



Stirling Modelling Summary

Working Group objectives

- Reducing the impact of regional traffic on roads within the Alliance area;
- Protecting the public transport Interchange from roads carrying high volume regional traffic;
- Determining which Freeway connections can best serve the combined Stirling, Osborne Park and Herdsman areas; and
- Reducing the need for high cost Freeway works such as CD roads.

Methodology

GHD have previously undertaken an extensive exercise investigating likely trip generation characteristics of the Stirling Regional Centre (SRC) based on latest land use yields. These assumptions have been imbedded in the MRWA ROM to provide more robust forecasts of traffic likely to be associated with the SRC. The aim was to take advantage of and build on the work completed by GHD while capitalising on the capabilities of ROM to produce an integrated tool to move forward with traffic planning for the SRC.

Modelling Options – Connections to Freeway

A series of transport network options were modelled by the Stirling Modelling Working Group to determine the preferred connections to the Mitchell Freeway. The following list summarises the connections included in each option:

Option 1

- Karrinyup Road – North and South
- Hertha Road – South only
- Cedric Street – none
- Stephenson Avenue – North and South
- King Edward Road – North and South
- Hutton Street – North and South
- Tunnel
- Herdsman/Glendalough adjustments (changes to the internal network between Jon Sander Drive and Scarborough Beach Road. Please see ROM plot attachments for further information).
- Powis Street North and South

Option 2

- Same as option 1 but with no tunnel

Option 3

- Karrinyup Road – North and South
- Hertha Road – South only
- Cedric Street – North only
- Stephenson Avenue – South only
- King Edward Road – North and South
- Hutton Street – North and South
- Tunnel
- Herdsman/Glendalough adjustments
- Powis Street – North and South



Option 4

- Karrinyup Road– North and South
- Hertha Road – None
- Cedric Street – North and South
- Stephenson Avenue – None
- King Edward Road – None
- Herdsman/Glendalough adjustments
- Hutton Street – North and South
- Powis Street – North and South

Option 5

- Karrinyup Road – North and South
- Hertha Road– North and South
- Stephenson Avenue – None
- Cedric Street – None
- King Edward Road – North and South
- Herdsman/Glendalough adjustments
- Hutton Street - South only
- Powis Street: North and South

Option 6

- Karrinyup Road: North and South
- Hertha Road: None
- Cedric Street: None
- Stephenson Ave: None
- Kind Edward Road: North only – (Sarich Court will be LILLO connecting to King Edward)
- Herdsman/Glendalough adjustments
- Hutton Street: South only
- Powis Street: North and South
- (Note Sarich Court needs to be left in / left out only at King Edward due to the proximity to the King Edward interchange)

Option 7

- Karrinyup Road: North and South
- Hertha Road: None
- Cedric Street: None
- Stephenson Ave: North and South
- King Edward Road: None
- Herdsman/Glendalough adjustments
- Hutton Street: North and South
- Powis Street: North and South

(Note: For 6 and 7 Hutton St is 3 lanes each way between the ramps (i.e. 2 through lanes, one right turn onto the Freeway)

Option 6a and 7a

The only change for options (a) is reducing the number of lanes on a short length of Cedric Street over the freeway.



Option 8

Same as option 7 but with Hertha Road overpass removed

Option 8a

This variation removes the CD roads on the Mitchell Freeway South of Stephenson Ave and instead upgrades the section to 4 lanes each way to south of Powis Street.

Results Overview

Reducing the impact of regional traffic on roads was not achievable. The modelling indicated that high volumes of regional traffic will travel along Stephenson Avenue regardless of the network configuration.

The tunnel options, 1 and 3, both show tunnel volumes of 46K vpd which, as expected, does not justify a tunnel at 2031 and therefore was not considered further in the subsequent modelling exercises. Even though, in option 2 the Freeway is connected to Stephenson (not Cedric) and the reverse for option 4, there is little difference between the options in the Stephenson volumes.

There are large volumes in the links between Ellen Stirling Boulevard and Stephenson Ave option 4. This is likely due to traffic trying to use Stephenson Ave to go southwest, hence the volumes on Stephenson Ave are pretty similar – i.e. with or without the connection to the Mitchell Freeway they will find their way there to pass through the area.

In option 2 and 4 the differences on Ellen Stirling Boulevard and Hutton Street are not significant. The largest variation is on Cedric St west of the Freeway with 27K for option 2 and 52K for option 4. Pearson St has very high volumes with 64K (option 2) and 66K (option 4).

Option 5 was designed to provide balanced Freeway connections for Stirling, Osborne Park and Herdsman, a shift of regional traffic away from the public transport interchange entrances and minimise the need for CD roads along the Freeway.

Limiting freeway connections was further explored with options 6 and 7. This resulted with 7 being the preferred option. However, this was modelled again (option 8) with the removal of the Hertha Road overpass in order to align it to the current Structure Plan map.

Options 8a was subsequently modelled to consider the demand distribution resulting from the removal of CD roads. These outputs will require further analysis to determine the potential of this option.

Potential Next Step Modelling Work

1. Finalise ROM scenarios and make determinations regarding the big items – (C-D roads, number of Freeway lanes, interchanges, etc.).
2. Mesoscopic – to fine tune and shortlist preferred options including precinct connectivity and locations and to refine demand estimates for a micro/nano level model.
3. Ultimately nanoscopic to understand operational performance of the preferred option – this gets down to a traffic engineering level and would include the modelling of people trips (buses, passengers, cars, drivers, pedestrians), full traffic signal actuation – this would most likely be at a corridor / minimal network level so it's operation can be analysed in detail with less concern for how the wider area is operating as that would have been largely dealt with at the mesoscopic level.