CITY OF RICHMOND

REPORT TO COUNCIL

TO:	Richmond City Council	**DATE:**	October 3, 2002
FROM:	Councillor Harold Steves, Chair Parks, Recreation and Cultural Services Committee	**FILE:**	6510-05

RE: STEVESTON INTERURBAN TRAM FEASIBILITY STUDY

The Parks, Recreation and Cultural Services Committee, at its meeting held on Tuesday, September 24, 2002, considered the attached report, and recommends as follows:

COMMITTEE RECOMMENDATION –

1) ***That the attached Steveston Interurban Tram Feasibility Study (dated September 9, 2002 from the Manager, Cultural Services) be received for information;***

2) ***That Option 1, completely restored Tram operating over full 2.4 kilometre route phased over five years with Phase Two, the extension to London Farm, to be completed at a later date, be endorsed;***

3) ***That an ownership plan for all right-of-ways located between Garry Point and London Farm, be provided.;***

4) ***That staff investigate the possibility of utilizing dredged material to widen the dyke in front of the Maritime Mixed Use area;***

5) ***That staff:***

   a) ***provide revenue generation options that could contribute to the funding of the Steveston Interurban Tram project;***

   b) ***discuss with Onni Corporation, and other entities, the development of public/private partnerships; and***

6) ***That staff enter into discussions with the Steveston Harbour Authority regarding the use of right-of-ways, cost-sharing in the tram project and the possible future utilization of the two waterlots in front of Onni.***

Councillor Harold Steves, Chair
Parks, Recreation and Cultural Services Committee

Attach.

VARIANCE

Please note that staff recommended the following:

That:

(1) the attached Steveston Interurban Tram Feasibility Study (dated September 9, 2002 from the Manager, Cultural Services) be received for information; and

(2) Option 1, completely restored Tram operating over full 2.4 kilometre route phased over five years, be endorsed.

Staff Report

Origin

At the City Council meeting of April 8, 2002 City Council resolved that;

> *(1) staff conduct a study to review market feasibility, management models, transportation and engineering requirements, and the economic impact of operating Interurban Tram #1220 in Richmond; and*
>
> *(2) staff consult with geotechnical and other experts to determine the other aspects of the geotechnical and operational requirements of Interurban Tram 1220.*

Analysis

A working committee consisting of the Coordinator-Heritage Sites, Transportation Engineer, Park Planner, Engineering Cost Estimator and two representatives from the Steveston Interurban Restoration Society (S.I.R.S.) conducted the study with input from Development Applications staff and Tourism Richmond.

A market review including a stakeholder survey and public opinion survey were conducted with the majority of respondents very supportive of the project. Engineering and transportation requirements were researched and criteria for route alignments and building locations were established while still adhering to the provincial operating rules that govern tourist railways. S.I.R.S. has provided a cost estimate to restore the Tram and staff have estimated the cost of its relocation. Options for operating and management models were explored. An economic impact study is not recommended as there is insufficient data. Preliminary capital costs were established and very rough estimates for operating costs and potential revenue were projected.

Options

From the capital cost estimates and other information gathered, six options are presented for Council consideration on future actions in order to move forward. They are:

1. Completely restored Tram operating over full 2.4 kilometre route phased over five years;
2. Completely restored Tram operating over partial route of 1.0 kilometre phased over three years;
3. Tram as museum display only;
4. Leave Tram in Steveston Park and amend the Council approved Steveston Park Plan to accommodate;
5. Move Tram out of Steveston Park to a leased space in Richmond;
6. No further City involvement.

Option 1

Completely restored Tram operating over full 2.4 kilometre route phased over five years

A phased approach would have Council taking the lead role in funding Tram restoration and operation over a five year period.

a. Phase one would be to build the car barn/workshop and office/display space, 2003.
b. Phase two would be to move the Tram to the new building and restore it to full operational capacity, 2003 - 2004.
c. Phase three would be to build 1 kilometre of track, 2005.
d. Phase four would be to build the remaining 1.4 kilometres of track, 2006 - 2007.

- Pros
    - a valuable addition to the heritage character of Steveston
    - the Tram would remain in Richmond and be accessible to the community and visitors as an operating attraction by 2005, with an extension in 2006 or 2007
    - substantial length of track and location provides high market visibility
    - provides local transportation for area surrounding Steveston Village
    - the financial outlay needed to have the Tram operational would be spread over five years
    - meets the objective of the Steveston Interurban Restoration Society to operate Tram #1220
- Cons
    - no apparent source of funding
    - funding would need to be allocated in the five year capital plan from projects already prioritized
    - operating costs unknown
    - some impact on street parking

Estimated Cost			**Breakdown of Estimated Cost**			
Route	**Location**	**Total Cost** (depending on route alignment)	**Track, Electrical Requirements & Crossings**	**Building & Stations**	**Tram Relocation & Restoration**	**Design & Contingency (25%)**
Complete Route 2.4 kilometres	Garry Point Park to Britannia Heritage Shipyard	$6,748,000 to $7,912,000	$4,370,000 to $5,301,000	$696,000	$332,000	$1,350,000 to $1,583,000

Option 2

Completely restored Tram operating over partial route of 1.0 kilometre phased over three years

A phased approach would have Council taking the lead role in funding Tram restoration and operation over a three year period.

a. Phase one would be to build the car barn/workshop and office/display space, 2003.
b. Phase two would be to move the Tram to the new building and restore it to full operational capacity, 2003-2004.
c. Phase three would be to build 1 kilometre of track, 2005.

- Pros
  - the Tram would remain in Richmond and be accessible to the community and visitors as an operating attraction by 2005
  - the financial outlay needed to have the Tram operational would be spread over three years
  - additional track could be added at a later date
  - meets the objectives of S.I.R.S. to operate Tram #1220

- Cons
  - not as sustainable as Option 1 because a shorter length of track does not have as much impact in the market place to attract and retain ridership
  - no apparent source of funding
  - funding would need to be allocated in the five year capital plan from projects already prioritized
  - operating costs unknown
  - some impact on street parking

Estimated Cost			**Breakdown of Estimated Cost**			
Route	**Location**	**Total Cost**	**Track, Electrical Requirements & Crossings**	**Building and Stations**	**Tram Relocation & Restoration**	**Design & Contingency (25%)**
1.0 kilometre	Steveston area location	$3,236,000 to $4,400,000	$1,627,000 to $2,558,000	$630,000	$332,000	$647,000 to $880,000

Option 3

Tram as Museum Display Only

Council could allocate funds to build a car barn/workshop and office/display space and to move and restore the body of the Tram in the 2003 capital budget.

- Pros
    - the Tram would remain in Richmond and have a permanent location
    - the Tram would be visibly available to the community and visitors
    - the body of the Tram would be restored
- Cons
    - since the experience of riding the Tram would be lost, market appeal would be decreased significantly
    - only the body of the Tram would be restored
    - no longer meets S.I.R.S. objective to have Tram #1220 operating
    - the City does not own the Tram and the Society is less likely to sign an agreement to keep it in Richmond if it is not operating

	Estimated Cost		**Breakdown of Estimated Costs**			
	Location	**Total Cost**	**Track, Electrical Requirements &Crossings**	**Building & Stations**	**Tram Relocation & Restoration**	**Design & Contingency (25%)**
Tram as Museum Display	Steveston area location	$929,000		building only - $581,000	restore tram body only - $162,000	$186,000

Option 4

Leave Tram in Steveston Park and amend the Council approved Steveston Park Plan

Council could direct staff to amend the Council approved Steveston Park Plan to accommodate the Tram and buildings. This would allow the Steveston Interurban Restoration Society to continue applying for grants to restore the Tram.

- Pros
    - the Tram would remain in Richmond
    - the Tram would be visibly available to the community and visitors
    - the Tram would be within the original right of way where it operated historically and could use existing track
    - no capital costs at this time

- Cons
    - the Steveston Park Plan has already been designed to integrate the north and south halves of the park and to develop a major pedestrian corridor
    - additional funds and staff time would be needed to amend the plan
    - Steveston Park is a neighbourhood, community park and not viable for the tourist market
    - the Tram would not increase its contribution to the tourist attraction aspect of Steveston or link the heritage sites or provide local transportation options

Option 5

Move Tram out of Steveston Park to a leased space in Richmond

Council could allocate funds to move the Tram from Steveston Park to a leased space located in Richmond. The City would be responsible for the cost of the warehouse lease under the condition that the Steveston Interurban Restoration Society keep the Tram in Richmond. Council could allocate funds at a future date to develop the project as outlined in Option 1 above. Lease costs would be submitted as an additional level in the 2003 operating budget.

- Pros
    - the Tram may remain in Richmond
    - only capital cost to the City at this time is to relocate the Tram
- Cons
    - the Tram would not be available to the community and visitors
    - no longer meets S.I.R.S. objective to have Tram #1220 operating so the Society could choose to lease or sell the Tram to another community

Approximately 3000 square feet is needed to provide a warehouse space to house the Tram, provide a workshop to continue restoration and office space for the Society. The cost of this type of leased space is approximately $35,000 annually. Relocation costs are $4000.

Option 6

No further City Involvement in the Tram

The City could request that Steveston Interurban Restoration Society remove the Tram from Steveston Park.

- Pros
    - No further cost to the City
- Cons
    - the Society does not have the resources to relocate the Tram and would likely be forced to lease or sell it
    - a part of the City's heritage and a valuable asset to the community would likely be lost for the foreseeable future
    - a tourist attraction would be lost to the community

Financial Impact

The financial impact of Option 1, completely restored Tram operating over full 2.4 kilometre route phased over five years is as follows:

a. Phase one would be to build the car barn/workshop and office/display space, 2003, $716,000.
b. Phase two would be to move the Tram to the new building and restore it to full operational capacity, 2003 – 2004, $415,000.
c. Phase three would be to build 1 kilometre of track, 2005, from $2,105,000 to $3,269,000, depending on route selected.
d. Phase four would be to build the remaining 1.4 kilometres of track, 2006 – 2007, $3,361,000 to $4,525,000.

As there is no apparent source of funding this project would be referred to the Land and Capital Team for consideration in the 5-year capital plan. Staff will pursue opportunities for grants and sponsorship.

Conclusion

The Steveston Interurban Tram Feasibility Study re-confirmed that an operating tram in Richmond is a significant asset in the City's preservation and presentation of it's heritage and could contribute immensely to the tourist attraction aspect of Steveston. City involvement and commitment is required in order to have an operating tram in the City for future generations.

Option 1 provides the highest impact, creating the best opportunity to attract additional visitors to the area while providing residents with alternative local transportation. A connection between the majority of the City's heritage sites and the well visited Garry Point Park adds value to the experience of visiting Steveston.

The next step for Option 1 is to have staff report back with a recommendation on route alignment and building location.

Connie Baxter
Coordinator, Heritage Sites

City of Richmond
Steveston Interurban Tram
Feasibility Study

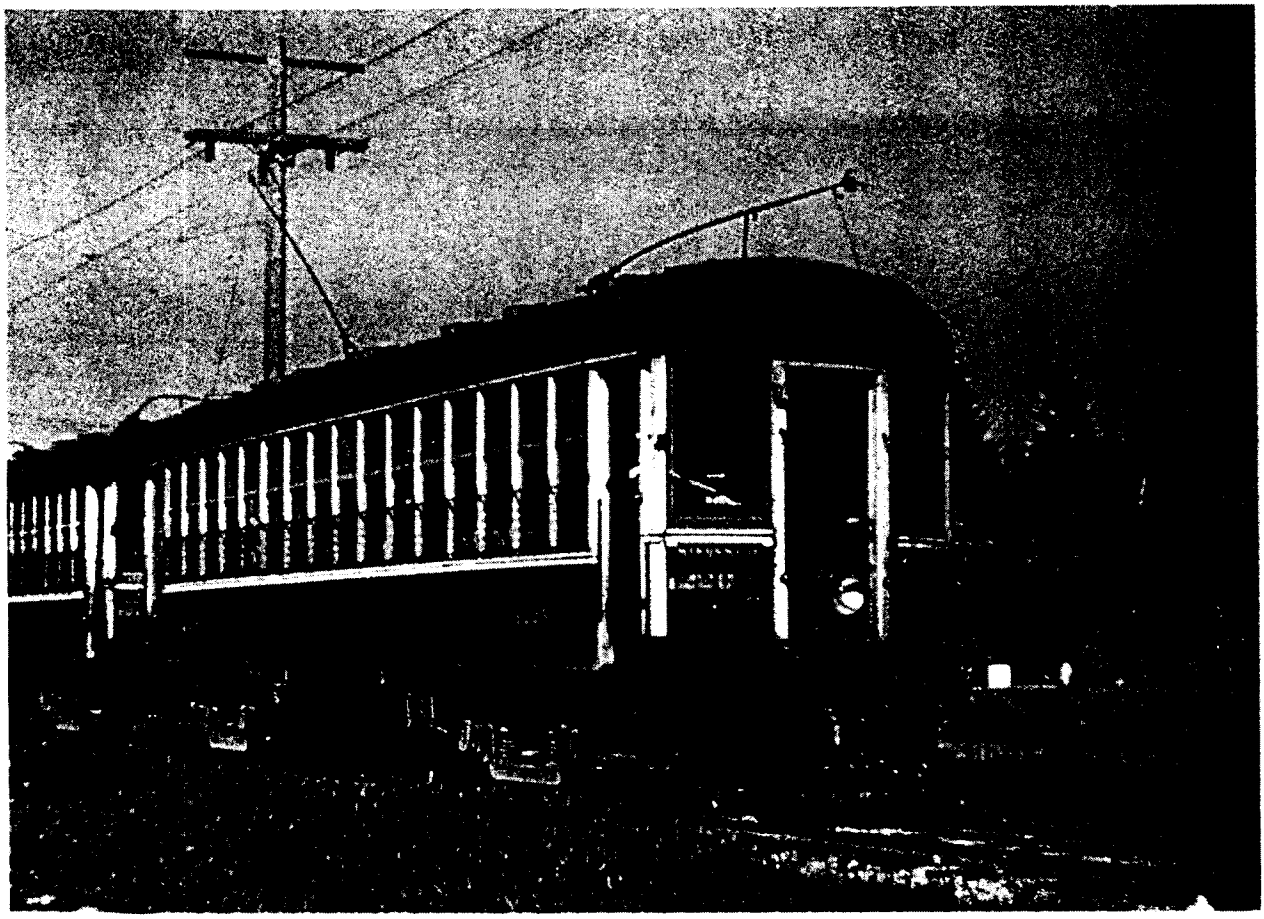

Photo: Steveston Interurban Restoration Society

Staff Report
City of Richmond

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Steveston Interurban Tram Feasibility Study

Executive Summary

On April 8, 2002 City Council directed staff to undertake a feasibility study to investigate the possibility of operating Interurban Tram Car #1220 in the Steveston area.

A working committee consisting of the Coordinator, Heritage Sites, Transportation Engineer, Park Planner, Engineering Technician and two representatives from the Steveston Interurban Restoration Society conducted the study with input from Development Applications staff and Tourism Richmond.

A review of current market trends in the tourism industry indicate a levelling off of visitors to the area but predict an increase in the coming years at the time the Tram could be brought into service. Stakeholders in the Steveston and Richmond area as well as staff and volunteers from regional and provincial attractions and public opinion survey respondents were all very supportive of the project. All of those surveyed felt an operating tram would be a tremendous addition to the attractions available in Steveston but it must be marketed as part of the whole destination rather than a "stand-alone" attraction.

Engineering and transportation requirements were researched with the assistance of the City of Vancouver Engineering Department, the Nelson Electric Tramway Society, Southern Railway of British Columbia and the provincial government. The committee established criteria for route alignment and building location given the constraint of staying within City owned land and the operating rules that govern tourist railways.

B.C. Electric Railway Interurban Tram Car #1220 is owned by the Steveston Interurban Restoration Society (S.I.R.S.). The Car is 80% restored and the Society is committed to bringing it to full operational capacity. The capital cost estimates for the completion of the restoration of the Tram was provided by S.I.R.S. and City staff projected Tram relocation costs.

A partnership between the City and Society, would be the most advantageous for this project as the Tram is owned by the Society and the track and buildings would be assets owned by the City. Proposed operating season and fees follow Vancouver and Nelson's tourist railways but would have to be confirmed in a detailed operating agreement between the City and Society.

Although comparisons with like attractions were made in the market review, further data does not exist in order to warrant an economic impact study of an operating tram in Steveston.

Preliminary capital costs for each route option, including track work, electrical requirements and crossings, stations and buildings were established. Based on the figures provided by the City of Vancouver, Nelson Electric Tramway Society and the Gulf of Georgia Cannery (an existing attraction in the area), the majority of operating costs could potentially be recovered by revenue from ridership.

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1.0 Introduction/Background

In the early 1990's, Interurban Tram Car #1220 was found in poor condition on Mitchell Island. City Council and staff were instrumental in "saving" the Tram by providing a grant and facilitating its move in 1993 to the B.C. Packer's site in Steveston. In 1992 the Steveston Interurban Restoration Society was formed, dedicated to the preservation of Richmond's interurban heritage including the restoration and eventual operation of Tram #1220. Ownership of the car was transferred to the Society from the provincial government, through the Royal B.C. Museum for one dollar.

In 1995 the Tram was relocated to its present location in Steveston Park and City Council passed a resolution "that staff be directed to work with the Society, to host a community workshop to discuss financial implications, community support, and potential sponsorship and to report to Council through Committee, ... with the results of this workshop, and a development and business plan."

The workshop took place in January, 1996 with recommendations to build a permanent car barn and replica station in Steveston Park as well as an extension of trackage to the east side of the park. Community support for the Tram was significant and workshop participants recognized a number of constraints, in particular the fact that the Steveston Park planning process was not underway yet. By May 2000, the working committee planning the upgrade for the park had established that due to the current and potential increase in growth in the area there will be an increased demand for open space and therefore felt it was not appropriate to permanently store or operate the tram in Steveston Park.

As a result of the Steveston Park Upgrade Plan, the Tram needs to be relocated to a permanent location. City staff reported on various location options and it was established that a more comprehensive analysis of the entire project was needed. On April 8, 2002 City Council directed staff to conduct a study to review market feasibility, management models, transportation and engineering requirements and the economic impact of operating Interurban Tram #1220 in Richmond. Staff were to consult with experts to determine geotechnical and operational requirements of Interurban Tram #1220.

A working committee consisting of the Coordinator of Heritage Sites, Transportation Engineer, Park Planner, Engineering Cost Estimator and two representatives from the Steveston Interurban Restoration Society together with input from Development Applications staff conducted the study requested by City Council.

The first section of this study is an historical assessment of the Tram, the next section is a market review, assessing available data and reviewing stakeholders and public opinion surveys. Section 4.0 provides an overview of the transportation and engineering requirements necessary to operate an interurban tram. Section 5.0 proposes some management model options, operating season and fee options while section 6.0 discusses the potential to assess economic impact. Section 7.0 provides a summary of financial implications for the project, including capital and operating costs as well as projected revenue.

2.0 Asset Assessment

In 1902 the Canadian Pacific Railway completed a passenger and freight railway line between Vancouver and Steveston. The British Columbia Electric Railway (B.C.E.R.) leased the line in 1905 to take advantage of a booming economy and the availability of electricity. The fishing and canning industries were in their "heyday" and Richmond's farm land was described as one of the most fertile tracts of agricultural land in the province. A railway through previously inaccessible land and a means of transportation for workers and freight proved invaluable to the growth and development of Richmond.

Interurban tram car #1220 was in service on this line from 1913 to 1958 when the line closed as a result of an aging fleet of interurban vehicles, competition from privately owned automobiles, and the increasing popularity of buses for passengers and trucks for moving freight. This passenger coach is one of only seven remaining that were previously owned and operated by the B.C.E.R. #1207 and 1231 are fully restored and operate in Vancouver, B.C., 1223 is currently being restored by the Burnaby Village Museum, 1225 is on static display in California, 1235 is on static display in Ottawa and 1304 is being operated by the Oregon Electric Railway Historical Society in Brooks, Oregon. All other cars were destroyed and sold for scrap.

Steveston Interurban Restoration Society (S.I.R.S.) owns car #1220, currently located in Steveston Park. The Society is dedicated to restoring the Tram to full operational capacity and is approximately 80% of the way towards their goal.

Heritage, like arts and culture, is very much about quality of life and presents an opportunity to build upon a community's established identity. Around the world, visitors flock to museums and art galleries to learn about the culture of the place they are visiting. Understanding the past gives a basis upon how to live in the present and steward the future. A heritage asset like Tram #1220 could provide an extremely visible and dynamic experience, providing an opportunity for expanding civic pride. It is well known that people learn best from experience. An historic tram ride would provide a unique and memorable experience that could enhance visitation to Steveston and Richmond.

The B.C.E.R. opened the possibility of development in many areas as they expanded transportation routes throughout the province. The Marpole – Steveston line and interurban cars such as #1220 that ran on the line, provided a critical economic and social link for the people of Richmond at a time when transportation was not easily accessible. Retaining, preserving and presenting such a rare and valuable heritage asset is paramount.

3.0 Market Review

Tourism Richmond has provided the following information about the tourism industry utilizing statistics from Tourism B.C., B.C. Statistics and Pannell, Kerr & Foster, an accommodation research consultant group.

The tourism industry in Canada and more specifically in British Columbia has levelled off. The growth that was experienced in the late 1980s and early 1990s has diminished. Tourism

forecasts indicate that a decrease of close to 1% will be experienced in 2002, however the close-in markets that will more directly affect the success of the Tram will perform better due to the fact that previous long-haul travelers now have a tendency to stay closer to home.

Overnight stays in B.C. are down and Richmond is experiencing a decrease of close to 5% compared to last year. Same day visits to B.C. from the U.S. have also decreased by 3%. Other economic indicators relative to airport passengers, provincial transportation arteries, restaurant revenues and average accommodation rates also indicate a downturn in tourism revenues.

The Tram will be primarily dependent upon markets within B.C., the Pacific Northwest and more likely the Lower Mainland. The decreasing travel factors should not have a significant influence on the Tram. Most economic indicators and tourism forecasts predict that over the next 3 to 5 years there will be a resurgence of tourism revenues. This is encouraging relative to the timing of the development of the Tram project.

It is not possible to predict demand for an historic attraction that is not yet available in the market place. Limited market information exists on Richmond attractions but comparisons can be made with like attractions and opinions can be sought. The information available for this study is from interviews with stakeholders in the Steveston/Richmond area, attractions in the Lower Mainland and within the province and opinions gathered from a public opinion survey.

3.1 Stakeholder Survey Summary

Stakeholder interviews were conducted in June, July and August, 2002. Individual staff members and/or volunteers from the following groups/businesses took part in the discussions:

Richmond Chamber of Commerce
Vancouver, Coast & Mountains Tourism Region
Tourism Richmond
Britannia Heritage Shipyard Society
Steveston Historical Society
Gulf of Georgia Cannery Society
London Heritage Farm Society
Richmond Heritage Commission
Steveston Hotel
Radisson Hotel
Steveston Harbour Authority
Steveston Community Society
Vancouver Whale Watch
Pajo's Fish & Chips
Elve's Embroidery
Steveston Rotary Club
City of Richmond, Communications staff and Parks Department staff

Interviews and discussions also took place with individuals from the following regional and provincial attractions:
Museum of Anthropology
Vancouver Aquarium
Capilano Suspension Bridge
Nelson Electric Tramway Society
City of Vancouver, Engineering Department staff (operators of the Vancouver Tram)

Support for the complete restoration and operation of Tram #1220 was unanimous. All individuals interviewed felt that it was a viable attraction for the City of Richmond but that it needed to be marketed as an added value to the Village of Steveston and existing attractions and businesses. Packaging the product of Steveston and marketing this multi-faceted destination to families, seniors and "train buffs" particularly those in the Lower Mainland and B.C. is critical to the success of the Tram. This would entail community groups, businesses, Tourism Richmond and the City of Richmond to commit to a concerted effort to present this "product" as a whole in the tourism market. It was felt that a "ride only" experience or static display would not be sufficient to attract enough visitors to make the Tram a viable attraction.

Opinions about building locations varied somewhat. Steveston Park was believed to be inappropriate for a tourist attraction as it is a community based, neighbourhood park. Garry Point Park and Britannia Heritage Shipyard were thought to be viable although Garry Point was somewhat preferred as it is more easily visible to the public. One interviewee believed the west side of Britannia was appropriate only if the Phoenix Net Loft was demolished. Another individual believed the building should be located at the London/Princess area and that the track should extend the whole distance from there to Garry Point Park.

Opinions about route options were also varied although the main consistent points raised were to make sure the Tram actually operated, the track was long enough to have some impact and be visible and provide transportation for locals and was near existing B.C. Transit service. Over half the interviewees preferred a route as close to the water as possible although others were concerned about safety on the dyke. Visibility of the Tram in operation was thought critical.

3.2 Public Opinion Survey Summary

The Steveston Interurban Tram Feasibility Study Public Opinion Survey was conducted from July 21 to 26, 2002 to help gauge public opinion about the possibility of operating Interurban Tram Car #1220 in the Steveston area. Over 190 surveys were completed, 65% by Richmond residents and 35% by visitors. Ages ranged from under 20 years to over 65 years old.

99.5% of Richmond residents surveyed supported the idea of an interurban tram operating in the Steveston area. 100% of visitors to Richmond supported the idea.

The majority of respondents believed an operating tram would have a positive impact on other tourist attractions, the length of tourists stay in the area, commercial businesses and civic pride. The majority also preferred the route closest to the water while the second most popular route extended all the way from Garry Point Park to London Farm. Some respondents suggested a continuation of the route to Richmond Centre while a few suggested eventually a route all the way into Vancouver.

For complete survey results see Appendix A.

4.0 Transportation/Engineering

There are three major components required to operate Interurban Tram Car #1220. First, the Tram needs to be restored to its full operating capacity. Secondly, an operating track needs to be built. This includes a right of way for route alignment, provision for overhead electrical power supply and road crossings and protection. Finally, support buildings including a car barn/ workshop to house and maintain the Tram, office /display space as well as stations at each stop on the route. The car barn/workshop and office/display space could be combined or in separate buildings and the stations consist of a raised platform and shelter, providing the same function as modern bus shelters.

4.1 Tram Restoration – Steveston Interurban Restoration Society are currently working on the complete restoration of Interurban Tram Car #1220 with the goal of bringing it to full operational capacity. Given the heritage nature of this asset, while incorporating modern safety standards, certain restoration guidelines are critical to follow to maintain the car's historical integrity and therefore value and authenticity. The Society has provided a comprehensive cost estimate outlined in Appendix B. A summary of these costs are included below in section 7.0 Financial Implications.

4.2 Route Operational Requirements – Railways are regulated by the provincial government through the Ministry of Community, Aboriginal and Women's Services. Specific requirements for right-of ways, crossings, etc. are outlined in the operating rules that govern tourist railways. To operate Tram #1220 in Richmond, the City and/or Society would have to apply to become a registered railway.

4.2.1 Alignment - The following criteria for route alignment were established:

1) Adequate space for track and overhead trolley right of way;
2) Close proximity to Steveston Village or an existing attraction for visibility and therefore market viability;
3) City owned land or existing road right of way;
4) Adequate space for approximately 4500 square feet of building structure(s);
5) Surrounding area, including built and landscape environment, that compliments industrial type of buildings;
6) Cost.

Depending on the route alignment selected, some existing or future on-street parking would not be available during the Tram's operating season to accommodate track along the curb lane

Routes considered and determined feasible: (see attached map)

1a) Corner of No. 1 Road east along the south side of Bayview Street, through the parkland to Westwater Drive to Railway Avenue to Britannia Heritage Shipyard. (in service agreement with Onni Project Management Services, Ltd.)
1b) Corner of No. 1 Road east along the south side of Bayview Street, through the parkland then along the dyke to Britannia Heritage Shipyard.
2) Corner of No. 1 Road and Bayview Street east along the dyke, around Phoenix Pond then along the dyke to Britannia Heritage Shipyard.
3a) Corner of No. 1 Road east along the north side of Moncton Street, south along the east side of Bayview through parkland to Westwater Drive to Railway Avenue to Britannia Heritage Shipyard.
3b) Corner of No. 1 Road east along the north side of Moncton Street, south along the east side of Bayview Street through parkland then along the dyke to Britannia Heritage Shipyard.
4) Garry Point Park east along the north side of Chatham Street, south along the west side of Third Avenue to the Gulf of Georgia Cannery.

Extensions through Steveston Village could be considered along Bayview Street or Moncton Street depending on the initial route selected.

Routes considered and determined not feasible:

1) Railway Avenue was considered but dismissed because of the lack of tourist traffic and the distance from Steveston Village.

2) A route from Britannia Heritage Shipyard to London Farm was considered but not recommended at this time because the City does not own enough land between Britannia and No. 2 Road to establish a right of way. It should be noted that Mr. Dana Westermark, a developer in the London /Princess area has offered to build a station and lay track should the Tram be available in this area.

4.2.2 Geotechnical - Further geotechnical studies are not required at this time as all proposed routes are within existing or new roadways or along a reinforced dyke.

4.2.3 Track Work – The Interurban Tram runs on standard gauge track; 85 lb rails that are 4' 8 ½" apart supported by an 8' tie every 18". A right of way of approximately 20' is required. The Tram can turn within a radii of approximately 50' if necessary and much more easily within a 90' radii.

4.2.4 Electrical – The power supply required to operate the tram is 600 volt, direct current. Therefore a rectifier station is required to convert BC Hydro's alternating current power supply to direct current. Trolley poles are also required every 100 feet along the track to carry the wires that supply the Tram. The City of Vancouver is working with TransLink to install the power supply for their tram project as it is the same as needed for today's trolley buses.

4.2.5 Support Buildings and Stations – A car barn and workshop are needed to house the Tram and provide space for regular maintenance of the vehicle. An office for the administration associated with operating the Tram and a museum display space for Interurban memorabilia is also included. A station, i.e. raised platform and shelter, is required at each stop along the proposed routes to accommodate passenger loading and unloading. Following the criteria listed in section 4.2.1 the following locations for support buildings were considered.

Options considered and determined feasible:

A) Britannia Heritage Shipyard – new building for car barn, workshop, office and display space all in one building at the western edge of the property. Beneficial to be adjacent to another attraction and similar buildings in the area although spatial requirements for 4500 square feet would be crowded.
B) Garry Point Park – new building for car barn/workshop to be located near Scotch Pond Heritage Fishing Cooperative so it is near another industrial building and does not block open space and new building for the office/display space closer to the entrance of the park would compliment the design of existing building on site.

Options considered and determined worthy of further investigation:

A) Phoenix Cannery Net Loft – desirable location, separate from but adjacent to another attraction. However, the building structure needs considerable stabilization in addition to the cost of retrofitting it for re-use.

Options considered and determined not feasible:

A) Laneway between the Steveston Hotel and the Gulf of Georgia Cannery – laneway is only 29' wide, requiring a two-storey building. Desirable location but significant height and type of building may be a problem.
C) Britannia Heritage Shipyard Native Longhouse – desirable location but building does not have enough clearance to accommodate the Tram. Would require significant modification to do so which is not desirable as it would destroy the heritage integrity of the building.
D) Britannia Heritage Shipyard – "historic zone" or east side of the site is problematic in that there are a number of curves to navigate and the road allowance is narrow and trackage through the site would destroy the cohesive heritage nature of the site.

E) London/Princess Area – City owns CNR right of way. Not viable from a market perspective and City does not own enough land to establish a route alignment westward to connect with potential market at this time.
F) Steveston Park – Community oriented park, not visitor oriented therefore not viable for the tourist market.

5.0 Management Models

Option 1 – City and SIRS partnership governed by a operating agreement – most viable option as both parties have control over the preservation and presentation of a valuable heritage asset and the accompanying infrastructure. This does not preclude private sponsorship or other support. This model may produce more support as a not-for-profit society may gain more corporate sponsorship than the City on its own.

Option 2 - City owned and managed – the City would need to purchase the Tram from current owners, the Steveston Interurban Restoration Society.

Option 3 – No City involvement – this increases the possibility that the Society would have to lease the Tram to a group outside Richmond. This is not desirable as the Tram is a very valuable heritage asset and was instrumental in the development of Richmond. If the owners of the Tram continue to operate in Richmond, they would likely do so on City owned land so it is fundamental that the City be involved.

Based on the successful operating models in Vancouver and Nelson:

Suggested Operating Season – (to be confirmed in an operating agreement)
May, June – weekends only
July, August – daily
September, October (until Thanksgiving), weekends only
December – for Christmas activities
(other holidays to be considered)

Suggested Fees – (to be confirmed in an operating agreement)
Adults - $2
Students/Seniors - $1
Under 6 years – free

6.0 Economic Impact

The purpose of undertaking an Economic Impact Assessment is to establish the economic effect of an attraction and provide information that will assist in planning that attraction.

In section 3.0 Market Review, comparisons were made with like attractions and a number of opinions were recorded. This information does not supply enough credible data to establish the economic impact of an operating tram in the Steveston area.

7.0 Financial Implications

Capital Costs

Preliminary capital costs listed below could be substantially reduced if government grant and sponsorship efforts are successful. See Appendix B and C for cost estimates.

Estimated Cost			Breakdown of Estimated Cost			
Route Option – see attached map	**Location** - Steveston Village to Britannia Heritage Shipyard	**Total Cost**	**Track, Electrical Requirements & Crossings**	**Building & Stations**	**Tram Relocation & Restoration**	**Design & Contingency (25%)**
1a	Bayview St. east	$3,272,000	1,655,000	630,000	332,000	655,000
1b	Bayview St. east (around bldgs)	$3,236,000	1,627,000	630,000	332,000	647,000
2	Dyke	$4,400,000	2,558,000	630,000	332,000	880,000
3a	Moncton St. east	$3,825,000	2,098,000	630,000	332,000	765,000
3b	Moncton St. east (around bldgs.)	$3,788,000	2,068,000	630,000	332,000	758,000
Route Option	**Location** – Steveston Village to Garry Point Park	**Total Cost**	**Track, Electrical Requirements & Crossings**	**Building & Stations**	**Tram Relocation & Restoration**	**Design & Contingency (25%)**
4	Gulf of Georgia Cannery via 3rd Ave. and Chatham St. to Garry Point Park	$3,386,000	1,747,000	630,000	332,000	677,000
Route Option	**Location** – Steveston Village Extension	**Total Cost**	**Track, Electrical Requirements & Crossings**	**Building & Stations**	**Tram Relocation & Restoration**	**Design & Contingency (25%)**
Moncton St.	Moncton St.	$1,564,000	1,218,000	33,000	-	313,000
Bayview St.	Bayview St.	$1,811,000	1,416,000	33,000	-	362,000
Complete Route	Garry Point Park to Britannia Heritage Shipyard	$6,783,000 to $7,912,000	4,398,000 to 5,301000	696,000	332,000	1,357,000 to 1,583,000
Tram as Museum Display	Stevston area location	$ 929,000		Building only – 581,000	Move and restore tram body only - 162,000	186,000

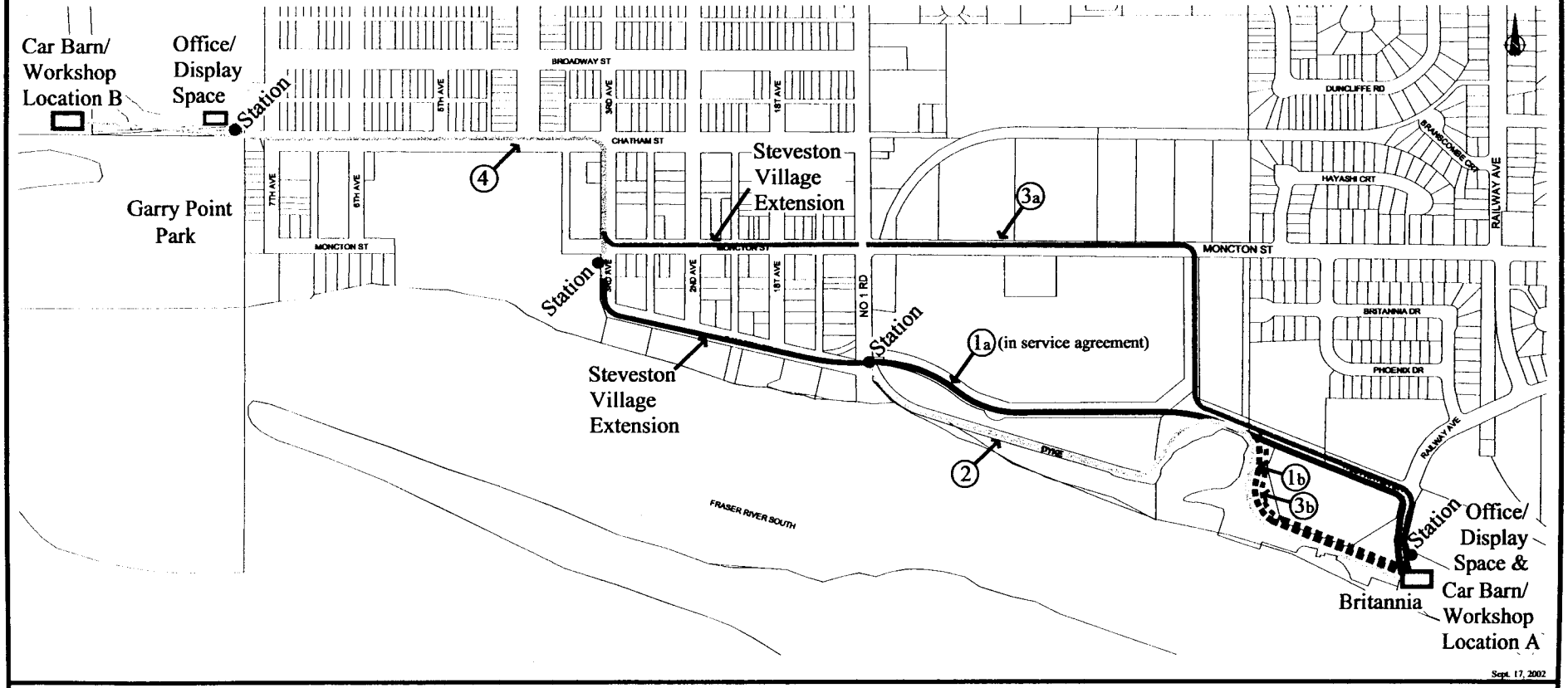
Operational costs and projected revenue

The City of Vancouver operates two interurban trams from May until October as well as for special events and private rentals. The City maintains the trams using staff time and has an annual budget of $11,000 for hard costs. Staff time for an electrical engineer, a superintendent and a person to work with the volunteer drivers regarding customer service is covered by departmental budgets. From the revenue collected from fares, the City receives approximately $10,000 per year after paying leasing costs on the trams. Ridership in 2001 was over 17,000 generating between $11,000 and $12,000 revenue. The City pays for power costs.

The Nelson Electric Tramway Society operate a streetcar on two miles of electrified track from Easter until Thanksgiving. They incurred operating expenses of approximately $22,000 in 2000 and $20,000 in 2001. The power supply, however, is donated by the City of Nelson and not included in these figures. The Society is entirely operated by volunteers, including 40 drivers and 10 maintenance people. Minor repairs are done by volunteers and no major repairs have been required to date. Revenue from ridership covered 65% and 80% of the operating costs in the years 2000 and 2001 respectively. Ridership in 2001 was 14,000, which generated $15, 500 in revenue, an average of $1.11 per visitor.

An operating budget for a tram system in the City of Richmond would depend on the management model chosen to operate the system. If the Tram were operated and maintained by volunteers the operating costs could be comparable to the Nelson group. All models of operation would need to include running and maintenance costs of the tram and track and would depend partially on the route alignment chosen. There is insufficient historical data to accurately predict operating costs at this time.

Ridership and therefore revenue is difficult to predict for an attraction that has not been available in a specific area. The most reliable statistical visitor information for the Steveston area is the Gulf of Georgia Cannery who hosted 22,350 visitors in 2001. The Cannery has been open to the public in various stages of completion since 1994 and in its current complete state since 2000. Visitation has built over the years and Cannery has established itself in the market place. The Tram could not expect to start operation with the same rate of visitation as an established attraction but could certainly capitalize on exposure in the same area. A very rough projection of visitation given these attractions could potentially serve the same area, residents and visitors could be 15,000. Using the average price per rider of $1.11 from Nelson, 15,000 people riding the Tram could generate $16,650.



Possible Tram Routes to be Evaluated

Steveston Interurban Tram Feasibility Study
Public Opinion Survey Results

The Steveston Interurban Tram Feasibility Study Public Opinion Survey was conducted to help gauge public opinion about the possibility of operating Interurban Tram #1220 in the Steveston area. The information was collected at three locations in Richmond. The first was the Tourism Information Center in Steveston Village. The second batch of information was gathered at the Tourism Richmond Information Center near the George Massey tunnel and the third location was a booth display at Richmond Center Shopping Mall.

From July 21 to 26, 2002, Richmond residents and Visitors to the Richmond area completed more than 190 surveys. The following is a break down of who completed the questionnaire.

1. Steveston Visitor Information Center, July 21 & 22
55 Richmond Residents
25 Visitors (15 Lower Mainland, 4 Alberta, 4 Ontario, 2 USA)
80 surveys = 41.5%

2. Richmond Visitor Information Center, July 23
10 Richmond Residents
24 Visitors (5 Lower Mainland, 2 Alberta, 1 Ontario, 2 Quebec, 2 BC, 12 USA)
34 surveys = 18%

3. Richmond Center Shopping Mall, July 25 & 26
60 Richmond Residents
18 Visitors (13 Lower Mainland, 1 Alberta, 1 Ontario, 2 BC, 1 Saskatchewan)
78 surveys = 40.5%

A total of 125 Richmond Residents completed the survey = 65%
A total of 68 Visitors to Richmond completed the survey = 35%

The age statistics of Richmond Residents who completed the survey:
Under 20=2%, 21-34=14%, 35-45=36%, 46-55=18% 56-64=14%, Over 65=15%

The age statistics of Visitors who completed the survey;
Under 20=.5%, 21-34=22%, 35-45=16%, 46-55=19%, 56-64=25%, Over 65=16%

The following report breaks down the survey findings question by question. The public was overwhelmingly supportive in spending the time to answer the survey, and was very excited to enter the draw for completing the survey. The display booth and Steveston Interurban Restoration Society pamphlets attracted much attention and notoriety for the Tram and the project.

Question #1, Have you heard of the Tram?

. 82% of the Richmond Residents surveyed said that they had heard of the Steveston Interurban Tram.

. **Interesting Point,** 5% of the Richmond Residents surveyed mentioned that they had also heard of the False Creek Tram.

. 51% of the Visitors surveyed said that they had heard of the Steveston Interurban Tram.

. **Interesting Point,** 3% of the Visitors surveyed mentioned that they had also heard of the False Creek Tram.

Question #2, Where did you hear of it?

. 61% of the Richmond Residents who had heard of the Steveston Interurban Tram stated that they had seen it or heard mention of it in "Steveston Village".

. 21% of the Richmond Residents who had heard of the Steveston Interurban Tram stated "Other" as how they had heard of the Tram. The most popular response being that they themselves or someone that they know, or had known, actually rode the Tram when it was in service.

. 12% of the Richmond Residents who had heard of the Steveston Interurban Tram stated that they had heard of the Tram through the "Newspaper".

. 6% of the Richmond Residents who had heard of the Steveston Interurban Tram stated that "Word of Mouth" was how they knew of the Tram.

. 31% of the Visitors who had heard of the Steveston Interurban Tram stated that they had seen it or heard mention of it in "Steveston Village".

. 40% of the Visitors who had heard of the Steveston Interurban Tram stated "Other" as how they had heard of the Tram. The most popular response being brochures, pamphlets, and actually having ridden on the Tram or knowing someone who had ridden on it.

. 11% of the Visitors who had heard of the Steveston Interurban Tram stated that they had heard of the Tram through the "Newspaper"

. 14% of the Visitors who had heard of the Steveston Interurban Tram stated that "Word of Mouth" was how they knew of the Tram.

Question #3, Please rate the possible impact of the tram.

. "Ability of the Tram to attract additional tourists to Steveston": This question brought the highest most positive rating of 4 or 5 out of 80% of all of the surveys. 3 was the lowest rating for this question, with 19%. Many comments were made that train lovers and families would make a special trip to Steveston to ride the Tram.

. "Ability of the Tram to extend a tourists length of stay": This question rated between a 4 and 3 for over 85% of all the surveys. The rating of 2 was the lowest number picked by just about 14% of the total surveys. This question was clarified to many people as to extending the length of stay by a half of an hour to an hour maximum. No one thought that any tourist would stay longer than that to ride the Tram.

. "Effect of the Tram on commercial businesses": This question rated a 5 by 75% of all the surveys with a 4 being the lowest number answered by 24%. The most common comment mentioned, was that an operating Tram would bring more visitors and their money into the village.

. "Access to Steveston's historical sites": This question rated a 4 by 77% of all the surveys, 3 by 20% and 2 being the lowest rating by 2%. This question brought up the most discussion about the possible track route for the Tram. People thought that the Tram definitely could run to the historic sites, but because no one route had been decided upon, this question was a bit vague.

. "Effect on Civic Pride": This question rated a 5 by 79% of the surveys and a 4 by the other 20%. This question brought the most positive comments.

Question #4, Do you support or oppose the possibility of an operating Tram? And why?

. 99.5% of Richmond Residents surveyed supported the Tram idea.
. .5% of Richmond Residents surveyed opposed the Tram idea. (1 person)

. 100% of Visitors surveyed supported the Tram idea.

Many of the people who completed the survey stated their answers to the rating questions in #3, as to why they would support the Tram idea. Positive comments concerning saving a part of the local history and having history come to life were fairly popular. Other comments that were heard over again were," We support restoration", "More money for the local Tourism Industry", "Children would love to ride", "Help alleviate traffic and parking problems in the village", "Assist physically challenged and elderly to get around the village", "Bring back some nostalgia", "If we don't use it we could lose it" "keep visitors in the area all year round".

The one survey that was opposed to the tram idea in Steveston felt that the cost would out weigh the benefits to the community, and that Steveston already had a sufficient number of tourist attractions. This survey also felt that the tram in False Creek was never used to its fullest capacity, and the Steveston one would also never be busy.

Question #5, Which route possibility would you support? And why?

. Route #1 had the popular vote of 13% of Richmond Residents and 10% of Visitors. Surveys stated that new sites and shops to see would attract more people to the tram. Parking would be eased from the village with the car barn being located at Britannia Heritage Shipyard, as well; more people would visit the Shipyard.

. Route #2 had the popular vote of 43% of Richmond Residents and 60% of Visitors. Surveys stated that the dyke created the most scenic route and was the least obtrusive to residents, and traffic. Parking would be again eased from the village with the car barn being located at Britannia Heritage Shipyard, as well; more people would visit the Shipyard.

. Route #3 had the popular vote of 6% of Richmond Residents and 3% of Visitors. Surveys stated that the ride would be pleasant visually traveling along new small green spaces and the new development of Steveston Park and the Community Center. Similar comments about the car barn located at Britannia, along with parking out of the village were made.

. Route #4 had the popular vote of 16% of Richmond Residents and 7% of Visitors. Surveys stated that the older area of the village needed attention along with the new development. Parking out of the village at Garry Point Park, where the car barn would be, would alleviate congestion, as well, the drop point being located in front of the Gulf of Georgia Cannery would encourage more visitors into the attraction.

. Route #5 had the popular vote of 18% of Richmond Residents and 15% of Visitors. Surveys stated that it gives a great overview of the whole village, and brings parking out of the village. The longer route would attract more patrons, as it would be worth the ride and or fare. Physically challenged people and families would have an opportunity to see the entire village and get the whole village feel.

. **Interesting Point,** 2% of Richmond Residents and 3% of Visitors would support the most economical of the routes suggested.

. **Interesting Point,** 2% of Richmond Residents and 2% of Visitors would support the route that most closely follows the original route.

Question #6, If any, what other locations should the tram service?

. 60% of all the surveys completed had no comment on this question.

. 20% of all the surveys completed suggested that eventually all of route #5 out to London Farm would be of benefit.

. 15% of all the surveys completed suggested that a continuation to Richmond Center would be of benefit.

. 5% of all the surveys completed suggested that eventually bringing the Tram into Vancouver would be of benefit.

Question #7, Would you use the Tram yourself?

. 96% of Richmond Residents and 99% of Visitors said that they personally would use the Tram.

People overwhelmingly were excited about the possibility of actually taking a ride on the Tram themselves. Many visitors made reference to the cable cars in San Francisco and a similar tourist attraction in Florida. Richmond Residents were also excited about the prospect of taking their future guests on the Tram.

Question #8, What other attractions have you visited in Richmond?

. 50% of Richmond Residents surveyed stated that they have visited "All" attractions.

. 25% of Richmond Residents surveyed had visited Richmond Center

. 25% of Richmond Residents surveyed had visited Steveston Village

. 20% of Richmond Residents surveyed had visited Garry Point Park

. 20% of Richmond Residents surveyed had visited London Farm

. 20% of Richmond Residents surveyed had visited The Gulf of Georgia Cannery

. 15% of Richmond Residents surveyed had visited Minoru Park

. 15% of Richmond Residents surveyed had visited Richmond Nature Park

. 10% of Richmond Residents surveyed had visited the Dyke system

. 10% of Richmond Residents surveyed had visited Gateway Theater

. 10% of Richmond Residents surveyed had visited SilverCity-Riverport

. 35% of Visitors surveyed stated that this was their first visit to Richmond

. 20% of Visitors surveyed stated that they had visited Steveston Village

. 20% of Visitors surveyed stated that they had visited Richmond Center

. 15% of Visitors surveyed stated that they had visited Garry Point Park

. 10% of Visitors surveyed stated that they had visited the Dyke system

Other Richmond attractions that were mentioned less than 10% in the surveys were:

. McDonald Beach
. Asia West
. Britannia Heritage Shipyard
. Steveston Museum
. Richmond Museum
. Buddhist Temple
. YVR Airport

Question #9, What other attractions have you visited in the Lower Mainland?

. 50% of Richmond Residents surveyed stated that they had visited "All" attractions

. 50% of Richmond Residents surveyed had visited Stanley Park

. 50% of Richmond Residents surveyed had visited Granville Island

. 20% of Richmond Residents surveyed had visited the Capilano Suspension Bridge

. 20% of Richmond Residents surveyed had visited the English Bay Beaches

. 20% of Richmond Residents surveyed had visited the North Shore Mountains

. 10% of Richmond Residents surveyed had visited Robson St.

. 10% of Richmond Residents surveyed had visited Canada Place

. 10% of Richmond Residents surveyed had visited Gas Town

. 10% of Richmond Residents surveyed had visited China Town

. 10% of Richmond Residents surveyed had visited Queen Elizabeth Gardens

. 35% of Visitors surveyed stated that this was their first visit to the Lower Mainland

. 50% of Visitors surveyed stated they had visited Stanley Park

. 30% of Visitors surveyed stated they h ad visited Granville Island

. 25% of Visitors surveyed stated they had visited Gas Town

. 10% of Visitors surveyed stated they had visited China Town

. 10% of Visitors surveyed stated they had visited Capilano Suspension Bridge

Other Lower Mainland attractions that were mentioned less than 10% in the surveys were:

. Vancouver Aquarium
. Science World
. UBC
. PNE
. Fort Langley
. Lonsdale Quay
. Vancouver Art Gallery

Question #10, Are there any other comments?

80% of the surveys had no comments. 10% of the other comments were very positive, stating what a good idea this project was, and that it should be expedited as quickly as possible. Another 10% of the surveys commented or questioned the removal of the old original track. The price of the project was also mentioned in the comment area in 5% of the surveys, with people asking for more dollar figures.

Conclusion of Results

As seen through the information presented in the surveys, the public is very supportive of the possibility of an operating Tram in the Steveston area.

Steveston Interurban Restoration Society

BCER Car # 1220 Restoration Estimate

The Steveston Interurban Restoration Society is dedicated to bringing 1911 vintage British Columbia Electric Railway (BCER) Car # 1220 to full operational capacity.

Completely restored, the Car has a market value of $1.5 million dollars (CA), the present day estimate researched for insurance purposes. The historical value to the people of British Columbia is however, priceless. During the first half of the twentieth century, the BCER, forerunner of B.C. Transit, had a fleet of nearly a hundred St.-Louis cars on daily service throughout the Lower Mainland. Car # 1220 is one of five remaining St.-Louis electric passenger Cars that operated on BCER lines. The rest were destroyed and sold for scrap in the late 1950s.

As of August 2002, car # 1220 is temporarily stored in Steveston Park, Richmond, B.C. and sits on the original rails it served daily, from 1913 to 1958. The Car is currently near completion. The total hybrid body of wood and metal structure is almost 80% finished and restoration is continuing. Provided all funding can be secured, BCER # 1220 could be operational within one year. At that point in time, the Tram will have to be moved to electrified trackage. The restoration project has been in progress for over five years, funded by a variety of government-sponsored programs, grants and private donations.

Significant upgrade to the Car's mechanical status will be required to bring the Car into operation, in addition to meeting Provincial guidelines as specified by the Ministry of Municipal Affairs Inspector. Furthermore, modern safety improvements, including structural and cosmetic repairs (safety glass, for example) are essential to returning # 1220 to active service.

The restoration estimate is based on our experience dealing with the usual repairs associated with this kind of project and advice from key personnel involved with the restoration of St.-Louis car # 1231 and BC built Car # 1207, now servicing the tourist trade in downtown Vancouver. In order to meet SIRS' objective of restoring the heritage Car to full operational capacity, all parts must be in original condition and completely functional. For the preservation of historical authenticity, attention to detail is therefore paramount. The restoration is thus, a time consuming endeavor.

The estimate is subject to unforeseen or hidden damages. In addition, high cost items missing or beyond repair are not included, but an allowance is made to repair or restore most mechanical and cosmetic parts.

Nevertheless, upon closer examination some mechanical parts may be in better condition than anticipated. Some parts included in the restoration estimate may even pass a safety inspection and have no need of immediate attention.

The estimate is a speculative quotation for budgetary purposes only.

The estimate is classed in *two* major categories: the ***Mechanical*** and the ***Body***.

1) The Mechanical: (Trucks, motors, control, and undercarriage)

Car # 1220 is nearly complete, but has some missing parts. The mechanical area of the car will need:

- preventive maintenance

- several consumable parts (bearings and brake shoes)

The costs as presented should cover what is expected; however since some items may not require service, then the costs may certainly be lower. This estimate outlines a "worst case scenario" situation.

1.1.- Trucks:

- A light sand blasting is required and the trucks painted in Rustoleum black

- Bushings, pins and pieces of rigging require replacement or repair

- Each of the bearings require cleaning or replacement and repacking with new material and fresh oil

- All cover gaskets require custom made replacements along with cover hold down hinges and springs

- All wheels need truing

- All tires need upgrade to full interurban service; new tires must be custom forged, mounted and balanced.

- Brake shoes and bushings need replacement (brake lines treated with under carriage equipment)

Truck mechanical upgrade to be provided by Southern Railway of British Columbia.

- Pricing for the outlined services: $5,000 per truck (x2)	$10,000.00
- Pricing for 8 tires @ $ 3,125 each (incl. installation):	$25,000.00
- Wheel truing: $450 per axle (x4)	$ 1,800.00
- Suspension Bearings @ 2800 each (x4)	$11,200.00
- Friction bearings @ $1,000 each (x4)	$ 4,000.00
- Covers and gaskets @ 350 each (x8)	$ 2,800.00

- Blast and paint	$ 1,700.00
- Brake cylinders (honing, packing and new cups)	$ 2,000.00
- Brake shoes & break heads (for 34" wheels)	$ 2,000.00
Total	**$60,500.00**

Plus all applicable taxes.

The price does not include any unseen structural cracks in the frame or missing components and other hidden or damaged high cost items.

1.2.-Traction Motors:

All four motors need an overhaul.

- General clean up with Meggar, remove, dismantle, wash, clean, bake, until an acceptable reading is acquired on the armature and case.

- Inspection of fields and repair where necessary including new leads where required.

- Glyptol paint where required

- Undercut and stone the commutators

- New bearings to be applied where needed

- Spray paint under case

- Reassemble and replace minor parts

A) This work can be done in house at Southern Railway as long as field, interpoles and armature windings are acceptable.

- Pricing for the outlined services: $ 8,500 per motor (x4)	$34,000.00
Total	***(A) $34,000.00***

Plus all applicable taxes.

B) If services are beyond Southern Railway capabilities, then the motors would be sent out to a contract shop. Southern Railway recommends: TransWest Mining, General Electric or ElectroMotors. These Companies provide VPI treatment and rewinding if necessary. The pricing would be proportionately higher to approximately $12,000 per motor, or perhaps more.

If motors need contract shop:

- Pricing for the outlined services: $12,000 per motor (x4)	$48,000.00
Total	***(B) $48,000.00***

Plus all applicable taxes.

Both these numbers are subject to major damages or part replacement that cannot be seen at this time. However, some parts included in the repair may pass an inspection.

1.3.-Controls:

Several parts need replacing or repair:

- The switching group needs replacement resistor of the correct value.

- The master controllers need cleaning, some brazing or segment replacement and lead replacement or tidying.

- Control wiring needs checking or replacement as it is in conduit pipes.

- The four banks of Westinghouse grids need to be rebuilt and several plates replaced.

- The four banks of General Electric grids also need rebuilding.

- Have several trolley poles, but one Trolley base is missing.

The controls would be done by contract shop as previously outlined.

Contract shop:

- Pricing for the outlined services: $10,000 per grid (x2)	$20,000.00
- Including master controller and resistors:	$10,000.00
- Wiring replacement/trolley base/misc. parts	$ 5,000.00
Total	***$35,000.00***

Plus all applicable taxes.

All of these numbers are subject to major damages or part replacement that cannot be seen at this time. However, some parts included in the repair may pass an inspection.

1.4.- Undercarriage:

Some parts are damaged and may need repair or replacement:

- Brake airlines need repair or replacement.

- Governor, compressor and tanks need to be inspected and repaired or replaced.

- Hand brakes need inspection, repair, adjustment or replacement.

- Draft gear needs repair and parts replaced.

- All other undercarriage parts to be inspected repaired or replaced.

- All other missing undercarriage parts to be replaced.

Many of these items and parts can be repaired, manufactured and installed on the restoration site. The air tanks have been pressure tested, but the compressor needs to be sent to a contract shop. One large missing air tank must be manufactured.

-Pricing for the Undercarriage:	$40,000.00
Total	***$40,000.00***

Plus all applicable taxes.

All of these numbers are subject to major damages or part replacement that cannot be seen at this time. However, some parts included in the repair may pass an inspection.

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Total Pricing for The Mechanical:

1.1.- Trucks:	$ 60,500.00
1.2.- Traction Motors;	(A) $ 34,000.00
1.3.- Controls:	$ 35,000.00
1.4.- Undercarriage:	$ 40,000.00
Total estimated cost without overrun or savings	***$169,500.00***

Plus all applicable taxes.

Transportation of truck materials (1.1. & 1.2.) FOB Southern Railway, New Westminster. All of these numbers are subject to major damages or part replacement that cannot be seen or anticipated at this point in time.

Some parts included in the repair estimate however may be well preserved and pass an inspection. ***Experience has shown that many items or parts may be quite serviceable with minor repair or cleaning.*** If this is the case and with some degree of luck, the total price for the upgrade on the trucks, motors, controls and undercarriage may come to an expenditure of nearly ***50% lower*** than the stated figure. Swap deals with other Rail Societies may also bring about a reduction in costs.

In any case, all operating mechanical parts must pass a safety inspection and be approved to Provincial standards.

The mechanical restoration estimate is intended to bring the 1220 to functional operation on a main line, thereby preserving its full historical and market value.

2) The Body:

Having been essentially partly restored over the past five years, BCER # 1220 may not need as extensive a restoration as will be outlined. This estimate covers restoration areas of the Roof, Sash and Doors, Sheathing and Woodwork for the Interior and Under-frame.

The Tram Body is approximately 80% completed. The main structure is mostly done (roof and floor beams; roof, floor and wall planking; steel plates; stairwells and bumpers; etc.).

The remaining work however is essentially fine interior and exterior detail, like the window shades that cover each passenger window or exterior fascia and trim. The window shades are particularly difficult: appropriate canvas fabric has to be found, printed with authentic pattern, metal parts sown in, tracks installed, and finally, each completed structure is assembled in place on each individual window. Many small missing parts have to be researched, manufactured or acquired somehow. This can be expensive and quite time consuming.

The Body of BCER # 1220 has *four* major areas of concern:

1) The vestibules must be completed with the installation of all electrical and mechanical controls. Some interior painting and finishing detail is required.

2) The body interior needs to be varnished and detail refitted: window sashes, window shades, valences, interior pocket doors, interior roof covering, brass handles, luggage racks and many other small brass fittings (several missing), electrical components, like heaters and lights, air gages, controls, etc. All the interior wood must be varnished with exterior grade varnish and signage applied in gold lettering. After this the restored seats are reinstalled.

3) The application of the exterior roof membrane covering, re-installation of brass vents, racks, trolley poles, bases and other roof gear. We have most of the parts, except for the availability of only one of two trolley pole bases. Contract professionals must install the waterproof membrane.

4) The exterior body must be restored with all the original fittings (fascia, trim, headlights, etc.) and painted with high quality durable paint (Endura) in authentic colors.

For budgetary purposes, the operational expenses for the Body restoration will be calculated over a six-month period.

A) Materials:

2.1.1. Overhead:

Bookkeeper wages	$ 1,788.27
Office Supplies	$ 2,500.00
Total:	***$ 4,288.27***

2.1.2. Building Supplies:

800 feet of misc. Hardwood	800 X $ 7.00	$ 5,600.00
Bolts and Brass screws		$ 4,000.00
Fuel for compressor and heaters		$ 1,000.00
Electrical wire and conduit		$ 3,000.00
Misc. Electrical supplies		$10,000.00
Pattern making & bronze casting for parts		$10,000.00
Misc. Building Materials (glue, sand paper, rivets, washers, nails, paint, etc.)		$ 5,000.00
Total:		***$38,600.00***

2.1.3. Tools:

Welding equipment (supplies & rental)	$ 2,500.00
Wrenches	$ 500.00
Clamps	$ 400.00
Saw blades & sharpening	$ 600.00
Grinding disks	$ 1,000.00
Sand for Sand Blaster	$ 600.00
Misc. electrical power tools (Drills, grinders, sanders, routers, etc.)	$ 5,000.00
Misc. hand tools (hammers, pliers, chisels, pry-bars, paint brushes, etc.)	$ 2,500.00
Misc. tool supplies (router bits, drill bits, and other accessories)	$ 1,000.00
Bench Tools (table saw, planer, band saw, etc.)	$ 5,000.00
Bench and Table tool repair service	$ 1,000.00
Total:	***$20,100.00***

2.1.4. General Supplies:

Fire Extinguishers/safety equip.	$ 2,500.00
Total:	***$ 2,500.00***
Total Overhead and Materials	***$65,488.27***

B) Wages:

2.2.1. Professional Services:

Raising the Tram on blocks and steel beams or/and lowering it back on to the trucks upon completion of repairs	$ 6,000.00
Roof Canvas to be installed by contractor	$12,000.00
Total:	***$18,000.00***

2.2.2. Contract Crew Wages:

1 Master Metal Worker	$800 X 26 weeks	$20,800.00
1 Master Woodworker	$800 X 26 weeks	$20,800.00
1 Master Electrician	$800 X 26 weeks	$20,800.00
1 Helper	$480 X 26 weeks	$12,480.00
Net Contract Wages: (2.2.2.)		$74,880.00
Gross Contract Wages / Services: (2.2.1. & 2.2.2.)		***$92,880.00***

The Body:

A) Gross Overhead and Materials: (2.1.1. to 2.1.4.)	$ 65,488.27
B) Gross Wages and Professional Services:(2.2.1. to 2.2.2.)	$ 92,880.00
The Body Total:	***$158,368.27***

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Total:	***1) The Mechanical***	***$169,500.00***
	2) The Body	***$158,368.27***
Grand Total		***$327,868.27***

Plus all applicable taxes.

2.3.- Additional comments:

- Professional services will be required for the installation of the roof membrane. There is a synthetic product on the market that some railways and societies currently use for these types of vintage cars. Lexcan LTD. provides this product type: Standard Vinyl Membrane (2.3).

- The Body has already been set up on blocks. However, it will need to be lowered back on to the trucks, once the trucks are serviced and returned from Southern Railway. This is an operation that should be done only by professionals like Nickel Bros. or Pro-Tech Industrial Movers.

- After completion, professional services will again be required for the removal, transportation and installation of car # 1220 to electrified trackage.

SUMMARY AND CAUTIONARY NOTES:

TIME FRAME:

The trucks may take some months to be restored at Southern Railway, as they have to fit them into their current workload schedule and contract shop time. The tires alone have to be ordered at least a month in advance, then fitted and mounted.

A one year time frame for the restoration is quite realistic for this type of project, for booking trades, finding materials, hunting down rare or hard to find items or parts, or having them manufactured and so on. The project may well be finished under this time frame, but it could conceivably take longer.

The estimate proposes a realistic scenario based on current conditions.

COST REDUCTIONS:

Total estimated costs may be reduced or increased significantly depending on the difficulty in obtaining qualified crew, quality of motors and trucks, materials availability or rare items sought after or manufactured, and the time frame envisaged for full completion and operation.

Nevertheless, the restoration costs may be lowered by these 3 factors:

1- In the normal course of restoration, a great many parts will be salvaged and re-used in the re-construction, from metal to wood parts, to brass screws. If the salvage operation is successful, the materials budget may be cut significantly, depending on the quality of reclaimed parts.

2- The truck and motor work by Southern Railway and contract shops may also prove to be less than anticipated. Southern Railway estimates have ranged from $50,000.00 to over $100,000.00, mostly because of the difficulty in assessing the restoration of vintage mechanical and electrical parts. Once in the shop and taken apart, the trucks and motors may prove in better shape than previously estimated.

3- In addition, the estimated working time for trades may be considerably shorter due to a variety of factors, from the extent of restoration desired to a higher quality of structural and cosmetic preservation found. If all goes well, the Body restoration objective could be reached in perhaps less than the anticipated time frame of six months. There may not be an immediate necessity in reconstructing the window shades, for example, thereby saving a substantial amount of labour and expense.

These 3 factors alone could contingently lower the total estimated cost and completion time frame, thereby reducing the total restoration budget.

If the work can be completed in 6 months and barring any unforseen problems, ***it may be possible*** to bring the costs down to:

1) The Mechanical	***$ 84,750.00***
2) The Body	***$ 79,184.13***
Grand Total	***$163,934.13***

Plus all applicable taxes.

Again, the estimate is a speculative quotation for budgetary purposes only.

If you require more information or have more questions, please do not hesitate to contact me at (604) 274-4811 or (604) 313-3589.

Thank you,

Michel Brisebois

Chair, Steveston Interurban Restoration Society (SIRS)

Steveston Tram feasibility study

Cost comparison of options

Option	Location - alignment	length (m)	cost ($)	Track	Overhead power	Rectifier & transformer	Station & car barn	Road crossings	Crossing signals	Tram restoration	Design & conting.
1a	Bayview Street east	1,000	3,272,000	753,000	460,000	210,000	630,000	170,000	62,000	332,000	655,000
1b	Bayview Street east (around bldg)	1,000	3,236,000	755,000	550,000	210,000	630,000	110,000	2,000	332,000	647,000
2	Dyke	1,100	4,400,000	1,514,000	602,000	210,000	630,000	170,000	62,000	332,000	880,000
3a	Moncton Street	1,200	3,825,000	930,000	606,000	210,000	630,000	170,000	182,000	332,000	765,000
3b	Moncton Street (around buildings)	1,190	3,788,000	904,000	662,000	210,000	630,000	110,000	182,000	332,000	758,000
4	Chatham Street to Garry Point Park	930	3,386,000	796,000	460,000	210,000	630,000	160,000	121,000	332,000	677,000
Future extension:											
	Moncton Street	350	1,564,000	385,000	151,000	210,000	33,000	290,000	182,000	-	313,000
	Bayview west	450	1,811,000	480,000	254,000	210,000	33,000	290,000	182,000	-	362,000

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rh;doc738723;version3;jul08/02;jul11/2002;sep5/2002

Steveston Tram study

Option 1a - along Bayview Street (east)

$ 3,272,000

	Quantity	Unit	Unit cost	Amount
Track construction:				
- rail, ties, hardware, ballast (main line)	850	m	480.00	408,000.00
- rail, ties, hardware, ballast (to car barn)	150	m	480.00	72,000.00
- excavation for track and ballast bed	880	m	60.00	52,800.00
- restore 200mm concrete pavement (3m wide)	420	m	240.00	100,800.00
- restore asphalt path	230	m	150.00	34,500.00
- restore asphalt pavement	100	m	160.00	16,000.00
- restore gravel path	100	m	45.00	4,500.00
- restore curb & gutter, catch basins	520	m	80.00	41,600.00
- relocation of streetlights	420	m	55.00	23,100.00
				753,300.00
Overhead power:				
- metal pole & conc. Base + devit arm + wiring	1,000	m	430.00	430,000.00
- extra for bends	1	ea	30,000.00	30,000.00
				460,000.00
Power supply / Rectifier Station:				
- rectifier, installation and housing	1	ea	150,000.00	150,000.00
- hydro connection, transformers (allowance)	1	L/S	60,000.00	60,000.00
				210,000.00
Station, car barn:				
- station	2	ea	24,500.00	49,000.00
- raised platform and ramp	1	ea	8,000.00	8,000.00
- car barn, workshop & office	4,250	SF	130.00	552,500.00
- maintenance pit, drainage etc (allowance)	1	SF	20,000.00	20,000.00
				629,500.00

Road crossings:			
- street crossing - No. 1 Road	1 ea	60,000.00	60,000.00
- street crossing - Railway Ave.	1 ea	60,000.00	60,000.00
- lane crossing	1 ea	20,000.00	20,000.00
- pedestrian crossing (allowance)	3 ea	10,000.00	30,000.00
			170,000.00

Crossing protection:			
- supply/install flashers (east end)	1 ea	60,000.00	60,000.00
- supply/install crossbucks	3 ea	500.00	1,500.00
			61,500.00

Tram restoration:			
- mechanical	1 L/S	169,500.00	169,500.00
- tram body	1 L/S	158,400.00	158,400.00
- transport tram to car barn	1 L/S	4,000.00	4,000.00
			331,900.00

(Note: The Steveston Interurban Restoration Society also provided a reduced budget of $163,934.13 as alternative to a full budget of $327,868.27)

Cost Summary for Option 1a

Track construction		753,000
Overhead power		460,000
Power supply / Rectifier Station		210,000
Station, car barn		630,000
Road crossings		170,000
Crossing protection		62,000
Tram restoration		332,000
sub-total:		2,617,000
Design & management	10 %	262,000
		2,879,000
Contengency allowance	15 %	393,000
		3,272,000

rh;doc738723;jul08/02;jul11/2002;sep4/2002

Steveston Tram study

Option 1b - along Bayview Street (east)

$ 3,236,000

	Quantity	Unit	Unit cost	Amount
Track construction:				
- rail, ties, hardware, ballast (main line)	850	m	480.00	408,000.00
- rail, ties, hardware, ballast (to car barn)	150	m	480.00	72,000.00
- excavation for track and ballast bed	880	m	60.00	52,800.00
- restore 200mm concrete pavement (3m wide)	420	m	240.00	100,800.00
- restore asphalt path	430	m	150.00	64,500.00
- restore asphalt pavement	-	m	160.00	-
- restore gravel path	-	m	45.00	-
- restore curb & gutter, catch basins	420	m	80.00	33,600.00
- relocation of streetlights	420	m	55.00	23,100.00
				754,800.00
Overhead power:				
- metal pole & conc. Base + devit arm + wiring	1,000	m	430.00	430,000.00
- extra for bends	4	ea	30,000.00	120,000.00
				550,000.00
Power supply / Rectifier Station:				
- rectifier, installation and housing	1	ea	150,000.00	150,000.00
- hydro connection, transformers (allowance)	1	L/S	60,000.00	60,000.00
				210,000.00
Station, car barn:				
- station	2	ea	24,500.00	49,000.00
- raised platform and ramp	1	ea	8,000.00	8,000.00
- car barn, workshop & office	4,250	SF	130.00	552,500.00
- maintenance pit, drainage etc (allowance)	1	SF	20,000.00	20,000.00
				629,500.00

Road crossings:				
- street crossing - No. 1 Road	1	ea	60,000.00	60,000.00
- lane crossing	1	ea	20,000.00	20,000.00
- pedestrian crossing (allowance)	3	ea	10,000.00	30,000.00
				110,000.00

Crossing protection:				
- supply/install flashers (east end)	-	ea	60,000.00	-
- supply/install crossbucks	3	ea	500.00	1,500.00
				1,500.00

Tram restoration:				
- mechanical	1	L/S	169,500.00	169,500.00
- tram body	1	L/S	158,400.00	158,400.00
- transport tram to car barn	1	L/S	4,000.00	4,000.00
				331,900.00

(Note: The Steveston Interurban Restoration Society also provided a reduced budget of $163,934.13 as alternative to a full budget of $327,868.27)

Cost Summary for Option 1b

Track construction		755,000
Overhead power		550,000
Power supply / Rectifier Station		210,000
Station, car barn		630,000
Road crossings		110,000
Crossing protection		2,000
Tram restoration		332,000
sub-total:		2,589,000
Design & management	10 %	259,000
		2,848,000
Contengency allowance	15 %	388,000
		3,236,000

rh;doc738723;jul08/02;jul11/2002

Steveston Tram study

Option 2 - along dyke

$ 4,400,000

	Quantity	Unit	Unit cost	Amount
Track construction:				
- rail, ties, hardware, ballast (main line)	970	m	480.00	465,600.00
- rail, ties, hardware, ballast (to car barn)	150	m	480.00	72,000.00
- excavation for track and ballast bed	970	m	60.00	58,200.00
- restore dyke promenade (8" conc. SOG)	400	m	240.00	96,000.00
- restore asphalt path	250	m	150.00	37,500.00
- restore asphalt pavement	220	m	160.00	35,200.00
- restore gravel path	100	m	45.00	4,500.00
- restore curb & gutter, catch basins	220	m	80.00	17,600.00
- relocation of streetlights	400	m	55.00	22,000.00
- sheet piling	26,250	sf	20.00	525,000.00
- modify dyke riprap and geofab underlay	1	L/S	54,300.00	54,300.00
- backfill behind sheet piling and associated works	1	L/S	126,400.00	126,400.00
				1,514,300.00
Overhead power:				
- metal pole & conc. Base + devit arm + wiring	1,120	m	430.00	481,600.00
- extra for bends	4	ea	30,000.00	120,000.00
				601,600.00
Power supply / Rectifier Station:				
- rectifier, installation and housing	1	ea	150,000.00	150,000.00
- hydro connection, transformers (allowance)	1	L/S	60,000.00	60,000.00
				210,000.00

Station, car barn:				
- station	2	ea	24,500.00	49,000.00
- raised platform and ramp	1	ea	8,000.00	8,000.00
- car barn, workshop & office	4,250	SF	130.00	552,500.00
- maintenance pit, drainage etc (allowance)	1	SF	20,000.00	20,000.00
				629,500.00

Road crossings:				
- street crossing - No. 1 Road	1	ea	60,000.00	60,000.00
- street crossing - Railway Ave.	1	ea	60,000.00	60,000.00
- lane crossing	1	ea	20,000.00	20,000.00
- pedestrian crossing (allowance)	3	ea	10,000.00	30,000.00
				170,000.00

Crossing protection:				
- supply/install flashers (east end)	1	ea	60,000.00	60,000.00
- supply/install crossbucks	3	ea	500.00	1,500.00
				61,500.00

Tram restoration:				
- mechanical	1	L/S	169,500.00	169,500.00
- tram body	1	L/S	158,400.00	158,400.00
- transport tram to car barn	1	L/S	4,000.00	4,000.00
				331,900.00

(Note: The Steveston Interurban Restoration Society also provided a reduced budget of $163,934.13 as alternative to a full budget of $327,868.27)

measurements:

- dyke	400	m
- around pond (asphalt path)	250	m
- townhouse (fire lane)	100	m
- townhouse (pavement), Westwater Drive	110	m
- Railway Ave (pavement)	110	m
	970	m

Cost Summary for Option 2

Track construction		1,514,000
Overhead power		602,000
Power supply / Rectifier Station		210,000
Station, car barn		630,000
Road crossings		170,000
Crossing protection		62,000
Tram restoration		332,000
sub-total:		3,520,000
Design & management	10 %	352,000
		3,872,000
Contengency allowance	15 %	528,000
		4,400,000

rh;doc738723;version3;july15/2002

Steveston Tram study

Option 3a - along Moncton Street (north side)

$ 3,825,000

	Quantity	Unit	Unit cost	Amount
Track construction:				
- rail, ties, hardware, ballast (main line)	1,050	m	480.00	504,000.00
- rail, ties, hardware, ballast (to car barn)	150	m	480.00	72,000.00
- excavation for track and ballast bed	880	m	60.00	52,800.00
- restore 200mm concrete pavement (3m wide)	420	m	240.00	100,800.00
- restore asphalt path	120	m	150.00	18,000.00
- restore asphalt pavement	410	m	160.00	65,600.00
- restore gravel path	100	m	45.00	4,500.00
- restore curb & gutter, catch basins	830	m	80.00	66,400.00
- relocation of streetlights	830	m	55.00	45,650.00
				929,750.00
Overhead power:				
- metal pole & conc. Base + devit arm + wiring	1,200	m	430.00	516,000.00
- extra for bends	3	ea	30,000.00	90,000.00
				606,000.00
Power supply / Rectifier Station:				
- rectifier, installation and housing	1	ea	150,000.00	150,000.00
- hydro connection, transformers (allowance)	1	L/S	60,000.00	60,000.00
				210,000.00
Station, car barn:				
- station	2	ea	24,500.00	49,000.00
- raised platform and ramp	1	ea	8,000.00	8,000.00
- car barn, workshop & office	4,250	SF	130.00	552,500.00
- maintenance pit, drainage etc (allowance)	1	SF	20,000.00	20,000.00
				629,500.00

Road crossings:			
- street crossing - Moncton	1 ea	60,000.00	60,000.00
- street crossing - Railway Ave.	1 ea	60,000.00	60,000.00
- lane crossing	1 ea	20,000.00	20,000.00
- pedestrian crossing (allowance)	3 ea	10,000.00	30,000.00
			170,000.00

Crossing protection:			
- supply/install flashers	3 ea	60,000.00	180,000.00
- supply/install crossbucks	3 ea	500.00	1,500.00
			181,500.00

Tram restoration:			
- mechanical	1 L/S	169,500.00	169,500.00
- tram body	1 L/S	158,400.00	158,400.00
- transport tram to car barn	1 L/S	4,000.00	4,000.00
			331,900.00

(Note: The Steveston Interurban Restoration Society also provided a reduced budget of $163,934.13 as alternative to a full budget of $327,868.27)

Cost Summary for Option 3a

Track construction		930,000
Overhead power		606,000
Power supply / Rectifier Station		210,000
Station, car barn		630,000
Road crossings		170,000
Crossing protection		182,000
Tram restoration		332,000
sub-total:		3,060,000
Design & management	10 %	306,000
		3,366,000
Contengency allowance	15 %	459,000
		3,825,000

rh;doc738723;jul08/02;jul11/2002

Steveston Tram study

Option 3b - along Moncton Street (north side)

$ 3,788,000

	Quantity	Unit	Unit cost	Amount
Track construction:				
- rail, ties, hardware, ballast (main line)	1,040	m	480.00	499,200.00
- rail, ties, hardware, ballast (to car barn)	150	m	480.00	72,000.00
- excavation for track and ballast bed	880	m	60.00	52,800.00
- restore 200mm concrete pavement (3m wide)	420	m	240.00	100,800.00
- restore asphalt path	420	m	150.00	63,000.00
- restore asphalt pavement	200	m	160.00	32,000.00
- restore gravel path	-	m	45.00	-
- restore curb & gutter, catch basins	620	m	80.00	49,600.00
- relocation of streetlights	620	m	55.00	34,100.00
				903,500.00
Overhead power:				
- metal pole & conc. Base + devit arm + wiring	1,190	m	430.00	511,700.00
- extra for bends	5	ea	30,000.00	150,000.00
				661,700.00
Power supply / Rectifier Station:				
- rectifier, installation and housing	1	ea	150,000.00	150,000.00
- hydro connection, transformers (allowance)	1	L/S	60,000.00	60,000.00
				210,000.00
Station, car barn:				
- station	2	ea	24,500.00	49,000.00
- raised platform and ramp	1	ea	8,000.00	8,000.00
- car barn, workshop & office	4,250	SF	130.00	552,500.00
- maintenance pit, drainage etc (allowance)	1	SF	20,000.00	20,000.00
				629,500.00

Road crossings:				
- street crossing - No. 1 Road	1	ea	60,000.00	60,000.00
- street crossing - Railway Ave.	-	ea	60,000.00	-
- lane crossing	1	ea	20,000.00	20,000.00
- pedestrian crossing (allowance)	3	ea	10,000.00	30,000.00
				110,000.00

Crossing protection:				
- supply/install flashers	3	ea	60,000.00	180,000.00
- supply/install crossbucks	3	ea	500.00	1,500.00
				181,500.00

Tram restoration:				
- mechanical	1	L/S	169,500.00	169,500.00
- tram body	1	L/S	158,400.00	158,400.00
- transport tram to car barn	1	L/S	4,000.00	4,000.00
				331,900.00

(Note: The Steveston Interurban Restoration Society also provided a reduced budget of $163,934.13 as alternative to a full budget of $327,868.27)

Cost Summary for Option 3b

Track construction		904,000
Overhead power		662,000
Power supply / Rectifier Station		210,000
Station, car barn		630,000
Road crossings		110,000
Crossing protection		182,000
Tram restoration		332,000
sub-total:		3,030,000
Design & management	10 %	303,000
		3,333,000
Contengency allowance	15 %	455,000
		3,788,000

rh;doc738723;jul08/02;jul11/2002

Steveston Tram study

Option 3b - along Moncton Street (north side)

$ 3,788,000

	Quantity	Unit	Unit cost	Amount
Track construction:				
- rail, ties, hardware, ballast (main line)	1,040	m	480.00	499,200.00
- rail, ties, hardware, ballast (to car barn)	150	m	480.00	72,000.00
- excavation for track and ballast bed	880	m	60.00	52,800.00
- restore 200mm concrete pavement (3m wide)	420	m	240.00	100,800.00
- restore asphalt path	420	m	150.00	63,000.00
- restore asphalt pavement	200	m	160.00	32,000.00
- restore gravel path	-	m	45.00	-
- restore curb & gutter, catch basins	620	m	80.00	49,600.00
- relocation of streetlights	620	m	55.00	34,100.00
				903,500.00
Overhead power:				
- metal pole & conc. Base + devit arm + wiring	1,190	m	430.00	511,700.00
- extra for bends	5	ea	30,000.00	150,000.00
				661,700.00
Power supply / Rectifier Station:				
- rectifier, installation and housing	1	ea	150,000.00	150,000.00
- hydro connection, transformers (allowance)	1	L/S	60,000.00	60,000.00
				210,000.00
Station, car barn:				
- station	2	ea	24,500.00	49,000.00
- raised platform and ramp	1	ea	8,000.00	8,000.00
- car barn, workshop & office	4,250	SF	130.00	552,500.00
- maintenance pit, drainage etc (allowance)	1	SF	20,000.00	20,000.00
				629,500.00

Road crossings:				
- street crossing - No. 1 Road	1	ea	60,000.00	60,000.00
- street crossing - Railway Ave.	-	ea	60,000.00	-
- lane crossing	1	ea	20,000.00	20,000.00
- pedestrian crossing (allowance)	3	ea	10,000.00	30,000.00
				110,000.00

Crossing protection:				
- supply/install flashers	3	ea	60,000.00	180,000.00
- supply/install crossbucks	3	ea	500.00	1,500.00
				181,500.00

Tram restoration:				
- mechanical	1	L/S	169,500.00	169,500.00
- tram body	1	L/S	158,400.00	158,400.00
- transport tram to car barn	1	L/S	4,000.00	4,000.00
				331,900.00

(Note: The Steveston Interurban Restoration Society also provided a reduced budget of $163,934.13 as alternative to a full budget of $327,868.27)

Cost Summary for Option 3b

Track construction		904,000
Overhead power		662,000
Power supply / Rectifier Station		210,000
Station, car barn		630,000
Road crossings		110,000
Crossing protection		182,000
Tram restoration		332,000
sub-total:		3,030,000
Design & management	10 %	303,000
		3,333,000
Contengency allowance	15 %	455,000
		3,788,000

rh;doc738723;jul08/02;jul11/2002

Steveston Tram study

Option 4 - along Chatham Street (Garry Point Park)

$ 3,386,000

	Quantity	Unit	Unit cost	Amount
Track construction:				
- rail, ties, hardware, ballast (main line)	680	m	480.00	326,400.00
- rail, ties, hardware, ballast (to car barn)	250	m	480.00	120,000.00
- excavation for track and ballast bed	880	m	60.00	52,800.00
- restore 200mm concrete pavement (3m wide)	680	m	240.00	163,200.00
- restore asphalt path	250	m	150.00	37,500.00
- restore asphalt pavement	-	m	160.00	-
- restore gravel path	100	m	45.00	4,500.00
- restore curb & gutter, catch basins	680	m	80.00	54,400.00
- relocation of streetlights	680	m	55.00	37,400.00
				796,200.00
Overhead power:				
- metal pole & conc. Base + devit arm + wiring	930	m	430.00	399,900.00
- extra for bends	2	ea	30,000.00	60,000.00
				459,900.00
Power supply / Rectifier Station:				
- rectifier, installation and housing	1	ea	150,000.00	150,000.00
- hydro connection, transformers (allowance)	1	L/S	60,000.00	60,000.00
				210,000.00
Station, car barn:				
- station	2	ea	24,500.00	49,000.00
- raised platform and ramp	1	ea	8,000.00	8,000.00
- car barn, workshop & office	4,250	SF	130.00	552,500.00
- maintenance pit, drainage etc (allowance)	1	SF	20,000.00	20,000.00
				629,500.00

Road crossings:				
- street crossing - Chatham	1	ea	60,000.00	60,000.00
- street crossing - 7th Ave.	1	ea	60,000.00	60,000.00
- lane crossing	1	ea	20,000.00	20,000.00
- pedestrian crossing (allowance)	2	ea	10,000.00	20,000.00
				160,000.00

Crossing protection:				
- supply/install flashers	2	ea	60,000.00	120,000.00
- supply/install crossbucks	2	ea	500.00	1,000.00
				121,000.00

Tram restoration:				
- mechanical	1	L/S	169,500.00	169,500.00
- tram body	1	L/S	158,400.00	158,400.00
- transport tram to car barn	1	L/S	4,000.00	4,000.00
				331,900.00

(Note: The Steveston Interurban Restoration Society also provided a reduced budget of $163,934.13 as alternative to a full budget of $327,868.27)

Cost Summary for Option 4

Track construction		796,000
Overhead power		460,000
Power supply / Rectifier Station		210,000
Station, car barn		630,000
Road crossings		160,000
Crossing protection		121,000
Tram restoration		332,000
sub-total:		2,709,000
Design & management	10 %	271,000
		2,980,000
Contengency allowance	15 %	406,000
		3,386,000

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Steveston Tram study

Future extension along Moncton Street

from No. 1 Road to Third Avenue: 350 m **$ 1,564,000**

	Quantity	Unit	Unit cost	Amount
Track construction:				
- rail, ties, hardware, ballast (main line)	350	m	480.00	168,000.00
- excavation for track and ballast bed	880	m	60.00	52,800.00
- restore 200mm concrete pavement (3m wide)	350	m	240.00	84,000.00
- restore asphalt pavement	350	m	70.00	24,500.00
- restore curb & gutter, catch basins	350	m	80.00	28,000.00
- relocation of streetlights	350	m	80.00	28,000.00
				385,300.00
Overhead power:				
- metal pole & conc. Base + devit arm + wiring	350	m	430.00	150,500.00
- extra for bends	-	ea	30,000.00	-
				150,500.00
Power supply / Rectifier Station:				
- rectifier/booster, installation and housing	1	ea	150,000.00	150,000.00
- hydro connection, transformers (allowance)	1	L/S	60,000.00	60,000.00
				210,000.00
Station:				
- station	1	ea	24,500.00	24,500.00
- raised platform and ramp	1	ea	8,000.00	8,000.00
				32,500.00

Road crossings:			
- street crossing - No. 1 Road, 1st Ave, 2nd Ave	3 ea	60,000.00	180,000.00
- street crossing - 3rd Ave.	1 ea	60,000.00	60,000.00
- lane crossing	1 ea	20,000.00	20,000.00
- pedestrian crossing (allowance)	3 ea	10,000.00	30,000.00
			290,000.00

Crossing protection:			
- supply/install flashers	3 ea	60,000.00	180,000.00
- supply/install crossbucks	3 ea	500.00	1,500.00
			181,500.00

Cost Summary for Future extension along Moncton Street

Track construction		385,000
Overhead power		151,000
Power supply / Rectifier Station		210,000
Station, car barn		33,000
Road crossings		290,000
Crossing protection		182,000
sub-total:		1,251,000
Design & management	10 %	125,000
		1,376,000
Contengency allowance	15 %	188,000
		1,564,000

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Steveston Tram study

Future extension along Bayview Street

from No. 1 Road to Third Avenue: 450 m **$ 1,811,000**

	Quantity	Unit	Unit cost	Amount
Track construction:				
- rail, ties, hardware, ballast (main line)	450	m	480.00	216,000.00
- excavation for track and ballast bed	880	m	60.00	52,800.00
- restore 200mm concrete pavement (3m wide)	450	m	240.00	108,000.00
- restore asphalt pavement	450	m	70.00	31,500.00
- restore curb & gutter, catch basins	450	m	80.00	36,000.00
- relocation of streetlights	450	m	80.00	36,000.00
				480,300.00
Overhead power:				
- metal pole & conc. Base + devit arm + wiring	450	m	430.00	193,500.00
- extra for bends	2	ea	30,000.00	60,000.00
				253,500.00
Power supply / Rectifier Station:				
- rectifier/booster, installation and housing	1	ea	150,000.00	150,000.00
- hydro connection, transformers (allowance)	1	L/S	60,000.00	60,000.00
				210,000.00
Station:				
- station	1	ea	24,500.00	24,500.00
- raised platform and ramp	1	ea	8,000.00	8,000.00
				32,500.00

Road crossings:			
- street crossing - No. 1 Road, 1st Ave, 2nd Ave	3 ea	60,000.00	180,000.00
- street crossing - 3rd Ave.	1 ea	60,000.00	60,000.00
- lane crossing	1 ea	20,000.00	20,000.00
- pedestrian crossing (allowance)	3 ea	10,000.00	30,000.00
			290,000.00

Crossing protection:			
- supply/install flashers	3 ea	60,000.00	180,000.00
- supply/install crossbucks	3 ea	500.00	1,500.00
			181,500.00

Cost Summary for Future extension along Bayview Street

Track construction		480,000
Overhead power		254,000
Power supply / Rectifier Station		210,000
Station, car barn		33,000
Road crossings		290,000
Crossing protection		182,000
sub-total:		1,449,000
Design & management	10 %	145,000
		1,594,000
Contengency allowance	15 %	217,000
		1,811,000

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