BRISBANE, AUSTRALIA

BRIEF: SOUTH EAST BUSWAY

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BRISBANE, AUSTRALIA

Brief: South East Busway

CITY CONTEXT

South East Queensland has a population of more than 2.3 million people. The area, centered on the City of Brisbane, extends to Noosa in the north, the Gold Coast in the south, and Toowoomba in the west. Metropolitan Brisbane, the heart of this region, has a population of 1.5 million. About half of this population lives within the city. Brisbane's Central Business District (CBD) is estimated to have about 60,000 jobs.

Brisbane Transport, a municipal undertaking, provides bus and ferry service, although some bus service and all ferry service is provided under contract. In addition, Queensland Rail's "City Train" provides suburban and regional rail service.

The city has implemented 23 bus priority routes including the Woolloongabba and City bus tunnels with dedicated rights-of-way, 2 high occupancy vehicle (HOV) transit lanes, 19 bus-only lanes, and the South East Busway. The Inner Northern Busway is under development. Figure 1 shows the regional rail system.

Bus ridership increased from about 38 million annual trips in 1992 to 57 million in 1996. Annual rail ridership on City Train increased from about 39 million in 1992 to 42 million in 1996.

PLANNING AND IMPLEMENTATION BACKGROUND

The South East Queensland Planning Framework involves land use and growth management that provide the context for a 25-year transport plan, a 7-year transport action plan, and a 3-year transport program. The goal by 2011 is to accommodate about 10 percent of the 11.8 million person trips made by public transport as compared with 7 percent at present. Proposals include selective increases in road capacity, land use controls and demand management, and public transport improvements. Transit proposals and actions include rail extensions, a busway network, bus priorities, transit centers, and bikeways. Two busways are in the plan—a South East Busway to Eight Mile Plains and the Inner Northern Busway. (See Figures 2 and 3.)

The decision to build a busway system (as in Ottawa) was found to cost less than the "donothing" alternative and to contribute to Brisbane's 2011 transport and development objectives. By the year 2011, the busway was estimated to save taxpayers about \$62 million in Australian dollars (A).⁽²⁾

The South East Busway, progressively opened between September 2000 and the middle of 2001, is the result of 5 years of planning design, construction, and community liaison. A 1996 market survey indicated that 25 percent of the respondents already used the bus, and another 61 percent would consider using the South East Busway assuming that there were improvements in convenience, frequency, reliability, and personal safety.

SOUTH EAST BUSWAY

The 17-kilometer [10.5-mile] South East Busway extends from the Brisbane Central Business District to the southern suburb of Eight Mile Plain, adjacent to the South East Freeway. (See Figure 4.) The \$400 million (A) busway includes 10 attractively designed stations and a bus operations center that employs modern Intelligent Transportation System (ITS) technology. (See Figure 5.) It traverses a highly developed urban area and a constrained corridor. Over half of Brisbane Transport bus routes use some part of the busway.

The busway includes surface and tunnel operations on exclusive rights-of-way. Users include Brisbane Transit and suburban bus operators who are under the bus operations center's control. Priority lanes connect with the southern busway terminus.

DESIGN FEATURES

The South East Busway is located along one side of a six-lane freeway through much of the corridor. The cross section between stations consists of two 3.5-meter [11.5-ft] travel lanes. Bypass lanes are provided at stations to enable express buses to pass buses making stops (see Figure 6). A 0.5-meter [1.6-ft] barrier with a fence separates two 3.5-meter travel lanes. These lanes are flanked by two 3.5-meter [9.8-ft] lanes for stopped buses. The entire busway envelope, including station platforms, occupies a 21-meter [69-ft] right-of-way.

STATIONS

The busway stations have been developed at key nodes to serve major activity centers. They allow buses to serve low-density communities, collect passengers on local roads, and then join the busway for a congestion-free trip to the city center.

Attractively designed stations (Figure 7) have extensive monitoring surveillance and communications capability, and provide real-time information. Each station provides the visual "signature" for the bus rapid transit (BRT) service. Stations are unattended and are open 24 hours each day.

Each station provides facilities for passengers to safely access buses arriving and departing from two platforms. Pedestrian overpasses (Figure 8) enable passengers from between station platforms to cross the busway, and fences preclude at-grade crossings of the busway.

The design of the stations is a key component of the busway system. Each station forms a significant part of the adjacent landscape. The strong horizontal lines of station elements (i.e., roof structures) and an emphasis on slender steel detailing and sizes produces sensitive structures and minimized visual and environmental impacts on surrounding areas.

Station elements fall into the following two categories:

<u>Macro elements.</u> These include an entry plaza, an arrival structure with elevator and stairs, a primary entry awning for passenger information displays, platform structures (e.g., canopies) for passenger protection, a covered pedestrian bridge over the busway, busway signature colors and station identification signage, passenger information displays in the entry plaza and on platforms, and lighting and landscape elements.

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<u>Micro elements.</u> These include ticketing machines, public telephones, passenger seats, trash bins, drinking fountains, vending machines, retail kiosks, driver amenity facilities, public washrooms, security systems, operator advertising, information maps, third party advertising, and art and sculpture.

Metal building products were used for the station superstructure including platforms, stairs, elevators, pedestrian bridges, awnings, street furniture, median barrier fencing, post-top lighting, ancillary pedestrian fences, balustrades, and handrails.

BUS OPERATIONS

Busway service is provided to two separate areas in the Central Business District (CBD). As shown in Figure 9, the City Expresses serve the South Bank Cultural Centre and Queen Street. The Rockets serve Queen Street and Riverside. Overlaid on these BRT services is a complex array of services that makes various stops along the busway (Figure 10). Some 90 routes use a portion of the busway.

Service frequencies range from 1 to 6 minutes during peak hours, 5 to 15 minutes on weekdays, 5 to 30 minutes on Sundays, and 10 to 60 minutes after 8:00 p.m.⁽¹⁾

FACILITIES MANAGEMENT

Facilities management of tunnels includes five suppression, ventilation, emission/visibility detectors, and alarmed doors. Station management includes passenger lift monitoring, overnight motion detection, and lift (elevation) sump monitoring. The Busway Operations Center controls lighting and emergency lighting.

RIDERSHIP

Busway ridership for the core services between the CBD and Eight Mile Plains increased 42 percent between May and October 2001—the first 6 months that the complete busway was open. During this period, some 9.6 million passengers were carried. The first entire year carried 17.7 million passengers excluding special events and the opening weekend. Daily ridership approximates 60,000. The City of Brisbane indicates that the South East Busway can carry 11,000 people per hour in each direction, with 2002 peak-hour, peak-period volumes of about 9,500 per hour just outside the CBD.

BENEFITS

The South East Busway is an extension of the rapid transit system provided by City Train. It links major destinations, improves bus-rail and bus-bus transfers, and results in transit travel times that are more competitive with driving, particularly during peak hours. The South East Busway is a showplace of state-of-the-art technology and modern architecture. Some 375,000 (annual) private vehicle trips were converted to public transport.

Property values have increased as much as 20 percent in some communities located near the South East Busway. Table 1 shows that property values increased two to three times as much in communities located within 10 kilometers (6 miles) of the busway as compared with those located at greater distances.⁽⁷⁾

INNER NORTHERN BUSWAY

The 4.7-km (3.0-mile) \$135 million (A) busway is under construction. The first stage is expected to open in December 2003. The dedicated bus-only roadway will extend from Royal Brisbane Hospital to Queen Street, where it will link to the South East Busway. It is expected to provide an efficient link for cross-town trips.

ASSESSMENT

Brisbane's South East Busway is a modern state-of-the-art rapid transit facility. Similar to Ottawa in concept and building on Ottawa's experiences, it has reduced travel times and attracted riders. Its stations have won architectural awards for their creative design, and it has improved land values in the communities that it serves directly.

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Table 1: Effect of Busway on Property Values

Station	Property within 5 to 10 km of Busway		Increase beyond 10 km of Busway	Ratio
Holland Park West	+20.86%	Holland Park	+ 6.23%	3.35
Upper Mount Gravatt	+ 8.29%	Mount Gravatt East	+ 4.76%	1.74
Eight Mile Plains	+ 3.93%		+ 1.56%	2.52

Source: Real Estate Institute of Queensland.

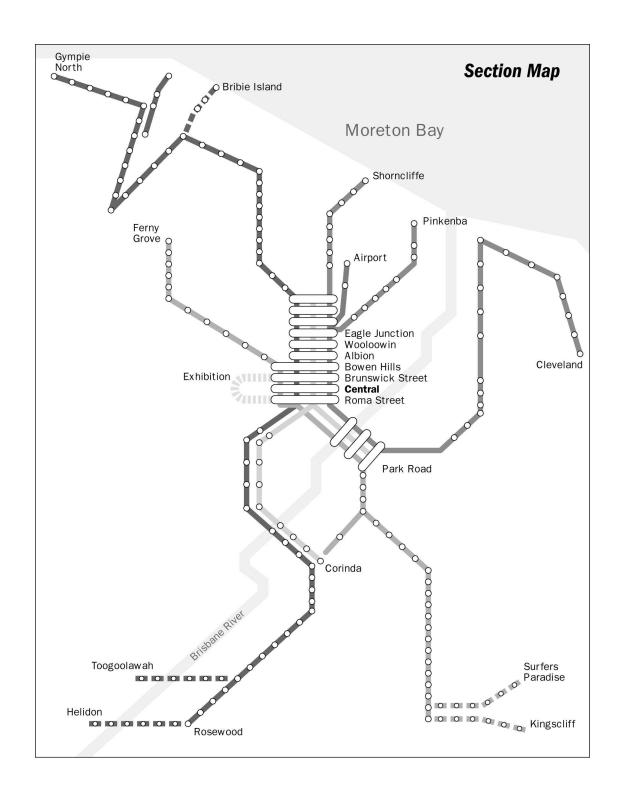


Figure 1: Regional Rail Map

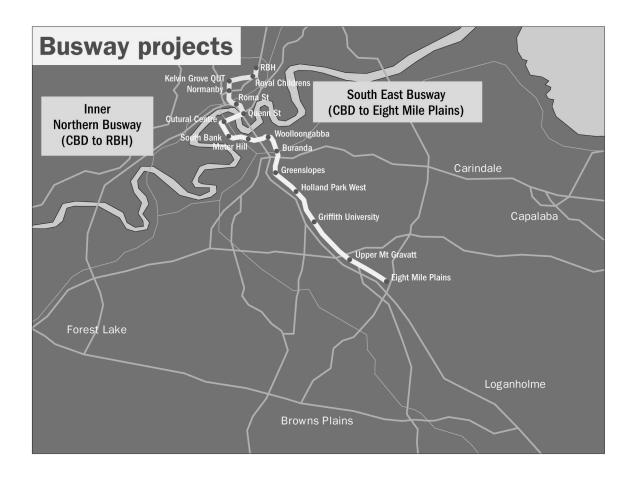


Figure 2: Busway Projects

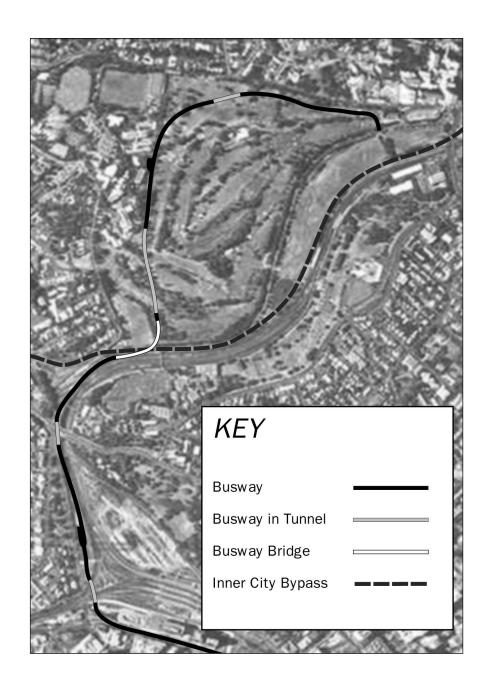


Figure 3: South East Busway Development



Figure 4: Stations – South East Busway





Figure 5: ITS Technologies

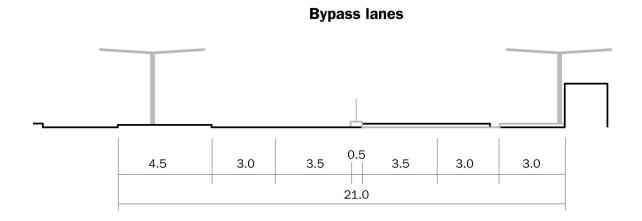


Figure 6: Bypass Lanes at Stations



Figure 7: Typical Station Design



Figure 8: Pedestrian Bridge at Station

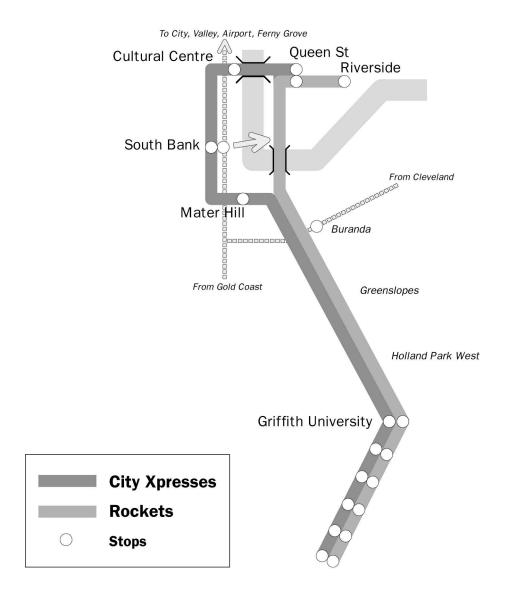


Figure 9: Network Concept

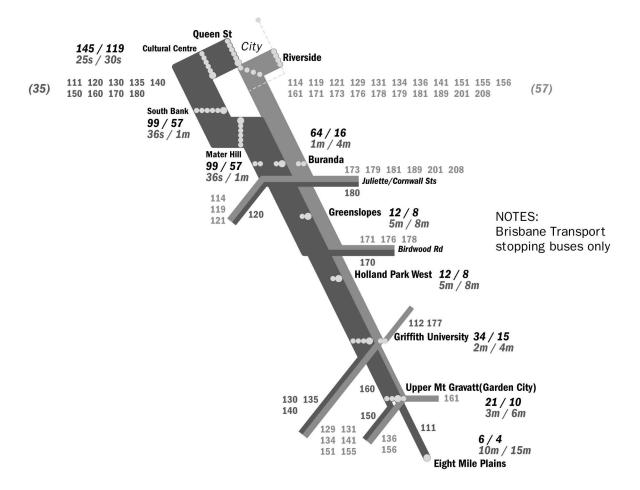


Figure 10: Routes and Stopping Patterns