Logan City Council:
Priority Infrastructure Plan (2011)

- Traffic Forecasts
  (Appendix A: Figures)

Prepared for
Logan City Council

By
Veitch Lister Consulting Pty Ltd
<table>
<thead>
<tr>
<th>Project Name</th>
<th>Project No.</th>
<th>Report Name</th>
<th>Version</th>
<th>Date</th>
<th>Author</th>
</tr>
</thead>
</table>
Structure of the ZENITH Integrated Travel Demand Forecasting Model

Figure 2.1

Zone Trip Production Variables
- households
- household size
- workers (blue & white collar)
- dependents (0-17, 18-64, 65+)

Car Ownership Model
Zonal car ownership is sensitive to socio-economic characteristics and accessibility by car and transit

Household Segmentation Model
- persons
- workers
- dependents
- cars

Trip Production Model
- Production Zonal Trip Ends for Segmentation
  - HBW - blue, HBW - white
  - HBE - prim, HBE - sec
  - HBE - tert, HBShop
  - HBRec, HBOther
  - WBW, WBS, WBO
  - SBS, SBD
  - ONHB

Travel Market Segmentation Model
Segments Travel Market by journey purpose and level of car ownership

Accessibility Model

Transit Network
- walk access time
- car access time
- wait time
- in-vehicle time
- transfer time
- fares

Highway Network
- link speeds
- operating costs
- parking charges

Zonal Trip Attraction Variables
- population
- households
- education enrolments (3 levels)
- employment by industry (13 levels)

Accessibility Model

Trip Distribution Model
Produces zone to zone person trips by purpose and car availability.

Time Period Model
- by 3 time periods
- by journey purpose

Primary Mode Choice Model
- non motorised trips
- transit trips
- car trips

Person Trips by Non-Motorised Modes

Person Trips by Transit

Person Trips by Car

Car Occupancy Model
- by purpose
- by car ownership
- CBD/non-CBD
outputs vehicle trips

Transit Assignment
Loads transit passengers onto transit network - three time periods

Vehicle Assignment
Loads vehicle matrices onto highway network - three time periods

Transport System Performance
- value of time spent travelling
- boardings & alightings
- car and CV volumes
- vehicle travel distance
- fare revenue

- environmental impacts
- accident costs
- operating costs
- private cars
- commercial
- transit system

Commercial Vehicle Model
- light commercial
- medium and heavy commercial

Time Period Model
- by 3 time periods

Commercial Vehicle Trips

Rerun Model for Congestion Effects
Figure 2-2 Extent of VLC's Models of SEQ

Core Area

Buffer Area

Gympie

Toowoomba

Sunshine Coast (R)

Moreton Bay (R)

Somerset (R)

Ipswich (C)

Logan (C)

Redland (C)

Gold Coast (C)

Scenic Rim (R)

Tweed Heads

Tweed

Heads

Heads

Heads

Heads

Toowoomba

Ipswich (C)

Logan (C)

Redland (C)

Gold Coast (C)

Scenic Rim (R)

Tweed Heads

Tweed

Heads

Heads

Heads

Toowoomba
Figure 2-3

Extent of the Fine-grained Zone System
Figure 3-1b Employment Distribution, 2006

Employment Density (Jobs/ha.)
- 100+
- 75 to 100
- 50 to 75
- 25 to 50
- 10 to 25
- 5 to 10
- 1 to 5
- 0 to 1
Figure 3-2 Model Road Network, 2006
Figure 3.3a: Comparison of Average Weekday Traffic - SouthRoC & BCC Area

\[ y = 0.9378x \]

\[ R^2 = 0.9712 \]
Figure 3.3b: Comparison of Heavy Vehicle Volumes - SouthRoC & BCC Area

\[ y = 0.9838x \]

\[ R^2 = 0.8572 \]
Screen-lines used for model validation
Validation of weekday traffic volumes across all screen-lines

Figure 3.5
Modelled volumes versus counts for all screen-line crossings (24 hour – all vehicles)  
Figure 3.6a

Modelled volumes versus counts for all screen-line crossings (24 hour – commercial)  
Figure 3.6b

Modelled volumes versus counts for all screen-line crossings (AM peak 2-hour – all vehicles)  
Figure 3.6c
Validation of weekday traffic volumes across Oxley Creek screen-line

Figure 3.7a
Validation of weekday traffic volumes across Brisbane / Logan screen-line

Figure 3.7b
Validation of weekday traffic volumes across Redland / Logan screen-line Figure 3.7c
Validation of weekday traffic volumes across Logan Motorway screen-line  

Figure 3.7d
Validation of weekday traffic volumes across Logan River screen-line

Figure 3.7e
Validation of weekday traffic volumes across Albert River screen-line

Figure 3.7f
Figure 3.8

R² Regression Plot of Modelled and Observed Weekday Traffic Volumes (Logan)

Figure 3.9

Screenline Total Daily Volumes vs DOT Criteria

Screenline Total 2hr Volumes vs DOT Criteria

Figure 3.10
Figure 4-1a Forecast Population Growth (LDPM), 2009 to 2021

Change in Pop. Density
(Persons / Ha.)
-1 to 1
-5 to -1
<-5
1 to 5
10 to 25
25 to 50
50 to 75
75 to 100
100+
Figure 4-1b Forecast Population Growth (LDPM), 2021 to 2031

Change in Pop. Density (Persons / Ha.)

- 100+
- 75 to 100
- 50 to 75
- 25 to 50
- 10 to 25
- 5 to 10
- 1 to 5
- -1 to 1
- -5 to -1
- <-5
Figure 4-1d Forecast Population Growth (LDPM), 2009 to 'Ultimate'

Change in Pop. Density
(Persons / Ha.)

- 100 +
- 75 to 100
- 50 to 75
- 25 to 50
- 10 to 25
- 5 to 10
- 1 to 5
- -1 to 1
- -5 to -1
- < -5
Figure 4-2a 'As Modelled' Population Distribution, 2021

Population Density (Persons / Ha.)

- 100 +
- 75 to 100
- 50 to 75
- 25 to 50
- 10 to 25
- 5 to 10
- 1 to 5
- 0 to 1

'As Modelled' Population Distribution, 2021 Figure 4-2a
Figure 4-2b: 'As Modelled' Population Distribution, 2026

Population Density (Persons / Ha.)

- 100 +
- 75 to 100
- 50 to 75
- 25 to 50
- 10 to 25
- 5 to 10
- 1 to 5
- 0 to 1
Figure 4-2c 'As Modelled' Population Distribution, 2031

Population Density
(Persons / Ha.)

- 100 +
- 75 to 100
- 50 to 75
- 25 to 50
- 10 to 25
- 5 to 10
- 1 to 5
- 0 to 1
Figure 4-2d 'As Modelled' Population Distribution, 'Ultimate'

Population Density (Persons / Ha.)
- 100 +
- 75 to 100
- 50 to 75
- 25 to 50
- 10 to 25
- 5 to 10
- 1 to 5
- 0 to 1
Figure 4-3a Forecast Employment Growth (LDPM), 2009 to 2021

Change in Emp. Density (Jobs / Ha.)
- 100 +
- 75 to 100
- 50 to 75
- 25 to 50
- 10 to 25
- 5 to 10
- 1 to 5
- -1 to 1

Forecast Employment Growth (LDPM), 2009 to 2021
Figure 4-3b Forecast Employment Growth (LDPM), 2021 to 2031

Change in Emp. Density (Jobs / Ha.)

- 100 +
- 50 to 75
- 25 to 50
- 10 to 25
- 5 to 10
- 1 to 5
- -1 to 1
- -5 to -1
- <-5
Figure 4-3c Forecast Employment Growth (LDPM), 2031 to 'Ultimate'

Change in Emp. Density (Jobs / Ha.)
- 250 +
- 100 to 250
- 75 to 100
- 50 to 75
- 25 to 50
- 10 to 25
- 5 to 10
- 1 to 5
- -1 to 1
- -5 to -1
- < -20

Forecast Employment Growth (LDPM), 2031 to 'Ultimate'
Figure 4-3d Forecast Employment Growth (LDPM), 2009 to 'Ultimate'

Change in Emp. Density (Jobs / Ha.)
- 250 +
- 100 to 250
- 75 to 100
- 50 to 75
- 25 to 50
- 10 to 25
- 5 to 10
- 1 to 5
- -1 to 1
- -5 to -1
- < -20

Forecast Employment Growth (LDPM), 2009 to 'Ultimate'
Figure 4-4b 'As Modelled' Employment Distribution, 2026

Employment Density
(Jobs / Ha.)

- 100 +
- 75 to 100
- 50 to 75
- 25 to 50
- 10 to 25
- 5 to 10
- 1 to 5
- 0 to 1

'As Modelled' Employment Distribution, 2026
Figure 4-4c 'As Modelled' Employment Distribution, 2031
Figure 4-4d 'As Modelled' Employment Distribution, 'Ultimate'