

# Airport Link

## Request for Project Change

TRAFFIC AND TRANSPORT TECHNICAL REPORT

- May 2008

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## Document history and status

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# 1. Introduction

This Traffic and Transport technical report has been prepared by the Sinclair Knight Merz (SKM) - Connell Wagner (CW) Joint Venture (JV) as an input to the Request for Project Change assessment for Airport Link. It documents the effects of the Changed Airport Link Project on the traffic and transport findings presented in the Airport Link Environmental Impact Statement (October 2006), and, where applicable, provides comparison with the performance and effects of the Reference Project described in the EIS. The Changed Project is described in the Airport Link Request for Project Change (May 2008).

The SKM-CW JV derived the data in this report primarily from inputs provided by City North Infrastructure (CNI). The passage of time, manifestation of latent conditions or impacts of future events may require further and subsequent data analysis, and re-evaluation of the findings, observations and conclusions expressed in this report.

The traffic and transport assessment presented has also been based on available information from a number of sources including investigations by others, and in some cases, for other projects. Material and reports prepared by others (including those reports referred to in this Traffic and Transport report or specifically identified as having been used as input into the assessment) have not been subject to independent checking and may contain inaccuracies or be based on assumptions that are not applicable to Airport Link.

This report has been prepared on behalf of, and for the exclusive use of, City North Infrastructure, and is subject to, and issued in connection with, the provisions of the agreement between the JV and CNI. The JV accepts no liability or responsibility whatsoever of, or in respect of any use of, or reliance upon, this report by any third party.

## 2. The Project

The primary objective of Airport Link is to provide relief to congested roads in Brisbane's northern suburbs, connect activity centres and provide a sound basis for future traffic management by linking to strategic road connections allowing cross-city travel movements to bypass the Central Business District and inner suburbs.

The Changed Project would have the same strategic network connectivity and number of traffic lanes as the Reference Project, and provides a connection between key elements of the urban road network managed by the Brisbane City Council (BCC) and the Department of Main Roads (DMR). It provides for three (3) lanes of general traffic in each direction in the north-south mainline tunnels, and two (2) lanes of general traffic in each direction in the north-east branch tunnels. The principal functionality of the key network connections would be as per the Reference Project providing the following major attributes :

- The southern connection at Bowen Hills provides connection to Council's road network: to the four (4) lane NSBT for cross-river movement; to Bowen Bridge Road and Campbell Street for traffic movements to the Central City network; and to the Inner City Bypass, a high, quality six (6) lane orbital connection, for east-west travel immediately to the north of the Central City.
- The north-western connection at Kedron provides linkages from both the north-south mainline tunnels and north-east branch tunnels to Gympie Road, an existing DMR-controlled six (6) lane major arterial route for north-south travel, and Stafford Road, an existing four (4) lane major arterial road which forms part of DMR's East-West Arterial Route.
- The north-eastern connection at Toombul connects to the four (4) lane East-West Arterial Road which links to the Gateway Motorway and Brisbane Airport access. The connection also joins to Sandgate Road, a predominantly four (4) lane north-south arterial road.

### 3. Transport and Traffic Demand Forecasting

The EIS used traffic modelling to replicate the existing traffic environment, to forecast future base traffic conditions, and to assess the transport network with and without the Reference Project to determine its' effects. The model used to predict traffic and transport demands, the Airport Link Traffic Model, was based upon the Brisbane Strategic Transport Model (BSTM) while detailed local area assessment was undertaken using an intersection analysis model (SIDRA).

Key State agencies and the Brisbane City Council undertake periodic modelling of the likely future travel demand upon the regional and metropolitan road network to aid with forward planning and infrastructure development. An accepted tool in this on-going process of review and planning is the BSTM.

The BSTM is continually reviewed and for the modelling for the Changed Project assessment the traffic model has been updated to incorporate the latest available information in three key areas:

#### 1. Updated demographic projections

New information on population and demographic projections to year 2026 for each traffic zone (over 1 500 in total) within the Brisbane Metropolitan Area has been included in the model. This was sourced from studies commissioned in 2007 by the state's Office of Urban Management (OUM) and the Council of Mayors (SEQ). A summary of the overall demographic forecasts for the EIS and the updated model for the Changed Project assessment is provided in **Table 3-1**. It is noted that whilst the updated estimates of future population for the Brisbane Metropolitan Area are reasonably similar to the projections used in the EIS, a comparison of the distribution of zonal population within the Brisbane Metropolitan area indicates a greater concentration of growth expected within the western corridor. The revised employment distribution indicates stronger growth in the Australia TradeCoast area, increasing travel pressures to this area.

■ **Table 3-1 – Population and Employment Projections for Brisbane Metropolitan Area**

Year	BSTM Version	Population	Employment
2016	EIS model	2,221,500 <sup>(1)</sup>	1,130,900 <sup>(2)</sup>
	Updated model	2,196,800 <sup>(3)</sup>	1,187,732 <sup>(4)</sup>
2026	EIS model	2,583,700 <sup>(1)</sup>	1,320,500 <sup>(2)</sup>
	Updated model	2,533,400 <sup>(3)</sup>	1,359,937 <sup>(4)</sup>

Table Notes :

- (1) Australian Bureau of Statistics (2005/06)
- (2) Employment opportunities consistent with relevant ABS population projection.
- (3) SEQ Economic and Employment Forecasting Study (PIFU 2007).
- (4) SEQ Economic and Employment Forecasting Study (NIEIR 2008).

## 2. Updated future transport network

Since the EIS, further planning has also progressed on a number of significant road infrastructure projects that would be likely to interact with travel patterns on Airport Link. The effect of these additional road projects has therefore been incorporated in the traffic model, with the following projects added into the base future networks within the transport model:

- Hale Street Link (as per the Hale Street Link IAS), present at 2012 (opening year of Airport Link).
- A more up-to-date representation of the Gateway Upgrade Project including Kingsford Smith Drive ramps, by 2012.
- Northern Link (as per TransApex Pre-feasibility Study), by 2016.

As Section 1 of the Northern Busway (Royal Brisbane Hospital) has now commenced construction, and the Northern Busway (Windsor to Kedron) would be delivered simultaneously with Airport Link, this key public transport initiative has also been included in the future transport networks.

In the comparisons presented in **Chapter 4**, to enable linkage to the EIS, traffic modelling of the Reference Project and the Changed Project has assumed that no significant upgrading is in place at East West Arterial / Gateway Motorway/Airport Drive roundabout and the related East West Arterial / Nudgee Road intersection. In **Chapter 5**, the cumulative effects of the proposed Airport Roundabout Upgrade (ARU) project on Airport Link are examined based on traffic modelling that incorporates the ARU project both with the Reference Project and the Changed Project.

## 3. Updated Airport Link tolls

The Changed Project would incorporate a slightly higher toll than that incorporated within the EIS traffic modelling of the Reference Project. The traffic modelling of both the Reference Project and the Changed Project has been undertaken based on a toll for light vehicles of \$4.00 (expressed in June 2006 dollars including GST) for a full north-south journey (ie Bowen Hills to Kedron, or Bowen Hills to Toombul) and a toll of \$3.00 for an east-west journey (Kedron to Toombul).

The toll level for medium and heavy commercial vehicles has also been updated in the traffic model, to reflect a multiplier of 2.65 times the light vehicles (car) toll level, consistent with the North South Bypass Tunnel.

Traffic modelling indicates that the Reference Project is now predicted to carry more traffic as a result of these updated inputs, particularly the updated employment distribution and network assumptions, with a corresponding effect on the surface road network. Correspondingly, if the Reference Project was not constructed additional congestion of the road network to that reported in the EIS is predicted. This is primarily due to the predicted changed travel demand resulting from the updated demographic projections.

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The BSTM based Airport Link traffic model was then used to consider the effects of the Changed Project based on the same assumptions used in the EIS but also incorporating the changes noted above. This recent traffic modelling indicates that the potential traffic flows for the Changed Project are similar to, but higher than, those estimated in the EIS and slightly higher than the remodelling of the Reference Project. This is due to the predicted increased travel demand resulting from the updated demographic forecasts and base network connectivity already noted, as well as the improved, more streamlined configuration of the surface connections incorporated into the Changed Project compared to the Reference Project. The strategic network performance benefits of the Changed Project would be similar to the Reference Project. This is demonstrated in the comparisons presented in **Section 4.2**.

## 4. Changes in Operational Effects

### 4.1 Demand for Airport Link

The Changed Project would increase the attractiveness of Airport Link by streamlining ramp connections at the North-Western and Southern interchanges. The changes in traffic flows forecast using the updated Airport Link EIS strategic model, compared to the EIS forecasts, are presented in **Table 4-1**. These forecasts indicate that the Changed Project would cater for between 4 and 6% additional vehicles compared to the estimates for the Reference Project in the EIS.

■ **Table 4-1 – Reference Project and Changed Project – changes in Airport Link usage**

Location	Change in Average Weekday Traffic (% change from EIS)	
	Reference Project	Changed Project
2012		
North-South Tunnel	+ 2,200 (3%)	+3,500 (5%)
East-West Ramps	-3,100 (-13%)	-100 (-1%)
Total Airport Link	-500 (-1%)	+3,700 (4%)
2026		
North-South Tunnel	+5,000 (5%)	+7,600 (8%)
East-West Ramps	-3,000 (-12%)	-900 (-3%)
Total Airport Link	+2,000 (2%)	+6,700 (6%)

Table Note:

- (1) The EIS comparisons in the above table relate to the cumulative Airport Link and Northern Busway scenario and are drawn from Section 21.2.1 in Part C of the Airport Link EIS.
- (2) These comparisons exclude the effects of the proposed Airport Roundabout Upgrade (ARU) project.

The forecast usage of Airport Link with the increased toll level for medium and heavy commercial vehicles by 2026 would be approximately 4% for the Reference Project and 5% for the Changed Project. This represents a decline from the proportions forecast in the EIS, however the volume of commercial vehicles removed from the surface network remains beneficial.

### 4.2 Network Performance

The impacts of Airport Link on overall Metropolitan area network performance are shown in **Table 4-2**.

Compared to the Reference Project, the Changed Project would offer greater overall congestion relief, indicated by slightly increased reductions in total vehicle travel hours and slightly improved average travel speeds within the overall network. The Changed Project would continue to reduce the amount of travel on lower order roads (local, district and suburban routes) and redistribute travel to Motorway routes, and would result in a slightly lower impact on overall vehicle kilometres of travel within the network.

■ **Table 4-2 – Reference Project and Changed Project – changes in network-wide benefits**

	2012 Average Weekday			2026 Average Weekday		
	EIS	Reference Project <sup>1</sup>	Changed Project <sup>1</sup>	EIS	Reference Project <sup>1</sup>	Changed Project <sup>1</sup>
<b>VKT [Thousands of vehicle-kilometres]</b>						
Motorway	530 (2.4%)	519 (2.3%)	553 (2.5%)	608 (2.0%)	585 (1.9%)	618 (2.0%)
Arterial	-295 (-1.4%)	-290 (-1.4%)	-331 (-1.6%)	-330 (-1.3%)	-298 (-1.2%)	-351 (-1.4%)
Suburban	-96 (-1.2%)	-93 (-1.1%)	-99 (-1.2%)	-131 (-1.3%)	-133 (-1.3%)	-131 (-1.3%)
District	-36 (-1.1%)	-35 (-1.0%)	-34 (-1.0%)	-59 (-1.4%)	-65 (-1.6%)	-56 (-1.3%)
Local	-19 (-1.4%)	-22 (-1.7%)	-22 (-1.7%)	-29 (-1.8%)	-33 (-2.2%)	-31 (-2.0%)
Total	84 (0.2%)	79 (0.1%)	67 (0.1%)	59 (0.1%)	56 (0.1%)	48 (0.1%)
<b>VHT [Hundreds of vehicle-hours]</b>						
Motorway	48 (1.8%)	49 (1.8%)	51 (1.9%)	42 (1.0%)	53 (1.3%)	37 (0.9%)
Arterial	-123 (-2.6%)	-150 (-3.2%)	-162 (-3.5%)	-195 (-3.2%)	-202 (-3.5%)	-213 (-3.7%)
Suburban	-40 (-2.4%)	-37 (-2.2%)	-42 (-2.5%)	-65 (-2.9%)	-61 (-2.9%)	-58 (-2.7%)
District	-18 (-1.8%)	-7 (-0.7%)	-5 (-0.5%)	-33 (-2.5%)	-31 (-2.2%)	-25 (-1.8%)
Local	-6 (-1.1%)	-21 (-3.9%)	-27 (-5.0%)	-21 (-2.3%)	-29 (-3.6%)	-31 (-3.9%)
Total	-138 (-1.3%)	-167 (-1.6%)	-184 (-1.7%)	-272 (-1.9%)	-270 (-1.9%)	-290 (-2.0%)
<b>Average Trip Speed [Kilometres per hour]</b>						
Total	0.8 (1.5%)	0.9 (1.7%)	1.0 (1.9%)	1.0 (2.1%)	1.0 (2.0%)	1.1 (2.2%)

Table Note:

- (3) From traffic modelling for Reference Project and Changed Project undertaken within updated BSTM-based Airport Link strategic model.
- (4) The EIS comparisons in the above table relate to the cumulative Airport Link and Northern Busway scenario and are drawn from Table 21-3 in Part C of the Airport Link EIS.

### 4.3 Traffic Volume Effects of Airport Link

The effects of Airport Link on key connecting roads are shown in **Table 4-3**. The traffic volume effects of the Changed Project would be generally similar to the Reference Project and the EIS. The streamlined North-West Connection and Southern Connection would produce some differences :

- The estimated traffic reduction on Bowen Bridge Road south of Butterfield Street would be lower and the reduction in volume on O’Connell Terrace would be higher, due to the modified arrangement with the Bowen Bridge Road On-Ramp.
- The Changed Project would result in additional traffic (2,000 vpd in 2026) attracted to Stafford Road, principally between Gympie Road and Richmond Street. The Changed Project incorporates upgrading of the Stafford Road/Richmond Street intersection to accommodate traffic increases.

■ **Table 4-3 – Reference Project and Changed Project – comparison of project effects on key connecting roads**

Location	Change in Average Weekday Traffic – 2012 (% change from Do Minimum)			Change in Average Weekday Traffic – 2026 (% change from Do Minimum)		
	EIS	Reference Project <sup>1</sup>	Changed Project <sup>1</sup>	EIS	Reference Project <sup>1</sup>	Changed Project <sup>1</sup>
<b>Southern Connections</b>						
NSBT (Brisbane River)	2,400 (3%)	4,900 (7%)	4,100 (6%)	8,000 (9%)	11,400 (15%)	11,400 (15%)
ICB (West of Bowen Bridge Road)	2,300 (2%)	2,500 (2%)	3,900 (4%)	2,300 (2%)	-500 (-0%)	-800 (-1%)
Hale Street (North of Milton Road)	200 (0%)	1,000 (1%)	400 (0%)	-700 (-1%)	-700 (-1%)	-700 (-1%)
Bowen Bridge Road (South of O'Connell Terrace)	800 (2%)	-2,500 (-5%)	-4,300 (-9%)	5,400 (10%)	1,200 (2%)	-1,800 (-3%)
Bowen Bridge Road (South of Butterfield Street)	-21,800 (-33%)	-11,700 (-20%)	-6,700 (-11%)	-23,500 (-31%)	-13,200 (-20%)	-5,600 (-8%)
Campbell Street (East of Mayne Road)	4,400 (20%)	8,100 (49%)	7,800 (47%)	5,800 (20%)	9,100 (39%)	7,500 (32%)
O'Connell Terrace (East of Bowen Bridge Road)	-1,700 (-11%)	-900 (-8%)	-2,000 (-18%)	-700 (-4%)	-1,800 (-12%)	-2,300 (-15%)
Brookes Street (South of St Pauls Terrace)	2,700 (13%)	2,900 (15%)	3,000 (16%)	2,400 (10%)	1,000 (4%)	1,600 (7%)
St Pauls Terrace (South of Brookes Street)	1,600 (12%)	600 (4%)	200 (1%)	800 (4%)	1,000 (6%)	400 (2%)
Gregory Terrace (West of Brookes Street)	-800 (-7%)	-200 (-2%)	0 (0%)	-1,800 (-12%)	-400 (-3%)	-300 (-2%)
Wickham Street (West of Brookes Street)	1,600 (5%)	1,700 (6%)	2,200 (8%)	1,500 (4%)	2,000 (7%)	2,500 (8%)
Ann Street (West of Brookes Street)	3,800 (12%)	3,300 (11%)	1,700 (6%)	3,800 (10%)	4,600 (13%)	2,700 (8%)
Montpelier Road (West of Breakfast Creek Road)	3,300 (12%)	3,700 (13%)	2,200 (8%)	2,900 (8%)	2,900 (9%)	1,600 (5%)
Gipps Street (North of Wickham Street)	-2,600 (-6%)	-3,100 (-8%)	-3,300 (-8%)	-2,200 (-5%)	-1,100 (-2%)	-2,100 (-5%)
<b>Northern Connections</b>						
Stafford Road (East of Richmond Street)	14,300 (56%)	13,300 (54%)	15,100 (61%)	17,400 (62%)	16,700 (62%)	18,700 (69%)
Stafford Road (West of Richmond Street)	13,000 (49%)	11,900 (46%)	12,400 (48%)	16,100 (55%)	15,700 (57%)	16,300 (59%)
Stafford Road (West of Webster Road)	6,200 (25%)	5,800 (24%)	5,700 (23%)	9,300 (37%)	8,900 (38%)	8,800 (37%)
Gympie Road (North of Broughton Road)	17,000 (22%)	17,000 (22%)	16,100 (21%)	21,800 (26%)	19,700 (23%)	19,400 (23%)
Gympie Road (South of Kitchener Road)	11,900 (16%)	12,300 (17%)	13,700 (18%)	14,600 (18%)	14,600 (18%)	16,300 (20%)
Gympie Road (North of Rode Road)	4,400 (6%)	4,000 (5%)	4,200 (5%)	8,300 (10%)	6,800 (8%)	6,900 (8%)
Rode Road (West of Gympie Road)	900 (3%)	1,300 (4%)	1,200 (4%)	-600 (-2%)	-100 (-0%)	-100 (-0%)
Sandgate Road (North of Schulz Canal)	-5,800 (-9%)	-4,900 (-7%)	-5,400 (-8%)	-6,400 (-9%)	-1,900 (-3%)	-2,400 (-3%)
East West Arterial (East of Widdop Street)	15,900 (27%)	16,500 (30%)	17,100 (31%)	10,400 (14%)	9,200 (12%)	8,800 (12%)

Table Notes : (1) From traffic modelling for Reference Project and Changed Project undertaken within updated BSTM-based Airport Link strategic model.

(2) Volumes shown are Do Something (with Airport Link) minus Do Minimum (without Airport Link).

## 4.4 Effect on Local Area

### 4.4.1 Traffic Volume

The effects of the project on roads in the local area are shown in **Table 4-4**.

The Changed Project effects on local surface roads compared to the Reference Project would be:

- Increased congestion relief and amenity benefits on Lutwyche Road, as traffic volumes would be reduced by a further 2,000 to 3,000 vpd.
- Increased traffic reduction benefits on key east-west surface routes such as Kedron Park Road-Rose Street-Junction Road and Rode Road.
- Use of Richmond Street by some traffic destined for Lutwyche, due to the revised arrangements connecting westbound traffic from the East-West Tunnel to Stafford Road. The effect of the Changed Project on Richmond Street would be a forecast small increase in traffic (up to 5%).
- The effect on Butterfield Street would continue to be a small decrease in traffic, despite the more direct access to the Airport Link offered by the Bowen Bridge Road ramps.

Effects on other local roads would be generally similar to the Reference Project.

■ **Table 4-4 – Reference Project and Changed Project – comparison of project effects on surface roads within the Inner North Area**

Location	Change in Average Weekday Traffic – 2012 (% change from Do Minimum)			Change in Average Weekday Traffic – 2026 (% change from Do Minimum)		
	EIS	Reference Project <sup>1</sup>	Changed Project <sup>1</sup>	EIS	Reference Project <sup>1</sup>	Changed Project <sup>1</sup>
<b>Arterial Roads</b>						
Lutwyche Road (South of Kedron Park Road, Kedron)	-24,800 (-36%)	-23,300 (-35%)	-26,000 (-39%)	-26,000 (-36%)	-26,200 (-36%)	-29,300 (-40%)
Lutwyche Road (North of Stoneleigh Street, Lutwyche)	-28,900 (-39%)	-26,800 (-37%)	-28,800 (-40%)	-30,100 (-39%)	-30,400 (-39%)	-32,600 (-42%)
Lutwyche Road (South of Newmarket Road, Windsor)	-36,600 (-35%)	-36,700 (-35%)	-38,500 (-37%)	-41,600 (-36%)	-45,300 (-38%)	-47,400 (-40%)
Sandgate Road (South of Junction Road, Clayfield)	-12,700 (-25%)	-11,600 (-23%)	-11,400 (-23%)	-15,400 (-25%)	-14,700 (-24%)	-14,400 (-23%)
Sandgate Road (South of Bonney Avenue, Albion)	-14,300 (-25%)	-13,800 (-25%)	-13,700 (-24%)	-19,500 (-27%)	-19,400 (-27%)	-19,300 (-27%)
Kedron Park Road (East of Lutwyche Road, Kedron)	-5,300 (-15%)	-5,400 (-16%)	-6,800 (-20%)	-6,200 (-16%)	-6,300 (-16%)	-7,800 (-20%)
Junction Road (West of Sandgate Road, Clayfield)	-8,100 (-27%)	-6,900 (-24%)	-7,600 (-26%)	-7,400 (-23%)	-6,700 (-21%)	-6,700 (-21%)
Rode Road (West of Sandgate Road, Wavell Heights)	-5,600 (-23%)	-5,200 (-21%)	-6,100 (-25%)	-6,700 (-24%)	-6,900 (-25%)	-8,000 (-29%)
Nudgee Road (North of E-W Arterial, Hendra)	1,600 (19%)	1,100 (12%)	1,100 (12%)	2,700 (21%)	2,700 (19%)	2,600 (19%)
Nudgee Road (South of E-W Arterial, Hendra)	-4,000 (-18%)	-3,900 (-19%)	-3,900 (-19%)	-4,300 (-17%)	-4,500 (-18%)	-3,700 (-15%)
Kingsford Smith Drive (East of Cookslev Street, Hamilton)	-6,600 (-9%)	-7,500 (-10%)	-7,600 (-11%)	-2,100 (-3%)	-4,500 (-6%)	-4,600 (-6%)
South Pine Road (Kedron Brook, Everton Park)	-6,300 (-13%)	-6,000 (-12%)	-6,100 (-12%)	-6,600 (-11%)	-6,900 (-12%)	-7,100 (-12%)
Enoggera Road (South of South Pine Road, Alderley)	-5,500 (-9%)	-4,400 (-7%)	-4,600 (-8%)	-8,800 (-12%)	-9,200 (-12%)	-9,400 (-13%)
<b>Suburban Roads</b>						
Butterfield Street (West of Bowen Bridge Road, Herston)	400 (4%)	-1,000 (-10%)	-500 (-5%)	-700 (-4%)	-1,400 (-10%)	-1,400 (-10%)
Newmarket Road (West of Lutwyche Road, Windsor)	-8,400 (-25%)	-9,200 (-30%)	-10,300 (-33%)	-9,700 (-23%)	-11,000 (-29%)	-11,500 (-30%)
Hamilton Road (West of Sandgate Road, Wavell Heights)	-3,200 (-15%)	-2,600 (-12%)	-3,500 (-17%)	-4,000 (-17%)	-3,900 (-17%)	-4,300 (-18%)
Kedron Park Road (South of Park Road, Woolloowin)	1,400 (12%)	-100 (-1%)	-400 (-3%)	100 (1%)	-2,400 (-15%)	-2,900 (-19%)
Albion Road (East of Lutwyche Road, Windsor)	-4,300 (-22%)	-5,600 (-29%)	-5,600 (-29%)	-3,000 (-13%)	-5,700 (-22%)	-6,800 (-27%)
Shaw Road (Kedron Brook, Woolloowin)	-1,600 (-10%)	-1,800 (-11%)	-2,100 (-13%)	-2,800 (-15%)	-3,500 (-19%)	-3,900 (-22%)
Chalk Street (West of Bridge Street, Woolloowin)	200 (1%)	-1,500 (-10%)	-1,700 (-11%)	-1,900 (-10%)	-3,900 (-21%)	-4,100 (-22%)
Mavqar Street (West of Lutwyche Road, Windsor)	-900 (-11%)	-1,400 (-16%)	-2,200 (-25%)	-700 (-7%)	-1,300 (-12%)	-2,400 (-22%)
<b>District Roads</b>						
Richmond Street (South of Stafford Road, Kedron)	-900 (-15%)	-800 (-13%)	200 (3%)	-1,200 (-19%)	-1,000 (-17%)	300 (5%)
Edinburgh Castle Road (North of Leckie Road, Kedron)	-1,600 (-21%)	-1,300 (-18%)	-1,100 (-15%)	-2,300 (-25%)	-2,500 (-28%)	-2,000 (-22%)
Dickson Street (North of Wride Street, Woolloowin)	-2,300 (-20%)	-2,500 (-21%)	-2,400 (-20%)	-3,500 (-27%)	-3,400 (-26%)	-3,500 (-27%)

Table Notes : (1) From traffic modelling for Reference Project and Changed Project undertaken within updated BSTM-based Airport Link strategic model.

(2) Volumes shown are Do Something (with Airport Link) minus Do Minimum (without Airport Link).

#### 4.4.2 Intersection Performance

The Changed Project streamlines traffic operations at several intersections in the vicinity of the north-west connection. It also includes a new signalised intersection at Lutwyche Road/ Gallway Street for local access, and improvements at Stafford Road / Richmond Street.

The results of SIDRA intersection analysis at these locations are summarised in **Table 4-5**. Peak period volumes from the updated Airport Link strategic transport model have been applied.

As noted in the EIS, these analyses are based upon conservative assumptions, as no effects of the future potential spreading of the peak period demands beyond a two hour period in the morning and evening has been incorporated.

■ **Table 4-5 – EIS and Changed Project – comparison of key intersection performance forecasts (2022)**

Intersection	AM Peak Hour				PM Peak Hour			
	EIS		Changed Project		EIS		Changed Project	
	Max DOS (X)	LOS	Max DOS (X)	LOS	Max DOS (X)	LOS	Max DOS (X)	LOS
Gympie Road / Stafford Road	1.07	F	0.65	C	1.04	F	0.95	D
Stafford Road / Richmond Street	0.87	C	0.76	B	1.00	E	0.91	C
Lutwyche Road / Kedron Park Road	1.08	F	0.73	C	1.32	F	0.75	D
Lutwyche Road / Gallway Street	N/A	N/A	0.93	B	N/A	N/A	0.88	B
Lutwyche Road / Northey Street	1.00	D	1.01	E	1.03	F	1.12	F
Bowen Bridge Road / Butterfield Street	0.77	C	0.87	C	1.00	D	0.93	C
Campbell Street / Mayne Road / Hamilton Place	0.95	E	1.21	F	0.93	E	1.18	F
Sandgate Road / East-West Arterial Road	1.04	F	1.07	F	1.30	F	1.14	F

Key observations from this assessment of the effects of the Changed Project are :

- Performance at most locations would be similar to, or better than, forecast in the EIS, with improvements in traffic operations in particular around the North-West Connection.
- The new Lutwyche Road / Gallway Street intersection would operate within capacity, however queues in the short right turn pocket for movements from the south would be likely to overflow into the adjacent lane during peak periods. The demand for this movement would need to be

monitored, and if necessary, a right turn ban would need to be implemented during peak periods to ensure safety and network efficiency for northbound traffic on Lutwyche Road.

- Although the Changed Project does not substantially alter the layout of the Campbell Street/Mayne Road/Hamilton Place intersection where the Airport Link southbound off-ramp discharges, a lower level of service of operation would be forecast than the EIS. This is partially attributable to revised expectations of land-use growth in the Bowen Hills area. Changes to the local traffic network accompanying more intense development are still under investigation (by others) and are not incorporated in the strategic model. Further refinement of the local network would be expected to re-distribute traffic, lowering the pressure at this location. It is noted that forecast volumes for the Changed Project would be only 3% higher than for the Reference Project.

#### 4.5 Local Access Effects

The effects of the Changed Project on local access would be generally as described in the EIS, with a small number of variations in the Bowen Hills and Kedron connection areas :

- The modified ramp arrangements, connecting to Bowen Bridge Road north of Butterfield Street and Lutwyche Road north of Northey Street, would remove the need to change traffic operations and local access on O'Connell Street, Campbell Street or Sneyd Street. This would reduce the project's effects on the local area.
- A new link extending Gallway Street to Lutwyche Road would replace Federation Street, providing signalised access to and from the major road for the local catchment including Bryden Street. Due to safety considerations no right turn into Gallway Street would be provided from Lutwyche Road. Traffic from the south would need to use an alternative route to enter this local precinct. For example, access would be available via Grantson Street, Lyons Terrace, and Cartwright Street. Consideration would also be given to providing alternative access. Analysis of the new Gallway Street intersection, shown in **Table 4-5**, indicates that it would provide acceptable traffic performance.
- A pick-up/set-down area would be provided on Lutwyche Road at Wooloowin State School, improving accessibility for students and reducing demands on surrounding local streets.
- Reconfiguration of the Leckie Road/Gympie Road intersection would necessitate the closure of the western end of Arnott Street. Access would be satisfactorily accommodated via Fifth Avenue, while the simplified intersection layout would enhance safety.
- In response to requirements from BCC and DMR, Homebush Road and Broughton Road would be closed at Gympie Road. Satisfactory alternative access would be available from Brookfield Road or Somerset Road via Clarence Road or Mitchell Street.

#### 4.6 Bus Travel Effects

The Changed Project facilitates the staged implementation of the Northern Busway which would provide significantly greater travel reliability, comfort, safety and convenience for public transport patrons. The busway would fulfil a significant public transport task and would be expected to increase bus patronage in the corridor.

The connectivity and broad features of the Northern Busway proposed to accompany the Changed Project would remain generally as identified in the EIS. The additional impact on public transport operations arising from the Changed Project would be expected to be minimal.

More detailed changes to the design of the Northern Busway are described in the *Project Change Report – Northern Busway (Windsor to Kedron)*.

During construction, the Changed Project may require temporary relocation of up to four bus stops in addition to those described in the EIS. Three of these are located on the eastern side of Lutwyche Road (north of Federation Street, north of Annie Street, and north of Chalk Street) while one is on the southern side of Kedron Park Road (outside the Kedron Park Hotel). In all these cases, the temporary bus stops should be located as close as possible to the original bus stop location and with convenient pedestrian access.

On completion of the project, the bus stops in the North-Western Connection area would be replaced by high quality busway facilities.

#### **4.7 Pedestrian and Cyclist Effects**

The Changed Project would provide for essentially the same pedestrian and cycle movements as described in the EIS, with some enhancements particularly at the Northern Connections.

The modifications to Airport Link and Northern Busway accesses at the Southern Connection result in a number of changes in the way these movements would be catered for :

- The new Gallway Street signals would provide local access and a convenient alternative route from the northern Enoggera Creek bikeway to the western side of Lutwyche Road.
- Federation Street would be closed to vehicles at Lutwyche Road, but pedestrian access would be retained, connecting to the ultimate Federation Street busway station.
- The new arrangement of the Northern Busway and Inner City Bypass on-ramps for Airport Link would reduce the number of signalised crossing stages when walking along the eastern side of Bowen Bridge Road. This, and the more direct pedestrian route compared to the Reference Project, would reduce pedestrian delays, although the route remains complex.
- The simplified configuration of the Northey Street intersection would include a wide median on Lutwyche Road, allowing the pedestrian crossing on the southern side of the intersection to be safely staged.

Changes at the Northern Connections would be:

- Simplification of the Gympie Road pedestrian crossings at Kedron Park Road and Stafford Road, made possible by the higher level of grade separation in the Changed Project.
- A new pathway on the western side of the Northern Busway linking the Colton Avenue area and the Kedron busway station with Suez Street. This would be additional to the new pedestrian and cycle bridge to Jack Street foreshadowed in the EIS.

- Connection of the path system near the Fifth Street bridge to the local street network via Brook Street, rather than the Kedron State High School oval.
- Additional pedestrian crossing at the East-West Arterial/Sandgate Road intersection, providing continuous pedestrian routes along both sides of Sandgate Road.

## 5. Cumulative Effects with Other Projects

### 5.1 Northern Busway

The cumulative impacts of the Northern Busway and Airport Link with the Changed Project are described in **Section 4**. As Section 1 of the Northern Busway has commenced construction, and the Windsor to Kedron sections are to be delivered simultaneously with Airport Link, the Northern Busway has been included in the transport modelling for Changed Project. The results have been compared to the combined Airport Link and Northern Busway analysis from the EIS.

The strategic features and functionality of both Airport Link and Northern Busway in the Changed Project are generally as described in the EIS. The incremental effects of the Northern Busway, compared to the combined modelling, would therefore be similar to those outlined in the EIS.

### 5.2 Airport Roundabout Upgrade (ARU) Project

The impact of the Changed Project on the East West Arterial / Gateway Motorway/Airport Drive roundabout and the related East West Arterial / Nudgee Road intersection would be very similar to the impact of the Reference Project. In a scenario without upgrading, at both locations, forecast peak hour total intersection volumes for the Changed Project in 2012 are within 1% of the Reference Project.

With the Airport Roundabout Upgrade (ARU) project in place, east-west accessibility would be improved and additional traffic would be expected to use Airport Link. Traffic modelling of both the Changed Project with the ARU project has been undertaken using the updated BSTM based Airport Link model. Results are summarised in **Table 5-1**.

■ **Table 5-1 Effect of Airport Roundabout Upgrade Project on Reference Project and Changed Project**

Location	Change in Average Weekday Traffic due to ARU Project	
	Reference Project	Changed Project
2012		
North-South Tunnel	+1,700 (2%)	+3,500 (4%)
East-West Ramps	+1,200 (6%)	+1,700 (7%)
Total Airport Link	+2,900 (3%)	+5,200 (5%)
2026		
North-South Tunnel	+7,500 (7%)	+7,900 (8%)
East-West Ramps	+8,900 (39%)	+9,700 (39%)
Total Airport Link	+16,400 (13%)	+17,600 (14%)

Table Note:

- (1) These comparisons show the difference between the forecast Airport Link volumes with and without the proposed Airport Roundabout Upgrade (ARU) project.

The ARU project would result in a similar uplift in traffic volumes using Airport Link for both the Reference Project and the Changed Project. With the ARU project, additional network performance benefits in terms of travel distance and time savings, and congestion relief, are forecast. The quantum of these benefits would be similar for the Reference Project and the Changed Project.

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The ARU project would provide a suitable traffic management solution to relieve congestion forecast at the East-West Arterial/Gateway Motorway/Airport Drive roundabout either without or with Airport Link.

## 6. Changes in Construction Impacts

### 6.1 Spoil Haulage

Traffic generation from spoil haulage for the Changed Project and the Reference Project as described in the EIS are summarised in **Table 6-1**.

■ **Table 6-1 – EIS and Changed Project – comparison of spoil haulage traffic volumes**

Location	Estimated Volume of Spoil Hauled	Overall Duration of Operation	Estimated Average Truck Loads per Day <sup>(1)</sup>	Hours of Spoil Removal (Weekdays)	Average Truck Loads per Hour <sup>(1)</sup>
Reference Project (EIS)					
Southern Connection	450,000 m <sup>3</sup>	32 months	50 (day+night)	24 hours	2/hr
North-Western Connection	975,000 m <sup>3</sup>	30 months	115 (day+night)		5/hr
North-Eastern Connection	185,000 m <sup>3</sup>	16 months	40 (day+night)		2/hr
Changed Project					
Southern Connection	450,000 m <sup>3</sup>	18 months	120/day; 50/night	Day 6:30 am – 6:30 pm Night 6:30 pm – 6:30 am	10/hr day; 4/hr night
Lutwyche Road Worksites	420,000 m <sup>3</sup>	24 months	33/day; 33/night		3/hr day; 3/hr night
North-Western Connection	803,000 m <sup>3</sup>	26 months	68/day; 43/night		6/hr day; 4/hr night
North-Eastern Connection-Tunnel Boring <sup>2</sup>	520,000 m <sup>3</sup>	10 months	274 (day+night)	Day 9 am – 3 pm Night 6 pm – 6 am	15/hr
North-Eastern Connection-Other Works	283,000 m <sup>3</sup>	16 months	40/day; 0/night	Day 6:30 am – 6:30 pm	3/hr day; 0/hr night

Table Notes :

- (1) Average across the total period of operations in each area. Actual traffic volumes will vary considerably during the project depending on activities at the time.
- (2) Anticipated maximum daily haulage traffic with both TBMs in full operation.

The Changed Project would have higher hourly haulage traffic generation than the Reference Project for the following reasons:

- Higher total spoil haulage volume, increased from 1,610,000 m<sup>3</sup> to 2,476,300 m<sup>3</sup>.
- Reduced duration of works in some locations, for example Kalinga Park.
- More detailed construction staging, identifying activity durations more accurately.
- Night-time scheduling of most spoil haulage from tunnel boring and tunnel driving, as well as some cut and cover operations, to reduce the impact on traffic performance.

The number of trucks per hour shown in **Table 6-1** represents only a small increase in the background traffic volumes on the spoil haulage routes.

A CTMP for this each major spoil haulage route would be prepared in accordance with approval conditions to ensure acceptable operating conditions are maintained.

The Changed Project identifies new measures that would reduce impacts on congested areas, including :

- Use of a proposed Northern Haul Route via Rode Road, significantly reducing construction traffic volumes on Lutwyche Road, Bowen Bridge Road and Kingsford Smith Road.
- Use of alternative peak period routes via Toombul Road and via Sugarmill Road, minimising impacts on the East-West Arterial/Gateway Motorway interchange.
- Use of limited haulage hours for tunnel boring operations at North-Eastern Connection, avoiding the 6 am to 9 am and 3 pm to 6 pm peak periods, which significantly reduces haulage traffic through the East-West Arterial/Gateway Motorway interchange.

The impact of haulage traffic on the Northern Haul Route would be expected to be very minor, adding an average of less than 0.5% to expected daily and peak hour traffic on most roads along the route. The greatest proportional influence would occur on Rode Road, but this would also be small, at less than 1.5 % of daily volumes and less than 1% of peak hour flows. Daily heavy vehicle volumes would increase by of the order of 20% on Rode Road, and by less than 5% in most other areas.

An average of 10 trucks per hour would pass through the East-West Arterial/Gateway Motorway/Airport Drive interchange in each direction, rising to 15 per hour in periods of peak activity. This represents well under 0.5% of background peak hour flow. With the peak hour alternative routes, loaded trucks would only use the left turn slip lane from the north, avoiding the key capacity constraints.

Operation conditions at this interchange will be improved by the opening of an alternative access to Brisbane Airport to supplement the existing Airport Drive connection from the Gateway Motorway. The Airport Northern Access Road Project is currently under construction in conjunction with the Gateway Upgrade (GUP). The Northern Access is planned to open in mid-2009, close to the scheduled time for the spoil haulage for tunnel boring operations to begin at the North-Eastern Connection. This, combined with the proposed haulage hours for this traffic, would minimise the potential impact on this key interchange. The new Northern Access to the Airport would also reduce the operational effects of other haulage traffic, and any peak period restrictions adopted may be able to be relaxed.

Analysis for the spoil haulage CTMPs will need to consider the cumulative effect on traffic performance of the Airport Link and simultaneous Northern Busway construction works. Spoil haulage for the Northern Busway which would accompany the Changed Project is estimated to generate an average of 2 truck loads per hour from the Lutwyche Road worksites and 3 per hour from the North-West Connection sites, which would follow the same haulage routes as the Airport Link vehicles. Other projects under construction at the same time, such as the North-South Bypass Tunnel (NSBT) and Gateway Upgrade Project (GUP) would also need to be considered.

## 6.2 Local Impacts – Southern Connection Area

### 6.2.1 Worksites and Access

The main worksite in the Southern Connection area remains near Federation Street and is expanded to the north and east with the Changed Project.

Initial access to this site would be from Federation Street, as identified in the EIS, until Stage 3 when access would be from the new extension of Gallway Street to Lutwyche Road. Access to the staff parking for the main office, east of Addison Street, would be from Gallway Street.

The main worksite would include half the width of Morris Street and the eastern section of Federation Street, providing an internal access road for spoil haulage vehicles separated from residential areas by noise fencing. The remaining public section of these streets would become one-way. Local traffic would exit the area via Addison Street and Gallway Street.

The Changed Project includes a new worksite, for the construction of the elevated Northern Busway and the Airport Link ramp over Lutwyche Road, on the western side of Bowen Bridge Road, as well as satellite offices south of Enoggera Creek.

Access to the work site on the western side of Bowen Bridge Road would be via the Northern Busway Stage 1 access on Butterfield Street, with left in access from Bowen Bridge Road/Lutwyche Road in some stages of the works.

Sections of the Airport Link / ICB / NSBT interchange works, including the satellite site offices south of Enoggera Creek, would be accessed from Campbell Street or Lanham Street. The area between the ICB and the Exhibition rail line would also have access from the ICB, while the central section between Cedric Street and Enoggera Creek would have access from Lutwyche Road via the 'Horace St' connection as well as via the main Federation Street worksite.

Workforce parking would be provided on vacant land north of the Ferny Grove railway line, with access off Albion Road and along McDonald Road. Pedestrian access from this carpark to the southern worksites would be available along the shared path beside Enoggera Creek. Dedicated transport would also be provided to shuttle workers from this carpark to the Southern Connection sites and to other sites such as Truro Street and Lutwyche.

### 6.2.2 Diversions During Construction

Erection of bridges would require night-time closures of several links in the NSBT/ICB interchange. Diversion routes would maintain connectivity during these closures. Identified routes typically include Bowen Bridge Road, Campbell Street and O'Connell Terrace.

The temporary closure of Campbell Street for the O'Connell Terrace on ramp bridge erection in the EIS would not be required with the modified intersection design.

Progressive realignments would be required on Lutwyche Road and Bowen Bridge Road for the changed off-ramp construction.

Federation Street would be closed to local traffic at the start of Stage 2. Access to the Federation Street catchment would be via Bryden Street, as it is at present during construction of the NSBT, until the connection of Gallway Street to Lutwyche Road was opened in Stage 3 in mid-2009.

The shared paths along Breakfast Creek would be closed through Mann Park during construction. Alternative access to Lutwyche Road would be available via Bryden Street, with a pedestrian crossing nearby at Newmarket Road, and via Federation Street or later the Gallway Street Extension.

Temporary footpath closures would occur on the western side of Lutwyche Road between Butterfield Street and Northey Street. The eastern footpath closure currently in place for the NSBT works would remain between Northey Street and Federation Street.

Pedestrian and cyclist access on Campbell Street would be closed in some sections, with diversions via O'Connell Terrace.

Two bus stops, inbound north of Federation Street and outbound near Taylor Street, may need to be temporarily relocated.

### **6.2.3 Effects on Road Users**

Site access for the Changed Project would generally occur from major roads, or link serving mainly commercial areas such as Campbell Street or Lanham Street. McDonald Street also serves a primarily commercial area, and would satisfactorily accommodate additional traffic from the construction carpark.

Residents in the existing Federation Street catchment would be separated from haulage traffic by the noise walls along Morris Street, Federation Street and the northern side of the Gallway Street Extension.

Local access for the Federation Street catchment would be maintained, with some temporary diversions for short distances, and ultimately relocated to the Gallway Street extension. Gallway Street would also carry staff vehicles from the nearby site office carpark, however the majority of workforce parking would be at McDonald Street.

Pedestrian and cyclist connectivity in the areas surrounding the works would be maintained, with some temporary route changes.

Bus operations would not be adversely affected by the bus stop relocations.

A CTMP for this area would be prepared before each construction phase in accordance with approval conditions to ensure acceptable operating conditions are maintained with the proposed temporary arrangements.

## 6.3 Local Impacts – North-Western Connection Area

### 6.3.1 Worksites and Access

The Norman to Colton Avenue worksite proposed in the EIS is reduced in the Changed Project to the western side of Lutwyche Road only, with cut and cover works within Lutwyche Road no longer required.

Access for this site would be similar to the EIS expectations. Workforce parking would be in the DES worksite (described below).

The major worksite on DES and Kedron Park High School property identified in the EIS would be significantly reduced with the Changed Project, and would be generally restricted to the DES site. The eastern area identified in the EIS would be used for construction workforce parking, with access for light vehicles only, from Gympie Road.

All turns access to the DES site would be available at the reconfigured Lutwyche Road/Kedron Park Road intersection, with left in access also provided from Gympie Road.

The Kedron Brook North site, on the eastern side of Gympie Road south of Stafford Road, would have left in-left out access from Gympie Road and left in access from Leckie Road.

Access to the ALOC Building site on Stafford Road would be from Stafford Road.

### 6.3.2 Diversions During Construction

Lasseter Street and Park Street would be closed, with access available via Sadlier Street, Leckie Road, Fifth Avenue and Erksine Avenue. The provision of additional more direct access to Gympie Road for this catchment would be investigated during construction.

The service road on the eastern side of Gympie Road north of Leckie Road would be closed for pavement reconstruction during Phase 2. Access would be available via Sadlier Street and Leckie Road.

Progressive alignment changes would be required, principally on Lutwyche Road and Gympie Road, but also on Kedron Park Road and Stafford Road in some phases.

Daytime tidal flow arrangements with 3 lanes in the peak and 2 in the off-peak direction would be used on Gympie Road north of Leckie Road.

A temporary route for the Kedron Brook shared path would be provided on the northern side of Kedron Brook, including 2 temporary bridges.

Pedestrian access to Kedron State High School from Kedron Brook shared path at western side of playing fields would be maintained, with an access way provided between the DES worksite and the construction carpark to the east.

Some footpath closures would be required during the works. These would include the western footpath on Lutwyche Road between Norman Street and Kedron Park Road, and the footpath along

the service road east of Gympie Road north of Leckie Road. Pedestrians would generally use the footpath on the other side of the road. In the second case pedestrians would be diverted to Leckie Road via the church carpark. The pedestrian crossing of Gympie Road at Leckie Road would also be closed, with pedestrians diverted to the crossing at Stafford Road.

As identified in the EIS, the outbound bus stop north of Norman Ave would be affected. It would be relocated close to the Kedron Park Road intersection in later stages of the works before being replaced by the Northern Busway.

### **6.3.3 Effects on Road Users**

Access to the worksites would be from major roads.

Reasonable access routes for local streets would be provided during temporary closures.

Pedestrian and cyclist connectivity in the areas surrounding the works would be maintained, with some temporary route changes.

Bus operations would not be adversely affected by the bus stop relocation.

A CTMP for this area would be prepared before each construction phase in accordance with approval conditions to ensure acceptable operating conditions are maintained with the proposed temporary arrangements.

## **6.4 Local Impacts – North-Eastern Connection Area**

### **6.4.1 Worksites and Access**

The Toombul worksite would be expanded with the Changed Project to include a greater area of Kalinga Park and the eastern, cul-de-sac end of Lewis Street, as well as the car park between the Airtrain alignment and Schulz Canal.

Access to the Toombul worksite would be generally as envisaged in the EIS, with a new site access route under Sandgate Road linking to the western section of the site and removing the need for access from the East-West Arterial/Sandgate Road intersection. A gate would also be located on Lewis Street for occasional use only, such as delivery of large plant.

Primary parking would be within the site as envisaged in the EIS, with overflow parking available on the southern side of Schulz Canal east of Widdop Street.

### **6.4.2 Diversions During Construction**

Night-time closures would be required in some phases for bridge erection or pavement reconstruction. Diversions would be provided to maintain access. Identified routes run past Centro Toombul and along Noble Street.

Progressive realignments of Sandgate Road through the East-West Arterial intersection would be required. Eastbound traffic on the East-West Arterial would be switched to the new alignment when it is complete.

As described in the EIS, the shared path along Schulz Canal would be diverted to the northern side during construction. A new link to Parkland Street would provide access to Toombul Station. Connections to Sandgate Road and the Toombul shopping centre would be provided.

The Sandgate Road crossings at the East-West Arterial intersection would be replaced by temporary pedestrian signals near Kedron Street, providing access to the nearby bus stop. The eastern footpath on Sandgate Road past the work site would also need to be closed for some phases of the project.

### **6.4.3 Effects on Road Users**

The Changed Project does not require access from the Sandgate Road/East-West Arterial intersection, which would reduce the impact of the works on network traffic performance in the area. Other regular access points are as envisaged in the EIS. Exceptional deliveries via Lewis Street would have only a brief impact on this residential area.

Pedestrian and cyclist connectivity in the areas surrounding the works would be maintained, with some temporary route changes.

A CTMP for this area would be prepared before each construction phase in accordance with approval conditions to ensure acceptable operating conditions are maintained with the proposed temporary arrangements.

## **6.5 Local Impacts – Joint Worksites with Northern Busway**

### **6.5.1 Worksites and Access**

With the Changed Project, the Northern Busway's Truro Street worksite, identified in the Northern Busway CDIMP, would also be used for Airport Link works. The worksite would be expanded from the road reserve identified in the CDIMP to include properties on the western side of Truro Street.

Access to the Truro Street worksite would be left in/left out from Truro Street as identified in the CDIMP, and from Lutwyche Road. Spoil haulage would be actively managed so that empty trucks are called in when there is space on site. Staff parking would be available on site and dedicated transport would also be provided to and from the temporary carpark on McDonald Road.

The Changed Project also includes a worksite on the eastern side of Lutwyche Road between Chalk Street and Bradshaw Street, which is part of the Lutwyche site identified in the Northern Busway CDIMP, expanded eastwards by one parcel.

Access to the Chalk Street worksite would be from Bradshaw Street, left in from Lutwyche Road, and an exit to Chalk Street. The Lutwyche Busway Station site would be accessible from the Chalk Street site and from Bradshaw St and Lamington Ave via the new busway access link. Left in/left out access from Lutwyche Road would also be available for some elements of the works.

Parking would be provided on the resumed properties west of Lutwyche Road near the Bradshaw Street site, with access from Lutwyche Road. Dedicated transport may also be provided from the McDonald Road carpark.

### 6.5.2 Diversions During Construction

The western two lanes on Truro Street will be closed to form part of the worksite.

Several temporary pedestrian route changes would be required :

- For the first phase of work, the western footpath on Lutwyche Road would be closed between Goodacre Street and Albion Road, with pedestrians diverted through Clarke Place. During this phase the pedestrian crossing of Lutwyche Road at Albion Road would be closed. The nearest alternative crossings are at Harris Street and Maygar Street.
- Lutwyche Road's eastern footpath would be closed past the Truro Street worksite, between Maygar Street and Stoneleigh Street. This should not be disruptive as the establishment of the worksite would remove destinations in this area.
- The eastern footpath on Lutwyche Road would also be closed between Felix Street and Chalk Street, with pedestrians diverted around the eastern side of the Chalk Street worksite.
- Around the Lutwyche Busway Station worksite there would be footpath closures on Bradshaw Street and Lamington Avenue. Pedestrians would use the footpaths on the other side of each street.

The existing bus stop on Truro Street may need to be relocated, at least at peak times. For example, a temporary bus stop could be located close to Fosbery Street which would provide pedestrian access to and from the west.

The inbound bus stop on Lutwyche Road north of Chalk Street would need to be relocated while the adjacent footpath is closed.

### 6.5.3 Effects on Road Users

Access to the worksites would occur generally from major roads. The sections of Bradshaw Street east and west of Lutwyche Road affected are short. No residences would remain on the section of Lamington Street used by the Lutwyche Road busway station site access.

Queuing space outside the Truro Street site for empty spoil trucks would be limited. The active haulage management would need to ensure that vehicles waiting to enter the site do not affect through traffic.

Pedestrian and cyclist connectivity in the areas surrounding the works would be maintained, with some temporary route changes. The alternative crossing points for Lutwyche Road while the Albion Road crossing is closed, at Harris Street and Maygar Street, are each over 200 m from Albion Road. Pedestrians would need to be notified of the closure as far as possible in advance.

Bus operations would not be adversely affected by the bus stop relocation.

A CTMP for this area would be prepared before each construction phase in accordance with approval conditions to ensure acceptable operating conditions are maintained with the proposed temporary arrangements.

## 7. Conclusions

The Changed Project includes a number of design changes to improve network performance. Overall, its connectivity and function would remain similar to that described in the EIS. The Changed Project would continue to meet the project objectives of relieving congested roads in Brisbane's northern suburbs, connecting activity centres and providing a sound basis for future traffic management by allowing cross-city travel movements to bypass the Central Business District and inner suburbs.

The Changed Project incorporates improved connections, particularly at Kedron, which would reduce delay for Airport Link users, improve operation of the traffic interface between Airport Link and the surface road network and reduce delays for both Airport Link and other traffic. This would increase the attractiveness of the facility, and would result in:

- Higher forecast usage of Airport Link (6% more users in 2026 than the directly comparative EIS forecast for the Reference Case).
- Improved overall network performance and congestion reduction – greater savings in vehicle hours travelled, improved overall travel speed and reduced impacts of vehicle-kilometres of travel within the network.
- Expected greater reduction in through traffic using key north-south and east-west surface routes through the inner northern suburbs.
- Slightly increased traffic volumes on some arterial connecting roads in close proximity to the project such as Gympie Road and Stafford Road.
- A small increase in traffic on Richmond Street at Kedron, rather than the small reduction previously forecast in the EIS.

The Changed Project would also:

- Maintain local accessibility - with reduced impacts in the O'Connell Terrace area, suitable alternatives for the Arnott Street catchment affected by a new road closure, and a viable albeit less convenient route from the south to the Federation Street catchment;
- Provide similar benefits to public transport as envisaged in the EIS, in conjunction with the accompanying Northern Busway; and
- Provide enhanced pedestrian and cyclist facilities at the northern connections, and maintain similar pedestrian and cyclist accessibility to the Reference Project in vicinity of the southern connection.

The difference in traffic forecasts in the analysis undertaken indicates that the Changed Project offers greater benefits than the Reference Project for the functioning of both the metropolitan and local road networks, with improved capability to relieve present and future surface congestion.