Road congestion in south-east Queensland

Over the next decade, Brisbane is expected to have the highest congestion growth rate of any Australian capital city.

The severity of urban congestion in south-east Queensland has long been recognised by the RACQ. Fortunately, the Queensland Government and Brisbane City Council have acknowledged the problem and list congestion management as one of their top priorities.

Traffic congestion occurs when travel demand is greater than the capacity, or supply, of available road space. In other words, too many people try to drive on a specific section of road at the same time. The result is a distinctive set of characteristics collectively referred to as congestion: slow driving speeds, longer trip times, reduced travel time reliability, and increased queuing and delays.

Congestion can be viewed as a function of economic development and prosperity. Since the 1950s, cars have become more affordable and the number of cars per household has increased. At the same time, cities have expanded and people have placed a high value on the safety and convenience of car travel, leading to a sizeable increase in the number of cars on our roads.

Our current congestion levels are also a symptom of neglect, in so far as investment in road infrastructure has failed to keep up with improved living standards and population growth. A report commissioned in 2003 by the Australian Automobile Association highlighted the inadequate level of investment in Australian roads. The report found that Australia’s net capital value of road infrastructure had decreased as a proportion of GDP from 22% in 1960 to just more than 10% in 2002.

Congestion threatens our local economy, environment and quality of life. Time wasted sitting in congested traffic reduces both leisure time and productivity; and longer travel times significantly increase transport costs for business.

However, urban congestion is not exclusive to south-east Queensland - it is a national problem. Australia is a car dependant nation and will remain so into the foreseeable future. While the mobility and access that motor vehicles provide contribute significant economic and social benefits, associated congestion is a considerable cost and requires investment in strategies to reduce its impact. The Bureau of Infrastructure, Transport and Regional Economics (BITRE) predicts that the excess, or avoidable, national costs of traffic congestion in Australian cities will exceed $20 billion by 2020 (refer to Figure 1 below). These costs reflect the extra travel time, fuel usage, travel time unreliability and pollution arising from congestion, compared to a situation of optimal traffic flows.

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The current level of congestion in Brisbane is estimated to cost $1.59 billion annually, and this is expected to increase 90% to an annual figure of more than $3 billion by 2020.

**What are the costs of road congestion?**

Costs associated with congestion vary according to the number of cars using the road at a specific time and the type of vehicle. The social and economic costs attributed to chronic traffic congestion are illustrated in Figure 2 below:
While most of the congestion costs in Figure 2 are intuitively understood by peak-hour motorists, many aren’t aware of the link between congestion and increased fuel consumption. Congestion is a major contributor to increased fuel usage and vehicle emissions. On-road tests, carried out by RACQ, show that driving in stop-start congested traffic increases fuel consumption and greenhouse gas emissions by around 30% compared with normal driving conditions during the day.²

**What is the situation in south-east Queensland? ... Alarming trends**

Over the next two decades, south-east Queensland’s population is expected to increase by 60,000 people each year. The region is also facing more trips, longer trips and worsening congestion, as highlighted in the Brisbane City Council Transport Plan for Brisbane 2008-2026. The transport plan predicts that both the number of vehicle trips in Brisbane and the total vehicle travel (vehicle kilometres) will increase 31% by 2026. These grim statistics are in line with RACQ member feedback obtained in July 2009. The RACQ undertook member research to gauge motorists’ perceptions about the road network, transport costs and congestion. RACQ members were asked whether they thought congestion had increased over the past five years, and what they expected to occur over the next five years. As shown in Figure 3, more than 90% of respondents believed congestion had worsened in recent years, and would continue to do so.

**Figure 3**

**Congestion management measures**

Five broad strategies are available to manage persistent peak-hour congestion and minimise non-recurrent congestion such as vehicle breakdowns:

1. Road supply – increasing capacity by investing in new roads or adding lanes;

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2. Travel options – improving public transport, walking and cycling facilities;
3. Traffic management – the use of ITS (intelligent transport systems) technology to improve traffic flows, and incident management to minimise network delays caused by accidents and breakdowns;
4. Demand management – reducing or managing the use of roads through pricing mechanisms, education or regulations; and
5. Land use planning – encouraging population growth around transport nodes and positioning employment and services closer to people to reduce average trip lengths and promote alternative travel options.

Affordable private vehicle travel is particularly important from an equity perspective. Rural and outer-suburban households often rely primarily on a car because they have little or no access to convenient, reliable public transport. It is therefore important that strategies to manage congestion are focused on improving alternatives or better managing impacts, rather than constraining car travel.

Table 1 lists a number of measures often used to combat congestion. A description of each measure and RACQ comment is provided, and options are assessed on their ability to reduce congestion.

<table>
<thead>
<tr>
<th>Congestion management measures</th>
<th>Effectiveness</th>
<th>Description and RACQ comment</th>
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<tbody>
<tr>
<td>Road supply</td>
<td>✓ ✓</td>
<td>New roads facilitate trade and access to resources, and are important for maintaining competitiveness and accommodating population growth. For example, investment in new untolled roads to bypass a city, or road expansion to improve traffic flows at specific bottlenecks, can effectively increase productivity. However, while greater road capacity can provide significant congestion relief, it is not always an option due to a lack of land, or high cost.</td>
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<tr>
<td>Travel options</td>
<td>✓ ✓</td>
<td>Public transport, walking and cycling provide alternatives to the car for some trips and can partially alleviate congestion. This warrants continued investment in public transport systems, walking and cycling facilities.</td>
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<tr>
<td>Traffic management - ITS</td>
<td>✓ ✓ ✓</td>
<td>ITS (intelligent transport systems) is a term applied to technology aimed at maximising capacity and efficiency of the existing road system. ITS include initiatives such as:</td>
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- ramp metering to control the number of cars entering a motorway;
- variable speeds;
- improved traffic signal coordination;
- tidal flow to reverse the direction of traffic in one or more lanes during peak periods; and
- communication of real-time travel information using variable message signs, mobile phone systems, internet and radio.

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<tr>
<th>Traffic management - incident management</th>
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| Congestion from accidents and minor incidents, such as a broken down vehicle, can impact on surrounding roads and cause further delays for road users. Quick clearance of accident sites and broken down vehicles is a cost effective way to minimise non-recurrent congestion.

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<tr>
<th>Demand management - inner-city congestion charges</th>
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| These are charges for entry to a congested inner city area. Congestion charges are applied in peak periods and no charge or decreased amounts are applied at less congested times. The aim of congestion charging or pricing is to directly alter demand for road space and encourage the use of alternatives such as public transport, walking, cycling, or off-peak travel. Congestion pricing that varies by location, direction of travel and time of day, utilising e-toll technology currently used on toll roads, is an efficient way to reduce congestion in inner-city areas.

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<tr>
<th>Demand management - increase motoring taxes</th>
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| An increase in broad motoring taxes, such as fuel excise and registration, will not specifically target demand for road space during congested periods. Higher fuel and registration taxes are not directly related to levels of congestion and therefore have little effect on reducing demand at specific times, or in specific locations.

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<tr>
<th>Demand management - pay-as-you-drive charges</th>
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| Pay-as-you-drive pricing converts fixed vehicle taxes and charges into kilometre-based fees. Under this system, insurance and registration can become a variable cost. Those who drive short distances pay less, while those who drive further pay more. This is, however, not a strategy specifically targeted at congestion.

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<tr>
<th>Demand management - road tolls</th>
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| These are charges for the use of a new road, tunnel or bridge. The toll revenue funds construction of the new infrastructure. Tolling new roads is an economically inefficient way to manage congestion. The toll is applied to off-peak travel and toll charges discourage some traffic from using the new road, so many motorists continue to use the congested surrounding road network.

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<th>Demand management - parking policies</th>
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<td>Reducing the number of available parking spaces in a city and increasing parking charges are often promoted as a way to reduce the number of cars entering the central business district (CBD). But in terms of congestion reduction, this is a poor policy instrument. Increased parking fees might deter some motorists from parking in the CBD, but this has no real impact on reducing through traffic. It also increases circulating traffic as drivers go...</td>
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Demand management - behaviour change and education

- Greater education and personalised travel planning can change travel patterns and also reduce car use. In Queensland, the TravelSmart program has been able to affect behaviour change and reduce car usage in favour of increased walking, cycling and public transport trips.

Demand management - workplace initiatives

- When businesses offer employees the opportunity to work from home, or vary start and finish times, it can potentially relieve peak hour congestion. Such flexible employment practices can reduce commuter trips and shift travel to non-peak periods.

Demand management - high occupancy transit lanes

- Transit (T2, T3) or high occupancy vehicle (HOV) lanes are road lanes solely for the use of high occupancy vehicles, such as buses or cars with the designated minimum number of occupants. The theory is that if people are encouraged to use buses or car pool in order to gain access to the faster HOV lane, it will reduce the number of cars on the road, thereby reducing congestion.

  HOV lanes may be appropriate in selected high-volume bus corridors, where they increase the speed and attractiveness of public transport. However, there is little evidence in Australia to show that HOV lanes increase car occupancy. As a result, HOV lanes often remain under-utilised while congestion in adjacent traffic lanes continues to grow.

Land use planning

- Effective land use planning can position facilities closer to people, providing convenient access to employment, education and services. This in turn can accommodate population growth, reduce car trip lengths and facilitate more walking, cycling and public transport use. However, land use changes are expensive and take time, so any congestion relief is incremental over a long period.

**Conclusion**

If policy makers don’t act quickly, traffic congestion in south-east Queensland will deteriorate further. Congestion already costs Brisbane more than $1.5 billion per annum and is projected to rise to $3 billion by 2020. This is a substantial economic, social and environmental problem that requires new policies, planning, services and infrastructure.

Congestion reduction cannot be attained solely by increasing road capacity and transport expenditure. Greater provision of walking, cycling and public transport, coupled with inner-city congestion pricing, effective traffic management and quick clearance strategies, are also necessary.

**Contact:** RACQ Public Policy Department
Ph: 07 3872 8920