



# Gold Coast Rapid Transit

11 Economic  
Environment

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# 1. Introduction

## 1.1 General

This Chapter presents and assessment of the economic impacts of the Gold Coast Rapid Transit project and covers the following areas:

- ▶ An analysis of the economic environment on the Gold Coast;
- ▶ Qualitative economic analyses of the Project; and
- ▶ Quantitative economic analyses of the Project.

### ***Economic Environment***

The analysis of the economic environment provides a description of the existing economic environment on the Gold Coast through:

- ▶ Population and employment characteristics of the region; and
- ▶ Targeted economic activities to encourage economic growth in the region.

### ***Qualitative Economic Analysis***

The purpose of the qualitative economic analysis is to capture the non-monetary benefits of the project that cannot be easily quantified. This includes:

- ▶ Level of job creation during construction and operations;
- ▶ The level of support for sustainable industry growth that the GCRT will provide;
- ▶ Changes in land use;
- ▶ Other non-quantifiable economic benefits; and
- ▶ Opportunity costs of not investing in the GCRT

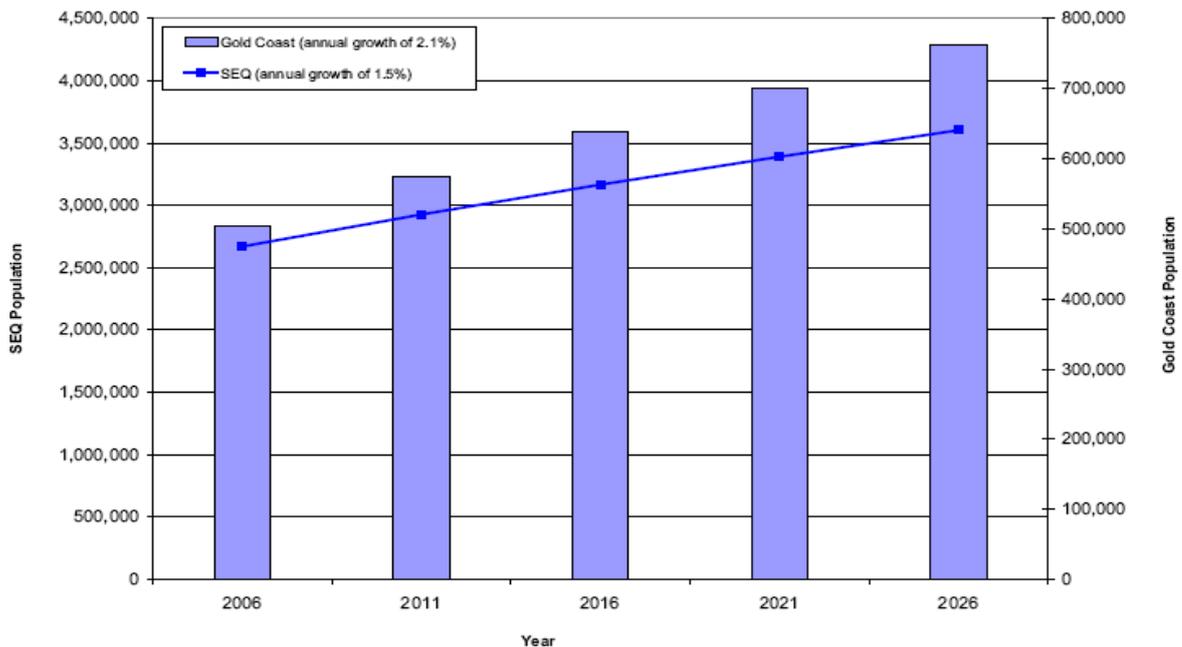
### ***Quantitative Economic Analysis***

The main purpose of the quantitative economic analysis was to assess the amount of community welfare gained if the Project was to proceed compared to a case if it does not proceed. A Cost Benefit Analysis (CBA) form part of the quantitative analysis and is the principal economic evaluation tool used in the evaluating the direct benefit of the Project on the community. It follows the standard practice of comparing cost and benefits of a project against a “do nothing” base case.

## 2. Economic Environment

The South East Queensland Regional Plan (SEQRP) highlights that the population of South East Queensland (SEQ) is forecast to increase from the current 2.6 million people to 3.7 million by 2026. The Gold Coast has the highest growth rate in SEQ having grown from 215,000 in 1986 to 469,000 in 2004 (aggregate growth of 218 percent over the 18 year period). The Gold Coast's current population is approaching 560,000 and is increasing by 15,000 per annum; by 2026 it is expected to approach 800,000. The Gold Coast region's population is expected to grow faster than for the rest of SEQ.

**Figure 11 - 1 Forecast Population Growth, Gold Coast and SEQ, 2006 - 2026<sup>1</sup>**



Predominant employment industries in the region are tourism, retail trade and construction. In 2006 there were 143,000 jobs in the region<sup>2</sup>.

The SEQRP states that a key economic development planning principle is to "*develop a diversified regional economy, characterised by knowledge-based high value-adding industries that build on existing regional and sub-regional competitive advantages and specialisations*".

The Gold Coast City Council (GCCC) has recognised the need to broaden its economy beyond the traditional population based industries of tourism, retail trade and construction.

<sup>1</sup> Source: Queensland Government, Planning Information & Forecasting Unit (PIFU).

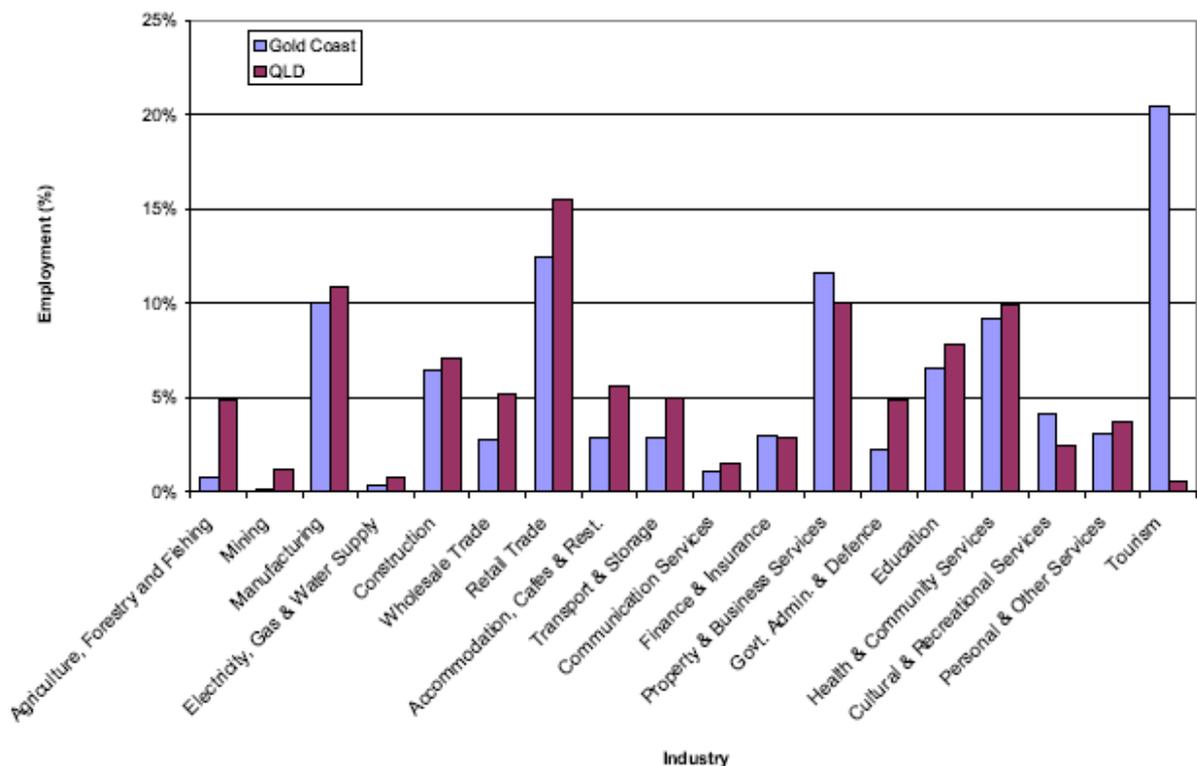
<sup>2</sup> Source: Gold Coast 2010: Economic Development Strategy.

To this end, GCCC is proactively developing the following targeted economic industries to support the traditional industry base:

- ▶ Education;
- ▶ Environment;
- ▶ Food;
- ▶ Health;
- ▶ ICT;
- ▶ Marine;
- ▶ Creative industries;
- ▶ Sporting; and
- ▶ High value tourism.

Figure 11 - 2 shows the level of contribution of these and other industries to the Gold Coast economy for the year 2006.

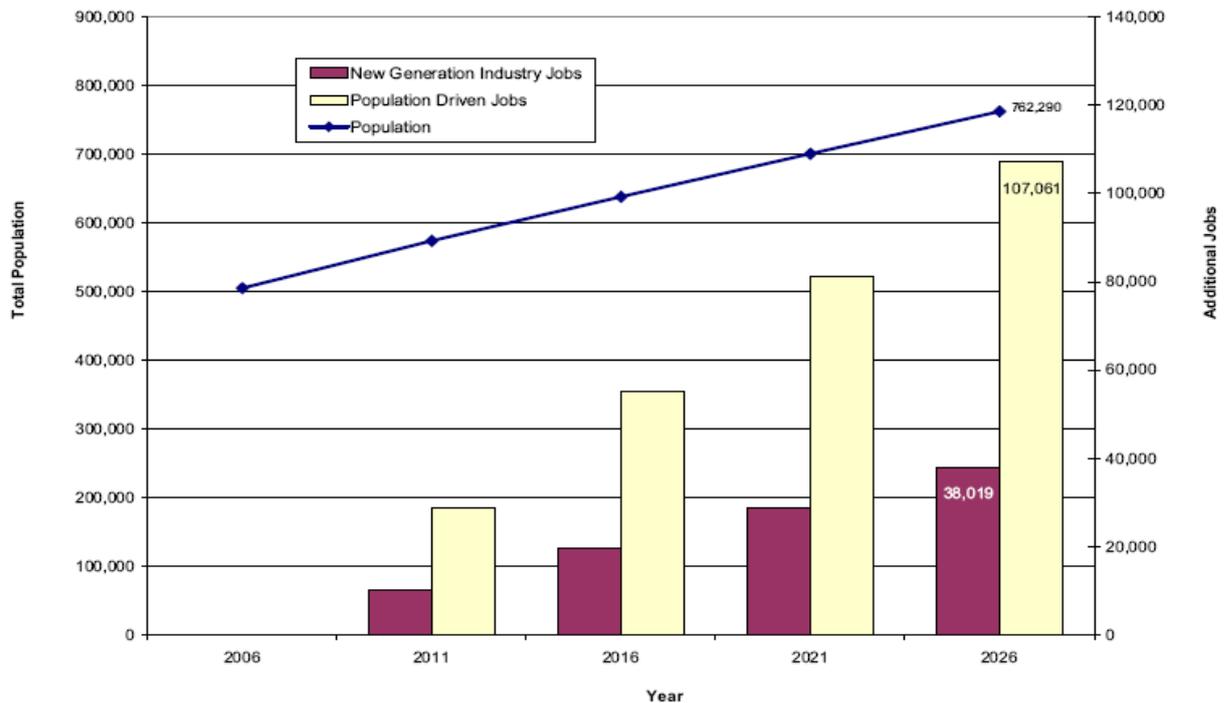
**Figure 11 - 2 Employment by Industry (percent), Gold Coast City and Queensland 2006<sup>3</sup>**



<sup>3</sup> Source: ABS Journey to Work and Labour Force Survey data, Bureau of Tourism Research and Queensland Office of Economic and Statistical Research with interpretations by SGS Economic and Planning.

Figure 11 - 3 shows how population and 'new generation industry'<sup>4</sup> jobs are expected to contribute to Gold Coast employment growth over the period 2006 to 2026.

**Figure 11 - 3 Gold Coast Population Forecasts & Employment Targets, 2006 to 2026<sup>5</sup>**

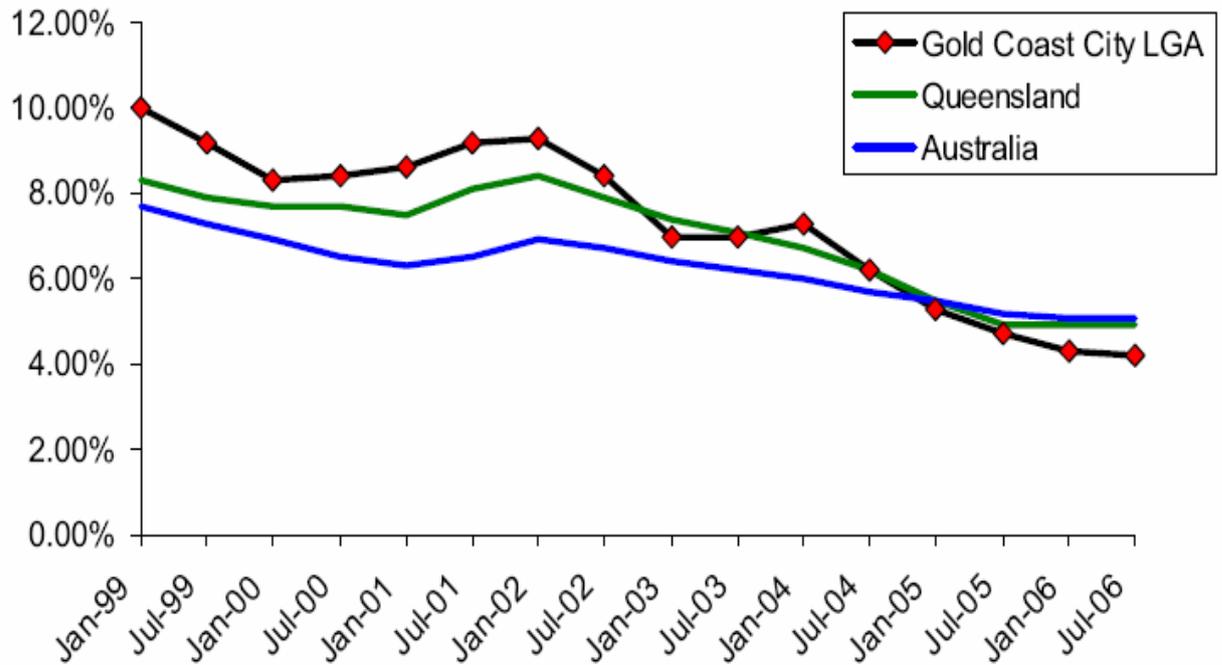


Traditionally, the Gold Coast region has lagged behind the rest of Australia and Queensland in terms of employment growth and economic development. Over the last decade, however, the proactive development of the tourism industry together with general economic growth and wealth creation has resulted in above average employment growth. Figure 11 - 4 shows the reduction in unemployment (and hence growth in employment) on the Gold Coast compared to Australia and Queensland over the period 1999 to 2006.

<sup>4</sup> That is the targeted economic industries.

<sup>5</sup> Source: SGS Economics and Planning.

Figure 11 - 4 Unemployment Trends, Gold Coast City, Queensland and Australia, 1999 to 2006<sup>6</sup>



<sup>6</sup> Source: Australian Bureau of Statistics, Labour Force Survey, July 2006

### 3. Qualitative Economic Analysis

The GCRT reaches a significant portion of the Gold Coast population and supports increased transport capacity throughout the Gold Coast City through the TransLink 10 year Network Plan for the Gold Coast region (see Chapter 8 – Transport Outcomes).

Analysis includes consideration of:

- ▶ The level of support for sustainable industry growth that the GCRT will provide;
- ▶ Level of job creation during construction and operations;
- ▶ Changes in land use;
- ▶ Other non-quantifiable economic benefits; and
- ▶ Opportunity costs of not investing in the GCRT.

#### 3.1 Supporting Sustainable Industry Growth

The GCRT will directly support nine of the twelve traditional and targeted economic industries discussed above including:

- ▶ Tourism and high value tourism:
  - Tourism continues to be a major economic activity for the Gold Coast employing over 20 percent of the local workforce. Many tourist activities are focussed in the city centre and the GCRT will facilitate increased access to these areas and, in particular, Surfers Paradise, Broadbeach and the Gold Coast beach front. Through the 10 year Network Plan, the GCRT will also support increased access to a number of other attractions such as Sea World through enhanced coverage of the Surfside bus network;
- ▶ Retail trade:
  - The retail trade is the second largest economic activity on the Gold Coast employing 13 percent of the total workforce. The GCRT will link a number of major retail centres such as Australia Fair, Pacific Fair and Surfers Paradise. It will also provide increased access to these areas from residential and holiday accommodation areas. Enhanced accessibility will provide these centres with an increased and sustainable ability to develop and grow;
- ▶ Construction:
  - Construction is the third largest employment segment on the Gold Coast employing 12 percent of the workforce. There is considerable international research which supports the link between the increased amenity of local areas (through increased transport and other infrastructure) and increases in property prices and construction activities (such as infill development and development of Transit Orientated Development. Continued strength of the Gold Coast property market will enable sustained economic activity in the construction industry. See Property Case Study for more detail;

- ▶ Education:
  - The GCRT will directly link and provide increased transport capacity to several education centres, such as the Griffith University, Southport TAFE and the Knowledge Precinct. Education centres are very large transport generators and without sufficient transport infrastructure, their growth is typically constrained. Also, through the broader 10 year Network Plan the GCRT will support other education centres such as Bond University and numerous secondary schools;
- ▶ Environment:
  - The GCRT will indirectly support the continued development of the environmental industry and, in particular, sustainable eco tourism;
- ▶ Health:
  - The GCRT will provide increased access to a number of health facilities in the Gold Coast region including the new GCUH, medical facilities in the Southport region, medical schools and bio-research centres. Without the GCRT, the new GCUH will not be able to achieve its full potential;
- ▶ Creative industries:
  - There are a number of creative industries located in the Gold Coast region which will be supported either directly by the GCRT or by the enhanced coverage provided under the 10 year Network Plan; and
- ▶ Sporting:
  - The GCRT will be able to directly support a number of sporting events such as the Gold Coast Indy and the Gold Coast Marathon.

### 3.2 Direct Job Creation

The GCRT total direct workforce is estimated to be up to 320<sup>7</sup>Fte over the construction and commissioning period. This is based on the Reference Project design and the traditional delivery model. It is not expected that PPP delivery would significantly change this figure.

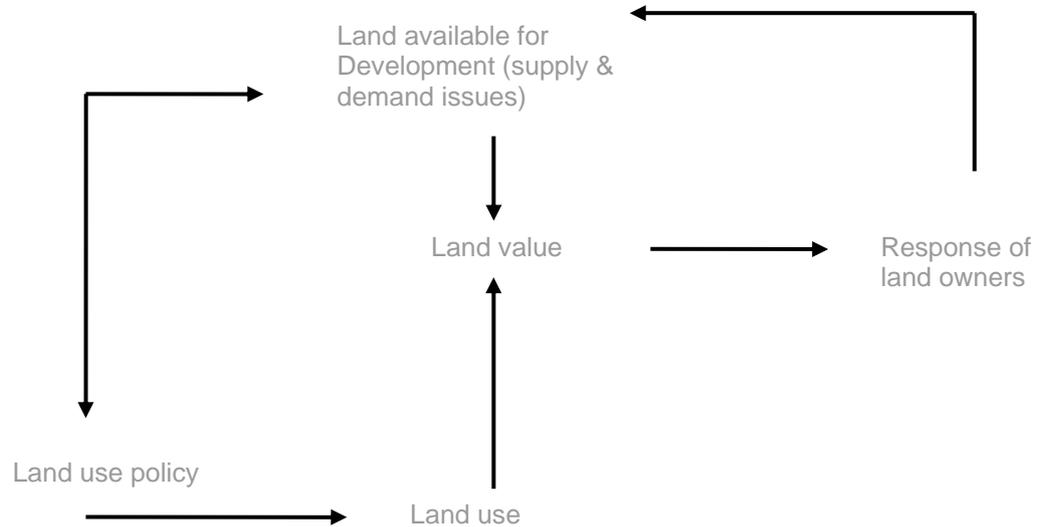
The workforce during the operating phase is estimated to be 84 for the BRT system for the year 2011, increasing to 249 by the year 2041. For the LRT system the workforce is estimated to be 91 for the year 2011, increasing to 169 by the year 2041. This does not include contract staff for major repairs or maintenance.

### 3.3 Changes in Land Use

Like all factors of production, land derives its value from market forces linked to productivity. If transport infrastructure brings about changes in the relative productivity of land within a region, there might be flow-on benefits for land values that are additional to the economic effects on employment, regional investment and patterns of consumption. Conceptually, land use and land values are inter-connected through policy, market forces and the reactions of land owners as shown in Figure 11 - 5.

<sup>7</sup> Estimated person hours to construct the GCRT are between 400,200 and 545,300.

**Figure 11 - 5 Changes in Land Use and Value**



In October 2002, the Royal Institute of Chartered Surveyors undertook a review of over 150 reference materials on the topic of land value and public transport<sup>8</sup>. The documents included original research and data collection as well as reviews of methods and case studies.

From the reference material, 18 key references were selected for more in depth analysis. Appendix G provides a summary of the results from those studies.

The RICS (Royal Institution of Chartered Surveyors) found that the expected effect on both the residential and commercial property markets is positive but the range of impacts is very variable.

They found that the impact area for residential developments is usually wider than those for commercial developments. Depending on the investment, residential impacts could extend to 1,000m, whilst those for commercial developments are likely to be concentrated in a 400m radius. There is also some evidence that residential property prices might be depressed immediately around the transport investment or station.

Impacts were more easily identified for tram and metro investments than for bus investments and most of the research has concentrated on urban rail systems.

Because land, as a factor of production, is 'fixed and permanent' it should be relatively easy to monitor the dollar value of different parcels through time and space, and to draw quantitative comparisons. In practice, however, there are problems for measurement related to methodology, quality of the data and attribution of cause and effect. A fuller explanation of these measurement problems includes the following:

- ▶ Identifying the different influences that cause the value of unimproved land to change through time and ascribing to each influence an importance rating;

<sup>8</sup> Source: RICS Policy Unit. Land Value and Public Transport: Stage 1 – Summary of Findings. October 2002.

- ▶ Predicting the temporal and/or spatial relationship between changes in land values and particular productivity drivers; and
- ▶ Testing whether the land market is free of imperfections (eg. caveats) that might impede changes in its usage and, consequently, distort its productivity and market value.

Due to differences in the 'background' circumstances supporting public transportation projects, the link with land values is not clear-cut. Some general principles, however, have been recognised that are relevant to GCRT and these are outlined below.

- ▶ Extent to which accessibility is increased:
  - The literature indicates that public transport projects which are substantial in scale and have advanced systems, tend to increase accessibility most and have a positive impact on local property values. These characteristics are certain to apply to GCRT, implying a strong prospect that GCRT will contribute to uplift in property values in some parts, if not all of the corridor;
- ▶ Mix of residential and commercial land users:
  - It was found that corridors with a large component of commercial occupiers were most likely to enjoy positive movements in land values. Development of TOD's along the GCRT corridor will have a high proportion of commercial occupants with positive consequences for property values. The prospect of positive values would seem to be strongest in those TOD's with the highest concentration of businesses; and
- ▶ Capacity to merge local economies:
  - Transport facilities with the capacity to merge previously unconnected micro economies were found to have a positive effect on property values. The outlook is less clear with respect to this driver but there would seem to be some prospect that GCRT will bring about stronger linkages with the economies north and south of the Gold Coast (ie. Brisbane and the Tweed Coast) and within the transit corridor (ie. Broadbeach, Southport, Surfers Paradise and the new GCUH, Griffith University and Knowledge Precinct). This will be assisted by the enhancement of east west connectivity through reallocation of bus services under the TransLink 10 year Network Plan.

Table 11 - 1 identifies the potential flow on effects of GCRT for each landholder category.

**Table 11 - 1 Landholder Benefits**

Landholder	Change in Land Use	Expected Positive Implications
State	Strategically placed and dedicated public transport used to promote densification rather than dispersion of urban population	More sustainable urban environment; more competitive workforce; higher taxation yields (due to higher taxes on property sales) and higher workforce participation rates. Less requirement to fund road upgrades or additional roads.
GCCC	Minimal additional land needed to establish GCRT. City building via TOD's that reflect the character and needs of the Gold Coast; all possible	Better preservation of city parkland and scenic amenity. Higher population inducing higher returns from land sales and higher rates on

<b>Landholder</b>	<b>Change in Land Use</b>	<b>Expected Positive Implications</b>
	without commensurate congestion	corridor land. Less requirement to fund road upgrades or additional roads.
Commerce	Relocation into TOD's according to capacity to service needs	Higher prices and turnover with positive income implications
Residents & Community Groups	Densification via units etc leading to increased accessibility and willingness to pay; higher workforce participation due to perception of higher returns from work.	Greater wealth through property value appreciation partially offset by higher costs of living. Greater access to employment and education opportunities.

### 3.4 Other Non-quantifiable Economic Benefits

There are a number of qualitative benefits that will not be fully captured by the quantitative Cost Benefit Analysis.

Examples include improved pedestrian access to facilities and reinforcement of the road hierarchy.

These and other non-quantifiable benefits are discussed below.

#### 3.4.1 Improved Quality of Life and Access to Facilities

To the extent that GCRT makes it easier to access local educational, service, retail and leisure facilities, it will generate an important social benefit by improving the quality of life for a proportion of the population who currently have poor access to public transport and who do not own a motor vehicle. People in this category will have increased access to the integrated transport network and will therefore enjoy a higher level of access to retail and business districts and government services. Although some induced demand is captured in the economic evaluation, the demand associated with superior access to services is possibly unaccounted for and needs to be recognised as an important non-quantified economic and social benefit.

#### 3.4.2 Reinforcement of the Road Hierarchy

Cities typically have primary, secondary and tertiary roads. The latter are found in residential areas to permit access to individual facilities including private homes. An unfortunate consequence of congestion on primary and secondary roads (intended as the major carriers of traffic) is "rat-running" where drivers increasingly use tertiary roads to reach their destination. Because tertiary roads are not designed or built for high volumes of through traffic, rat-running creates real problems including accidents and loss of suburban amenity. Transport modelling shows that the GCRT reduces rat-running by enticing commuters and commercial traffic back onto the secondary and primary roads as a result of reduced congestion. The non-quantified benefit is less traffic on tertiary roads (as distinct from more traffic on secondary and primary roads). This benefit is hard to quantify but will be critical to restoring suburban amenity to those Gold Coast areas currently suffering from a high incidence of rat-running behaviour.

### 3.4.3 Superior Environmental Outcomes

Congestion adds to both journey length (i.e. time) and the volume of greenhouse gas emissions. Apart from reducing congestion on the adjacent road network, GCRT will reduce greenhouse gas emissions by virtue of its own efficiency as a 'people mover'. Thus, gas emissions per GCRT travel unit (eg. CO<sub>2</sub> per person km) will be potentially low, relative to private cars, but net gains will still depend on load factors and ability to attract people from private transport modes. Environmental benefits are estimated in the GCRT Cost Benefit Analysis model but the estimate itself is based on 'industry standards' that might understate the full value where it translates into reduced power consumption and a healthier population (due to better air quality).

### 3.4.4 Agglomeration of Economies

GCRT is expected to permit densification by enticing commercial activities to relocate to the transit corridor. Relocation of businesses into TOD's might manifest itself as agglomerations where related firms cluster to reap the advantages of various economies as spelt out in the Eddington Transport Study (2006) quoted below.

### 3.4.5 Economies of Agglomeration

- ▶ Better matching of people to jobs and access to skilled labour as a result of dense labour markets:
  - Where firms need similar types of specialised skills, locating together increases the availability of skilled workers (either because the cluster attracts workers or as a result of local training institutions in the area). In large labour markets, costs of searching/recruitment are lower for both workers and firms (since potential matches occur more often) and the quality of each match is higher (for each vacancy the chance of finding a perfect match is higher).
- ▶ Connection to suppliers and markets:
  - Where firms are located in close proximity to each other there will be possibilities for specialist inputs to be provided to the group in a more efficient manner than if all the firms are geographically dispersed. With a large choice of suppliers, each firm can better select the specific type of input that is optimal for its particular need.
- ▶ Information spill-over between firms:
  - For each interaction between firms there is a transfer of knowledge which benefits other firms. The closer the firms are to each other the more interactions are expected.

### 3.4.6 Consumption Benefits

People choosing to live in clusters can benefit from the wider range of non-work/leisure opportunities available. In particular, access to a greater choice of goods and services that can only be offered due to scale, and are not available elsewhere, eg. a richer variety of 'the arts' is typically available in larger urban areas.

While the consequences of TOD's for regional employment and income are captured in the economic evaluation, the Gold Coast might have the capacity to create several unique agglomerations that generate powerful flow-on effects. These might take the form of world-class shopping centres that give

the Gold Coast more of an international focus for tourists. Higher average wages will result, to the extent that densification adds value that in turn generates higher rewards for the employer and/or the employee.

### **3.4.7 Image Building**

Due to its presentation, convenience and reliability, GCRT has a high capacity to enhance the attractiveness of the Gold Coast as a residential and holiday destination. Scope should exist to incorporate GCRT into Gold Coast promotions and develop strong associations between GCRT and the Gold Coast experience (as detailed in the 'local area plans' by the Land Use and Planning Study, Dec 2007). Over time, it is likely that GCRT will become integral to the life styles and customs associated with Gold Coast living. Such developments will see an increase in demand for public transport, and for GCRT in particular, these changes in attitudes and acceptance of public transport are beyond the normal estimating techniques of transport and economics modelling and, hence, are not included in the GCRT Cost Benefit Analysis. In the longer term, growth in demand via this mechanism is expected to increase property values and the productivity of consumption.

### **3.4.8 Avoidance of Road Upgrades**

Regardless of how significant the aggregate reduction in private car usage, there will still be an increase in network transport capacity. This may permit some deferral in the upgrading of intersections or providing additional capacity in roads adjoining the corridor (resulting in a deferment of capital outlays).

### **3.4.9 Reduced Reliance on Car Access and Car Parking**

Access to, and usage of tourist and retail destinations is presently dependent on the availability of car parking spaces. The GCRT will reduce the region's reliance on car parking infrastructure whilst still allowing access to key destinations.

### **3.4.10 Noise, Quality of Life and Amenity Enhancements**

Commuter stress has numerous manifestations and in some case can result in large and tangible costs. Effective public transport can reduce this cost for both car drivers who switch to public transport and those who continue to drive. The designated route, combined with best practice technology and professional drivers, will ensure superior environmental outcomes and gives residents more quality transportation options. The combined size of the benefit associated with a superior 'living environment' is clearly difficult to quantify but is considered to be not insignificant.

### **3.4.11 Managing Exceptional Risk**

Under exceptional circumstances (such as natural disaster or fuel crisis) the State might be called upon to provide transport services to a larger than usual proportion of the population. GCRT, together with interconnections to heavy rail and buses, would have the capacity to make a credible contribution to an emergency situation that calls for mass movements of population. Another risk (linked to congestion) that the State and region will want to avoid or mitigate is loss of competitiveness in the market for national and international tourists.

### 3.5 Opportunity Costs of Not Investing in the GCRT

If a GCRT system is not implemented, Gold Coast inhabitants and visitors will remain heavily reliant on private vehicle usage and it is likely that the existing road network will be extended from time to time to access greenfield developments and to enhance the connectivity of existing roads. Beyond such imperatives, extensions to the existing road network are likely to be viewed more critically than in the past for the following reasons:

- ▶ Poor cost effectiveness in terms of easing congestion;
- ▶ Low capacity to satisfy future demand;
- ▶ Risks to the natural environment; and
- ▶ High dislocation and impacts on communities and loss of visual amenity.

Ultimately, there are limits to the benefits of continuing to invest in the road network.

Table 11 - 2 provides a summary of the opportunity costs of not investing in the GCRT.

**Table 11 - 2 Opportunity Cost of Not Investing in the GCRT**

Private	Social	Environmental
Higher fuel and time costs for completing journeys on and near the Gold Coast Highway. This means longer time away from family or leisure pursuits.	Loss in regional appeal as a place to live and work in or to visit. This will cause the Gold Coast to lose competitiveness relative to alternative destinations.	Higher per capita greenhouse emissions relative to less congested cities. Longer term this might mean imposition of non-compliance penalties.
Additional personal stress and apprehension associated with road travel.	More road related accidents and increased perception of danger on and near roads.	Higher noise levels and threats to the landscape if more roads for cars are built.
Reduced opportunity for businesses to take advantage of the vibrancy and magnetism implicit in the GCRT concept.	Pressure to expand the traditional road network leading to impacts on the community including loss of amenity associated with loss of space and scenery.	Loss of wildlife habitat (ie flora and fauna) if the road network is expanded to accommodate more private cars.
Reduced growth in residential land values and the possibility of stranded assets if the region's economy is adversely affected by congestion and the cost of doing business.	Threats to public health and sense of wellbeing.	Pollution of local water ways (particularly following water run-off events) likely to be related to congestion.
Less opportunity to access retail, educational, service and leisure facilities	Less than optimal social outcomes in terms of physical wellbeing and community interaction	Reduced capacity for higher density living leading to increased pressure to expand the urban footprint thereby reducing open space.

## 4. Quantitative Economic Analysis

Quantitative economic evaluation (also known as Cost Benefit Analysis) quantifies the net benefits to the community. As the proposed Rapid Transit project will have metropolitan-wide benefits, it was necessary to simulate the full modal and regional network impacts of the Project using the available transport model. The evaluation analysis integrates a wide variety of inputs in a quantitative and meaningful way. These inputs include:

- ▶ infrastructure capital cost and ongoing operating and maintenance costs;
- ▶ public transport fleet capital cost and ongoing operating, maintenance and refurbishment costs;
- ▶ disruption to traffic during construction;
- ▶ perceived passenger travel;
- ▶ unperceived vehicle operating costs changes; and
- ▶ changes in environmental and accident costs.

Under the direction of the economics team, the transport model outputs were modified to calculate user benefits in a form that satisfies transport economics theory and in so doing follows current best practice in Australia and elsewhere. The evaluation follows other applicable guidelines on economic evaluation practice. General features of the economic evaluation are:

- ▶ Project implementation starts in 2009 and is completed by the end of 2012, with operations commencing in 2013.
- ▶ It is judged possible that it will take a while for the extent of mode shift expected to occur with the Project to take full effect. Benefits in 2013 are, therefore, assumed to be two-thirds of those that would occur if the change in travel behaviour was to occur immediately upon opening of the Project. Full benefits are projected for 2014 and thereafter.
- ▶ Benefits are continued for a period of 30 years (i.e. until 2042), with the residual value of infrastructure indicated in 2043.
- ▶ In line with general practice for transport projects in Queensland, a discount rate of 6 percent is used for the principal evaluation. Sensitivity tests are conducted with discount rates of 4 percent and 8 percent.
- ▶ Sensitivity tests are also presented to indicate the effect of higher and lower project costs and benefits.
- ▶ Benefit Cost Ratio (BCR), Net Present Value (NPV) and Economic Internal Rate of Return (EIRR) are shown for the principal evaluation. The benefit-cost ratio has been based on the ATC (2006)<sup>9</sup> method which requires that only capital costs are shown on the bottom line, with ongoing operating and maintenance costs shown as a negative benefit on the top line. Net Present Value is generally recognised as the best indicator.

<sup>9</sup> Australian Transport Council (2006) "National Guidelines for Transport System Management in Australia", Commonwealth of Australia, Canberra - Volume 3 (Appraisal of Initiatives) and Volume 4 (Urban Transport).

The principal evaluation is based on the best estimate of the difference in project costs and benefits between the Base Case and each of the Project Case options. The results of the principal evaluation are summarised in Table 11 - 3.

**Table 11 - 3 Summary of Economic Evaluation Results**

	<b>BRT Option</b>	<b>LRT Option</b>
Benefit Cost Ratio (BCR)	2.53	2.30
Economic Internal Rate of Return (%)	11.7	10.5
Net Present Value (NPV - \$M, March 2008 prices)	570	535

In summary, the evaluation indicates that both options are worthwhile in economic terms, with substantially positive net present values, benefit-cost ratios well above one, and economic rates of return well above generally used social discount rates. The economic merit of BRT option is slightly better than LRT option. This is the net result of a present value of costs that is 12 percent higher than the BRT option and benefits that are 4 percent higher.

Features of individual costs for the two options are:

- ▶ LRT has a present value of infrastructure capital cost that is 11 percent higher than BRT, rolling stock capital cost that is 159 percent more, but operations that are 24 percent lower, leading to a NPV of assets and operations that is 12 percent higher.
- ▶ The present value of the cost of traffic disruption during construction is equal to 5 percent of the present value of the cost of all assets and operations. It is marginally higher for LRT than BRT because of a slightly longer implementation period.
- ▶ Recurrent costs (for public transport operations) are considerable. The present value of the costs is \$209 million in BRT case (equal to 29 percent of the present value of all costs for the option) and \$160 million with LRT (equal to 20 percent of all costs of that option).
- ▶ The net effect of the above is that the present value of all costs of providing public transport is \$724 million with BRT and \$812 million with LRT.

With regard to impacts of the project options on the community:

- ▶ People who continue to use cars when the RT project has been implemented benefit from the Project because the transfer of some car drivers to public transport reduces traffic congestion. The benefit perceived by these continuing car users is relatively modest, with a present value of \$65 million with BRT and \$76 million with LRT (respectively 5 percent and 6 percent of the present value of all benefits for each of the options).
- ▶ People who use public transport with the Project, including those who transfer from car and walking, perceive major benefits; a present value of \$393 million with BRT and \$428 million with LRT (respectively 30 percent and 32 percent of the present value of all benefits for each of the options).
- ▶ In addition to the benefits perceived by people who transfer from car to public transport, there are other resource benefits because they under-perceive the cost of using their car in the Base Case.

The present value of unperceived vehicle operating resource savings is \$106 million in both BRT and LRT cases (equal to 8 percent of the present value of all benefits in each case).

- ▶ The shift of some car users to public transport also provides the opportunity to avoid ownership of cars and to build facilities for car parking. The present value of this saving is estimated at \$70 million in both BRT and LRT cases (equal to 5 percent of the present value of all benefits in each case).
- ▶ Commercial vehicles benefit from the Project because the transfer of some car drivers to public transport reduces congestion and allows the commercial vehicles to travel by more direct routes than would be possible in the Base Case. The present value of the benefit is modest, at \$30 million with BRT and \$31 million with LRT (equal to 2 percent of all benefits for each of the options).
- ▶ The rise in fare revenue is included in the current evaluation for a specific technical reason that is described in the main part of this report. It is an additional economic benefit that accrues to public transport users. The benefit is very large, with a present value of \$576 million with BRT and \$579 million with LRT (respectively 45 percent and 43 percent of the present value of all benefits for each of the options).
- ▶ Drawing on standard values of environmental impacts of road vehicle use (including noise, local air pollution, climate change, urban separation, water pollution, and impacts on nature and landscape), the benefits from the net change in the quantity of travel by road and public transport vehicles are modest, with a present value of \$18 million with BRT and \$19 million with LRT (equal to 1 percent of the present value of all benefits in each case).
- ▶ The economic value of savings in accidents that result from the net change in the quantity of travel by road and public transport vehicles is also modest, with a present value of \$24 million in each case (equal to 2 percent of the present value of all benefits).
- ▶ Agglomeration benefits due to land use change, specifically TOD, are also small with a present value of \$13 million in each case (equal to 1 percent of the present value of all benefits).
- ▶ The net effect of the above is that the present value of benefits gained by the community is \$1,294 million with BRT and \$1,346 million with LRT.

The net effect of the tests, as indicated by the weighted average of them based on allowing for a greater chance of less favourable outcomes, is similar to the principal evaluation. These results suggest that it is likely that the BCR for either rapid transit technology option will be more than one for a very broad set of circumstances.

## 5. Conclusion

This chapter has described the economic environment of the Gold Coast region and the economic analysis, qualitative and quantitative, undertaken for the Gold Coast Rapid Transit project.

The findings of this Chapter are:

- ▶ Economic Environment:
  - The South East Queensland Regional Plan (SEQRP) highlights that the population of South East Queensland (SEQ) is forecast to increase from the current 2.6 million people to 3.7 million by 2026. The Gold Coast has the highest growth rate in SEQ having grown from 215,000 in 1986 to 469,000 in 2004 (aggregate growth of 218 percent over the 18 year period).
  - The Gold Coast's current population is approaching 560,000 and is increasing by 15,000 per annum; by 2026 it is expected to approach 800,000. The Gold Coast region's population is expected to grow faster than for the rest of SEQ.
  - The SEQRP states that a key economic development planning principle of the Gold Coast region is to "*develop a diversified regional economy, characterised by knowledge-based high value-adding industries that build on existing regional and sub-regional competitive advantages and specialisations*".
  - The Gold Coast City Council (GCCC) has recognised the need to broaden its economy beyond the traditional population based industries of tourism, retail trade and construction and are proactively developing the following targeted economic industries to support the traditional industry base: education; environment; food; health; ICT; marine; creative industries; sporting; and high value tourism.
  - Over the last decade the proactive development of the tourism industry together with general economic growth and wealth creation has resulted in above average employment growth for the Gold Coast region.
- ▶ Qualitative Economic Analysis:
  - The Project will directly support nine of the twelve traditional and targeted economic industries discussed above including: tourism and high value tourism; retail trade; construction; education; environment; health; creative industries; and sporting.
  - The GCRT total direct workforce is estimated to be up to 320 Fte over the construction and commissioning period. This is based on the Reference Project design and the traditional delivery model. It is not expected that PPP delivery would significantly change this figure.
  - If transport infrastructure brings about changes in the relative productivity of land within a region, there might be flow-on benefits for land values that are additional to the economic effects on employment, regional investment and patterns of consumption.
  - Other qualitative economic benefits include: improved Quality of life and access to facilities; reinforcement of the road hierarchy; superior environmental outcomes; agglomeration of economics; economies of agglomeration; consumption benefits; image building; avoidance of road upgrades; reduced reliance on car access and car parking; noise, quality of life and amenity enhancements; and managing exceptional risk.

► Quantitative Economic Analysis:

- The evaluation analysis integrates a wide variety of inputs in a quantitative and meaningful way. These inputs include: infrastructure capital cost and ongoing operating and maintenance costs; public transport fleet capital cost and ongoing operating, maintenance and refurbishment costs; disruption to traffic during construction; perceived passenger travel; unperceived vehicle operating costs changes; and changes in environmental and accident costs.
- Benefit Cost Ratio (BCR), Net Present Value (NPV) and Economic Internal Rate of Return (EIRR) are shown for the principal evaluation. The benefit-cost ratio has been based on the ATC (2006) method which requires that only capital costs are shown on the bottom line, with ongoing operating and maintenance costs shown as a negative benefit on the top line. Net Present Value is generally recognised as the best indicator.
- The net effect of the cost assessment was that the present value of all costs of providing public transport is \$724 million with BRT and \$812 million with LRT.
- The net effect of the benefit assessment was that the present value of benefits gained by the community is \$1,294 million with BRT and \$1,346 million with LRT.
- The evaluation indicates that both options are worthwhile in economic terms, with substantially positive net present values, benefit-cost ratios well above one (BRT – 2.53 and LRT – 2.30), and economic rates of return well above generally used social discount rates. The economic merit of BRT option is slightly better than LRT option. This is the net result of a present value of costs that is 12 percent higher than the BRT option and benefits that are 4 percent higher.