authority ("FTA") of ten rail transit projects financed with U.S. federal funds found that actual passenger numbers were approximately 65% below forecast levels.[9] Of these projects, only Washington D.C.'s actual ridership was more than half of what was forecast, but was still 28% below forecasted levels.

[9] Systems reviewed include heavy rail projects in Washington D.C., Atlanta, Baltimore, and Miami, light rail projects in Buffalo, Pittsburgh, Portland, and Sacramento and downtown people mover (DPM) projects in Miami and Detroit.

A number of factors have been identified that lead to errors in ridership forecasts. Broadly, the most significant errors have occurred in the following areas:

- Inaccurate forecasting assumptions including sensitivity of ridership to demographic variables, time savings, etc.;
- Errors in estimating ridership growth (and "ramp-up");
- Service/configuration differences between the forecast system and the actual system; and
- Errors and biases in interpreting forecast results.

6.1.1. Forecasting Errors

Calculation errors in respect of the sensitivity of ridership to demographic variables, transit service levels and automobile costs can be significant source forecasting errors. Further, erroneous assumptions about future population growth and demographics can also have a significant impact on long-term ridership and revenue growth.

Planning ridership forecasts are often generated using transportation planning models such as the Greater Vancouver Regional District's ("GVRD's") EMME/2 Transportation Model. The EMME/2 model was developed in Canada and is widely used throughout the world.

While the EMME/2 model has proven an appropriate and effective tool for regional planning in the GVRD, it (and the data that it uses) is recognized as having a number of limitations in respect of their ability to generate investment grade forecasts. For example, the EMME/2 is extremely sensitive to fare and toll levels. This reflects factors such as a low value of travel time in the model and a limited ability to model significant barriers to riders changing jobs or household locations. As a result, the EMME/2 model may overestimate the impact of changes in fare levels on ridership.

Similarly, planning ridership forecasts rely on forecasts for population growth that often reflect a mix of current demographic trends and planning goals. This may lead to some inaccuracies in ridership forecasts if planned growth does not materialize. This does not, however, appear to be a significant issue in respect of EMME/2 modeling for the Streetcar as the areas served by the Streetcar are largely built out.

While errors in forecasting assumptions and models can be significant, the FTA's review of forecasting errors for U.S. transit projects found that they account for less than half of total errors. Optimistic assumptions about system characteristics and errors/bias in interpreting the results accounted for the majority of forecasting errors.

6.1.2. Ridership Growth Errors

Greenfield transit systems typically take approximately three to five years to reach their "natural" level of demand. This period occurs while commuters adjust their travel patterns to take advantage of the system.

Traffic forecasts often predict only the natural level of demand which assumes that commuters know about the new facility and use it immediately. In reality, it takes time for riders to adjust their travel patterns.

The time lag in achieving the forecast traffic levels, or "ramp up" period, is affected by a number of factors including:

- Competing transit options;
- Publicity around the new service;
- Reliability of the service; and
- Fares.

A common problem of both private and public sector ridership forecasts is underestimating the length of time it will take for the project to ramp up to the natural level. In the past, proponents have commonly assumed that a ramp-up period of around six months was adequate for infrastructure projects. More recently, evidence from completed projects has shown that a time period of approximately three to five years is more appropriate.

The length of the ramp-up period is important as it is characterized by low traffic and revenue relative to the natural demand level, but fast growth. Accordingly, it has a significant impact on a transit project's financing – specifically the amount of debt a project can support. Projects that underestimate that length of the ramp-up period may over-borrow in early years and run into financial difficulty before traffic levels catch up to projected demand levels.

6.1.3. Change in Project Configuration

Ridership forecasts are typically undertaken before detailed design work has been done. As a result, the ultimate configuration of a transit line including route, travel time, station location, ease-of-use and accessibility may be significantly different than what was assumed for the ridership forecasts.

Optimistic assumptions about the frequency and speed of service that new lines provide and about the quality of bus/transit feeder services (on which a number of transit lines rely on to generate ridership) can result in significant forecasting overestimates. For example, restrictions on running speed and changes in assumptions about crossing configuration (i.e. at-grade vs. grade separated) and delays at at-grade crossing may significant increase travel time assumptions.

Travel and waiting time and assumptions affect most types of traffic forecasts. The EMME/2 model used to generate commuter ridership projections for the Streetcar is extremely sensitive to travel time assumptions.

Similarly, stated preference surveys are also based on an expected type and level of service. If these service levels are not attained, this can significantly reduce ridership numbers. For example, in the case of the Sydney Airport Rail Link, the ultimate configuration was significantly different than the service envisioned in earlier stated preference surveys:

- Accessibility and signage was significantly poorer than what was originally proposed (the station was more difficult to access from the airport terminal);
- Specialized ("luggage-friendly") rolling stock was not provided; and
- Airport passengers travelling to the central business district (CBD) were "crowded off" during peak hours by commuters boarding at earlier stations.[10]

6.1.4. Errors/Biases in Interpreting Forecast Results

In its assessment of ridership forecasting errors associated with recent U.S. transit projects, the FTA concluded that:

> Even where a significant fraction of the difference between projected and actual rail ridership can be explained by errors in forecasting these inputs, these differences were usually so large that a substantial absolute difference remained unexplained. This suggests that important errors must have arisen from other, less obvious sources, including the structure of the ridership forecasting models, the way in which they were applied, or the misinterpretation of their numerical outputs during the planning process.

Public sector ridership forecasts are typically the subject of enormous amounts of political pressure. Supporters of the project, specific alignments or technologies (i.e. heavy or light rail) may push for interpretations of ridership numbers that support their position. Moreover, in the U.S., where municipal transit projects have received nearly $12 billion in federal support, there is a strong incentive to demonstrate strong benefit/cost ratios in order to obtain federal funding.

If ridership risk is transferred to the private sector, it has an extremely strong incentive to "stress test" ridership forecasts as its return is tied to project ridership and revenues. It is our experience that the private sector will typically spend significantly more time (and money) on ridership forecasts than government because of the significant financial penalties associated with not achieving forecasted ridership and revenue levels.

[10] A similar experience occurred with the Portland light rail project where forecasted tourist and recreational riders were displaced by commuters.

6.2. CURRENT RIDERSHIP FORECASTS

The ridership analysis undertaken for the BSW Report identified three distinct ridership categories:

- Commuter riders;
- Downtown tourist riders; and
- Lower mainland recreation riders.

The ridership data is based on the estimates in the BSW report. Since that report was prepared, there has been significant changes in the existing and projected growth of employment and residential populations in the Downtown (particularly downtown South and Coal Harbour) and False Creek Flats. Recent preliminary ridership estimates for those neighbourhoods prepared in conjunction with the Downtown Transportation Plan suggest that there may be more riders than originally anticipated. As stated in Section 9, further ridership analysis should include this new data.

The primary focus of the BSW Report was to identify alternative alignments and develop a range of capital and operating cost estimates. As traffic analysis was outside of the BSW Report's scope the only detailed ridership forecast developed was for commuter riders – this was done using the EMME/2 Transportation Model based on relatively detailed population and employment forecasts for the City of Vancouver. As will be discussed, ridership analysis for tourists and recreational riders was much more limited.

6.2.1. Commuter Traffic

Trips by commuter riders can be divided into the following primary groups:

- Distribution of CBD fringe and other parkers (work, shopping, student, and other) to their final destinations;
- Distribution of regional transit riders (work, shopping, student, and other) to their final destinations within (and outside of) the CBD; and
- Internal trips within the CBD by CBD workers, residents and students.

Commuter traffic for the Streetcar project is expected to be made up primarily of travel by residents and employees of the Vancouver peninsula.

As noted above, commuter ridership projections were based on the EMME/2 model and forecast out to 2021. The EMME/2 forecasts estimate the Streetcar's am peak hour travel and uses that number to calculate annual system riders. EMME/2 takes into account the cost and time of travel by car and transit and incorporates the City's current projections for population and employment growth in the downtown area.

6.2.2. Tourist Traffic

This category was defined as tourists staying in downtown Vancouver hotels. Ridership levels were estimated by taking the total tourist visitors staying in the region and assessing the likelihood of the visitors using the Streetcar system. For the BSW Report, it was assumed that 25% of downtown tourists used the Streetcar, each making two trips.

6.2.3. Recreational Riders

Recreational riders are defined as tourists outside the Vancouver area as well as Greater Vancouver residents who may use the system for other than commuter purposes. Rider levels were calculated by looking at the total GVRD population, and adjusting for, age, availability, market capture (assumed to be 0.04%) and number of rides per rider.

6.3. AREAS REQUIRING FURTHER ANALYSIS

Although the ridership forecasts developed in the BSW Report appear to be a reasonable first estimate of demand levels, significant additional work would need to be done before a private sector PPP partner would be prepared to assume traffic risk.

Macquarie has reviewed the ridership information currently available with two international traffic firms – Maunsell and AECOM Consulting Transportation Group – to obtain "high level" input into what further analysis would be required.

The primary concern with current data is the lack of substantial data supporting estimates for the tourist and recreational riders. These estimates are currently based on "reasonableness" assumptions driven by the number of tourists visiting downtown Vancouver and the potential for recreational riders from the Lower Mainland.

In our experience, these ridership numbers will be very system specific and will depend significantly on the accessibility, convenience and service provided by the Streetcar to tourists. Further, promotion of the system as a tourist service/destination may also have a significant impact on recreational riders.

This section describes a number of ways in which current ridership estimates could be improved, including:

- Further review of comparable systems; and
- Origin/destination and stated preference surveys.

6.3.1. Further Review of Similar Systems

The tourist ridership numbers developed as part of the BSW Report were compared broadly against numbers obtained from heritage streetcar systems in New Orleans, San Francisco and Seattle (King County). Although the Vancouver ridership numbers were found to be comparable, there are significant difficulties in making direct comparisons between the different systems as the alignment, scope and connectivity of each system is relatively unique. For example, in New Orleans, approximately 40% of the Charles Street system's 4 million streetcar riders are tourists, while only 20% of the Riverfront system's 600,000 riders are tourists.

The following system specific characteristics will have a significant impact on the attractiveness of a system to tourist and recreational riders:

- Its proximity to both hotels and key tourist destinations. Successful tourist systems such as the Washington D.C. Tourmobile (described below) provide a frequent, convenient service for most significant tourist destination in Washington D.C.
- Ease of use and additional services provided. Stop location, signage, publicity, joint promotions with other tourist services, venues, etc. will all impact tourist ridership levels:
    - The proximity of stop locations to tourist accommodations and destinations. The "effective" catchment area for commuter is typically about 400 metres. While over half of the hotel rooms in Greater Vancouver are located downtown, the distance from hotels to Waterfront and other proposed station will impact the attractiveness of the service. Similarly, for tourists, the proximity of Streetcar stations to tourist sites, and the ability to reach a significant number of planned destinations using the Streetcar, will be important determinants of its attractiveness.
    - A number of heritage and downtown tourist systems (such as Melbourne, Australia) provide qualified tour guides.
- Availability and ease-of-use of competing transportation modes. Depending on the location, distance and accessibility of tourist sites, there may be significant competition from other modes of transportation - i.e. tour buses, taxis, regular transit, walking, etc.
- Fare levels and structure. A number of streetcar and downtown bus services are free or offer unlimited all day travel for a fixed fare. These make the service attractive to recreational and tourist riders.

Similar issues will determine commuter ridership levels. For example, an integrated fare structure with other transit modes significantly improves the functionality of the service for commuters using the Streetcar to connect to SkyTrain or bus feeder services.

A comprehensive review of the ridership levels and experience of other heritage systems should be done to improve confidence in any Vancouver ridership projections.

For example, experience with the recently opened Portland Streetcar has demonstrated a number of ridership issues including:

- A strong novelty effect in its first month (weekend riders declined significantly over the first few months); and
- Coincident ridership peaks between tourists and commuters leading to some "crowding out" of projected tourist riders.

While a number of ridership issues may also be applicable to the Vancouver Streetcar, a number are city-specific reflecting the ridership and system make-up. For example, systems such as Seattle are very seasonal while others such as San Francisco are not.

In addition to other heritage streetcar systems (as described in Section 5), ridership and revenue data for other tourist-focused transit services should be reviewed. These include tourist trolley or (rubber-tired) shuttle services which follow regular routes and typically allow passengers to board as many times as they like for a daily fixed charge (approx. $5 to $10 per person per day). Cities with such systems include Washington D.C. and Honolulu.

Washington D.C. Tourmobile

In 1967, the U.S. National Park Service sought operators for a low cost interpretive shuttle on the Federal Mall. The service commenced operations in 1969, and consisted initially of 3 trams that covered the area from Lincoln Memorial to the west front of the Capital. In 1970 the service was extended to provide an interpretive shuttle tour of the Arlington National Cemetery. The service continued to expand and now consists of approximately 42 gasoline-powered vehicles covering routes that include 25 major sites around the National Mall, Pennsylvania Avenue and Arlington National Cemetery.

The service serves upwards of 2 million riders annually. (The Washington D.C. Convention and Tourism Corporation estimates that approximately 19.2 million tourists visited the Washington D.C. metropolitan area in 2000.)

The Tourmobile service benefits by the large number of visitors visiting historical places and museums (30% of domestic visits relative to a 14% average for other U.S. cities) and the large numbers of tourists using tourist accommodations in Washington D.C. (64% staying hotels, motels or bed and breakfasts).

In addition to these systems, public transit downtown circulator services should be reviewed, such as the Orlando LYNX Lymmo system in Florida (described below). These systems typically serve similar riders to the proposed Streetcar, although many do not benefit from an exclusive right-of-way.

Orlando Lymmo

The Orlando Lymmo service is a free downtown circulator bus system that operates within dedicated rights-of-way.

The Lymmo service commenced operations in August of 1997 as a joint-project between the Central Florida Regional Transportation Authority (LYNX), the City of Orlando and the Downtown Development Board. The Lymmo service is funded by downtown parking revenues and is sponsored by the City of Orlando and the Downtown Development Board.

The service operates on 2.3 miles of downtown Orlando streets between the Orlando Arena and

Orlando Lymmo
Orlando City Hall. Lymmo's 10 natural gas buses provide 5 minute service during peak hours and special events and serve "station"-like stops approximately every 2 blocks. Buses are given priority at intersections with transponders. The Lymmo service carried an average of 95,000 passengers per month. Users include downtown employees and people traveling to downtown events.

6.3.2. Origin/Destination and Stated Preference Surveys

Because of the lack of market data surrounding recreational and tourist riders and the benefit of confirming EMME/2 traffic numbers, Macquarie would expect that further origin/destination and stated preference work would be completed before a decision was made to proceed with the Streetcar project.

Planning methodologies are available to assess the potential ridership and revenues associated with each of the travel market segments identified in the BSW Report. Generally, these would involve:

- Market surveys focused on each of these market segments;
- The development of travel models for the specific segments;
- Verification of CBD land use, employment, and network data currently used; and
- Application of travel models to estimate ridership and revenue for the specific transit alternatives that are contemplated.

This type of market research is relatively expensive, and would likely be staged with the PPP process, with more defined work being done as the Streetcar progressed. As discussed in Section 4, the timing of this work, and whether or not it would be commissioned by the City or the private sector will depend on the PPP model selected.

To the extent more ridership forecasting is done, specific areas of focus should include:

- Reviewing the EMME/2 assumptions currently used to derive commuter traffic demand and assessing its sensitivity to time savings, fare level, etc. This would include assessing the elasticity of ridership in respect of fare increases in order to determine an optimal toll level;
- Reviewing service and configuration assumptions used in EMME/2 and other forecasting models and surveys (i.e. travel time); and
- Developing better information in respect of tourist and recreational rider levels.

Work should be done around the tourist destinations served by the initial Streetcar alignment (i.e. Granville Island, Chinatown and Gastown). While some information currently exists about the numbers of visitors to these destinations[11], visitor surveys should be conducted to collect information about their origins/destinations and existing mode of arrival/departure.

[11] The Granville Island Administration Office estimates that Granville Island attracts around 10 million visitors a year, with a significant proportion of these visitors being Vancouver residents.

This analysis would be complemented by stated preference surveys that would help define the proportion of this market that might be captured by the Streetcar service. Fare level, service frequency and co-ordination of feeder transit services will be crucial to patrons and will strongly impact their stated preferences.

Finally, it may make sense to conduct original market research focused on tourists. This would be accomplished by administering a stated preference survey to a sample of tourists (typically drawn from the universe of hotel guests expected to use the service).

7. METHOD OF GOVERNMENT CONTRIBUTION

The financial analysis undertaken by Macquarie to date demonstrates that based on current ridership levels and construction costs a contribution by the public sector is required. The exact level of this contribution will be determined by:

- How the public sector chooses to make this contribution i.e. capital grant, operating subsidy over the term of the concession or for a limited period;
- What fare level and structure is set for the system;
- How the private sector is to be involved in the project; and
- Further ridership and engineering analysis.

The financial modelling undertaken by Macquarie and detailed in Section 8 of this Report has been based on the following three options:

1. **Upfront Capital Contribution:** assumption that the government contribution is made in the form of an upfront capital grant towards construction costs. It is assumed that this is a non-taxable grant, requiring no interest or principle repayment at any time and not resulting in any ownership of the asset by the public sector over the life of the project.

2. **Operating Subsidy:** an ongoing subsidy payable by government over the entire concession period and which reduces over time.

3. **Upfront Capital Contribution and Operating Subsidy**: the government makes an upfront capital grant as well as an ongoing subsidy over the life of the concession.

The following section outlines the benefits and risks associated with the provision of government funding through these methods, as well as the other operating and financial support options available to government.

7.1. CAPITAL CONTRIBUTIONS

Up front capital contributions are still generally the most favoured form of project support by government. This is largely driven by the inflexible budgeting requirements of government agencies and their preference to avoid ongoing, long term financial obligations. By contributing to the process in this way taxpayers can see a tangible asset they have received in return for the expenditure and government Treasuries avoid having to fund long term financial commitments. This funding method also provides an additional level of certainty regarding the level of funding as governments often see operating subsidies as having the potential to blow out should the project perform below expectations.

Capital cost contributions are often preferred because:

- They are simple and effective in transferring risk to the private sector;
- They provide a cost free form of capital; and
- Government involvement in the Project can theoretically be defined upfront and therefore limited.

However, when they are actually assessed these upfront capital grants do not always provide the government and their taxpayers with the maximum level of value for money. In fact the money is considered "dead" money in that it does not provide a return for the government's investment and there is often little (if any) performance requirements beyond what would have always been included in a concession agreement or project deed.

If a capital contribution is to be provided this should only happen at the project's financial close to ensure the government retains an advantage during negotiations. The government should also determine the timing for payment of these contributions – that is at the commencement of construction, pro-rata during the construction period or at the end of construction (more complex).

Clearly, government funding is cheaper and thus the earlier it is contributed the lower the project capital costs and the lower the government funding requirement is. However the government should seek the same guarantees that lending banks would usually seek that the project will be completed for the fixed price, lump sum and date certain quoted. In the event that the project is not completed, the government should benefit from the same protections in terms of liquidated damages for delay. This protection is required to ensure that the private sector is not able to pass the risk of construction delays and cost overruns to the government. If it is not possible to ensure this, the government should consider contributing on a pro-rata basis or at the end of the construction period.

7.2. OPERATING SUPPORT

As an alternative to providing up-front funding, the government may choose to provide an annual operating subsidy to the project. This form of contribution has the advantage of being able to tailor payments to meet the project's estimated cash flows. This form of contribution also offers the government the added advantage of linking payments to operating performance, thereby ensuring the government has a check on the private sector operator.

7.2.1. Performance Related Subsidies

An alternative to tying government support fully to ridership risk is to tie subsidy payments to the transfer of operating risks through a performance-related operating subsidy regime. This is an increasingly common form of outsourcing of government service provision, and can be combined with the private sector taking ridership risk with the operating subsidy contribution as a "top up".

7.2.2. Government Ridership/Traffic Support

Many PPP projects are proposed or developed on the basis of government and the private sector sharing traffic or ridership risk.

Examples include:

- The Korean Social Obligation Contracts (SOCs) where government's primary form of support is in backing ridership projections with mechanisms to increase the concession period and in extremis to top up revenue shortfalls arising from failure to meet ridership projections;
- The Guangzhan-Shenzhen-Zhuhai toll road in China where a government financial agency "insured" traffic projections; and
- Proposals for the Sydney-Canberra High Speed Rail in Australia, where the proponent proposed a government stand-by facility to cover shortfalls between a bank accepted ridership projection and the higher project proponent's ridership estimates. This allowed more commercial debt to be raised but at a contingent risk to government.

It is not generally recommended to share ridership risk in this way, unless a very specific stream of riders can be identified which is particularly influenced by government policy. This is not felt to be the case for the Streetcar.

7.2.3. Concession Top-Up

Government policies often specify concession fares (for the elderly, children and students). In these cases it is appropriate for government financial support to come in the form of a top-up between the concession fare and the full commercial fare.

7.2.4. Induced Revenue Sharing

The Streetcar project may cause higher system wide ridership. As is indicated in some of the case studies, if fares are integrated there maybe an opportunity to share the increased revenue between the owner of the Streetcar and the Operator of the other transit systems – SkyTrain, bus, West Coast Express.

7.3. FINANCIAL SUPPORT

7.3.1. Government Mezzanine Debt Support

Where a PPP project is close to being commercially viable but is failing to quite meet private sector return requirements because of the cost of debt capital or its structure, Macquarie favours support by government agencies in the form of mezzanine debt rather than a grant.

It is important to distinguish very clearly between mezzanine debt invested on a fully commercial basis in terms of security structures and repayment profile, (albeit with potentially a lower return requirement) and the types of government "soft loans" which were used to support a number of Asian infrastructure projects.

Mezzanine debt can be a useful adjunct to other forms of government financial contribution and an appropriate mechanism for upside profit sharing. A good example is the M4 toll road in Sydney where government took a subordinated debt position because it wanted a stake in the Project and not because it needed to fill a funding gap. The subordinated debt was subsequently sold into the private market at a substantial premium. The case study below illustrates some prominent Australian examples of subordinated debt financing.

Government mezzanine debt contributions can also have the flexibility to be linked to other government policy objectives or requirements. For example, in the case of the West Rail Project in Hong Kong, government recognised the high likelihood of significant value capture from property development, but also the difficulty of capturing this with sufficient certainty to be a major component of the base case financing plan (see below). The government contribution to the Project was therefore made partially in the form of subordinated debt, with a repayment schedule linked to the achievement of property development revenues.

In the case of the Vancouver Streetcar, mezzanine debt could be structured by the City or Province, with repayments linked to the achievement of property development benefits on adjacent government-owned properties contributed to the Project.

Project	Margin[12]	Comments
Highway 407	2.81%	$300 million issued for 7 year term in May 2000.
M5	12.0% and 7.0% total rate	$40m facility, sold to Infrastructure Trust of Australia for $120m. Term equal to concession term
Loy Yang A	Margin increased from 4.5% (years 1 - 5) to 5.0% (years 6 - 10) to 5.5% (years 11 - 18)	18 year facility for $300m
Adelaide Airport	Margin increased from 4.5% to 2001, 5.0% to 2004,5.5% to 2016	Interest only to June 2008. Deeply subordinated - total subordinated debt facility size of $15m cf senior debt facility of $230m.
Brisbane Airport	4.0%	9 year facility for $105m Capitalizes for first 5 years.
Transurban City Link	3.85%	25 years

[12] Margin refers to the interest rate premium charged to reflect both the risk of the project and the lower priority of the payments (i.e. mezzanine debt interest and principal payments are only made after all senior debt payments).

It is understood that one suitable agency already exists for the provision of this type of support. The BC Transit Financing Corporation currently makes senior debt and equity investments on a commercial basis in both public and private transport projects in British Columbia. There is nothing to restrict this corporation from making similar investments in the Project on a mezzanine basis.

7.3.2. Opportunities for MFABC/City Financing

Capital financing for TransLink transit projects is currently done through the Municipal Financing Authority of British Columbia (MFABC), a not-for-profit corporation established by the Province of BC to act as a pooled financing vehicle for 27 of BC's Regional Districts. The MFABC is rated AAA by both Moody's and Standard and Poor's reflecting:

- Joint and several obligations among all Regional Districts borrowing through the vehicle and joint and several obligations between members of individual Regional Districts; and
- The ability of the MFABC to levy all property assessments within BC.

The City of Vancouver currently raises debt independently of the MFABC through general obligation (GO) financing and achieves similar credit levels reflecting its strong property tax base.

As a result of the low cost of funds through the MFABC or City of Vancouver Financing, the City would be able to raise capital for the Project quite cost-effectively – these funds could then be contributed to the Project as senior debt, mezzanine financing, etc.

7.3.3. Government Credit Enhancement

Quite closely linked to the provision of government mezzanine finance is the provision of credit enhancement by government. The City of Vancouver, TransLink (or the GVRD/MFA BC) could provide a guarantee of debt issued to finance the Project, thereby transferring the benefit its ability fund through property taxes, etc. levied in the region.

7.4. VALUE CAPTURE

Infrastructure developments such as the Streetcar provide some scope for governments with regard to value capture opportunities. Value capture methods that have been used (or contemplated) for new transport infrastructure projects include special assessment districts, development impact fees, developer dedications, tax increment financing, PPP development of adjacent sites, pre-purchase and sale of adjacent rights, and the sale of new property rights (i.e. access and advertising rights). However, the scope for value capture for the Streetcar may be limited given that the proposed area through which the Streetcar will operate is already heavily developed and the relatively small scale of the project means that it is unlikely to enhance the area to the same degree as a new transportation corridor.

However value capture opportunities outside of the infrastructure, but associated with the infrastructure, tend to be larger in value but generally more speculative, for example residential or other developments. At present, capturing the benefits of increased land values, outside of the introduction of special assessment districts and/or development impact fees appears difficult.

While the government has a significant amount of control over value capture through its ability to set town planning requirements and policies it should consider carefully any changes it may wish to introduce to ensure there are no negative repercussions elsewhere in the community. In assessing the benefits of this the government must be aware of the number of external factors required to implement value capture initiatives and assess the likelihood of a positive outcome in this light.

Specifically, Macquarie believes that the following issues should be taken into consideration before the government pursues any value capture opportunities:

- There do not currently appear to be any significant parcels of land owned by the City of Vancouver that would benefit significantly by the development of the Streetcar.
- Public perception of a PPP process to acquire development rights around the Streetcar in advance of the project announcement may be extremely poor (i.e. the City of Vancouver may be seen as "favouring" a developer over existing owners). Structuring such an arrangement (and monitoring the private sector partner) is also likely to be extremely difficult.
- There is no "certainty" that project land value increases will materialize or be captured effectively by a PPP partnership.

Experience in the U.S. has been that development impact fees ("DIFs"), etc. seldom contribute more than 10-15% of Project costs. There is also typically a "lag" between Project completion and the collection of DIFs. As a result they cannot be used to finance the Project unless they are securitised in advance.

8. FINANCIAL ANALYSIS OF THE STREETCAR PROJECT AS A PPP

8.1. PROJECT ASSUMPTIONS

The financial analysis provided in this Report is based on assumptions reliant on the Baker McGarva Hart, SNC/Lavalin and Ward Consulting *Vancouver Downtown Streetcar Study* ("BSW Report"). The BSW Report provided all cost estimates in 1998 figures and while the following analysis has provided for escalation to 2002 figures, assumptions upon which the costings are based is reasonably dated and would require a detailed review. In addition to this work, and as outlined in section 6 of this Report, a comprehensive review of ridership is also required.

For the purposes of completing the financial analysis for this Report, assumptions relating to the project's ridership, construction and operating costs needed to be made. These core assumptions will all require further detailed examination as the project progresses and thus act as a limitation on the weight that should be applied to the results of the analysis provided in this Report.

The assumptions detailed below are the base assumptions used in the financial analysis of the Vancouver Streetcar. Figures are provided in 2002 dollars unless otherwise stated.

8.2. ROUTE ALTERNATIVES

Financial analysis of the streetcar project is based on four route alternatives:

- ***Route 1***: The 'Waterfront' alternative considers the Granville – Science World – Waterfront route;
- ***Route 2***: The 'Waterfront plus Roundhouse' alternative examines the Granville – Science World – Waterfront route plus an additional leg from Science World to Roundhouse;
- ***Route 3***: The 'Stanley Park' alternative involves an examination of the Granville – Science World – Waterfront – Stanley Park route; and
- ***Route 4***: The 'Stanley Park plus Roundhouse' alternative examines Granville – Science World – Waterfront – Stanley Park with an additional leg from Science World to Roundhouse.

8.3. GOVERNMENT CONTRIBUTION OPTIONS

Financial analysis undertaken by Macquarie of the Streetcar Project has indicated that under all fare and route scenarios a government contribution is required.

Section 7 of this Report detailed a variety of methods by which government could choose to make their contribution. For the purposes of this analysis Macquarie has examined three options:

- **Option 1** – the government provides an upfront government contribution at financial close;
- **Option 2** – the government provides an operating subsidy during the period of the concession. This operating subsidy is fixed (escalating as to inflation) for 10 year periods, decreasing by 20% after each 10 year period; and
- **Option 3** – the government provides an upfront government contribution of $10 million as well as an ongoing contribution, as described in Option 2, over the life of the concession.

The net present value ("NPV") of the total government contribution via an operating subsidy is provided to aid comparability of results, and is discounted at a rate of 12 per cent. Within each of these options, two potential Streetcar fare variations have been modelled to provide a guide as to the levels of government contribution required.

8.4. PRIVATE SECTOR INVOLVEMENT

Macquarie's financial analysis has assumed that the Streetcar Project would be developed as a PPP under a design, build, finance, maintain and operate model. Under this model the private sector would take all risk in relation to ridership, operations, maintenance and financing over the 30 year concession period. This model of private sector involvement has been examined in section 4 of this Report along with other private sector options.

Should the City of Vancouver choose not to proceed with this particular model of PPP, adjustments to the financial analysis will need to be made which will impact on the final government contribution required.

Regardless of the PPP model finally implemented by the City, the Government will still be able to include in the structure a requirement for upside sharing over the concession period. Under such arrangement the Government would share in any profit generated by the project over that which is forecast by the private sector proponent on establishment of the project. This is usually done on a sliding scale, allowing the Government a greater share of the windfall the better the project performs above original forecasts.

8.5. CONSTRUCTION[13]

All route options have assumed the construction of the project will commence on 1 January 2003, with the construction cost and term for each option as detailed below:

Route 1: Waterfront (Waterfront Route)

- Base construction cost of $43 million.
- Granville to Science World base construction cost: $19 million.
- Science World to Waterfront base construction cost: $24 million.
- Construction period: 1.5 years.

Route 2: Waterfront plus Roundhouse

- Base construction cost of $59 million.
- Granville to Science World base construction cost: $19 million.
- Science World to Waterfront and Roundhouse base construction cost: $40 million.
- Construction period 1.5 years.

Route 3: Stanley Park (Stanley Park Route)

- Base construction cost of $66 million.
- Granville to Science World base construction cost: $19 million.
- Science World – Waterfront – Stanley Park base construction cost: $47 million.
- Construction period 1.5 years.

Route 4: Stanley Park plus Roundhouse

- Base construction cost of $82 million.
- Granville to Science World base construction cost: $19 million.
- Science World – Waterfront – Stanley Park and Roundhouse base construction cost: $63 million.
- Construction period 2.0 years.

8.6. FINANCIAL ASSUMPTIONS

- For the purposes of undertaking the financial analysis Macquarie has made the following assumptions in relation to the financing parameters for the project:

[13] Costs are based on construction cost estimates provided in Sections 6.2.6 and 8.1.7 of the BSW Report and include a ten per cent escalation over costs included in the BSW Report to reflect current day dollars. A break up of the construction costs into asset categories has been assumed for depreciation purposes.

- Inflation – 2.0% per annum.
- Base interest rate – 6.0% per annum.

Construction Financing for the Project is by way of an equity bridging facility to support the contribution of equity at the end of the construction period, and by way of a construction debt facility. Macquarie has applied the following margins to each of these facilities:

- Equity Bridge Facility 0.5%
- Construction Debt Facility 2.5%

- Long term operational financing is by way of long term sponsor equity and by way of a long term bank debt facility. Terms of the debt facility are:
  - Interest margin: 2.0%;
  - Interest only period: 5 years; and
  - Amortisation period: 15 years.

- During the initial years of operation, Macquarie has established an operating reserve. This reserve provides additional capacity to meet the operating expenses of the project during the first few years when infrastructure projects are typically faced with considerable financial constraints while ramp up is occurring. The reserve has been financed by the funds raised through debt and equity and is set at $5 million for all options. Funds from the reserve are utilised during the first 6 and a half years of operation to assist in meeting debt servicing and operating costs. At the end of this period any funds not utilised are released back to the project.

8.7. FARE ASSUMPTIONS

Macquarie has chosen two fare levels for the purposes of this financial analysis:

Fare Scenario 1: Low

- Commuter Fare: $1.00 per rider
- Tourist and Recreation Fare: $2.00 per rider

Fare Scenario 2: High

- Commuter Fare: $1.50 per rider
- Tourist and Recreation Fare: $2.50 per rider

This analysis assumes that the Streetcar fares are stand alone, with all revenue from operations returning to the private sector operator. Should the City of Vancouver wish to pursue an integrated fare structure with other modes of transportation operating within Vancouver, such as SkyTrain, the fares above would represent the "average" fare per rider that would be required to be recouped from the shared revenue pool. The

development of an integrated fare structure would require further work, specifically in relation to:

- Ridership analysis;
- Fare analysis; and
- Revenue sharing procedures.

8.8. OPERATIONS AND RIDERSHIP

- Operation of the Streetcar is assumed to commence on 1 July 2004 for route alternatives 1 to 3. Operations for Route 4, the Granville to Stanley Park plus Roundhouse route, are assumed to commence 1 January 2005.
- Concession period of 30 years.
- Route 1 – Waterfront Ridership[14]
    - — Base commuter ridership of 1.92 million p.a.
    - — Base tourist ridership of 1.36 million p.a.
    - — Base recreation ridership of 0.14 million p.a.
- Route 2 – Waterfront plus Roundhouse Ridership[15]
    - — Base commuter ridership of 2.07 million p.a.
    - — Base tourist ridership of 1.36 million p.a.
    - — Base recreation ridership of 0.14 million p.a.
- Route 3 – Stanley Park Ridership[16]

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[14] Section 8.1.11 BSW Report

[15] Ridership is based on sections 8.1.8 and 8.1.11 of the BSW Report. The BSW Report only provides opening day ridership for the Granville – Science World – Waterfront route ("Waterfront" – Route 1) and the Granville – Science World – Roundhouse route ("Roundhouse only"). No opening day ridership forecasts have been provided for route options 2 to 4, however, 2021 year estimates are available. Thus, opening day ridership is estimated on the following basis:

Ridership Factor = [(W 2021 ÷ W OD) + (RO 2021 ÷ RO OD)] ÷ 2

Route 2 – Waterfront plus Roundhouse Ridership = The maximum of: WR 2021 ÷ Ridership Factor, RO OD, W OD

Route 3 – Stanley Park Ridership = The maximum of: S 2021 ÷ Ridership Factor, W OD

Route 4 – Stanley Park Ridership plus Roundhouse Ridership = The maximum of: SR 2021 ÷ Ridership Factor, RO OD, W OD

Where:

W 2021 = Waterfront only ridership for 2021 *(Source: 8.1.8 BSW Report)*
W OD = Waterfront only opening day ridership *(Source: 8.1.11 BSW Report)*
RO 2021 = Roundhouse only ridership for 2021 *(Source: 8.1.8 BSW Report)*
RO OD = Roundhouse only opening day ridership *(Source: 8.1.11 BSW Report)*
WR 2021 = Waterfront plus Roundhouse ridership for 2021 *(Source: 8.1.8 BSW Report)*
S 2021 = Stanley Park ridership for 2021 *(Source: 8.1.8 BSW Report)*
SR 2021 = Stanley Park plus Roundhouse ridership for 2021 *(Source: 8.1.8 BSW Report)*

Each of the above is assessed individually for commuter, tourist and recreation ridership categories.

[16] *Ibid*

  - — Base commuter ridership of 3.41 million p.a.
  - — Base tourist ridership of 1.36 million p.a.
  - — Base recreation ridership of 0.17 million p.a.
- Route 4 – Stanley Park plus Roundhouse Ridership[17]
  - — Base commuter ridership of 5.28 million p.a.
  - — Base tourist ridership of 1.36 million p.a.
  - — Base recreation ridership of 0.17 million p.a.
- In the first year of operations, ridership is assumed to be 60% of base ridership, ramping up to 80% in the second year and 100% in year three. Thereafter, a 5% growth in ridership is assumed per annum.
- Operating costs[18]:
  - — $1.89 million for Route 1;
  - — $2.92 million for Route 2;
  - — $3.14 million for Route 3; and
  - — $4.39 million for Route 4.

8.9. FINANCIAL ANALYSIS

8.9.1. Route 1: Waterfront

Option 1: Upfront Government Contribution

	Fare Scenario 1 (low)	Fare Scenario 2 (high)
Fares	• Commuter Fare: $1.00 per rider • Tourist/Rec. Fare: $2.00 per rider	• Commuter Fare: $1.50 per rider • Tourist/Rec. Fare: $2.50 per rider
Outcomes	Government contribution of **$25 million** required 31 December 2002	Government contribution of **$11 million** required 31 December 2002

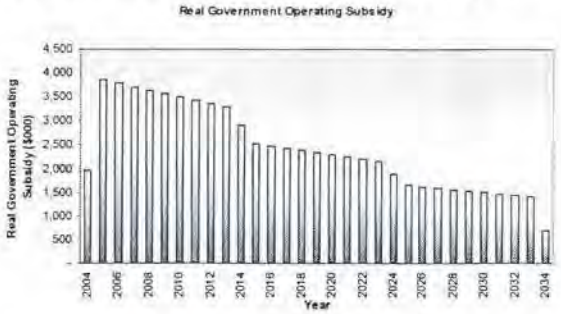
[17] *Ibid*

[18] Includes $0.55 million in assumed operating costs for Granville to Science World. Other operating costs are based on section 8.1.7 of the BSW Report with a 10% increase to reflect current day prices.

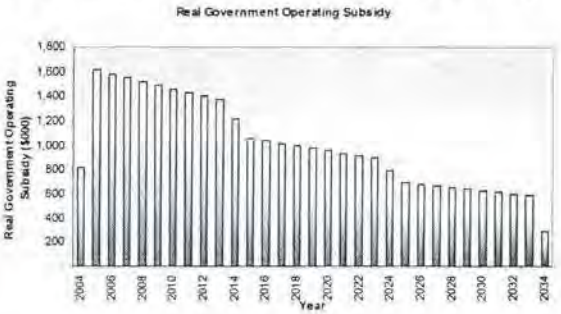
Option 2: Operating Subsidy

	Fare Scenario 1 (low)	Fare Scenario 2 (high)
Fares	• Commuter Fare: $1.00 per rider • Tourist/Rec. Fare: $2.00 per rider	• Commuter Fare: $1.50 per rider • Tourist/Rec. Fare: $2.50 per rider
Outcomes	Escalated government operating subsidy for the first 10 years of operation: $4.1m Escalated government operating subsidy for the next 10 years of operation: $2.6m Escalated government operating subsidy for the last 10 years of operation: $1.1m NPV of operating subsidy: **$27 million**	Escalated government operating subsidy for the first 10 years of operation: $1.7m Escalated government operating subsidy for the next 10 years of operation: $1.4m Escalated government operating subsidy for the last 10 years of operation: $1.1m NPV of operating subsidy: **$11 million**

Fare Scenario 1: Real Government Subsidy (per year)



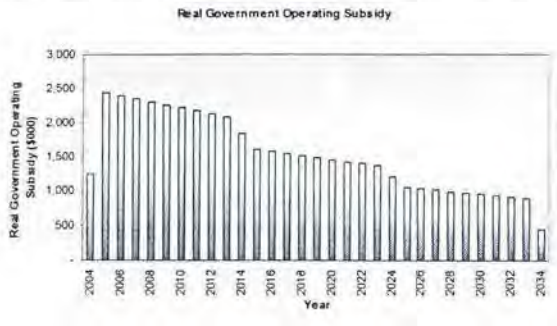
Fare Scenario 2: Real Government Subsidy (per year)



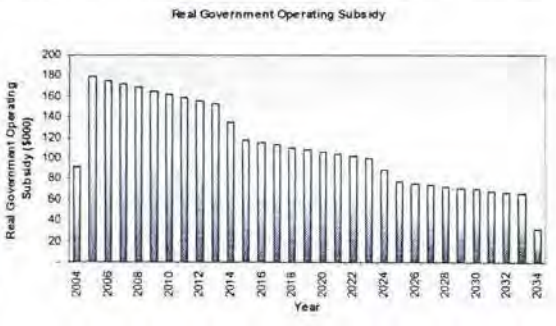
Option 3: Upfront Government Contribution plus Operating Subsidy

	Fare Scenario 1 (low)	Fare Scenario 2 (high)
Fares	• Commuter Fare: $1.00 per rider • Tourist/Rec. Fare: $2.00 per rider	• Commuter Fare: $1.50 per rider • Tourist/Rec. Fare: $2.50 per rider
Outcomes	Government contribution of **$10 million** required 31 December 2002 Escalated government operating subsidy for the first 10 years of operation: $2.6m Escalated government operating subsidy for the next 10 years of operation: $2.1m Escalated government operating subsidy for the last 10 years of operation: $1.7m NPV of operating subsidy: **$17 million**	Government contribution of **$10 million** required 31 December 2002 Escalated government operating subsidy for the first 10 years of operation: $0.2m Escalated government operating subsidy for the next 10 years of operation: $0.2m Escalated government operating subsidy for the last 10 years of operation: $0.1m NPV of operating subsidy: **$1 million**

Fare Scenario 1: Real Government Subsidy (per year)



Fare Scenario 2: Real Government Subsidy (per year)



8.9.2. Route 2: Waterfront plus Roundhouse

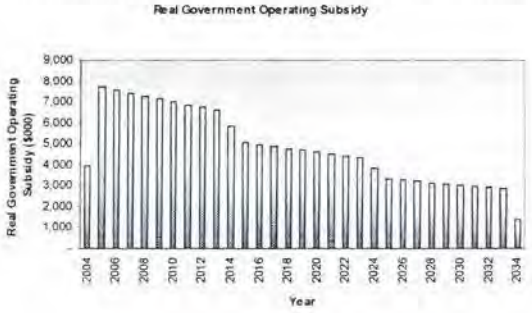
Option 1: Upfront Government Contribution

	Fare Scenario 1 (low)	Fare Scenario 2 (high)
Fares	• Commuter Fare: $1.00 per rider • Tourist/Rec. Fare: $2.00 per rider	• Commuter Fare: $1.50 per rider • Tourist/Rec. Fare: $2.50 per rider
Outcomes	Government contribution of **$48 million** required 31 December 2002	Government contribution of **$32 million** required 31 December 2002

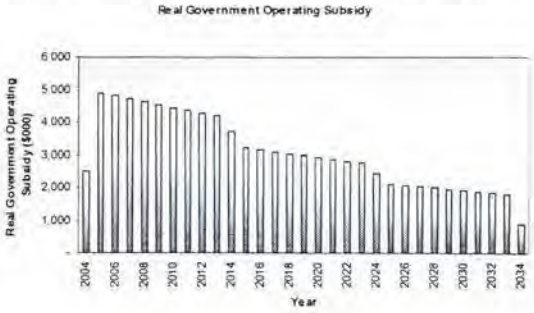
Option 2: Operating Subsidy

	Fare Scenario 1 (low)	Fare Scenario 2 (high)
Fares	• Commuter Fare: $1.00 per rider • Tourist/Rec. Fare: $2.00 per rider	• Commuter Fare: $1.50 per rider • Tourist/Rec. Fare: $2.50 per rider
Outcomes	Escalated government operating subsidy for the first 10 years of operation: $8.2m Escalated government operating subsidy for the next 10 years of operation: $6.6m Escalated government operating subsidy for the last 10 years of operation: $5.2m NPV of operating subsidy: **$54 million**	Escalated government operating subsidy for the first 10 years of operation: $5.2m Escalated government operating subsidy for the next 10 years of operation: $4.6m Escalated government operating subsidy for the last 10 years of operation: $3.3m NPV of operating subsidy: **$34 million**

Fare Scenario 1: Real Government Subsidy (per year)



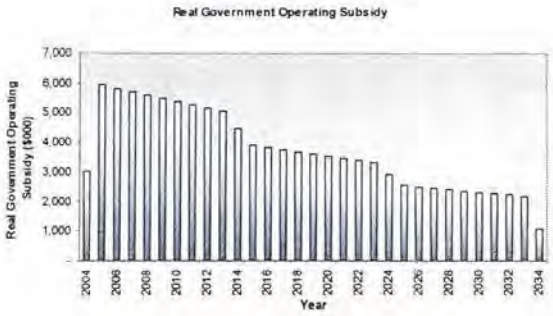
Fare Scenario 2: Real Government Subsidy (per year)



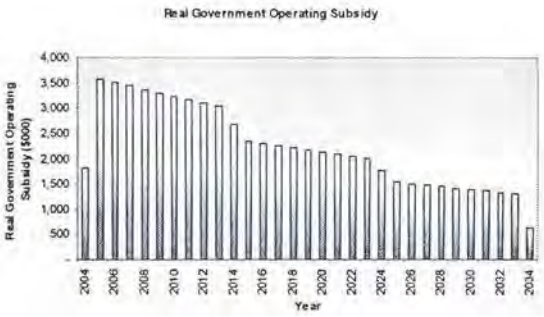
Option 3: Upfront Government Contribution plus Operating Subsidy

	Fare Scenario 1 (low)	Fare Scenario 2 (high)
Fares	• Commuter Fare: $1.00 per rider • Tourist/Rec. Fare: $2.00 per rider	• Commuter Fare: $1.50 per rider • Tourist/Rec. Fare: $2.50 per rider
Outcomes	Government contribution of **$10 million** required 31 December 2002 Escalated government operating subsidy for the first 10 years of operation: $6.3m Escalated government operating subsidy for the next 10 years of operation: $5.0m Escalated government operating subsidy for the last 10 years of operation: $4.0m NPV of operating subsidy: **$41 million**	Government contribution of **$10 million** required 31 December 2002 Escalated government operating subsidy for the first 10 years of operation: $3.8m Escalated government operating subsidy for the next 10 years of operation: $3.0m Escalated government operating subsidy for the last 10 years of operation: $2.4m NPV of operating subsidy: **$25 million**

Fare Scenario 1: Real Government Subsidy (per year)



Fare Scenario 2: Real Government Subsidy (per year)



8.9.3. Route 3: Stanley Park

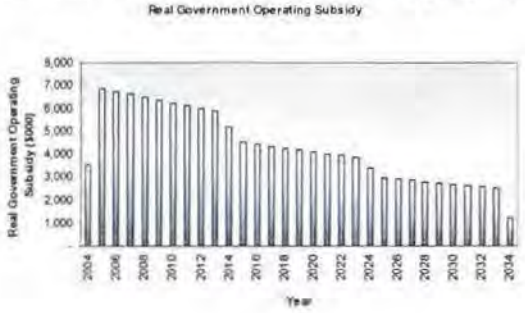
Option 1: Upfront Government Contribution

	Fare Scenario 1 (low)	Fare Scenario 2 (high)
Fares	• Commuter Fare: $1.00 per rider • Tourist/Rec. Fare: $2.00 per rider	• Commuter Fare: $1.50 per rider • Tourist/Rec. Fare: $2.50 per rider
Outcomes	Government contribution of **$43 million** required 31 December 2002	Government contribution of **$22 million** required 31 December 2002

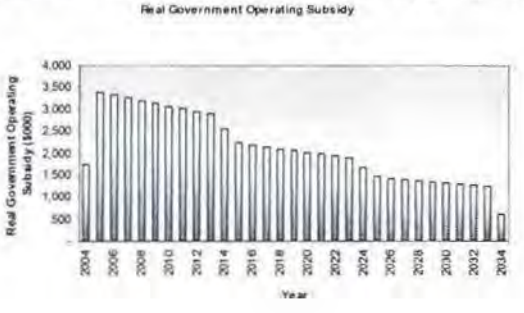
Option 2: Operating Subsidy

	Fare Scenario 1 (low)	Fare Scenario 2 (high)
Fares	• Commuter Fare: $1.00 per rider • Tourist/Rec. Fare: $2.00 per rider	• Commuter Fare: $1.50 per rider • Tourist/Rec. Fare: $2.50 per rider
Outcomes	Escalated government operating subsidy for the first 10 years of operation: $7.3m Escalated government operating subsidy for the next 10 years of operation: $5.8m Escalated government operating subsidy for the last 10 years of operation: $4.7m NPV of operating subsidy: **$48 million**	Escalated government operating subsidy for the first 10 years of operation: $3.6m Escalated government operating subsidy for the next 10 years of operation: $2.9m Escalated government operating subsidy for the last 10 years of operation: $2.3m NPV of operating subsidy: **$24 million**

Fare Scenario 1: Real Government Subsidy (per year)



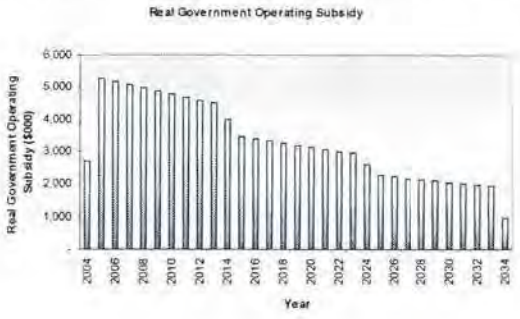
Fare Scenario 2: Real Government Subsidy (per year)



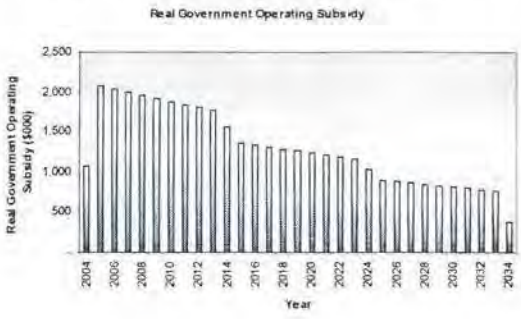
Option 3: Upfront Government Contribution plus Operating Subsidy

	Fare Scenario 1 (low)	Fare Scenario 2 (high)
Fares	• Commuter Fare: $1.00 per rider • Tourist/Rec. Fare: $2.00 per rider	• Commuter Fare: $1.50 per rider • Tourist/Rec. Fare: $2.50 per rider
Outcomes	Government contribution of **$10 million** required 31 December 2002 Escalated government operating subsidy for the first 10 years of operation: $5.6m Escalated government operating subsidy for the next 10 years of operation: $4.5m Escalated government operating subsidy for the last 10 years of operation: $3.6m NPV of operating subsidy: **$37 million**	Government contribution of **$10 million** required 31 December 2002 Escalated government operating subsidy for the first 10 years of operation: $2.2m Escalated government operating subsidy for the next 10 years of operation: $1.8m Escalated government operating subsidy for the last 10 years of operation: $1.4m NPV of operating subsidy: **$14 million**

Fare Scenario 1: Real Government Subsidy (per year)



Fare Scenario 2: Real Government Subsidy (per year)



8.9.4. Route 4: Stanley Park plus Roundhouse

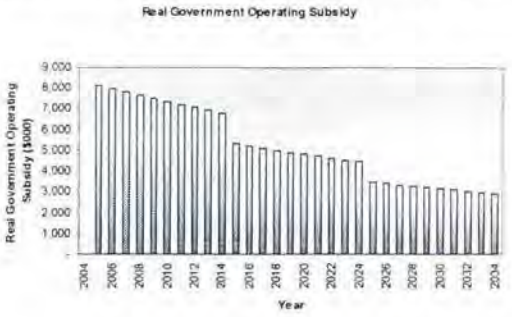
Option 1: Upfront Government Contribution

	Fare Scenario 1 (low)	Fare Scenario 2 (high)
Fares	• Commuter Fare: $1.00 per rider • Tourist/Rec. Fare: $2.00 per rider	• Commuter Fare: $1.50 per rider • Tourist/Rec. Fare: $2.50 per rider
Outcomes	Government contribution of **$50 million** required 31 December 2002	Government contribution of **$23 million** required 31 December 2002

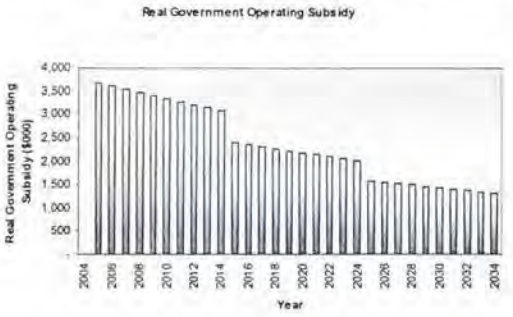
Option 2: Operating Subsidy

	Fare Scenario 1 (low)	Fare Scenario 2 (high)
Fares	• Commuter Fare: $1.00 per rider • Tourist/Rec. Fare: $2.00 per rider	• Commuter Fare: $1.50 per rider • Tourist/Rec. Fare: $2.50 per rider
Outcomes	Escalated government operating subsidy for the first 10 years of operation: $8.6m Escalated government operating subsidy for the next 10 years of operation: $6.9m Escalated government operating subsidy for the last 10 years of operation: $5.5m NPV of operating subsidy: **$54 million**	Escalated government operating subsidy for the first 10 years of operation: $3.9m Escalated government operating subsidy for the next 10 years of operation: $3.1m Escalated government operating subsidy for the last 10 years of operation: $2.5m NPV of operating subsidy: **$24 million**

Fare Scenario 1: Real Government Subsidy (per year)



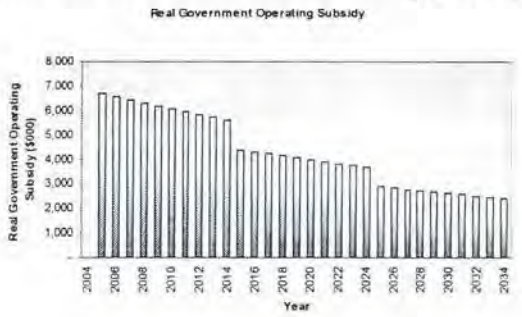
Fare Scenario 2: Real Government Subsidy (per year)



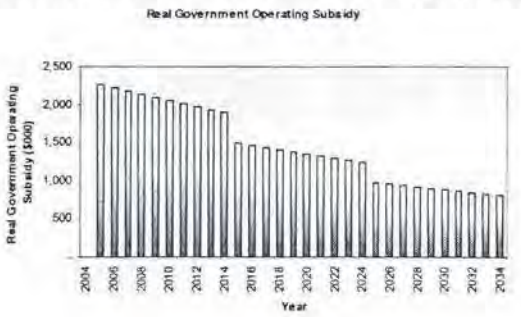
Option 3: Upfront Government Contribution plus Operating Subsidy

	Fare Scenario 1 (low)	Fare Scenario 2 (high)
Fares	• Commuter Fare: $1.00 per rider • Tourist/Rec. Fare: $2.00 per rider	• Commuter Fare: $1.50 per rider • Tourist/Rec. Fare: $2.50 per rider
Outcomes	Government contribution of **$10 million** required 31 December 2002 Escalated government operating subsidy for the first 10 years of operation: $7.1m Escalated government operating subsidy for the next 10 years of operation: $5.7m Escalated government operating subsidy for the last 10 years of operation: $4.5m NPV of operating subsidy: **$44 million**	Government contribution of **$10 million** required 31 December 2002 Escalated government operating subsidy for the first 10 years of operation: $2.4m Escalated government operating subsidy for the next 10 years of operation: $1.9m Escalated government operating subsidy for the last 10 years of operation: $1.5m NPV of operating subsidy: **$15 million**

Fare Scenario 1: Real Government Subsidy (per year)



Fare Scenario 2: Real Government Subsidy (per year)



8.10. SUMMARY ANALYSIS

The following table represents the NPV of the government contribution required for each route alternative, government contribution option and fare scenario:

	Option 1 Upfront Government Contribution		**Option 2 Government Operating Subsidy**		**Option 3 Upfront Government Contribution plus Operating Subsidy**	
	Scenario 1: Commuter - $1.00 Tourist & Recreation - $2.00	**Scenario 2:** Commuter - $1.50 Tourist & Recreation - $2.50	**Scenario 1:** Commuter - $1.00 Tourist & Recreation - $2.00	**Scenario 2:** Commuter - $1.50 Tourist & Recreation - $2.50	**Scenario 1:** Commuter - $1.00 Tourist & Recreation - $2.00	**Scenario 2:** Commuter - $1.50 Tourist & Recreation - $2.50
Route 1 Waterfront	$25 m	$11 m	$27 m	$11 m	$27 m	$11 m
Route 2 Waterfront plus Roundhouse	$48 m	$32 m	$54 m	$34 m	$51 m	$35 m
Route 3 Stanley Park	$43 m	$22 m	$48 m	$24 m	$47 m	$24 m
Route 4 Stanley Park plus Roundhouse	$50 m	$23 m	$54m	$24 m	$54 m	$25 m

The above financial analysis demonstrates that the lowest government contribution is required under Route 1, where only Granville – Science World – Waterfront is constructed. The amount of government contribution across the different government funding options is similar, with the lowest contribution of $11 million required under the higher fare scenario of commuter $1.50 and tourist and recreation $2.50.

The additional construction for the Roundhouse leg results in a marked increase in the government contribution required for Route 2. This is attributable to the relatively small difference in ridership (0.15 million commuter riders) between these Routes 1 and 2, but with an increased base construction cost of $16 million for Route 2.

The highest government contribution requirement of $54 million occurs when the Stanley Park plus Roundhouse route (Route 4) is constructed and a government operating subsidy is provided under the lower fare scenario of commuter $1.00 and tourist and recreation $2.00. This similarly demonstrates that revenues able to be generated from this lengthier route option is insufficient to offset the resultant increases in capital costs.

While the above analysis does provide a guide to required government contribution levels, this should not be the only means of assessing the preferred alternative. It remains important that the "value for money" component of each option is taken into account in a PSC assessment. Also, in comparing the above amounts, it is important to note that the NPV amounts presented for government contribution via operating subsidies can vary significantly with the choice of discount rate. Further, as additional ridership work is required and strongly recommended, any change in the key ridership variables may alter these outcomes significantly.

However it must be noted that no sensitivity analysis has been undertaken to date on ridership levels and Macquarie's analysis above assumes ridership has zero elasticity to fares. In practice this is unlikely to be the case, particularly with the short haul commuter market. This will therefore impact on the government contribution required under the higher fare option.

8.11. CONCLUSIONS

It is accepted that for this project to proceed, the government must make a contribution, regardless of the financing model ultimately supported. Therefore it is critical that this contribution is minimised and appropriately reflects what the government and taxpayers will obtain in return for their money.

It is also important that in assessing models, and ultimately bids, the varying levels of government contribution required are evaluated through a process that allows for more than merely a dollar for dollar comparison. The PSC provides a well established and internationally accepted process for doing this.

Macquarie also believes that it is critical that the government clearly define, from the beginning of the process, how they wish to make this contribution. While an upfront capital contribution is an easy, effective and transparent way of providing funding for a specific infrastructure project it does not allow for any return on the government's investment, nor does it provide any future financial controls over the private sector operator.

Any decision in respect of choosing between up-front capital grants and ongoing subsidies should consider the likely improved ability of the City of Vancouver to access up-front capital grants, especially if the system is self-supporting on an operational basis.

It is Macquarie's view that if the government chooses to pursue a private finance option, a combination of an upfront capital contribution to the construction costs, along with an ongoing subsidy or financial support, would deliver the best outcome to maximize risk transfer and cost effectiveness and avoid the common negative consequences that can result from operating subsidies.

If the government chooses to include a capital contribution as part of the financial package for funding the project, it is Macquarie's view that this should only be provided at full financial close on the deal.

Further analysis regarding the level of government contribution and the way in which it is provided must be undertaken if the City of Vancouver chooses to proceed with private financing.

9. THE WAY FORWARD

The analysis undertaken by Macquarie in developing this Report has indicated that there is considerable merit in developing the Vancouver Streetcar project as a PPP. However, based on current ridership and cost information, even with the private sector involved, some level of government contribution will be required.

In order for the City of Vancouver to determine the most appropriate PPP model for the Streetcar and to move the Project forward as a PPP, it will need to complete the following steps:

1. Develop a preliminary project definition (i.e. speed, capacity, frequency, amenities, etc.);
2. Confirm the availability of the range of anticipated government contribution and establish an agreed development/funding/operating framework with TransLink;
3. Determine the appropriate PPP scope based on services/risk that the City wishes to transfer to the private sector;
4. Select a private sector partner to assist in project development as part of a "project development group"; and
5. Undertake additional project definition work, technical and ridership analysis necessary to develop complete project specification.

The additional project definition work will be required so that when the project development group approaches the private sector, the project will have sufficient definition to allow the private sector to analyze an investment.

The following sections provide an overview of these steps in the context of a process that involves the private sector at an early stage in project development.

9.1. PRELIMINARY PROJECT DEFINITION

For the private sector to be prepared to invest development capital in the Streetcar Project, government must demonstrate a clear Project "vision".

It is Macquarie's view that this is essential to provide the private sector with some certainty as to the government's "output specifications" - what government wants the Streetcar to do, and the general parameters within which the Project must be developed.

Government clarity on this issue will provide the private sector maximum certainty in developing innovative technical and commercial solutions to meet the public sector's needs. As part of finalizing a Project "vision", it is essential that the City of Vancouver establish a firm position regarding the preferred corridor for the system and the stages in which it will be developed.

While Macquarie believes that the private sector input can provide significant benefits in respect of identifying more cost-effective design and alignments (within a defined traffic corridor), it is critical that any preferred government position on this issue is stipulated up-front for the private sector.

As will be discussed in Section 4.4, if the City intends to involve a private sector partner early in the process, more detailed project definition work can be deferred until a PPP project development team has been formed which includes City engineering staff, the private sector and independent consultants (as required) retained by the City.

9.2. CONFIRMATION OF FUNDING AND INTERGOVERNMENTAL FRAMEWORK

As described in Section 8.10 based on the cost and ridership numbers provided in the BSW Report, a total government contribution of between $8.9 million and $67.8 million (on a net present value basis) will be required over the life of the Project. As demonstrated in the financial analysis, the ultimate level of funding required may vary significantly depending on:

- The route ultimately selected (and any staging of system development);
- Ridership/revenue and fare levels (including fare allocation in respect of multi-mode trips); and
- Construction costs.

Private sector parties will need to be confident that there is sufficient government financial support (and commitment) to advance the Project before they advance significant amounts of development capital.

Decisions in respect of fares and funding mechanisms will need to be done in conjunction with TransLink given the large numbers expected to use both the Streetcar and TransLink's SkyTrain and bus network. A fare allocation model for transfers and a mechanism for coordinating the operations of the systems should also be determined before a PPP process is advanced. The fare assumptions used in this Report are on the basis that the allocation of integrated fare between the operator of the bus and SkyTrain systems (TransLink, through subsidiaries) would be such that the operator of the Streetcar would retain $1.00 on a commuter fare (in the case of Scenario 1) or $1.50 (in the case of Scenario 2). This is an assumption only and would need to be negotiated with TransLink.

9.3. ENDORSEMENT OF A FINANCING (AND PPP) OPTION

In determining the scope of private sector involvement in the Streetcar (i.e. design, build, operate, maintain, finance, own, etc.), the City will need to determine the level of risk/responsibility that it is prepared to transfer to the private sector.

In many instances, the type of PPP model that is implemented is determined largely by the type of the role the government chooses to assume and whether the government is required to provide an upfront or ongoing contribution to the project.

The table below illustrates how the most appropriate PPP is closely linked to level of government financial contribution and the corresponding ability of the Project to be financed from Project revenues.

	Franchisee must be same as rest of network	Integrated ticketing required	Franchisee may be different	
Fully Self Supporting	BOOT	BOOT	BOOT	BOOT
Some Contribution to Capital	Franchise (with fee payable by Francisee)	Franchise (with fee payable by Franchisee)	Franchise (with fee payable by Franchisee)	BOOT with Capital Grant
Covers Opex	DBFM / Franchise	DBFM / Franchise	DBFM / Franchise	DBFO
Does not cover Opex	DBFM / Franchise	DBFM / Franchise	DBFM / Franchise	DBFO
Little or none	DBFM			
	Integrated Network Component	Integrated travel	Special Service e.g. Streetcar	Stand Alone

Endorsing a PPP model will require the City to compare potential PPP models against key City objectives and the objectives of other stakeholders such as TransLink. While there are many PPP options for financing this project, this Report has attempted to provide three clear alternatives.

Evaluating PPP models will require detailed quantitative and qualitative analysis scored against the Stakeholder objectives and compared to the Public Sector Comparator as appropriate. This detailed analysis does not need to be done in advance of selecting a private sector partner (see below) but should be sufficiently advanced that the City can appropriately specify what the scope and role of the private sector partner will be.

9.4. SELECTION OF A PPP PARTNER

Given the expected size and current level of development of the Streetcar Project, the City of Vancouver may want to consider selecting a private sector "development partner" early in the process. As discussed in Section 4.4.2, this would enable the City to benefit from the technical, service and ridership experience of an experienced in developing the Streetcar Project.

Such a process was used for the Croyden Tramlink, where the project development group established to develop the project concept and performance specifications included a private sector operator, equipment supplier, and civil engineering contractor selected through a competitive tender process.

This process would not commit the City to a specific PPP framework or preclude the City from ultimately re-tendering the Project once a PPP structure and performance specifications have been established.

9.5. ADDITIONAL PROJECT ANALYSIS

9.5.1. Further Ridership Analysis

As discussed in Section 6, the biggest risk to the development of the Streetcar as a PPP is ridership risk.

Given the significant level of uncertainty associated with current ridership estimates, private sector partners will be reluctant to spend development capital on the Project if PPP revenues are tied to ridership levels. If current ridership estimates prove to be significantly inaccurate, there is a risk that the Project would be unfinanceable by the private sector.

While detailed ridership analysis is expensive, it may be possible to "stage" the analysis, with any initial analysis by the City (before a PPP partner is selected) being limited to work designed to reduce the largest areas of ridership uncertainty. Depending on the scope of the PPP, the costs of further detailed ridership analysis may be shared with the private sector.

Commuter Riders

Commuter ridership projections prepared for the BSW Report were based on application of the GVRD EMME/2 model out to 2021. This model reviews the am peak hour travel, takes into account the cost and time of travel by car and transit and incorporates the City's current projections for population and employment growth in the downtown area.

A number of areas require further analysis:

- Fare elasticity and the impact that peak and off-peak fares will have on ridership levels. This is needed to assess an optimal fare level from a revenue/policy perspective.
- The sensitivity of ridership levels to different system configurations (including the impact of different assumptions in respect of travel/transfer time, service frequency, etc.).
- Expected levels of ridership "ramp-up".

Downtown Tourist Riders

Estimates of downtown tourist riders were calculated by taking the total tourist visits in the region and assessing the likelihood of the visitors using the Streetcar system. The BSW Report assumed a high level of tourist use on the service based on a summary review of similar systems in other cities (i.e. New Orleans and San Francisco). However, these forecasts are necessarily system specific – further analysis (likely including stated preference analysis) - will need to be done. Without such further analysis there is a significant risk that tourist ridership forecasts may be inaccurate. City and service specific factors such as seasonality, capacity constraints, nature of visitors/visits to downtown, alternative transportation modes and proximity of service to major attractions may have a significant impact on rider levels.

Lower Mainland Recreation Riders

These are defined as tourists staying outside of the downtown Vancouver area as well as Greater Vancouver residents who may use the system for other than commuter purposes. As with tourist rider forecasts, a more detailed, "city/system/route specific" analysis needs to be done.

9.5.2. Engineering Assessment

The current scope of works required for the Project's development and associated costs have been taken from the BSW Report. While this Report has been useful in undertaking this initial PPP analysis, costing estimates will need to be revised to take into account any price movements that have occurred in the market as well as any changes in scope that would be required due to development of the proposed corridors since the initial assessment was undertaken.

9.6. INITIAL PUBLIC CONSULTATION PROCESS

Once the City of Vancouver has developed a broad project scope of work and output specifications it would be appropriate to take this option to the community and key stakeholders for consultation.

This process would involve:

- Providing the community and stakeholders with information regarding the Project configuration and scope to date;
- Localizing information for various effected communities and detailing the potential impacts and benefits of the project as it stands;
- Outlining the broad transport policy objectives on which the Project is based and way in which they are achieved through the project proceeding;
- Detailing possible financing options and fare policy (i.e. required level of cost recovery and differential fares for commuters/tourists); and

- Detailing future a consultation process to take place as part of the environmental approvals process.

As part of the consultation process, the community and stakeholders should also be provided with a defined process for making submissions to the City regarding their concerns, suggestions or support for the project. These submissions should be taken into account as the project scope is further defined. The City may consider exploring the Portland approach, which included significant involvement from downtown businesses.

In addition to this, by providing this consultation process, the City can ensure that any concerns of the community and stakeholders are identified and/or accommodated early in the projects development, or if any "project stoppers" exist, they are identified before the project proceeds too far and funds have been unnecessarily expended.