NEW FRASER RIVER CROSSING

Traffic and Revenue Forecasts

Executive Summary Report

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Prepared for:

Greater Vancouver Transportation Authority

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DISCLAIMER NOTICE

This report has been produced for The Greater Vancouver Transportation Authority in support of planning for the New Fraser River Crossing.

The projections of traffic and revenue contained within this document represent Steer Davies Gleave's best estimates. While they are not precise forecasts, they do represent, in our view, a reasonable expectation for the future, based on the most credible information available as of the date of this report.

However, the estimates contained within this document rely on numerous assumptions and judgements and are influenced by external circumstances that can change quickly and can affect income.

In addition, it has been necessary to base much of this analysis on data collected by third parties. This has been independently checked whenever possible. However, Steer Davies Gleave does not guarantee the accuracy of this third party data. In particular, the forecasts rely on future land use changes (known as the Growth Management Strategy) that have not directly been reviewed by Steer Davies Gleave.

Contents

1. EXECUTIVE SUMMARY

Background

1.1 Steer Davies Gleave were retained in May 2003 by the Greater Vancouver Transport Authority (GVTA) and the British Columbia Ministry of Transportation (MoT) to undertake a traffic and revenue study for the Fraser River Crossing.

1.2 This report describes the work undertaken in the preparation of Final Forecasts for the New Fraser River Crossing (the FRC). The objectives of this study were:

- To derive forecasts that can be used to develop the FRC project.
- To look at different combinations of schemes and toll levels.
- To undertake sensitivity analysis.
- To produce revenue forecasts between 2003 and 2031.

1.3 For this project, Steer Davies Gleave have three local British Columbian partners:

- G.D Hamilton Associates Consulting Ltd: Transport Planners.
- TransTech: Data Collection Experts.
- TSi Consultants: The Vancouver Strategic Model.

The New Fraser River Crossing

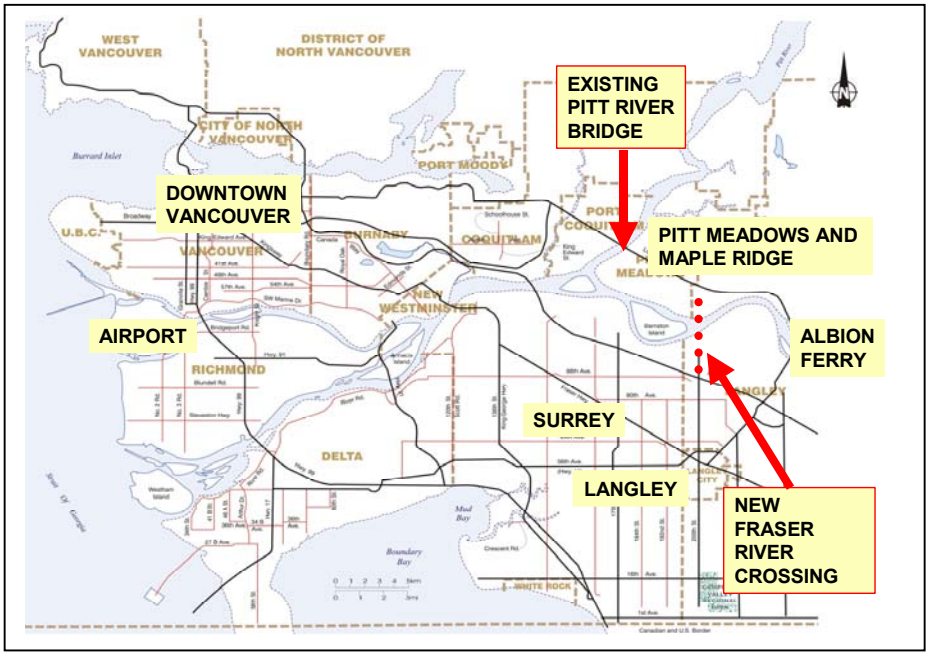
1.4 The FRC is a new 6-lane crossing of the Fraser River (and associated connector roads) between Langley (Highway 1) and Maple Ridge (Highway 7). Currently, the nearest bridge crossings of the Fraser River are about 12km to the west (Port Mann Bridge) and about 25km to the east (Mission Bridge). The Albion Ferry currently operates just to the west of the proposed new crossing. This will be withdrawn from service when the new bridge is built. The scheme location is shown in Figure 1.

1.5 From a traffic and revenue forecasting perspective, the new bridge has two main effects:

- Those currently travelling between Pitt Meadows/Maple Ridge and Surrey/Langley will have a significantly faster new alternative of travelling via the toll bridge; and
- The increase in "travel catchment" as a consequence of the new bridge will results in a change in where people live and work, where they shop and whom they visit.

1.6 There are also a number of secondary effects as a consequence of the construction of the bridge including an impact of routing from Pitt Meadows/Maple Ridge to Burnaby/Vancouver and from Coquitlam/Port Coquitlam to Langley/Surrey.

FIGURE 1: LOCATION OF THE NEW FRASER RIVER CROSSING (FRC)

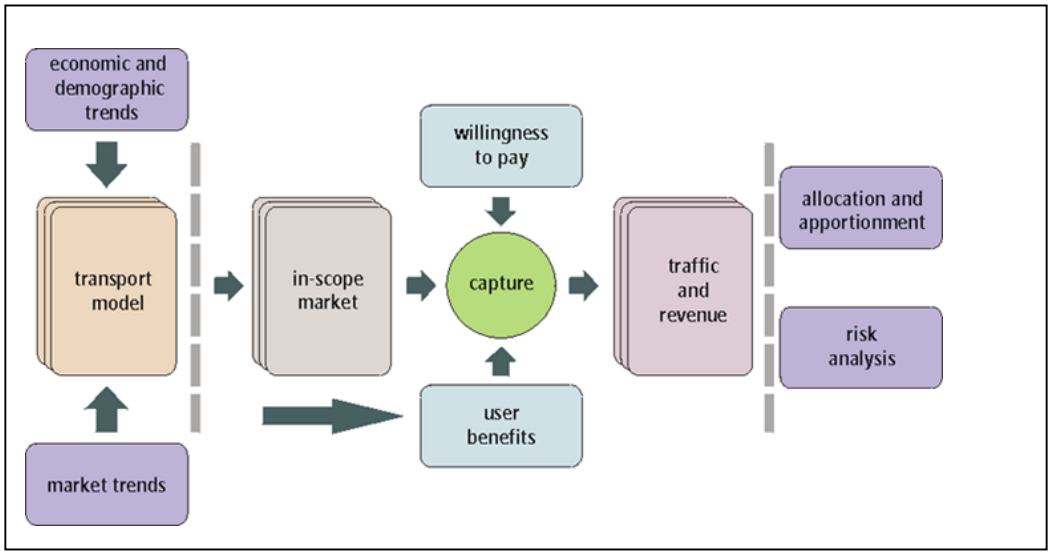


Approach to Forecasting

1.7 Steer Davies Gleave prepared the demand and revenue forecasts using an approach that examines the key features that determine traffic capture:

- The traffic demand that *could* use the new toll road; **In-Scope Market**.
- The 'in-scope' traffic that *will* use the new toll road; **Traffic Capture**.
- Forecasting future changes as external conditions change over time; **Forecasting**.

FIGURE 2: STEER DAVIES GLEAVE APPROACH TO TOLL ROAD FORECASTING



1.8 The existing traffic levels have been estimated using the GVTA Strategic Transport Model. The In Scope Market (i.e. base year matrices) derived from the STM have been reviewed in detail using extra data collected in June and October 2003 as part of this project at 28 locations in the vicinity of Highway 7 and Highway 1 and combined with existing 2003 count data from another 21 locations.

1.9 This database was then further supplemented by historic count data (1999 to 2002) at a substantial number of other locations across the wider Lower Mainland network. A further 18 count locations were surveyed in the autumn of 2003.

1.10 The Advantages of the new schemes (in terms of time savings) have been reviewed using extensive observations of existing and extra travel time surveys undertaken on several routes in the study area. Travel time measurements were conducted between April and June 2003, in order to capture representative spring traffic conditions. Overall, 16 routes were surveyed. Data was collected for each route during three periods (AM peak, Midday and PM peak), with generally a minimum of six runs per direction per period. Two further journey time routes were surveyed in the autumn of 2003.

1.11 A Toll Model has been built that predicts the level of traffic that will choose to use the new toll roads by assessing willingness to pay or Traffic Capture. In June and July 2003 a research programme was undertaken into drivers' behaviour to derive appropriate Values of Time and other model parameters for the model calibration and forecasting exercise.

1.12 Over 600 Stated Preference (SP) interviews were undertaken with car drivers and over 150 interviews were conducted with road freight operators. Based on this research, an average value of time (VOT) of $12.2 per hour for car drivers was derived. VOT were also derived for cars by trip purpose (Commuter: $10.4/hour, Business: $18.4/hour and Other: $12.50/hour).

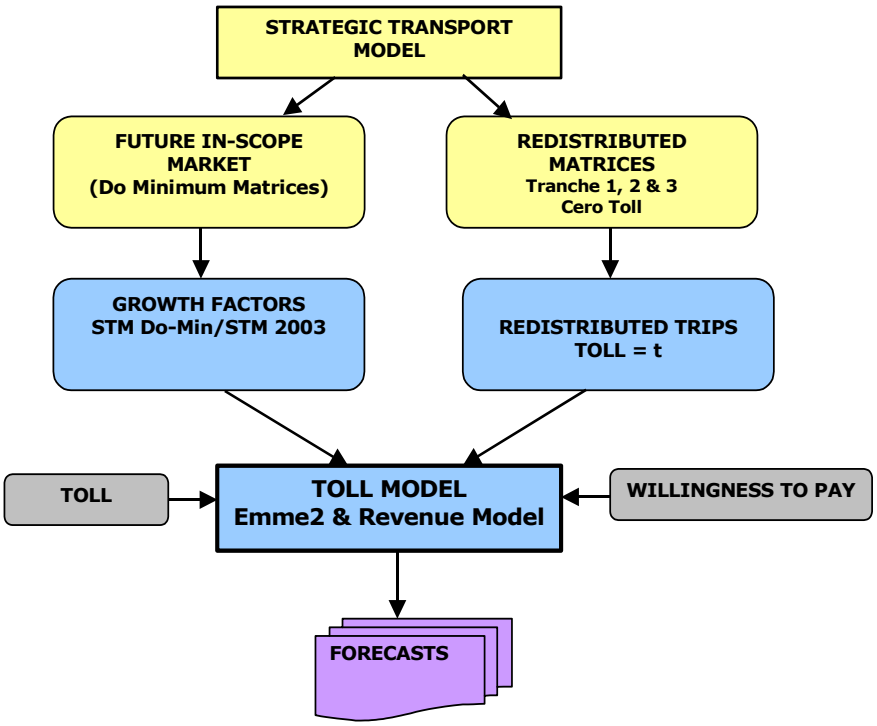
1.13 VOT have also been derived for road freight vehicles. The average value of time was $34.97 per hour. However, the traffic models differentiate between light and heavy trucks. Consequently, values of time were derived for these two vehicle categories at $28.47 and $40.65, respectively.

Linkage between the Strategic Transport Model (STM) and the Toll Model

1.14 The ultimate traffic forecasts are obtained by applying the TM in combination with a Revenue Model (spreadsheet based). The Future In Scope market is derived from the STM. It provides growth rates/factors that are applied to the TM 2003 Base Year matrices to build the future year matrices for the assignment years (2011, 2021 and 2031).

1.15 The STM is also used as part of the process to forecast changes in trip demand as a consequence of improved accessibility. This is of particular importance for the FRC project. Figure 3 (overleaf) shows the linkages between these models.

FIGURE 3: GENERAL LINKAGES BETWEEN THE MODELS



1.16 The STM is a four-stage model that that predicts the number of auto, truck, transit, walk and bike trips. The modelling stages are:

- **Trip Generation**: Estimates the number of trips that are produced and attracted to each traffic zone by purpose (e.g. work, post-secondary, grade school, other).
- **Trip Distribution**: Distributes these trips between zones as a function of travel cost and results in person trip matrices (for all modes) by trip purpose.
- **Mode Split**: Divides the trip purpose matrices by mode by estimating the probability of using a mode between zones, based on the differences in travel costs.
- **Assignment**: Loads the modal matrices onto the respective road and public transport networks. The results include vehicle and transit network volumes and travel times.

1.17 The STM models have been calibrated using the latest travel survey data including the 2001 Census and validated against recent traffic count and journey time surveys.

1.18 The Toll Model (TM) takes as inputs the networks and trip matrices output from the STM. However, prior to their use a number of changes were made:

- The vehicle matrices were sub divided into eight car driver behavioural segments and four truck segments and each segment attributed with its own unique VOT.
- The networks were enhanced with some additional network details, particularly on Highway 1, to better reflect very localised local route choice.
- The trip matrices were calibrated against the observed trip patterns at the Pitt River and Port Mann Bridges.

1.19 Following these changes, the model was revalidated against observed journey times and flows. Figures 4 and 5 show (scatter graphs) the flow validation for all count sites (for the AM peak and midday, respectively) and confirms the good fit between modelled and observed data. The journey time validation (scatter graphs) is summarised in Figures 6 and 7. These figures indicate that the journey time validation is good.

FIGURE 4: AM PEAK MODEL FLOW VALIDATION

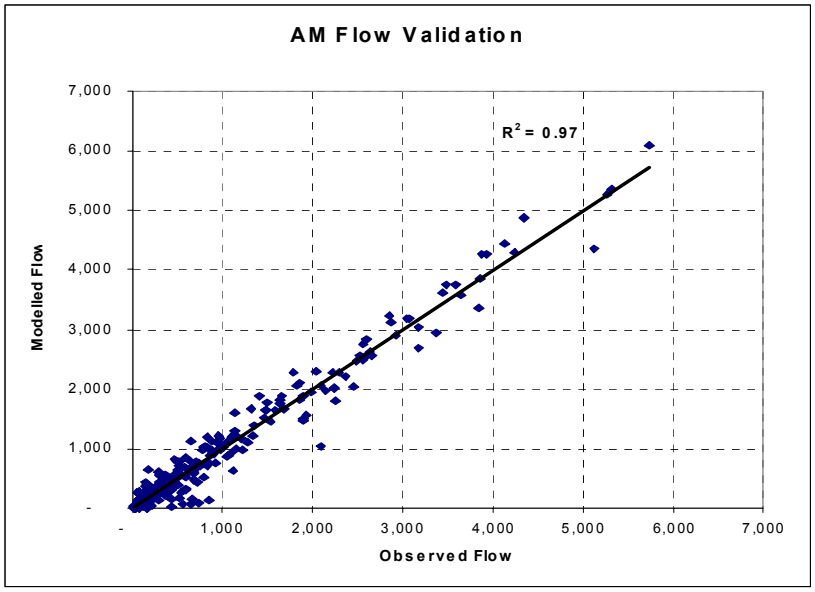


FIGURE 5: MIDDAY MODEL FLOW VALIDATION

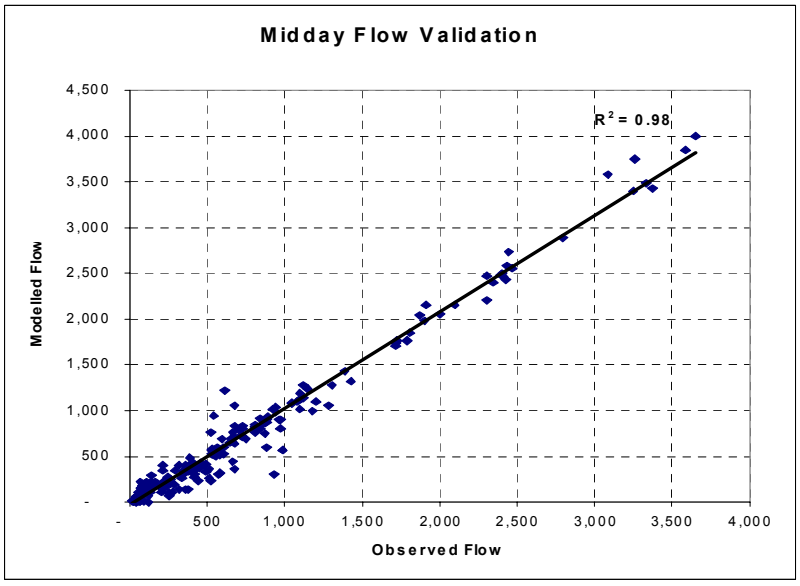


FIGURE 6: AM PEAK MODEL JOURNEY TIME VALIDATION

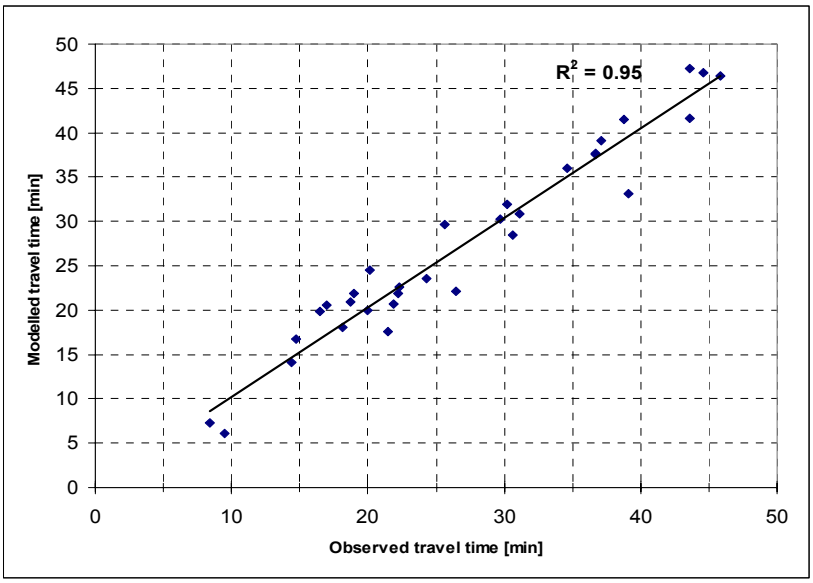
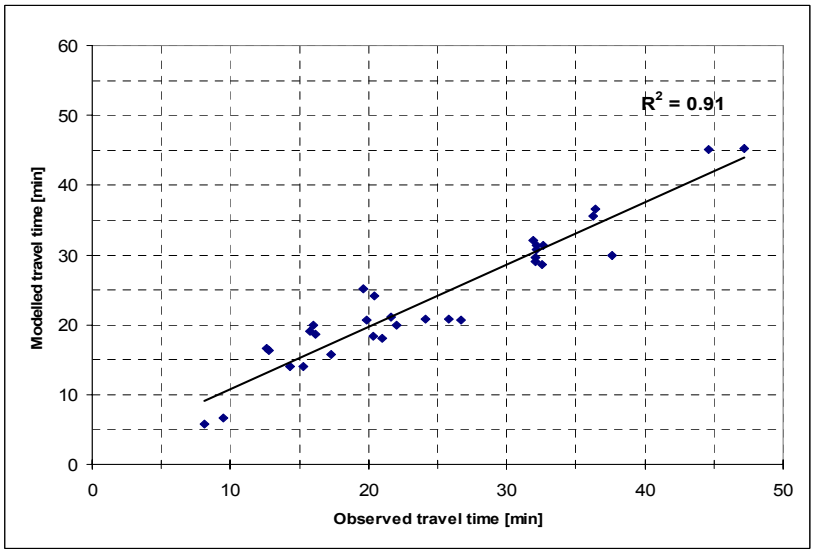


FIGURE 7: MIDDAY PEAK MODEL JOURNEY TIME VALIDATION



1.20 From this analysis, we can be confident that:

- The in-scope matrices are reliable in terms of trip patterns.
- The in-scope traffic is of the correct magnitude.
- The time savings benefit derived from the new bridge are being accurately modelled.

1.21 We are therefore confident that the Toll Model provides a robust base from which to derive demand forecasts for the FRC project.

Modelling Redistribution

1.22 The introduction of a significant new transport link not only leads to a changed pattern of route choice for trips between their origins and destinations, but also a change in the origins and destinations themselves. This is the situation with the construction of the FRC.

1.23 Figures 8 and 9 show AM peak drive time isochrones (or catchments) from Maple Ridge with and without the FRC scheme and highlight the significant change in journey times. For example, Pitt Meadows drivers will save 30 minutes to Surrey and 40 minutes to Langley City. As importantly, Langley and most of Surrey will be within a half hour drive of residents of Pitt Meadows and Maple Ridge.

FIGURE 8: NO FRC: AM PEAK TRAVEL TIMES FROM PITT MEADOWS/MAPLE RIDGE

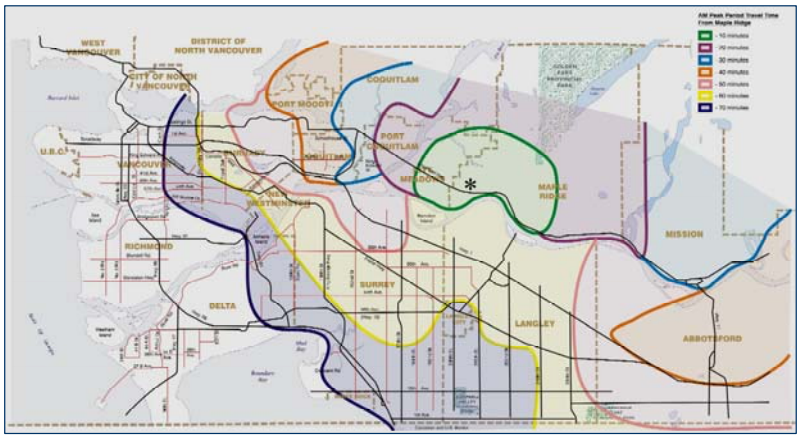
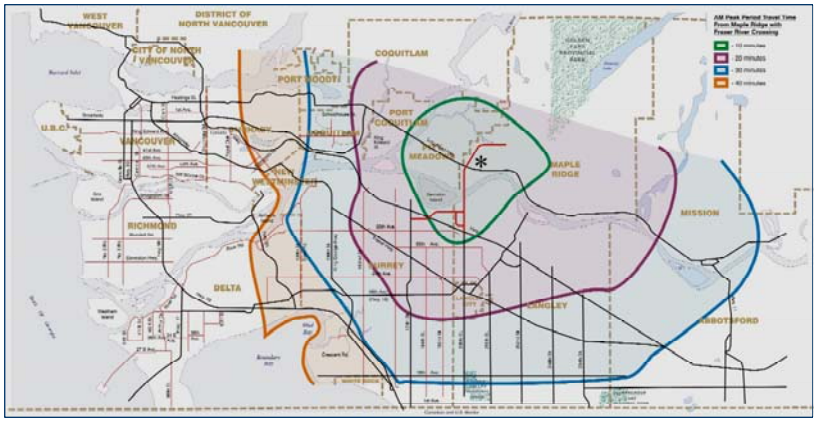


FIGURE 9: WITH FRC: AM PEAK TRAVEL TIMES FROM PITT MEADOWS/MAPLE RIDGE



1.24 Dramatic reductions in travel time of the scale predicted will inevitably lead to a change in people's decisions about where trips are to be made to. Transport planners describe this process as ***trip redistribution***. The trip redistribution forecasts have been derived by analysing output from the Strategic Model. While this redistribution has a large impact on the traffic on the FRC, it is relatively small when considered within the totality of trip making in the region.

Traffic and Revenue Forecasts

1.25 Traffic forecasts have been prepared for the period 2003 to 2031. The forecasts have been prepared for 2003 to 2031 to allow any opening date between those two years to be considered. Specific "ramp up" factors have also been provided for application to the forecasts for those years immediately after the opening of the scheme.

1.26 The central case can be considered the most probable or likely outcome in the future and provides the "starting point" for any analysis of risk and uncertainty. Therefore, a series of reasonable or likely assumptions were defined for a range of uncertainties, including:

- Macro economic assumptions and level of traffic growth in the study area.
- The behavioural parameters and how they might change over time.
- The future transport system in Vancouver.
- Ramp up of demand once the facility opens and Annualisation factors.

Macroeconomic Assumptions and Traffic Growth

1.27 The key **macro economic** assumption used is real growth in GDP per head. From 2003 to 2007, forecasts are available from the Government of British Columbia (and range between 1.7% and 1.9% per year). Beyond 2007 we have adopted forecasts prepared by the Conference Board of Canada suggesting a long term growth rate for British Columbia of 1.5% per year.

1.28 The **future traffic growth** in the study area will be influenced by the change in land use, especially houses and employment and the change in the level of car ownership.

1.29 In June 2003, Urban Futures Inc. prepared a report that identified four alternative future land use options for the Lower Mainland, although all are constrained to the same overall population total for 2031 of 3.4 million and to the same overall employment for 2031 of 1.76m. One of these was a review and update of the existing regional growth strategy (Option 1: GMS), while the others were developed as a range of alternative land use policy scenarios that took different policy directions to the GMS. It was agreed that the central scenario would be Option 1: GMS.

1.30 The GMS assumptions were input into the STM to derive peak and midday hour trip matrices. These reflected a change in population and employment, but not an increase in levels of car ownership. It was therefore decided to develop a car ownership model. This model was developed by "fitting" a traditional car ownership model function to observed car ownership per head and GDP per head data for British Columbia. The model also makes an allowance for the proportion of adults in the total population.

1.31 While the relationship between GDP and car ownership changes slightly each year (as car ownership approaches saturation), for a long-term 1.5% real GDP/head growth (as defined for the central case) the model predicts about 1% growth in car ownership.

Behavioural Parameters

1.32 The values of time derived from the Stated Preference surveys are assumed to increase in real terms over time as follows:

- Cars: GDP per head growth * 0.5.
- Medium and Heavy Trucks: Real wage growth (average weekly earnings).

1.33 As long-term forecasts of wage growth are not readily available, we have derived a historic relationship between GDP per head growth and average weekly earnings:

- Real Wage Growth = Real GDP/Capita Growth * 0.25.

1.34 Therefore, for trucks, the real growth in behavioural parameters is one quarter of the rate of real GDP/Capita growth.

The Future Transport System in Vancouver

1.35 The central case includes a definition of the changes to the transport network by 2011, 2021 and 2031. These changes relate to both major regional and local municipal highway improvements and major transit proposals. While the full list is extensive, the more major regional schemes include:

- Widening Highway 15 from the border to the TCH (Highway 1).
- Widening Highway 10 from 176th to 120th.
- Abernethy Way widening.
- Pitt River bridge widening to 3 and 3 and conversion of the Mary Hill / Lougheed signal controlled intersection to a free flow interchange.
- Lougheed Highway widening (Pitt River Bridge to 224th).
- 200th Street widening (68th to 88th).

1.36 While some are complimentary to the FRC project, a number of schemes compete directly with the FRC, especially the Pitt River Bridge widening and the Mary Hill / Lougheed Highway intersection improvements.

Ramp Up of Diverted Traffic and Build Up of Redistributed Traffic

1.37 When a road opens, it may take some time for drivers to adjust their behaviour in the light of the new or changed route choices. This is called ramp up. As the forecasts from the model represent an end state situation, the early months of the concession need to be adjusted for this effect. Based on observed data from a range of toll roads, the following ramp up profile has been derived:

- Ramp up of current (diverted) traffic: year 1 = 85%; year 2 = 90%, year 3 = 100%.
- Build up of redistributed traffic: year 1 = 40%, year 2 = 76%; year 3 = 96%; year 4 = 98%; year 5 = 99%; year 6 = 100%.

Annualisation Factors

1.38 The Toll Forecasting Model produces traffic flows for two periods, AM peak hour: (07:30 to 08:30) and Midday period (an average hour of flow between 10:00 and 14:00).

1.39 In order to calculate the annual traffic, it is necessary to annualize the results to represent a whole year. This was done using historic 24-hour automatic count data from a number of different sites in the area.

Results

1.40 The initial tests for the FRC looked at demand and revenue at alternative toll levels (car toll between 2$ to 4$). The results are shown in Table 1. For all the tests the ratios for trucks compared to cars are:

- Light Truck (LT): 1.5 * car toll.
- Heavy Truck (HT): 2* car toll.

1.41 A toll of $2.5 for FRC generates $38.7 million per year in 2003 and $91.6 million in 2031. For toll rates between $2 and $2.75, the revenue estimates are very similar, with a variation of 2% between the highest and the lowest revenue in 2031.

TABLE 1 FRC ANNUAL REVENUE AT VARIOUS TOLL RATES

Year	Annual Revenue (m $CAN*) for different Toll Rates					
	2$	2.5$	2.75$	3$	3.25$	4$
2003	38.6	38.7	38.4	35.9	35.1	28.5
2011	52.1	52.5	52.0	50.3	49.2	41.4
2021	73.6	74.6	74.4	74.1	72.5	62.5
2031	89.8	91.6	91.5	92.8	90.9	78.8

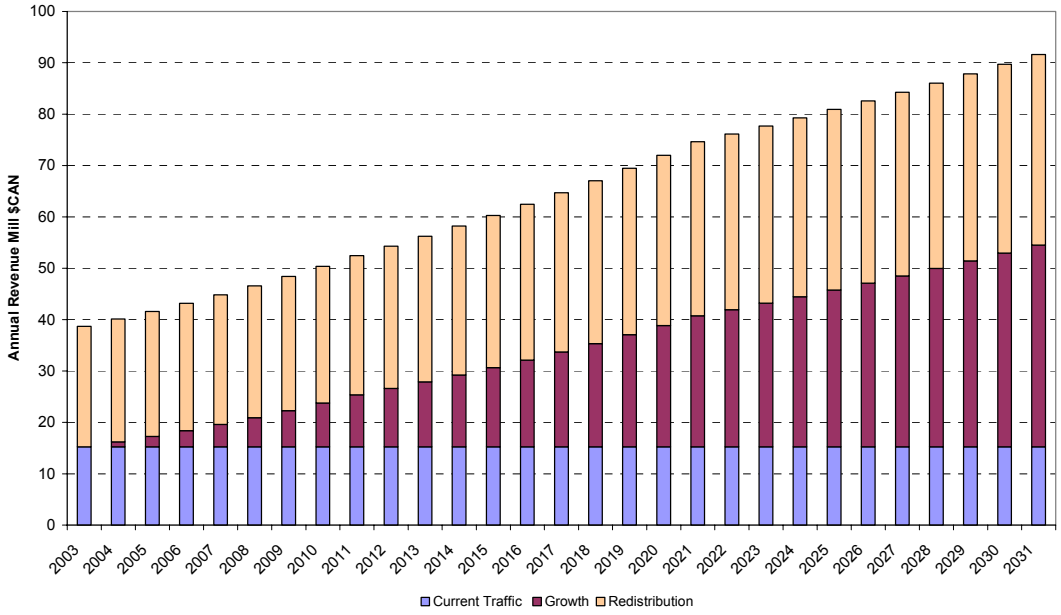
Note: All revenues are real 2003 dollars. It has been assumed tolls remain constant, in real terms, over time. These revenue figures exclude ramp up.

1.42 In all scenarios the car toll category generate the vast majority of the revenue, contributing between 84% and 86% of the total revenue. In the case of the $2.5 toll, cars contribute to 85% of the revenue, light truck 5% and heavy truck 11%.

1.43 The revenue distribution ($2.50 for cars) is shown in Figure 10 overleaf. The revenues are divided in three categories:

- Current traffic: that is the traffic that is currently on the road network, but that will change their itinerary to use the Fraser River Crossing.
- Traffic growth: the forecasted traffic growth over time.
- Redistribution: trips that do not exist on the current road network, but that will take place because of the new facility.

FIGURE 10: FRC REVENUE DISTRIBUTION FOR A $2.50 TOLL (EXCLUDING RAMP-UP)



1.44 For a $2.5 toll, the redistribution accounts for 61% in 2003 and for 40% in 2031 of the total revenue. In 2031, traffic growth contributes 43% of the revenue and the current traffic 17%. This redistribution has a large impact on the traffic on the FRC but it is relatively small when considering the totality of trip making. With a $2.50 toll only 14% of peak hour Pitt Meadows/Maple Ridge origins change. These represent only 3% of Langley destinations and 2% of North Delta/Surrey destinations. Midday redistribution is even smaller, only 5% of Pitt Meadows/Maple Ridge origins change.

1.45 There are three other possible effects as a consequence of the opening of the FRC:

- People will transfer from non-car modes to car.
- People will make more trips.
- People, jobs and services will be attracted to an area at a greater level than anticipated in development plans as a consequence of the improved accessibility.

1.46 The first effect (termed mode shift) has been modelled within the strategic model, and is predicted to have a negligible impact on traffic levels using the FRC.

1.47 The second impact (termed induced travel) has not been modelled or allowed for in the forecasts. Evidence of this effect is seen in the 1999 travel diaries, which shows that across the region each adult makes 3.73 auto trips per day, on average. However, Pitt Meadows/Maple Ridge (with its current poor accessibility) is lower at 3.54 trips, while Surrey, with excellent accessibility, has 4.10 trips. The absence of this effect within the modelling process provides some confidence as to the conservative nature of the forecasts.

1.48 The last effect is also difficult to quantify. The regional population and employment forecasts (and their distribution to municipalities) have been based on the current development strategy for the region. However, experience would suggest that developments such as FRC could put pressure on development strategies and additional development (above and beyond that anticipated). The construction of the bridge will certainly be an important factor in ensuring planned development does actually arise.

Definitions of the Sensitivity Tests

1.49 A number of sensitivity tests were undertaken to assess the impact of alternative assumptions related to:

- Value of Time.
- Growth
- Impact of changes in Pitt River Bridge Configuration

1.50 The sensitivity tests regarding the **value of time** considered two aspects: the value of time in 2003 and its growth during the concession period. The low and high scenarios are defined as the follows.

1.51 The high VOT scenario assumptions are:

- VOT of 2003 * 1.2 (and 1.5).
- Car VOT growth = 0.5 * (high scenario of GDP per head growth).
- Truck VOT growth = 0.25 * (high scenario of GDP per head growth).

1.52 The low VOT scenario assumptions are:

- VOT of 2003 * 0.8.
- Car VOT growth = 0.5 * (low scenario of GDP per head growth).
- Truck VOT growth = 0.25 * (low scenario of GDP per head growth).

1.53 The GDP real growth per head for the low and high scenarios is plus or minus 0.5% per year of the central case GDP growth assumption.

1.54 The base case growth scenario is based on the GMS land use and central population growth assumptions. It was also assumed that the car ownership would grow at a higher rate than the population. **Low and high growth sensitivity** tests were defined as follows:

- High Growth: High population and high car ownership growth.
- Low Growth: Low population and low car ownership growth.

1.55 The population growth scenarios are based on alternative population forecasts prepared by Statistics Canada for British Columbia. In the low scenario the population is 8% lower by 2031, while in the high scenario the population is 13% larger by 2031.

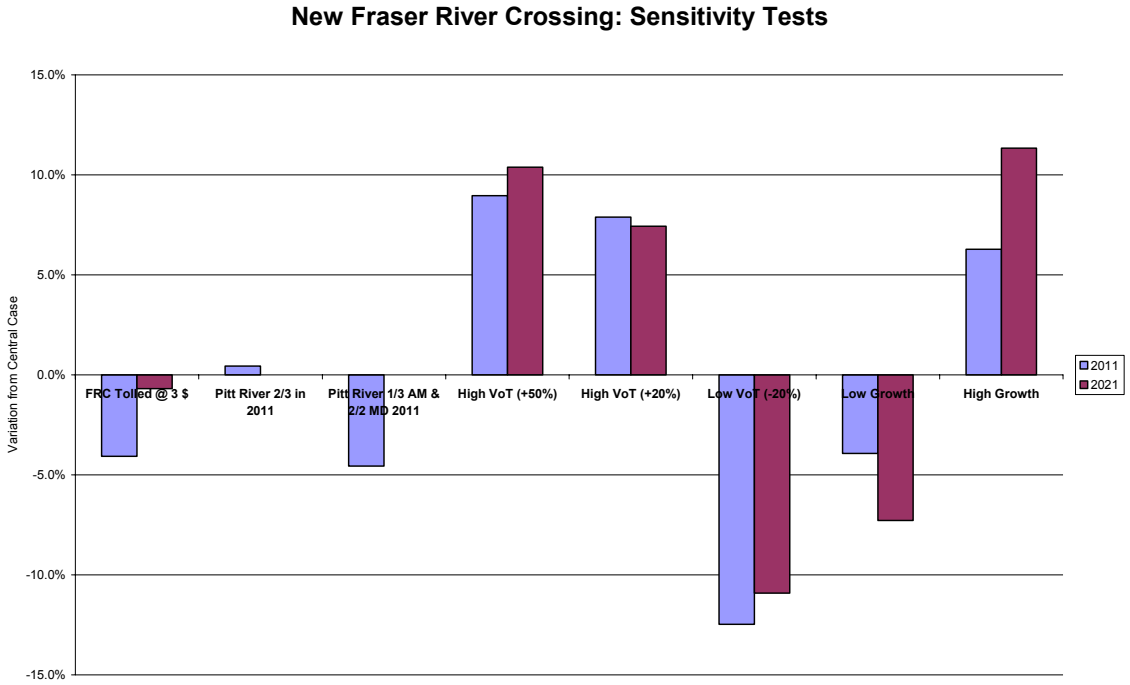
1.56 In the central case scenario, the car ownership model predicts about 1% extra traffic as a result of an increase in levels of car ownership from a long term 1.5% real GDP/head growth and the population in the GMS Scenario. The combination of low GDP/head growth (-0.5% per year less than the central) and low population gives 0.6% less traffic per year. For the high growth scenario the extra traffic is approximately 1.2% per year.

1.57 Finally, tests were conducted to look at the potential impact of Pitt River Bridge configuration. The sensitivity tests looked at two configurations. Firstly the retention of the current configuration at Pitt River (3/1 lanes in the AM and 2/2 lanes in the Midday period). The second was a 3/2 lanes configuration on Pitt River Bridge and a new interchange near the western end of the bridge at Lougheed Highway/Mary Hill Bypass.

The Results of the Sensitivity Tests

1.58 The results of the sensitivity tests (in terms of percentage change in revenue from the central case) are summarised in Figure 11 below. Assuming that trip redistribution does not change with variations in VOT, increasing the VOT by 20% increases the revenue by only 5%. A 20% decrease in VOT and a low case scenario of GDP growth contributes to decrease the revenue by 6% in 2003 and 10% by 2031. The impact on revenue of the alternative population and car ownership scenarios is relatively low. Using low growth assumptions generates a loss of 10% of revenue by 2031. The high growth assumptions provide a gain in revenue of 15%. Finally, it appears that Pitt River Bridge does not have a significant impact on FRC crossing traffic volumes and on revenue for year 2011.

FIGURE 11: FRC SENSITIVITY TESTS



Risk Analysis

1.59 In the context of deriving Investment Grade forecasts, a reasonable central case forecast is not sufficient, unless accompanied by well-understood and quantified risk profile. However, given the uncertainties surrounding the production of traffic and revenue forecasts, Steer Davies Gleave does not believe the preparation of a quantified risk analysis is actually possible, or any results obtained in such a way very helpful. The range of assumptions included within the preparation of a forecast is so extensive – and the distribution of risk around each of these factors so little understood – that any such results are likely to be spurious in their accuracy.

1.60 That said this, the rigour required to specify and apply a limited Monte Carlo analysis does assist in thinking through the risks and uncertainties and does help to express any uncertainties in a way that can be well understood. It is therefore beneficial to develop such a risk model, although the results should always be interpreted with care.

1.61 In order to develop such a risk model – and to begin to model and quantify risk and uncertainty – we therefore prepared:

- An assessment of uncertainty factors.
- A quantification of uncertainty.
- A risk simulation analysis.

1.62 A main area of uncertainty is related to the risk associated with the magnitude and build up of future demand. There are three key 'building blocks' to consider:

- Base traffic: the existing traffic that is forecast to use the facility and does not include the additional traffic attributable to growth and redistribution.
- Growth traffic: traffic that has been generated by changes in key parameters such as population, household, jobs and the numbers of workers as well as by changes in the factors that affect route choice (value of time, congestion).
- Redistributed traffic: traffic that is the product of redistribution of trip origins and destinations due to enhanced accessibility.

1.63 The timescales within which the forecast traffic levels for each of these segments are reached are vital to the forecasts, as it typically takes a considerable period of time before the full amount of traffic is realised. Therefore, the risk analysis also addressed uncertainty around ramp up. Uncertainty also surrounds other parameters affecting the forecasts. The main such parameters include: supply (network configuration), annualisation factors and behavioural parameters (values of time).

1.64 Quantifying uncertainty can be interpreted as defining a range of possible values together with a measure of likelihood that they will actually occur. The quantification of uncertainty is based on both the information that is available and our own professional judgement based on other similar schemes. We therefore developed an appropriate list of assumptions covering both the range of risks and the probabilities that these will occur.

1.65 These identified risk factors were input to the risk simulation model. The simulation process combines all the identified uncertainties to produce a range of traffic and revenue forecasts in the form of a probability distribution. On the basis of this output, Steer Davies Gleave prepared traffic forecasts showing central estimates and indicating a likely distribution of outcomes around that estimate. Figures 12 and 13 present the traffic and revenue forecasts over the forecast period, illustrating the mean forecasts and the confidence interval around them.

FIGURE 12: TRAFFIC FORECASTS

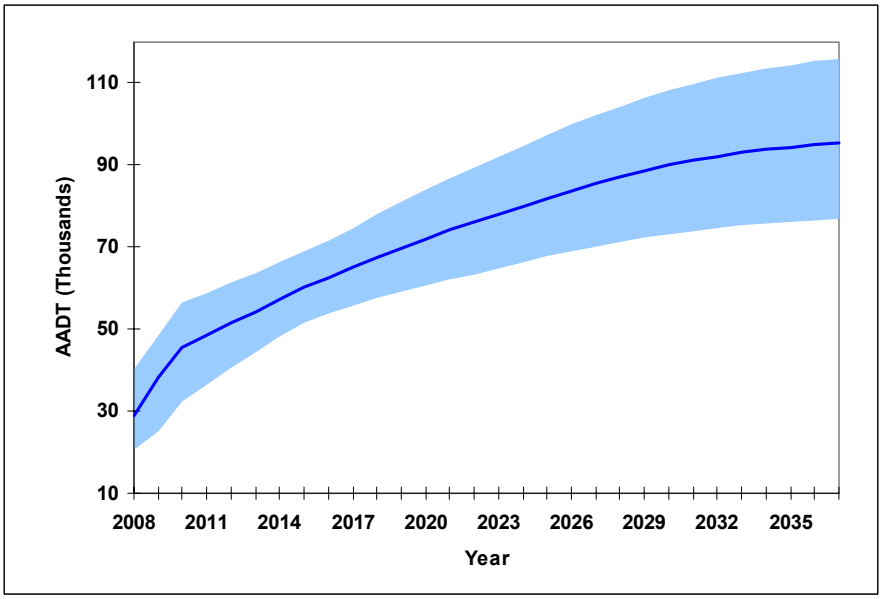
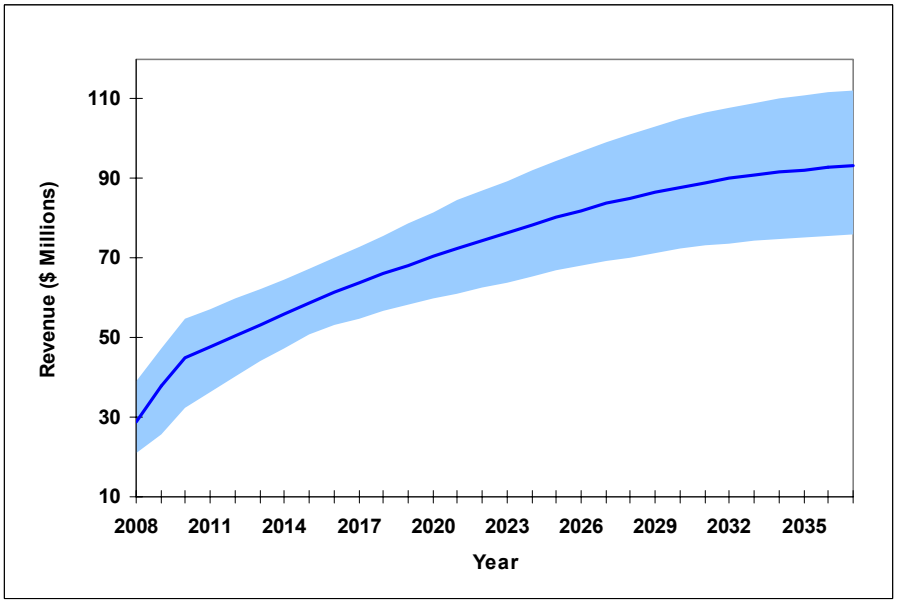


FIGURE 13: REVENUE FORECASTS



Conclusions

1.66 The FRC will offer a significant improvement in journey time and reliability for drivers travelling from Pitt Meadows/Maple Ridge to Surrey/Langley. As the new bridge also offers a significantly shorter journey it will be attractive at all times of the day, even when congestion on other routes is less of a problem. Consequently, even following the imposition of a toll on the bridge, there will still be a significant proportion of drivers travelling between Pitt Meadows/Maple Ridge to Surrey/Langley who will use the FRC.

1.67 The area north of the Fraser River (Pitt Meadows/Maple Ridge) is currently very inaccessible, particularly to the major employment centres in Surrey and Langley. When the FRC opens these areas will become very accessible. As a consequence, trip patterns will change dramatically, with Pitt Meadows/Maple Ridge becoming a very attractive location to live for those that work in Surrey/Langley. This process is known as *trip redistribution* and will result in significant volumes of additional traffic on the FRC. As a consequence of the current very poor accessibility between these areas a large proportion of the traffic predicted to use the FRC is redistributed trips. However, this traffic still represents a relatively small proportion of trips in the Pitt Meadows/Maple Ridge area.

1.68 Over time the level of traffic on the FRC is expected to increase as a consequence of a number of factors. These include the continued growth of population and jobs in the region. In addition, as income levels continue to increase in real terms we can expect more people to own cars and the level of the toll to decline (in real terms). These effects will further encourage traffic growth on the FRC.

1.69 In preparing the forecasts presented in this report, Steer Davies Gleave has drawn on a wide base of data, most of it collected recently in Vancouver specifically for this project. The methods adopted to prepare these forecasts are tried and tested, and have allowed a close examination of the key factors influencing demand, and hence revenue. It is forecast that revenue in 2003 would have been $39m (2003 prices) had the FRC already been open, rising to $91.6m by 2031. Most of this revenue (85%) comes from cars.

1.70 We have also looked at a range of risks and uncertainties around the project, to obtain both an understanding of specific risks and to derive an overall view (optimistic and pessimistic) of forecast revenue levels. This analysis suggests if the road were to open in 2008 a 10% - 90% confidence interval around the central forecast of $29.1m would be minus 35% and plus 50%. By 2012 this has reduced to minus 25% and plus 23% around the central forecast of $50.7m. The reduction arises as the uncertainty around ramp up of traffic, particularly redistribution effects, reduces. This confidence interval then remains relative constant (in percentage terms) for the remainder of the evaluation period (2031).

1.71 Finally, it should be recalled that these forecasts represent gross revenue (i.e. vehicles multiplied by toll). However, as it is anticipated that tolls will be collected using a free flow electronic system there is likely to be some reduction in these forecasts.