6. Traffic

6.1 Introduction

The CoastConnect — Caloundra to Maroochydore project (CoastConnect) will change the physical layout of the road network in the corridor. The effect of these changes was assessed to determine the potential benefits and impacts to all road users. This traffic and transport analysis of the CoastConnect corridor has been carried out to ensure that:

- the travel times for buses along the corridor are optimised
- adverse impacts are not created for other road users on the corridor
- the impacts to the public during the construction phase can be minimised.

Where possible, impacts have been identified and mitigation measures have been suggested. The traffic conditions were analysed for the base case (i.e. 2006) and for future years (i.e. 2016 and 2026).

6.2 Methodology

A strategic model was created to investigate at a high level travel patterns on the surrounding network and along the corridor. Information from this model was then used to develop peak hour microsimulation models for the corridor that could be used for more detailed assessment of link behaviour and travel times. More detailed intersection modelling was then carried out for key intersections using turning flows from the microsimulation models.

The strategic modelling process was developed using the existing Sunshine Coast Travel Forecasting Model (SCTFM) linked to a new multimodal model created in VISUM. This model was used to determine the future travel patterns resulting from the proposed CoastConnect corridor and other planned works. The strategic model included the base year of 2006 as well as forecast years of 2016 (approximate opening year) and the 2026 (the planning horizon year). The corridor-focused VISSIM microsimulation model was developed for the same years using origin–destination matrices generated by the VISUM model.

Implementing bus priority will reduce capacity for cars in some areas and will remove the potential to increase capacity for cars, so it was important to find out whether any impacts to traffic could be managed or would be insignificant when compared with the benefit to buses.

The traffic impact assessments considered:

- current performance of the existing road network including:
  - current daily volumes to identify the sections of the corridor where there may be congestion
  - current intersection performance to identify the specific points in the network that are currently congested
- future travel times along the corridor, both with and without CoastConnect to determine the impact of the project on the other road users as well as any benefits to bus patrons

- the performance of key intersections along the corridor, which was analysed using SIDRA. The intersection performance was assessed for the AM and PM peaks in 2016 and 2026 using the intersection volume results from VISSIM
- traffic impacts and mitigation measures during the construction phases.

Pedestrian and cycle impacts, parking impacts and bus network integration are covered in separate chapters of this report.

Three traffic modelling packages were used to assess traffic performance: VISUM, VISSIM and SIDRA. VISUM is a strategic transport-modelling package that encompasses a larger geographic area than the study area itself. It is used to forecast changes in travel behaviour and traffic patterns resulting from CoastConnect. VISSIM is a microsimulation transport-modelling package that assesses the traffic flows in the corridor in more detail; it is used to assess travel times, delays and congestion. SIDRA is a transport-modelling package that analyses individual intersections.

The traffic modelling to date has used the best available data and technology however it will be refined in the future to produce more accurate results.

VISUM strategic modelling

Strategic modelling for the CoastConnect corridor was undertaken by MWH using the VISUM modelling package. The existing Sunshine Coast Traffic Forecasting Model, Version 2 (SCTFM2), was used as the basis of strategic modelling. SCTFM was originally developed by Sinclair Knight Merz (SKM) for the former Sunshine Coast councils and DMR using the EMME2 strategic modelling software package. The traffic model network data, land use data, and other traffic modelling parameters were transferred to VISUM and a mode choice model implemented to obtain a multimodal model. Trip generation and distribution were carried out in SCTFM2 and the mode choice and trip assignment was carried out in VISUM. Both SCTFM2 and CoastConnect VISUM model an average weekday.

Traffic and public transport assignments were based on path selection strategies contained in VISUM.

The traffic validation process involved:

- comparison of traffic volumes from the VISUM model with 24-hour link and screenline crossing volumes
- comparison between observed and modelled traffic travel times along certain routes within the bounds of the model.

The public transport validation process involved:

- comparison between public transport data from the model and available ticketing information
- comparison between observed and modelled bus travel times along certain links within the bounds of the model
- the key purpose of the VISUM model was to provide the demand matrices for the VISSIM models so that detailed modelling could be undertaken.

VISSIM microsimulation modelling

A microsimulation model of the CoastConnect corridor was developed using the VISSIM modelling package. The VISSIM model used the VISUM model developed by MWH to obtain the trip matrices for the study area.

The networks modelled in VISSIM were:

- base case 2006 network, and do-minimum networks for 2016 and 2026
- CoastConnect — the proposed improvements to the corridor as detailed by PB in the plans dated January 2009 which are generally consistent with the preferred concepts. This model was created for the years 2016 and 2026.

The 2006 base model was validated according to the micro-simulation validation criteria specifications used by DMR. The traffic count data used in the base case analysis was used to validate the base year VISSIM model.

The bus travel times were validated against the timetabled travel times for route 600. Route 600 was used, as it currently runs along most of the length of the CoastConnect corridor. Data from the South East Queensland Travel Time Survey (2005) was used to validate the travel times of other road users.

The future-year traffic volumes were validated against the VISUM traffic volumes.

Figure 6-1 shows the area modelled in VISSIM. The primary objective was to model the road network where changes would be made (‘core area’ in Figure 6-2). However the model also included areas where CoastConnect does not make any changes to the road network.

The outputs of the VISSIM model for each of the scenarios were:

- average travel speeds per section for bus and other vehicles for each option
- average travel time per section for bus and other vehicles for each option
- time savings for public transport passengers and additional time for private transport users for each option.

These results were used to determine the performance of the traffic network in the future years.

A summary of the VISUM and VISSIM modelling process is available in Appendix E.

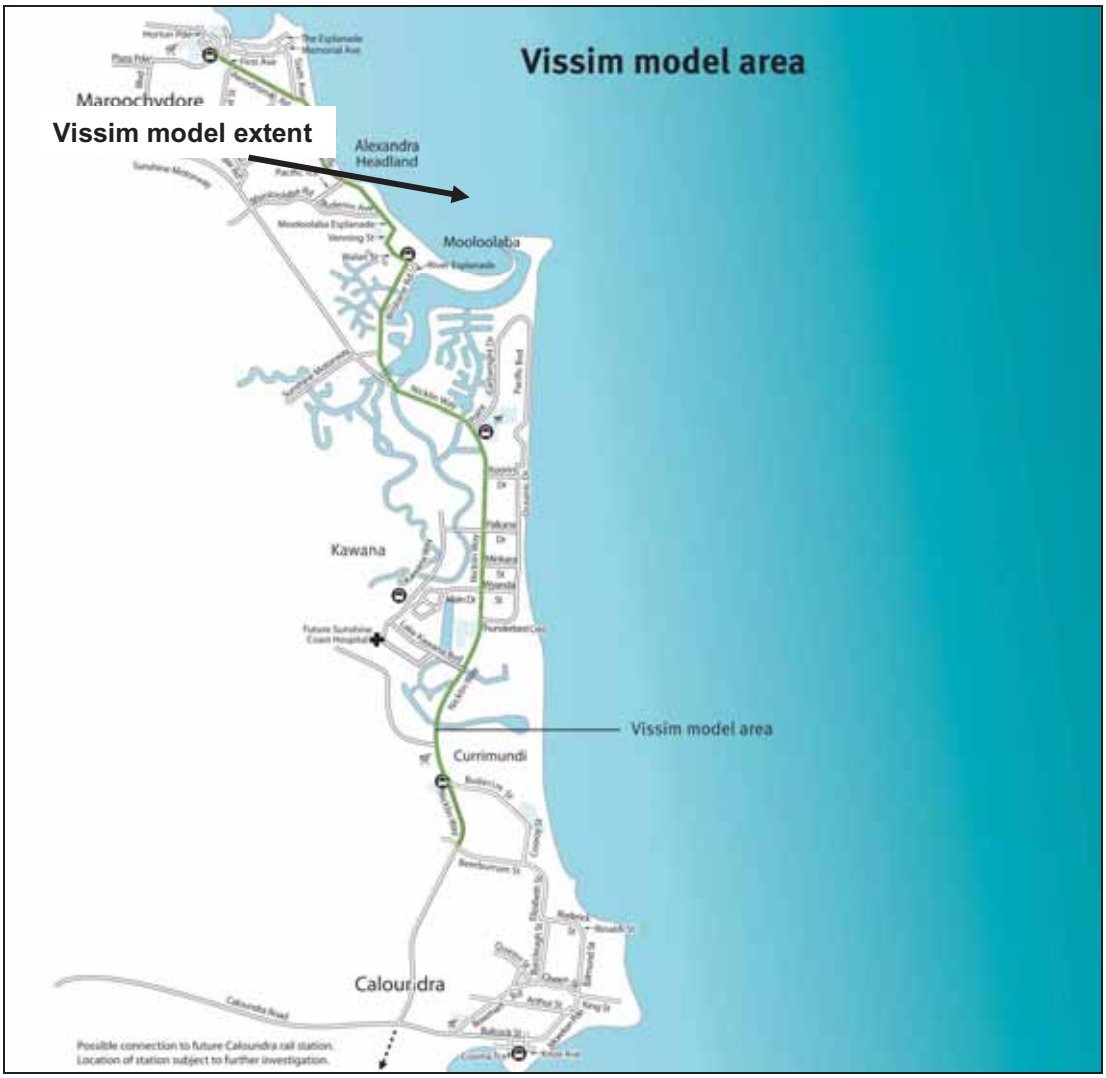

Figure 6-1: VISSIM model area

6.2.1 SIDRA intersection modelling

The year 2006 was used as the base year. The SIDRA package was used to analyse the intersection performance for the base case. The volumes for the mid-block analyses were sourced from the strategic modelling carried out for the base case.

The 2006 volumes for the intersection performance analyses were based on traffic count data at each intersection. The traffic count data was obtained from both the Department Main Roads (DMR) and the Sunshine Coast Regional Council. Where the count data available at an intersection was not for the year 2006, a 2 % annual growth rate was used to determine the 2006 volumes at the intersection. The 2 % growth rate was based on historical annual average daily traffic (AADT) information provided from the permanent traffic counter along Alexandra Parade.

Phase times and cycle times for the signalised intersections were obtained from DMR. These phase times and cycle times were used for 2006 SIDRA analysis.

6.3 Preliminary analysis

6.3.1 Existing situation

Corridor-wide considerations

Table 6-2 shows the 2006 VISUM daily traffic volumes predicted for the corridor. The volumes range from 15,000 to 50,000 vehicles per day. Daily volumes are particularly high at the northern end of Nicklin Way, between Point Cartwright Drive (northern end of Section 4) and Sunshine Motorway (southern end of Section 5).

Table 6-1: Corridor traffic daily volumes

	Section	2006 (vehicles per day)
Nicklin Wy	South of Buderim St	22,000
Nicklin Wy	Between Erang St and Peregrine Dr	35,000–37,000
Nicklin Wy	Peregrine Dr to Lake Kawana Blvd	30,000–33,000
Nicklin Wy	Lake Kawana Blvd to Pt Cartwright Dr	30,000–33,000
Nicklin Way	Pt Cartwright Dr to Parrearra Channel	46,000–49,000
Brisbane Rd	Nicklin Wy to Walan St	10,000–15,000
Venning St/Walan St.	Brisbane Rd to Alexandra Pde	15,000–17,000
Alexandra Pde	Venning St to Okinja Rd	14,000–23,000
Aerodrome Rd/Horton Pde	Okinja Rd to Cornmeal Creek	18,000–20,000

Key intersections along the corridor were analysed in order to identify congestion points along the CoastConnect corridor. The remainder of this section considers the intersection performance in each of the seven sections of the corridor. SIDRA was used to analyse intersection performance, and the level of saturation (LOS) was set to be based on delay. Table 6-2 to Table 6-9 present the degree of saturation (DOS) and '95 % back of queue' length (i.e. out of every 100 queues observed for a movement at an intersection, on average, only 5 queues will exceed its '95 % back of queue' length).

In general the SIDRA results indicate that most intersections are performing at LOS C or better at present. However, there are some intersections operating at LOS E or worse during one or both peaks. The SIDRA movement summaries can be found in Appendix F.

Sections 1 and 2 — Caloundra to Currimundi

CoastConnect will use Moreton Parade, Edmund Street, Roderick Street, Elizabeth Street, Cooroy Street and Buderim Street in Sections 1 and 2. All of these roads fall under the jurisdiction of the Sunshine Coast Regional Council. The Caloundra City Plan Update 2 indicates that these roads are:

- trunk collectors (Moreton Parade, Edmund Street and Roderick Street)
- subarterial roads (Elizabeth Street, Cooroy Street and Buderim Street).

AADT traffic volumes for an average weekday, based on the 2006 base VISUM model for Section 1 and 2, are:

- Bulcock Street (Knox Avenue to King Street) 5,500 AADT
- Edmund Street (King Street to Buccleugh Street) 2,700 AADT
- Elizabeth Street (Roderick Street to Cooroy Street) 14,600 AADT
- Buderim Street (Beerburrum Street to Nicklin Way) 11,300 AADT.

The following two intersections were tested in Section 2:

- Elizabeth Street, Roderick Street and Buccleugh Street
- Nicklin Way and Buderim Street.

Tables 6-2 and 6-3 show the current performance of these intersections as modelled in SIDRA.

The intersection of Nicklin Way, Buderim Street and Bellara Street is operating at LOS E in the AM peak and LOS F during the PM peaks. At this intersection, while the through movements along the corridor (i.e. Nicklin Way) are at LOS C, the primary factor is the poor overall intersection performance in the Buderim Street approach, which is predicted to have a DOS greater than one.

Table 6-2: 2006 AM peak SIDRA results for intersections in Sections 1 and 2

Intersection	LOS	DOS	95 % queue length (m)	Average delay (s)
Elizabeth St, Roderick St & Buccleugh St	LOS C	0.68	153	20
Nicklin Wy, Buderim St and Bellara St	LOS F	1.86	542	117

Table 6-3: 2006 PM peak SIDRA results for intersections in Sections 1 and 2

Intersection	LOS	DOS	95 % queue length (m)	Average delay (s)
Elizabeth St, Roderick St, Buccleugh St	LOS B	0.67	123	17
Nicklin Wy, Buderim St and Bellara St	LOS E	1.13	229	57

Sections 3 and 4 — Nicklin Way and Kawana Town Centre

CoastConnect includes Nicklin Way in Section 3. Nicklin Way falls under DTMR's jurisdiction. Section 4 includes Lake Kawana Boulevard, Kawana Way/Innovation Parkway and Main Drive to provide access to the Kawana Town Centre. Due to the uncertainty of planning for the Kawana Town Centre, it was not possible to create an agreed VISSIM model for this area.

AADT volumes for an average weekday, based on the 2006 base VISUM strategic model for Sections 3 and 4, are:

- Nicklin Way (Buderim Street to Gannawarra Street) 34,200 AADT
- Nicklin Way (Currimundi Creek to Lake Kawana Boulevard) 37,800 AADT
- Nicklin Way (Lake Kawana Boulevard to Point Cartwright Drive) 36,400 AADT
- Nicklin Way (Point Cartwright Drive to Mooloolah River) 51,500 AADT
- Lake Kawana Boulevard (Nicklin Way to Kawana Way) 1,600 AADT
- Kawana Way (Lake Kawana Boulevard to Metier Linkway) 1,400 AADT
- Innovation Parkway (Capital Place to Metier Linkway) 600 AADT
- Main Drive (Kawana Way to Nicklin Way) 2,100 AADT.

SIDRA analysis of 16 intersections in Sections 3 and 4 was carried out to determine base conditions. The results summary is shown in Tables 6-4 and 6-5.

Table 6-4: 2006 AM peak SIDRA results for intersections in Sections 3 and 4

Intersection	LOS	DOS	95 % queue length (m)	Average delay (s)
Nicklin Wy, Currimundi Market	LOS A	0.55	134	6
Nicklin Wy, Erang St	LOS C	1.00	305	20
Nicklin Wy, Gannawarra St	LOS B	0.77	267	18
Nicklin Wy, Anunua St, Piringa St	LOS C	1.00	256	20
Nicklin Wy, Peregrine Dr, Regatta Blvd	LOS A	0.70	173	10
Nicklin Wy, Moondara St	LOS B	0.70	160	16
Nicklin Wy, Lake Kawana Blvd	LOS E	1.05	745	57
Nicklin Wy, Beach Dr, Meridian Dr	LOS B	0.68	172	16
Nicklin Wy, Wyanda Dr, Main Dr	LOS C	1.03	253	35
Nicklin Wy, Minkara St, Waterview St	LOS C	1.11	239	24
Nicklin Wy, Palkana Dr, Kawana Island Blvd	LOS D	1.36	230	40
Nicklin Wy, Koorin Dr, Sunbird Ch	LOS B	0.79	194	11
Nicklin Wy, Lutana St, Nicklin Wy	LOS B	0.70	183	13
Nicklin Wy, Kawana Shoppingworld	LOS A	0.40	65	5
Nicklin Wy, Pt Cartwright Dr, Marawa Dr	LOS C	0.83	202	34
Nicklin Wy, Jessica Blvd, Kensington St	LOS E	0.98	389	63
Kawana Wy, Capital Pl	LOS A	0.17	28	8

Table 6-5: 2006 PM peak SIDRA results for intersections in Sections 3 and 4

Intersection	LOS	DOS	95 % queue length (m)	Average delay (s)
Nicklin Wy, Currimundi Market	LOS B	0.70	221	13
Nicklin Wy, Erang St	LOS B	1.00	231	16
Nicklin Wy, Gannawarra St	LOS B	0.85	337	18
Nicklin Wy, Anunua St, Piringa St	LOS B	1.00	276	19
Nicklin Wy, Peregrine Dr, Regatta Blvd	LOS B	0.84	245	12
Nicklin Wy, Moondara St	LOS A	0.93	132	9
Nicklin Wy, Lake Kawana Blvd	LOS B	0.76	206	12
Nicklin Wy, Beach Dr, Meridian Dr	LOS C	1.01	193	22
Nicklin Wy, Wyanda Dr, Main Dr	LOS C	1.07	186	33
Nicklin Wy, Minkara St, Waterview St	LOS B	0.91	201	16
Nicklin Wy, Palkana Dr, Kawana Island Blvd	LOS D	1.36	391	49
Nicklin Wy, Koorin Dr, Sunbird Ch	LOS B	0.75	161	11
Nicklin Wy, Lutana St, Nicklin Wy	LOS B	0.81	247	17
Nicklin Wy, Kawana Shoppingworld	LOS A	0.55	85	8
Nicklin Wy, Pt Cartwright Dr, Marawa Dr	LOS D	1.00	297	48
Nicklin Wy, Jessica Blvd, Kensington St	LOS F	1.04	514	111
Kawana Wy, Capital Pl	LOS B	0.19	35	12

While most intersections are able to perform at LOS C or better, in 2006 the intersection at Nicklin Way, Jessica Boulevard and Kensington Street is at LOS E during the AM peak and LOS F during the PM peak. All movements at the intersection were found to be congested during both peak hours.

Nicklin Way and Lake Kawana Boulevard intersection is at LOS E during the AM peak. This is primarily due to the large volume of northbound through traffic along Nicklin Way.

Section 5 — Mooloolaba

To ensure local values and visions are achieved along Brisbane Road/Walan Street, the Sunshine Coast Regional Council is leading the design and delivery of this section. Council's Mooloolaba Integrated Land Use and Transport Assessment Study is the current policy position for this section.

The planned improvements included in the Mooloolaba Integrated Land Use and Transport Assessment Study, with additional lanes designated as transit lanes, have been assumed for the transport modelling.

Section 6 — Alexandra Parade

Annual average daily traffic (AADT) volumes for an average weekday, based on the 2006 base VISUM model for Section 6 are:

- Alexandra Parade (Venning Street to Pacific Terrace) 17,400 AADT
- Alexandra Parade (Pacific Terrace to Parker Street) 23,600 AADT.

The following three intersections in Section 6 were analysed:

- Alexandra Parade and Buderim Road
- Alexandra Parade and Pacific Terrace
- Alexandra Parade and Okinja Road .

Tables 6-6 and 6-7 show the SIDRA results for the intersections in Section 6.

The results indicate that the overall intersection performance is at LOS C or better.

Table 6-6: 2006 AM peak SIDRA results for intersections in Section 6

Intersection	LOS	DOS	95 % queue length (m)	Average delay (s)
Alexandra Pde and Buderim Ave	LOS B	0.58	119	13
Alexandra Pde and Pacific Tce	LOS C	0.87	114	22
Alexandra Pde and Okinja Rd	LOS A	0.60	88	10

Table 6-7: 2006 PM peak SIDRA results for intersections in Section 6

Intersection	LOS	DOS	95 % queue length (m)	Average delay (s)
Alexandra Pde and Buderim Ave	LOS B	1.000	137	13
Alexandra Pde and Pacific Tce	LOS C	1.000	370	32
Alexandra Pde and Okinja Rd	LOS A	0.736	67	9

Section 7 — Maroochydore

CoastConnect will use Alexandra Parade, Aerodrome Road and a small section of Horton Parade in Section 7. These are under DTMR jurisdiction.

AADT volumes for an average weekday, based on the 2006 base VISUM model for Section 7 are given below:

- Aerodrome Road (Parker Street to Wrigley Street) 20,200 AADT
- Aerodrome Road (Wrigley Street to Maud Street) 21,900 AADT
- Horton Parade (Maud Street to Church Street) 20,100 AADT.

The following four intersections in Section 7 were analysed:

- Aerodrome Road and Sixth Avenue
- Horton Parade and First Avenue
- Horton Parade and Plaza Parade
- Horton Parade, Cornmeal Parade and Sunseeker Parade.

Tables 6-8 and 6-9 show the SIDRA results for the intersections in Section 7.

The results indicate that while most intersections are able to perform at LOS C or better, the intersection of Maroochydore Road and First Avenue is at LOS F during both the AM and PM peaks. This is due to the right-turn movement from First Avenue.

Table 6-8: 2006 AM peak SIDRA results for intersections in Section 7

Intersection	LOS	DOS	95 % queue length (m)	Average delay (s)
Aerodrome Rd, Sixth Ave	LOS B	0.790	103	18
Horton Pde, First Ave	LOS F	1.318	549	92
Horton Pde, Plaza Pde	LOS C	1.131	164	28
Horton Pde, Cornmeal Pde, Sunseeker Pde	LOS B	0.877	124	16

Table 6-9: 2006 PM peak SIDRA results for intersections in Section 7

Intersection	LOS	DOS	95% queue length (m)	Average delay (s)
Aerodrome Rd, Sixth Ave	LOS D	1.021	263	40
Horton Pde, First Ave	LOS F	1.455	1081	205
Horton Pde, Plaza Pde	LOS C	1.110	198	29
Horton Pde, Cornmeal Pde, Sunseeker Pde	LOS B	1.001	144	17

6.3.2 Potential benefits, impacts and typical mitigation measures

Corridor-wide considerations

Assumptions

Other transport infrastructure projects are proposed for the area affected by CoastConnect, the most notable of which is the Multi Modal Transport Corridor (MMTC). The MMTC is a transport corridor extending from Caloundra Road in the south to Sunshine Motorway in the north.

The MMTC will provide additional capacity for both public transport and general traffic in the study area.

Within the CoastConnect study area, the MMTC will be composed of:

- a motorway-standard road between Caloundra, Mooloolaba and Maroochydore. Work has been completed on the southern section of this road, between Caloundra Road and Creekside Boulevard. Planning work for the section from Creekside interchange northwards is currently under way
- a rail line between Creekside and Maroochy Boulevard; this is part of the Caboolture to Maroochydore Corridor Study (CAMCOS) rail link between Beerwah and Maroochydore.

The new road link is intended to reduce congestion along Nicklin Way. The South East Queensland Regional Plan 2009 to 2031 includes both the MMTC and the CoastConnect projects.

Figure 6-2 shows the MMTC alignment.

The MMTC will have a major impact on the traffic patterns on the CoastConnect corridor. During the course of this investigation, the nature and timing of the delivery of the road and rail aspects of the MMTC have changed.

Figure 6-2: MMTC alignment

(Source: Queensland Department of Main Roads 2009, Multi Modal Transport Corridor, viewed 6 May 2009, http://www.mainroads.qld.gov.au/web/publicCR.nsf/0/65827398AD2082F54A257362000C7695?OpenDocument)

Potential benefits

Public transport mode share increase

The VISUM model forecast that public transport trips per day on the Sunshine Coast network would increase from 25,062 in 2006 to 58,312 in 2026, which is an increase from 2.2 % to 3.3 % of mode share. Although these regional mode share increases are low, the corridor results indicate a higher shift towards public transport, especially in 2016. For example from 2006 to 2016, at Aerodrome Road north of Maud Street, the public transport mode share increases from 5 % to 10 %, while at Alexandra Parade the public transport mode share increases from 12 % to 17 %. These modelling results do not take into account any future travel demand management or travel smart programs that could create greater demand. Traffic models of this type historically underestimate the mode transfers due to infrastructure projects like CoastConnect. Figures 6-3 shows mode shares for selected corridors shile Figure 6-4 shows mode share for selected centres along the corridor.

The VISUM modelling shows that in both 2016 and 2026, the introduction of CoastConnect would increase public transport mode share marginally by 0.06 % and 0.14 % respectively across the entire bus network. This relatively minor increase across the network can be partly attributed to the high level of bus service frequencies provided in both the 'do something' and 'do nothing' scenarios, creating marginal differences between the choice of modes.

The modest gains in public transport mode share are generally a result of large background growth in population and increased trip generation, coupled with the addition of road capacity in the network. It should also be noted that the VISUM model was not able to adequately model congestion at intersections; therefore, the attractiveness of public transport in the model would be underestimated. This would contribute to low public transport forecasts.

CoastConnect will result in a large increase in the reliability and efficiency of the public transport system, which is likely to translate into a greater acceptance by, and attraction of the public to, bus travel. As the public gains confidence public transport as a viable alternative to the private motor vehicle, the mode share is likely to increase beyond the predicted levels.

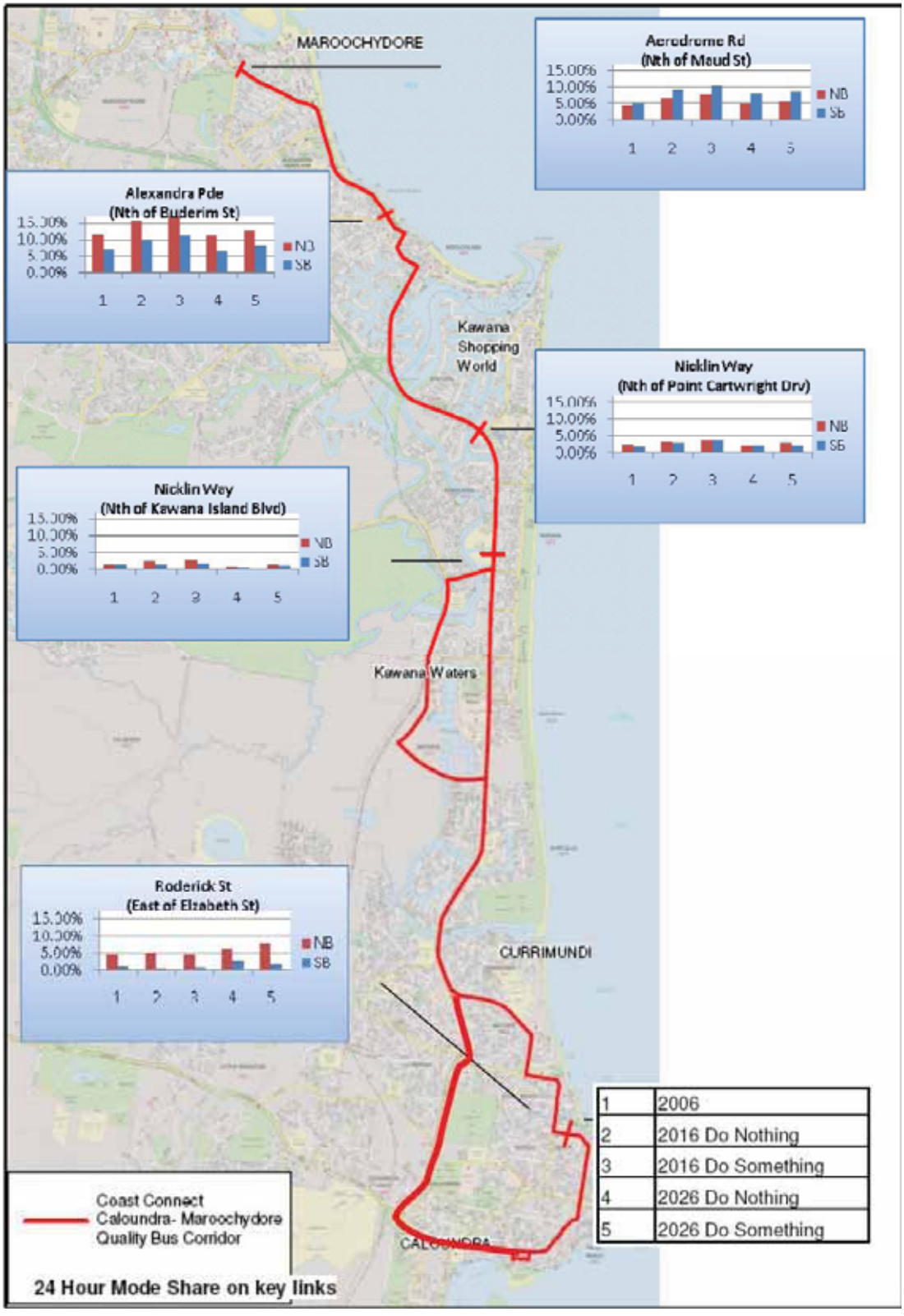

Figure 6-3: Selected key corridors 24 hour mode share results by direction by year (source: MWH 2009)

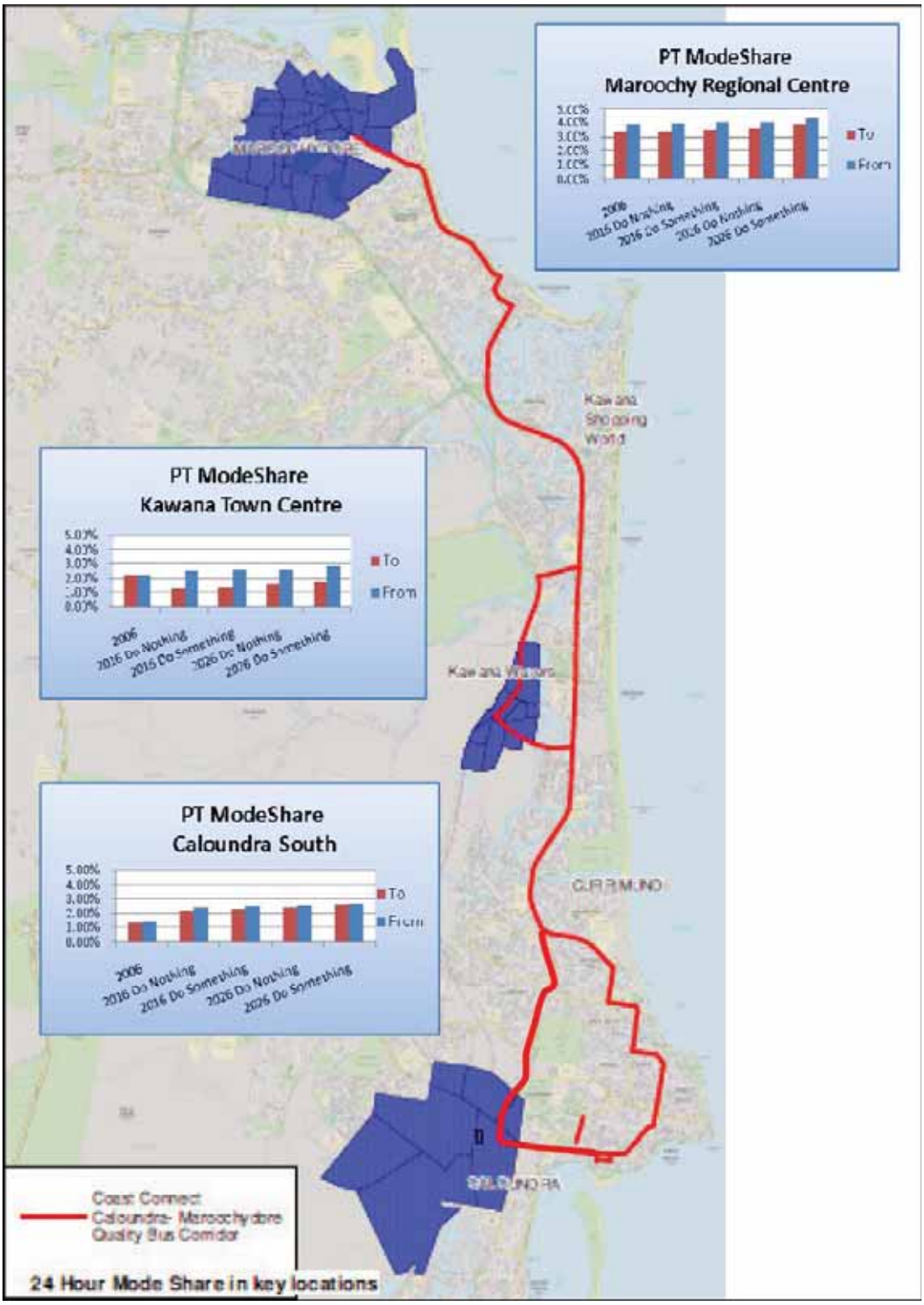

Figure 6-4: Selected key centres – 24 hour mode share results by direction by year (source: MWH 2009)

The modelled trend demonstrates a drop in the mode share in 2026 on particular sections of the corridor due to the return of private vehicles to the corridor. This demand was removed with the introduction of the Multi Modal Transport Corridor (MMTC) in 2016, but as it reaches its capacity, new trips in 2026 are diverted back to the project corridor. This trend correlates only to the patronage percentage and not the volume of public transport users as their numbers continue to rise. The application of additional travel demand measures would further enhance the attraction of public transport trips to major activity centres and encourage an increase in patronage.

Reliability

National and international experience suggests that modest gains in relative travel time when coupled with improvements in reliability and frequency can translate to significant shifts in public transport mode share. The modelling process is based on current trends and surveyed perception of mode choice parameters. While every attempt is made in the model to predict the shift in public perception in the future, and capture the future land use and employment growth resulting from the introduction of CoastConnect, it is anticipated that the parameters may underestimate the mode shift to public transport. Recent figures for Brisbane's South East Busway patronage levels support the fact that actual patronage figures were well above the modelled forecast figures produced in the project assessment process.

Corridor flows

Table 6-10 shows the VISUM projections for daily volumes along the corridor in 2016 and 2026. In general the northern section of Nicklin Way is the busiest section of the corridor although in 2026, Nicklin Way south of Buderim Street is also projected to see significant growth.

Table 6-10: 2016 and 2026 projected daily volumes along the corridor

	Section	2016 (vehicles per day)	2026 (vehicles per day)
Nicklin Way	South of Buderim Street	32,000	52,000
Nicklin Way	Between Erang Street and Peregrine Drive	37,000–38,000	42,000–44,000
Nicklin Way	Peregrine Drive to Lake Kawana Boulevard	36,000–39,000	42,000–44,000
Nicklin Way	Lake Kawana Boulevard to Pt Cartwright Drive	26,000–32,000	33,000–41,000
Nicklin Way	Pt Cartwright Drive to Parrearra Channel	42,000–48,000	49,000–55,000
Alexandra Parade		12,000–17,000	14,000–19,000
Aerodrome Road		17,000–30,000	17,000–35,000

Travel times

Tables 6-11 to 6-18 show the VISSIM travel time results for cars (i.e. general traffic) and buses through the CoastConnect corridor. Bus route 600 was chosen to determine bus travel times through the corridor as the route travels most of the length of the corridor. In order to have a fair comparison, the car travel distance measured was also along the route taken by bus route 600.

Table 6-11: 2016 AM travel times (northbound)

2016 northbound AM peak hour	Car travel time without CoastConnect (minutes)	Car travel time with CoastConnect (minutes)	Bus travel time without CoastConnect (minutes)	Bus travel time with CoastConnect (minutes)
Route 600				
Beerburrum – Kawana Shoppingworld	12	12	20	19
Kawana Shoppingworld – Mooloolaba	8	9	15	11
Mooloolaba – Sunshine Plaza	6	7	17	13
Total travel time	**26**	**28**	**51**	**43**

Table 6-12: 2016 PM travel times (northbound)

2016 northbound PM peak hour	Car travel time without CoastConnect (minutes)	Car travel time with CoastConnect (minutes)	Bus travel time without CoastConnect (minutes)	Bus travel time with CoastConnect (minutes)
Route 600				
Beerburrum – Kawana Shoppingworld	12	11	19	18
Kawana Shoppingworld – Mooloolaba	10	8	21	11
Mooloolaba – Sunshine Plaza	9	8	15	14
Total travel time	**31**	**28**	**55**	**43**

Table 6-13: 2016 AM travel times (southbound)

2016 southbound AM peak hour	Car travel time without CoastConnect (minutes)	Car travel time with CoastConnect (minutes)	Bus travel time without CoastConnect (minutes)	Bus travel time with CoastConnect (minutes)
Route 600				
Sunshine Plaza – Mooloolaba	7	7	14	13
Mooloolaba – Kawana Shoppingworld	8	9	14	12
Kawana Shoppingworld – Beerburrum	10	10	20	20
Total travel time	**25**	**26**	**48**	**44**

Table 6-14: 2016 PM travel times (southbound)

2016 southbound PM peak hour	Car travel time without CoastConnect (minutes)	Car travel time with CoastConnect (minutes)	Bus travel time without CoastConnect (minutes)	Bus travel time with CoastConnect (minutes)
Route 600				
Sunshine Plaza – Mooloolaba	7	7	15	13
Mooloolaba – Kawana Shoppingworld	8	8	14	12
Kawana Shoppingworld – Beerburrum	10	9	21	18
Total travel time	**26**	**24**	**50**	**43**

Table 6-15: 2026 AM travel times (northbound)

2026 northbound AM peak hour	Car travel time without CoastConnect (minutes)	Car travel time with CoastConnect (minutes)	Bus travel time without CoastConnect (minutes)	Bus travel time with CoastConnect (minutes)
Route 600				
Beerburrum – Kawana Shoppingworld	14	14	22	18
Kawana Shoppingworld – Mooloolaba	9	9	16	11
Mooloolaba – Sunshine Plaza	7	7	18	14
Total travel time	**30**	**29**	**55**	**42**

Table 6-16: 2026 PM travel times (northbound)

2026 northbound PM peak hour	Car travel time without CoastConnect (minutes)	Car travel time with CoastConnect (minutes)	Bus travel time without CoastConnect (minutes)	Bus travel time with CoastConnect (minutes)
Route 600				
Beerburrum – Kawana Shoppingworld	12	13	20	19
Kawana Shoppingworld – Mooloolaba	9	9	15	11
Mooloolaba – Sunshine Plaza	7	7	18	14
Total travel time	**28**	**29**	**53**	**44**

Table 6-17: 2026 AM travel times (southbound)

2026 southbound AM peak hour	Car travel time without CoastConnect (minutes)	Car travel time with CoastConnect (minutes)	Bus travel time without CoastConnect (minutes)	Bus travel time with CoastConnect (minutes)
Route 600				
Sunshine Plaza – Mooloolaba	8	8	15	13
Mooloolaba – Kawana Shoppingworld	8	11	14	12
Kawana Shoppingworld – Beerburrum	12	11	20	19
Total travel time	**27**	**29**	**49**	**44**

Table 6-18: 2026 PM travel times (southbound)

2026 southbound PM peak hour	Car travel time without CoastConnect (minutes)	Car travel time with CoastConnect (minutes)	Bus travel time without CoastConnect (minutes)	Bus travel time with CoastConnect (minutes)
Route 600				
Sunshine Plaza – Mooloolaba	7	8	15	13
Mooloolaba – Kawana Shoppingworld	8	11	14	12
Kawana Shoppingworld – Beerburrum	10	10	21	18
Total travel time	**25**	**29**	**50**	**43**

The VISSIM results show that peak hour bus travel times could improve by up to 13 minutes along the corridor due to the improvements made by CoastConnect. The project will also result in significant time savings for buses using the Kawana Shoppingworld bus station where bus drivers report delays of up to 13 minutes currently. Taken together, these savings are equivalent to a total saving of 20 minutes or more in 2026. Beyond 2026, general traffic volumes are expected to continue to grow, and if additional capacity for general traffic is not provided (other than what is currently known), congestion levels for general traffic will continue to increase. The travel time savings for bus patrons enabled by CoastConnect will therefore become even more evident further into the future. However, it should be noted that if further additional road capacity is provided, the attractiveness of public transport will decrease.

It is likely that, in the short term, the benefits of CoastConnect will be evident during times of congestion caused by accidents and other incidents. The bus-related infrastructure provided by the project will allow public transport users to bypass such congestion.

There will also be significant improvements during the holiday periods when traffic and congestion exceeds the average weekday of the model. Holiday congestion significantly affects bus travel times and reliability, and the proposed improvements will allow the buses to bypass much of the congestion.

The stations provided are all on-road bus stations. On-road bus stations minimise the manoeuvres buses stopping at the stations are required to make, thereby reducing overall travel times.

Potential impacts

The results indicate that south of the Kawana Shoppingworld the project has little impact on general traffic. The bus-related changes provide public transport priority without taking away capacity from general traffic. The project does however take capacity away from general traffic along Venning Street and along Nicklin Way between the Mooloolah River and Palkana Drive, resulting in a greater impact on general traffic. But even on these sections, the car travel time increases are only minimal in comparison with the bus travel time savings.

Potential construction-phase impacts and mitigation measures

It is known that the corridor sees increased traffic volumes during the holiday seasons, as the Sunshine Coast is a popular holiday destination. This applies to general traffic as well as pedestrians and cyclists. Therefore construction works for the corridor should be scheduled outside these peak periods.

All bus-related infrastructure to be provided through the corridor involves kerb-side changes (i.e. bus lanes, bus priority measures at intersections and cycle lanes in some sections). Therefore, construction works are likely to affect left-turn access to side roads and driveways. To mitigate such impacts, construction should be staged so that alternative access to streets can always be maintained through other connecting roads.

For example, when left-turn access to Main Drive at the intersection of Nicklin Way, Main Drive and Wyanda Drive is closed due to construction works, construction should be staged to allow left-turn access into Meridian Street at the Nicklin Way, Meridian Street, Beach Drive intersection. Traffic is then able to reach Main Drive by turning left into Meridian Street. The public should also be given advanced warning that such changes will be occurring, and should be advised of alternative routes.

There are some locations where alternative locations for left-turn manoeuvres are not available. For example, if left-turn access to Sunbird Chase at the intersection of Nicklin Way, Sunbird Chase and Koorin Drive is closed, an alternative access to Sunbird Chase via a left turn at another intersection is not available. The public should be given advanced warning of such closures so that they are able to take alternative routes (such as making a right-turn manoeuvre).

Appropriate traffic management measures should be employed at all stages of construction to ensure the safety of both the public and the construction workforce (e.g. barriers). The public should be kept informed of expected works whenever possible to mitigate any impacts.

There may be some interruptions to traffic flow during the installation of some of the bus stops. However, these are expected to be minimal, and are likely to be present for short periods of time. Any impacts can be mitigated through the use of appropriate traffic management measures such as signage and barriers. Where bus stops are being moved, advanced notification should be provided and alternative stops identified and communicated to the public.

Sections 1 and 2 — Caloundra to Currimundi

In Sections 1 and 2, the CoastConnect corridor consists of:

- a new on-road bus station at Cooma Terrace (Caloundra bus station) to integrate with the existing transit station. The existing pedestrian link to Bulcock Street is to be enhanced and provision has been made for an additional new pedestrian link to be finalised during detailed design. It in envisaged that the buses will integrate with the planned Caloundra rail station in the future. The location of this rail station is subject to the outcome of the Caloundra South Rail Corridor Realignment Study
- mostly, bus stops that are not recessed. Most of the existing bus stop locations have been retained
- minimal bus-related changes to the road network along the corridor (i.e. Moreton Parade, Edmund Street, Roderick Street, Elizabeth Street, Cooroy Street and Buderim Street).

Potential benefits

The relocation of the bus station on-road at Cooma Terrace will remove the conflicts that currently exist inside the bus station and clearly define the areas for buses, coaches, cars and pedestrians.

Potential impacts

The relocation of the bus station on-road at Cooma Terrace and the pedestrian crossings proposed are likely to have some impact on traffic operations on this street. Since Cooma Terrace is a minor street, with traffic mostly using it for access, the impact will be minimal.

Along the corridor the project is not making any changes to the road network and will not be removing any capacity from general traffic; therefore, no impacts are expected during the operational stage.

Typical mitigation measures

It is not envisaged that separate mitigation measures will be required for this section.

Section 3 — Nicklin Way

In Section 3, the CoastConnect corridor consists of:

- a new station near the Kawana Shoppingworld site with station platforms on either side of Nicklin Way
- an all-weather overpass has been proposed to link the station platforms with Kawana Shoppingworld
- recessed bus stops along Nicklin Way
- kerb-side bus lanes along Nicklin Way. Nicklin Way will have a six-lane cross-section with four lanes for general traffic, two cycle lanes and two bus lanes. Narrowed medians are provided to maintain on-street parking where possible, as the community indicated it regarded on-street parking as important
- widening to accommodate the existing left-turn slip lanes along the Nicklin Way. These are currently provided to improve capacity at the intersections by reducing the need for the traffic signals to be called to accommodate left turners.

Potential benefits

The bus lanes along Nicklin Way will improve travel times and significantly improve reliability of travel times for buses along the corridor.

The relocation of the bus station at Kawana Shoppingworld from within the shopping centre parking lot to an on-road bus station along Nicklin Way would have a major positive impact on bus travel times. During normal operation, the time to access the existing station has been surveyed at up to 13.7 minutes, and anecdotal feedback from Sunbus drivers suggests that delays of up to 12 minutes are not uncommon due to traffic congestion within Kawana Shoppingworld car park. The new bus station would have no delay to access and exit. The reliability of service timetables would also be improved.

South of Lutana Street the project provides bus priority by adding a lane to Nicklin Way. This will provide for an uncongested route for buses, and add capacity to the general network by removing buses from the general traffic lanes. Retention of the left-turn slip lanes along Nicklin Way will ensure that left turning vehicles clear from the bus lanes allowing efficient operation.

Potential impacts

Existing general traffic lanes will need to be converted to bus lanes for the 3-kilometre section of Nicklin Way between Palkana Drive and Mooloolah River. However, these conversions would only occur once the extension of the Sunshine Motorway over the Mooloolah River is opened. The MMTC will increase the number of lanes available for general traffic on the Mooloolah River crossing.

The widening to accommodate left-turn slip lanes requires significant resumptions of corner blocks and there is continuing negotiation regarding the need for these slip lanes. Should the left turn slip lanes be removed in future design phases there could be additional delays to buses as they wait for turning vehicles to clear from the bus lanes.

Preliminary modelling indicates that there would not be extensive queueing or capacity impacts at most intersections if the left-turn slip lanes were to be removed.

During construction of the corridor, access to properties along Nicklin Way and left-turn movements may be restricted. The construction management plan will need to set out appropriate mitigation measures to maintain a reasonable level of access to properties.

The VISSIM modelling did not indicate any delay or saturation issues at most of the intersections in this section, apart from those at Pt Cartwright Drive and Lake Kawana Boulevard. The operation of these major intersections and three other significant intersections in this section of the corridor was tested in SIDRA for the projected traffic in 2016 and 2026 to assess the operation of the intersections with CoastConnect. The intersections analysed in SIDRA were:

- Nicklin Way, Pt Cartwright Drive and Marawa Drive
- Nicklin Way, Wyanda Drive and Main Drive
- Nicklin Way, Palkana Street and Kawana Island Boulevard
- Nicklin Way and Erang Street
- Nicklin Way and Lake Kawana Boulevard.

The intersection volumes were extracted from the VISSIM model and used a standard 120-second cycle time. The phasing arrangements in the SIDRA analyses were based on the phasing schemes in VISSIM, with SIDRA allowed to optimise the phase times.

Tables 6-19 to 6-26 show the SIDRA results for the overall intersection performance, both with and without the CoastConnect changes in place. The SIDRA movement summaries can be found in Appendix G.

Generally the intersections experience little change in performance due to the CoastConnect changes. However, the intersection of Nicklin Way, Point Cartwright Drive and Marawa Drive generally performs worse with the CoastConnect changes. This is because, at this intersection, CoastConnect converts one lane from general traffic use to a high-occupancy vehicle (HOV) lane. The intersection of Nicklin Way and Lake Kawana Boulevard also experiences some increases in queuing with CoastConnect in the 2016 AM and 2026 PM peak periods. This is due to changes in phase times to accommodate the longer distances pedestrians are required to cross due to the added bus lane at the intersection.

Table 6-19: 2016 AM peak SIDRA results for intersections in Section 3 without CoastConnect

Intersection	LOS	DOS	95 % queue length (m)	Average delay (s)
Nicklin Wy, Pt Cartwright Dr, Marawa Dr	C	0.73	121	25
Nicklin Wy, Wyanda Dr, Main Dr	F	1.27	1493	150
Nicklin Wy, Palkana Dr, Kawana Island Blvd	D	1.30	204	38
Nicklin Wy, Erang St	F	3.12	1645	360
Nicklin Wy, Lake Kawana Blvd	C	0.98	347	25

Table 6-20: 2016 AM peak SIDRA results for intersections in Section 3 with CoastConnect

Intersection	LOS	DOS	95 % queue length (m)	Average delay (s)
Nicklin Wy, Pt Cartwright Dr, Marawa Dr	D	0.94	355	26
Nicklin Wy, Wyanda Dr, Main Dr	B	0.75	185	16
Nicklin Wy, Palkana Dr, Kawana Island Blvd	D	1.30	204	39
Nicklin Wy, Erang St	B	1.00	223	17
Nicklin Wy, Lake Kawana Blvd	C	0.94	402	29

Table 6-21: 2026 AM peak SIDRA results for intersections in Section 3 without CoastConnect

Intersection	LOS	DOS	95 % queue length (m)	Average delay (s)
Nicklin Wy, Pt Cartwright Dr, Marawa Dr	D	0.86	253	37
Nicklin Wy, Wyanda Dr, Main Dr	F	1.08	739	90
Nicklin Wy, Palkana Dr, Kawana Island Blvd	C	0.92	306	31
Nicklin Wy, Erang St	C	1.00	454	32
Nicklin Wy, Lake Kawana Blvd	C	0.98	487	33

Table 6-22: 2026 AM peak SIDRA results for intersections in Section 3 with CoastConnect

Intersection	LOS	DOS	95 % queue length (m)	Average delay (s)
Nicklin Wy, Pt Cartwright Dr, Marawa Dr	D	0.93	380	29
Nicklin Wy, Wyanda Dr, Main Dr	C	0.56	122	21
Nicklin Wy, Palkana Dr, Kawana Island Blvd	C	0.96	206	26
Nicklin Wy, Erang St	B	1.00	232	17
Nicklin Wy, Lake Kawana Blvd	C	0.94	379	29

Table 6-23: 2016 PM peak SIDRA results for intersections in Section 3 without CoastConnect

Intersection	LOS	DOS	95 % queue length (m)	Average delay (s)
Nicklin Wy, Pt Cartwright Dr, Marawa Dr	D	0.73	192	37
Nicklin Wy, Wyanda Dr, Main Dr	E	1.62	454	76
Nicklin Wy, Palkana Dr, Kawana Island Blvd	D	1.30	234	39
Nicklin Wy, Erang St	C	0.88	215	25
Nicklin Wy, Lake Kawana Blvd	C	0.98	347	27

Table 6-24: 2016 PM peak SIDRA results for intersections in Section 3 with CoastConnect

Intersection	LOS	DOS	95 % queue length (m)	Average delay (s)
Nicklin Wy, Pt Cartwright Dr, Marawa Dr	D	0.96	368	41
Nicklin Wy, Wyanda Dr, Main Dr	B	0.68	136	14
Nicklin Wy, Palkana Dr, Kawana Island Blvd	D	1.3	234	42
Nicklin Wy, Erang St	B	1.00	109	18
Nicklin Wy, Lake Kawana Blvd	C	0.84	219	29

Table 6-25: 2026 PM peak SIDRA results for intersections in Section 3 without CoastConnect

Intersection	LOS	DOS	95 % queue length (m)	Average delay (s)
Nicklin Wy, Pt Cartwright Dr, Marawa Dr	D	0.83	233	35
Nicklin Wy, Wyanda Dr, Main Dr	D	0.96	396	44
Nicklin Wy, Palkana Dr, Kawana Island Blvd	E	1.30	602	64
Nicklin Wy, Erang St	C	0.92	349	25
Nicklin Wy, Lake Kawana Blvd	C	0.90	276	25

Table 6-26: 2026 PM peak SIDRA results for intersections in Section 3 with CoastConnect

Intersection	LOS	DOS	95 % queue length (m)	Average delay (s)
Nicklin Wy, Pt Cartwright Dr, Marawa Dr	D	1.00	484	55
Nicklin Wy, Wyanda Dr, Main Dr	C	0.79	220	22
Nicklin Wy, Palkana Dr, Kawana Island Blvd	D	1.30	315	41
Nicklin Wy, Erang St	B	1.00	160	17
Nicklin Wy, Lake Kawana Blvd	C	0.89	285	27

Typical mitigation measures

Based on the SIDRA results, the turn pockets at the northern approaches of the Nicklin Way/Main Drive intersection and Nicklin Way/Lake Kawana Boulevard intersection should be increased to accommodate the predicted queues and reduce the impact on the southbound through movements. Further analysis should be carried out prior to detailed design to confirm the recommended layouts.

Section 4 — Kawana Town Centre

In Section 4, the CoastConnect corridor will include the following:

- bus and cycle lanes will be provided along Lake Kawana Boulevard from Nicklin Way to Central Drive
- bus priority will be provided through Birtinya Island and into and out of the Sunshine Coast University Hospital
- bus lanes are proposed along Main Drive; they will be provided by removing existing on-street parking
- Sportsmans Parade will be realigned to form a signalised cross intersection with Tandem Avenue

- the roundabouts at the intersections of Metier Linkway, Main Drive and Kawana Way will be replaced by signalised intersections
- the roundabout at the intersection of Lake Kawana Boulevard and The Decks will be replaced with a signalised intersection
- the corridor will ultimately integrate with the proposed CAMCOS station
- Bus priority measures around Kawana Town Centre will be investigated further with Queensland Health, the Sunshine Coast Regional Council and Stockland.

Potential benefits

Bus lanes will be provided without removing capacity from general traffic. Bus services are thus likely to benefit from improved reliability without negatively impacting on general traffic. This section of the corridor was not modelled in the VISSIM model because the land use planning and the traffic control for connections to and from the MMTC at the Kawana Town Centre are still under investigation by council, Stockland and DTMR. The benefits have therefore not been quantified.

Bus lanes will be provided along Main Drive by removing the parking lane. It is likely that this change will improve the operation of Main Drive as the removal of the on-street parking will reduce edge effects.

Potential impacts

This section of the corridor was not modelled in the VISSIM model because the land use planning and the traffic control for connections to and from the MMTC at the Kawana Town Centre are still under investigation by council, Stockland and DTMR. The potential impacts have therefore not been quantified.

Typical mitigation measures

There are no specific mitigation measures proposed for this section.

Section 5 — Mooloolaba

If the Sunshine Coast Regional Council were to provide transit lanes through this section, it would reduce bus travel time and provide better reliability. Transport and Main Roads will continue to work with Council in the planning through this area.

Section 6 — Alexandra Headland

In Section 6, the CoastConnect corridor consists of:

- recessed bus stops
- bus priority lanes on the approach and departure of intersections at:
  - Venning Street
  - Buderim Avenue
  - Pacific Terrace
  - Okinja Road.
- the Mari Street intersection will be signalised with queue bypass lanes provided on the eastern side only
- on-road cycle lanes will be provided along Mooloolaba Esplanade and Alexandra Parade.

Continuous bus lanes are not provided in this section as the community indicated it did not support converting Alexandra Parade to six lanes. Queue bypass lanes for buses will be provided at the signalised intersections to allow buses to avoid congestion. These will consist of a short bus lane on the approach and departure side of the intersections so that buses can overtake general traffic by using their right to merge. This arrangement does not take time out of the signal cycle from general traffic and therefore does not impact on general travel times.

Potential benefits

The project will widen intersections to provide for bus priority at these intersections. This will have some benefits to bus travel times and reliability especially in peak traffic conditions, without reducing capacity for general traffic.

Potential impacts

The queue bypasses will rely on traffic giving way to buses entering the traffic stream on the departure side of the intersections. This could be a minor impact on general traffic, but the VISSIM model does not show significant delays along this section for average weekday traffic.

Section 7 — Maroochydore

In Section 7, the CoastConnect corridor consists of:

- a station along Horton Parade near the Sunshine Plaza Shopping Centre, with station platforms on either side of Horton Parade
- a pedestrian overpass is proposed to connect the two platforms of the station
- banning existing right turn (bus only) from Sunshine Plaza
- ultimate closure of Sunseeker Parade to accommodate station platforms

- banning of right turn movement from Horton Parade to Cornmeal Creek to accommodate station platforms
- bus lanes along Aerodrome Road from Third Avenue/Rose Street to the Cornmeal Creek Bridge provided by removing on-street parking
- bus queue bypass lanes at the Sixth Avenue intersection
- some recessed bus stops, with other bus stops on-street in order to reduce property or car parking impacts.

Potential benefits

The bus lanes are provided without removing capacity for general traffic. This will result in some improvement in travel times for buses along this section. It will significantly improve the reliability of bus travel times by allowing buses to bypass congestion.

Potential impacts

Bus priority is provided without taking capacity from general traffic therefore the impact on general traffic using Aerodrome Road and Horton Parade would be minimal. The relocation of the existing bus station would mean that the right turn (bus only) from the car park is no longer needed.

Closure of Sunseeker Avenue combined with the construction of the new bus station will mean that no access is available for the existing car park in front of 164-168 Horton Parade.

Closure of the right turn from Horton Parade into Cornmeal Parade would mean that traffic from the south wishing to access the Cornmeal Parade car park would need to access via First Avenue. This has not been modelled in detail however the Aerodrome Road First Avenue intersection is likely to be operating at capacity and this would worsen the queuing of right turners. The short distance available between Maud Street and First Avenue would make this difficult to accommodate. Traffic arriving via Plaza Parade and wishing to access the Cornmeal Creek car park would need direction to turn right into Horton Parade and then left into Cornmeal Parade.

Typical mitigation measures

During construction of the bus lanes, left-turn traffic will be restricted. The construction management plan should minimise this impact.

6.4 Future investigations

Traffic accessing the MMTC from Lake Kawana Boulevard and traffic along Kawana Way through the Kawana Town Centre could impact on bus services along these sections of the corridor. To determine possible impacts, more detailed investigation of this section is required and should be integrated with planning for the Kawana Town Centre, the Sunshine Coast University Hospital and the interchange to the MMTC.

The VISSIM model did not include the proposed bus layover facility in Church Street, Maroochydore, or the proposed corridor between Maroochydore and Nambour. The operation of these will need to be further examined as part of separate investigations.

The left-turn slip lanes along Nicklin Way may need further analysis if it is necessary to reduce property impacts by removing some of these slip lanes.

Base case modelling indicates that there will be operational issues in Aerodrome Road between Second Avenue and First Avenue due to the short spacing of 3 busy signalised intersections. Further investigation of this issue should be carried out prior to detailed design to ensure that the corridor continues to operate satisfactorily for all users.

The development of the new Caloundra South Development and the resultant traffic generated may impact on the operation of buses along Caloundra Road. It is planned that the express bus routes from Caloundra to Maroochydore will use Caloundra Road.

The scope of this investigation did not include Caloundra Road and its operation. Therefore, the development of the new Caloundra Town Centre and the operation of Caloundra Road and its impact on bus operations should be considered in further investigations. It is believed that bus priority measures may be required along Caloundra Road to minimise delays for bus patrons.

Without effective enforcement it is likely that during congested periods there would be increased illegal use of the bus lanes. This would decrease the effectiveness of CoastConnect. The need for, type and location of appropriate automated enforcement solutions should be investigated. New technology is currently in development to automate the enforcement of bus lanes. Such technology may be appropriate if illegal use is found to be a problem.

The increased public transport capacity resulting from the implementation of CoastConnect will create opportunities to actively increase public transport patronage and reduce car trips through the use of Travel Demand Management (TDM) techniques. These would include parking control and charging, green travel plans for significant trip attractors, travel awareness campaigns and land use changes to support transit-oriented development. TDM measures would be aimed at achieving a long-lasting behaviour change that would benefit from and support CoastConnect. Future modelling could incorporate some of the benefits from TDM to obtain more positive mode share results.

6.5 References

MWH 2009, *CoastConnect: Caloundra to Maroochydore quality bus corridor transport model development report*, MWH, Brisbane.

PB 2009, *CoastConnect (Caloundra to Maroochydore) VISSIM traffic modelling report*, Parsons Brinckerhoff, Brisbane.