

9<sup>th</sup> October, 2008

# Transport Modelling Report

Addendum: Evaluation of an  
Alternative Public Transport Scenario

**Contract No 07/021**  
**Growth Area Planning**  
**Toolern Precinct Plans**

Prepared for





**VLC Project 07-041**

**Melton Shire Council  
Contract No 07/021**

**GROWTH AREA PLANNING  
TOOLERN STRUCTURE PLANS**

**Transport Modelling Report**

**Addendum**

**Evaluation of an Alternative Public Transport Scenario**

<b>Date</b>	<b>Revision</b>	<b>Prepared By</b>	<b>Checked By</b>	<b>Approved By</b>	<b>Description</b>
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## 1 Introduction

On 30 September 2008, VLC submitted the *Transport Modelling Report* for the Toolern Precinct Plans. This addendum outlines an Alternative Public Transport Scenario (Alternative Scenario) to that proposed in the Toolern Precinct Plans and provides a comparative assessment of the two public transport scenarios.

## 2 Scenario Descriptions

The public transport proposal included in the Toolern Precinct Plans (the Structure Plan Scenario) and adopted in the original transport modelling work (*Transport Modelling Report*, VLC 2008) represents a significant improvement over the public transport facilities and services that exist today.

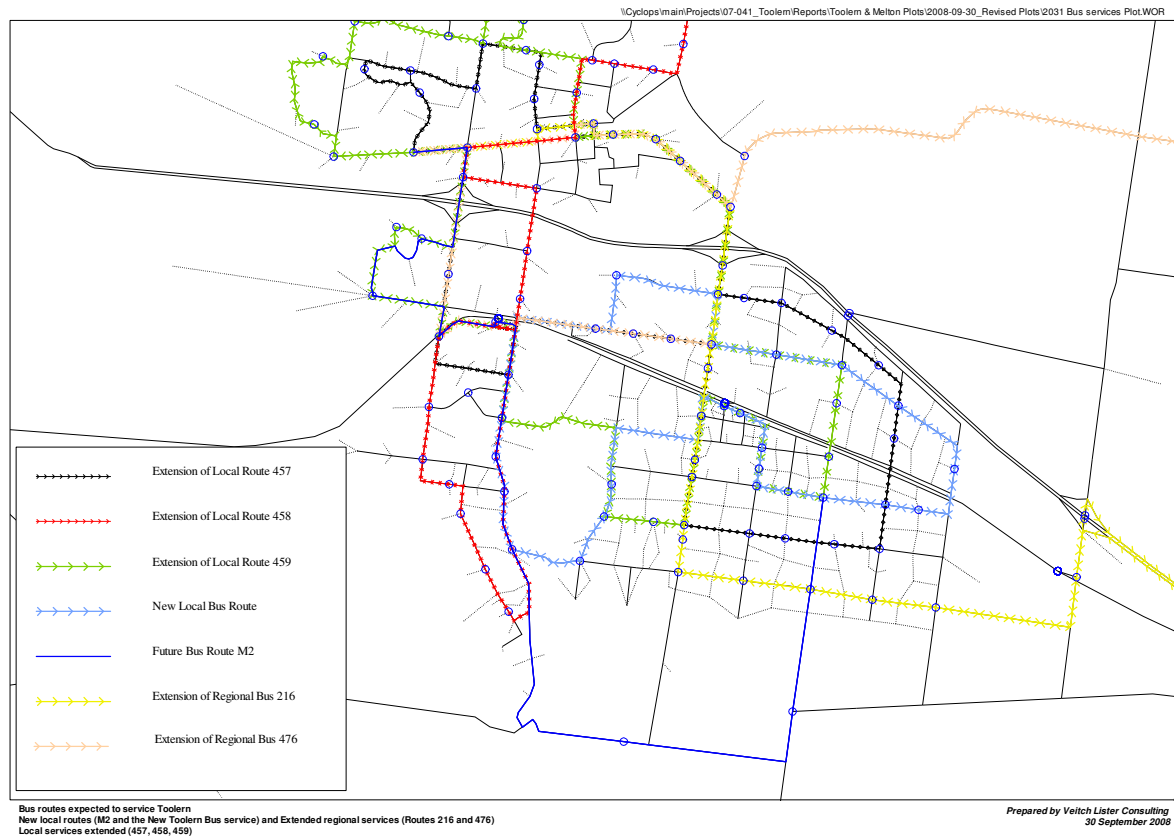
Since the submission of this work, the Department of Transport's Public Transport Division has requested that an Alternative Scenario be assessed. The Alternative Scenario also comprises of a major public transport improvement over the existing facilities and services.

A comparison of the local public transport assumptions can be seen in Table 2-1, where the grey shading represents areas in which the two scenarios differ.

**Table 2-1: Proposed Local Public Transport Upgrades**

	Public Transport Description	Public Transport Upgrades	
		Structure Plan Scenario	Alternative Scenario
1	Electrification of the rail line between Melbourne and Melton	Yes, new services stopping all stations with 15 min frequencies in the peaks	Yes, new services stopping all stations with 15 min frequencies in the peaks
2	New rail station at Toolern	Yes	No
3	Provision of additional bus services	Yes, one new local route with 15 min frequencies in the peaks, see Figure 2-1	Yes, one new local route with 30 min frequencies in the peaks, see Figure 2-1
4	Increased frequency of existing bus services	Yes, Generally 10 to 15 min frequency in the peaks, see Table 2-2	Yes, Generally 20 to 30 min frequency in the peaks, see Table 2-3
5	Additional V/Line services -	Yes, one Melbourne bound AM peak service and one Ballarat bound PM peak service	Yes, one Melbourne bound AM peak service and one Ballarat bound PM peak service
6	Changes to V/Line stopping patterns	Yes, most services express Melton, Rockbank and Toolern	Yes, most services express Melton and Rockbank

The bus route coverage assumed in both the scenarios is shown in Figure 2-1.



**Figure 2-1: Assumed Bus Routes in the Structure Plan and Alternative Scenario**

The service frequencies for the Structure Plan Scenario are presented in Table 2-2 below.

**Table 2-2: Structure Plan Scenario - Public Transport Service Frequency**

Mode	Route Code	AM Frequency (Average minutes)	Offpeak Frequency (Average minutes)	PM Frequency (Average minutes)	General Description
Rail	Future Train	15	30	15	Melton to City Loop (Electrified Service)
Rail	Future Train	15	30	15	City Loop to Melton (Electrified Service)
Bus	M2	30	60	30	Melton South to Melton
Bus	M2	30	60	30	Melton to Melton South
Bus	476	10	15	10	Moonee Ponds to Toolern
Bus	476	10	15	10	Toolern to Moonee Ponds
Bus	216	10	15	10	Deer Park to City
Bus	216	10	15	10	City to Deer Park
Bus	457	15	30	15	West Melton to Melton Station
Bus	457	15	30	15	Melton Station to West Melton
Bus	458	15	30	15	Melton East to Melton Station
Bus	458	15	30	15	Melton Station to Melton East
Bus	459	15	30	15	Melton Station to West Melton
Bus	459	-	single service	-	West Melton to Melton Station (Deviation)
Bus	459	60	-	-	Melton Station to West Melton (Deviation)
Bus	459	15	30	15	West Melton to Melton Station
Bus	New Toolern Bus	15	30	15	New Local Route
Bus	New Toolern Bus	15	30	15	New Local Route

The service frequencies for the Alternative Scenario are presented in Table 2-3 below.

**Table 2-3: Alternative Scenario - Public Transport Service Frequency**

Mode	Route Code	AM Frequency (Average minutes)	Offpeak Frequency (Average minutes)	PM Frequency (Average minutes)	General Description
Rail	Future Train*	15	30	15	Melton to City Loop (Electrified Service)
Rail	Future Train*	15	30	15	City Loop to Melton (Electrified Service)
Bus	M2	30	60	30	Melton South to Melton
Bus	M2	30	60	30	Melton to Melton South
Bus	476	20	30	20	Moonee Ponds to Toolern
Bus	476	20	30	20	Toolern to Moonee Ponds
Bus	216	20	30	20	Deer Park to City
Bus	216	20	30	20	City to Deer Park
Bus	457	30	60	30	West Melton to Melton Station
Bus	457	30	60	30	Melton Station to West Melton
Bus	458	30	60	30	Melton East to Melton Station
Bus	458	30	60	30	Melton Station to Melton East
Bus	459	30	60	30	Melton Station to West Melton
Bus	459	-	single service	-	West Melton to Melton Station (Deviation)
Bus	459	60	-	-	Melton Station to West Melton (Deviation)
Bus	459	30	60	30	West Melton to Melton Station
Bus	New Toolern Bus	30	60	30	New Local Route
Bus	New Toolern Bus	30	60	30	New Local Route

\*Rail station at Toolern omitted.

Both the Structure Plan and Alternative Scenarios represent an improvement over the existing public transport service frequencies (and coverage). The scale of public transport infrastructure improvement is greatest in the Structure Plan Scenario.

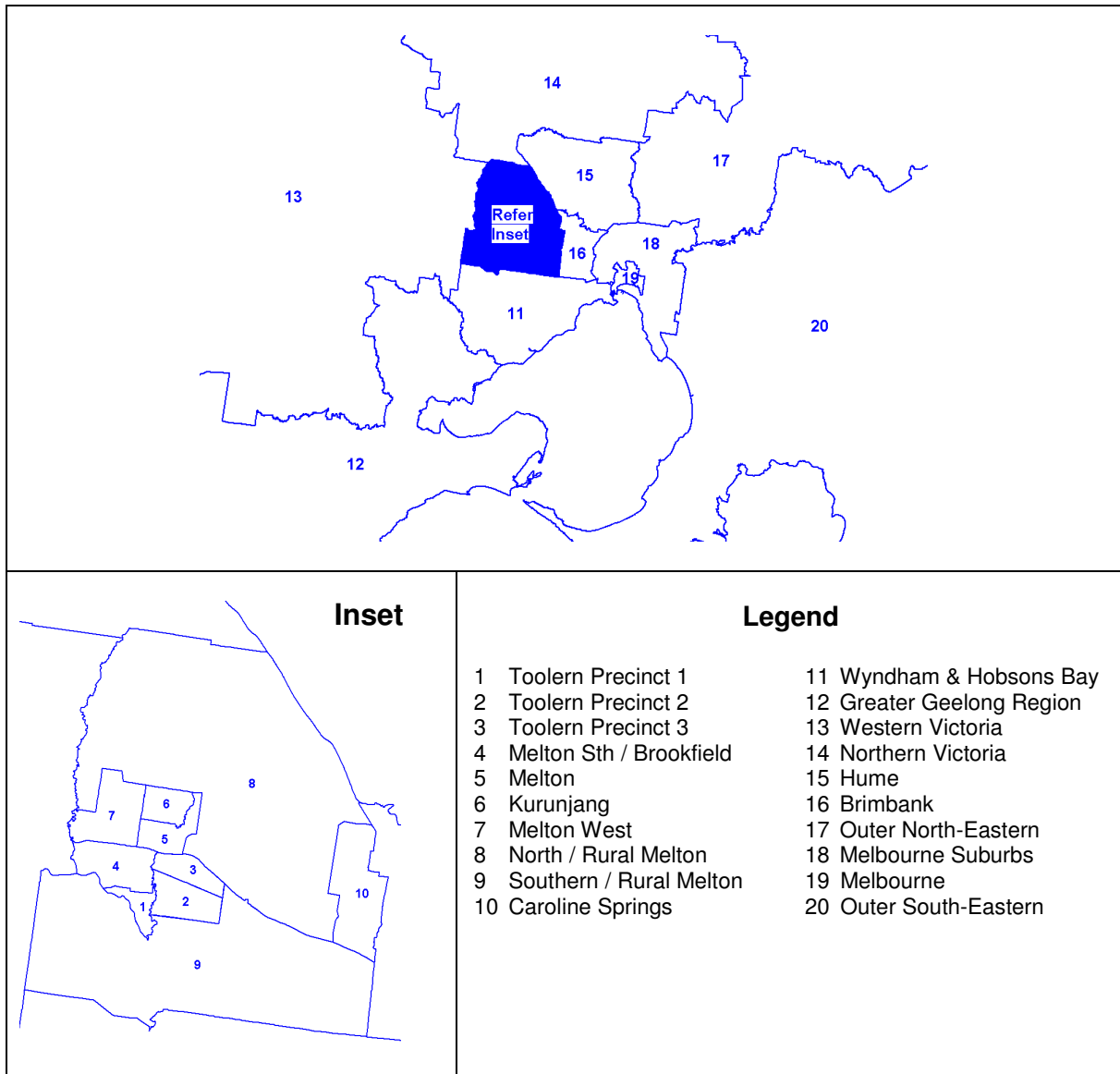
### 3 Alternative Scenario – Key Outcomes

#### 3.1 Travel Patterns and Mode Choice of Toolern Generated Travel (2031)

##### 3.1.1 Definition of Travel Sectors for Trip Analysis

In order to maintain consistency with the Structure Plan Scenario work, the Zenith travel model has been used to estimate travel patterns and demands relevant to Toolern for the Alternative Scenario.

The same 20 sector system has been defined, as shown in Figure 3-1 and match, as closely as practicable, to the precincts defined in 2005 Melton Shire Council Annual Household Survey, Metropolis Research, March 2006.



**Figure 3-1: Travel Sectors for Trip Analysis**

### 3.1.2 Home-Based Travel and Person-Trips from Toolern

Table 3-1 compares the Zenith model's prediction of the amount of weekday home-based travel generated by Toolern residents by trip purpose for the Structure Plan Scenario and the Alternative Scenario. Table 3-2 compares the trips commencing in Toolern by travel mode.

Referring to Table 3-1 and Table 3-2, the following observations relating to the Alternative Scenario, in comparison to the Structure Plan Scenario, can be made:

1. the difference in the number of trips (all purposes and all modes) commencing within Toolern is insignificant (-0.2%);
2. the difference in the number of car trips (all purposes) commencing within Toolern is also very small (+0.4% or approx. +820);
3. more Toolern residents will choose to satisfy their journey purposes locally (i.e. within Toolern) under the Alternative Scenario, particularly their "shopping/personal business, special/recreational & other" needs, however, this change is expected to be relatively small (approx. +0.3% or +820). This includes 2.6% (approx. 90) less trips to Melton and 1.0 % (approx. 50) less trips to Melton South/Brookfield for these purposes;
4. there will be 15% (approx. -1260) less public transport trips originating in Toolern, resulting in additional car trips (0.4% or approx. +820) and negligible additional walk/cycle trips (0.3% or approx. +120);
5. for public transport trips originating in Toolern, the following differences are noted:
  - 20% (approx. -540) less trips ending in Toolern under the Alternative Scenario, resulting in an additional 0.8% (approx. +680) car trips and 0.3% (approx. +110) in walk/cycle trips. The excess in local car trips (over the reduction in public transport trips) is likely to be due to there being less travel to other parts of Melton in the Alternative Scenario (refer to the following dot point). The small increase in walk and cycling trips could be partially attributed to individuals not having access to a car;
  - 15% (approx. -320) less trips ending in the remainder of the Melton Shire, with negligible change in car trips (+0.1%) and walk/cycle trips (+0.3%), indicating an increased likelihood of Toolern residents making use of more local facilities;
  - 11% (approx. -240) less public transport trips travelling to the City of Melbourne, closely matched by an additional 9% (approx. +170) in car trips.

**Table 3-1: Predicted Weekday Home-Based Travel by Toolern Residents by Trip Purpose**

		To																			
		1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20
<b>(a) Total Person Trips Commencing at the Home - All Journey Purposes</b>																					
Scenario	From	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20
Original Toolern Structure Plan		4610	23290	13480	5693	4769	1161	2248	604	552	1721	3590	284	530	173	1117	3036	348	4241	3462	799
Alternative Public Transport Scenario		4634	23375	13480	5687	4690	1192	2283	616	572	1709	3623	282	506	187	1136	3006	337	4209	3399	805
Difference		24	85	0	-26	-79	31	35	12	20	-12	33	-2	-24	14	19	-30	-11	-32	-63	6
<b>(b) Total Person Trips Commencing at the Home - Work</b>																					
Scenario	From	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20
Original Toolern Structure Plan		171	1267	3418	482	1125	120	279	97	103	344	2055	153	239	80	665	1313	174	2205	2297	349
Alternative Public Transport Scenario		173	1283	3414	490	1139	117	288	87	103	360	2075	152	228	80	663	1307	177	2180	2264	356
Difference		2	16	-4	8	14	-3	9	-10	0	16	20	-1	-11	0	-2	-6	3	-25	-33	7
<b>(c) Total Person Trips Commencing at the Home - Secondary and Tertiary Education Travel</b>																					
Scenario	From	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20
Original Toolern Structure Plan		0	589	76	492	0	275	243	7	0	309	322	30	40	29	133	380	44	697	827	202
Alternative Public Transport Scenario		0	587	79	506	0	273	248	7	0	310	322	37	38	31	141	379	38	696	804	199
Difference		0	-2	3	14	0	-2	5	0	0	1	0	7	-2	2	8	-1	-6	-1	-23	-3
<b>(d) Total Person Trips Commencing at the Home - Other Home Based Travel (Shopping/Personal Business, Social/Recreation, other)</b>																					
Scenario	From	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20
Original Toolern Structure Plan		4439	21434	9986	4719	3644	766	1726	500	449	1068	1213	101	251	64	319	1343	130	1339	338	248
Alternative Public Transport Scenario		4461	21505	9987	4671	3551	802	1747	522	469	1039	1226	93	240	76	332	1320	122	1333	331	250
Difference		22	71	1	-48	-93	36	21	22	20	-29	13	-8	-11	12	13	-23	-8	-6	-7	2

**Table 3-2: Predicted Weekday Travel Originating in Toolern by Travel Mode**

		To																	Total			
		1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17		18	19	20
<b>From Toolern</b>		11108	49110	29889	19432	11598	6067	9330	4144	2863	5487	7571	897	4458	2348	3275	6103	868	5667	1869	1309	<b>183393</b>
<b>Original Toolern Structure Plan</b>		11226	49558	30001	19460	11550	6098	9350	4173	2883	5438	7572	883	4442	2350	3283	6057	866	5653	2040	1329	<b>184212</b>
<b>Difference</b>		118	448	112	28	-48	31	20	29	20	-49	1	-14	-16	2	8	-46	-2	-14	171	20	<b>819</b>
<b>% Difference</b>		1.1%	0.9%	0.4%	0.1%	-0.4%	0.5%	0.2%	0.7%	0.7%	-0.9%	0.0%	-1.6%	-0.4%	0.1%	0.2%	-0.8%	-0.2%	-0.2%	9.1%	1.5%	<b>0.4%</b>
<b>Daily Total Person Trips - All Purposes by Car</b>																						
		To																				
<b>From Toolern</b>		261	1597	829	768	351	238	389	60	42	279	231	9	87	27	84	299	22	650	2231	146	<b>8600</b>
<b>Original Toolern Structure Plan</b>		186	1338	622	649	287	227	311	37	39	258	234	10	75	31	74	261	16	580	1992	117	<b>7344</b>
<b>Difference</b>		-75	-259	-207	-119	-64	-11	-78	-23	-3	-21	3	1	-12	4	-10	-38	-6	-70	-239	-29	<b>-1256</b>
<b>% Difference</b>		-28.7%	-16.2%	-25.0%	-15.5%	-18.2%	-4.6%	-20.1%	-38.3%	-7.1%	-7.5%	1.3%	11.1%	-13.8%	14.8%	-11.9%	-12.7%	-27.3%	-10.8%	-10.7%	-19.9%	<b>-14.6%</b>
<b>Daily Total Person Trips - All Purposes by Public Transport</b>																						
		To																				
<b>From Toolern</b>		3025	18138	12464	1265	300	52	44	7	70	1	0	0	0	0	0	0	0	0	0	0	<b>35356</b>
<b>Original Toolern Structure Plan</b>		3016	18131	12590	1281	280	47	50	8	69	0	0	0	0	0	0	0	0	0	0	0	<b>35472</b>
<b>Difference</b>		-9	-7	126	26	-20	-5	6	1	-1	-1	0	0	0	0	0	0	0	0	0	0	<b>116</b>
<b>% Difference</b>		-0.3%	0.0%	1.0%	2.1%	-6.7%	-9.6%	13.6%	14.3%	-1.4%	-100.0%	-	-	-	-	-	-	-	-	-	-	<b>0.33%</b>
<b>Daily Total Person Trips - All Purposes by Walking and Cycling</b>																						
		To																				
<b>From Toolern</b>		1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	<b>Total</b>
<b>Original Toolern Structure Plan</b>		3025	18138	12464	1265	300	52	44	7	70	1	0	0	0	0	0	0	0	0	0	0	<b>35356</b>
<b>Alternative Public Transport Scenario</b>		3016	18131	12590	1281	280	47	50	8	69	0	0	0	0	0	0	0	0	0	0	0	<b>35472</b>
<b>Difference</b>		-9	-7	126	26	-20	-5	6	1	-1	-1	0	0	0	0	0	0	0	0	0	0	<b>116</b>
<b>% Difference</b>		-0.3%	0.0%	1.0%	2.1%	-6.7%	-9.6%	13.6%	14.3%	-1.4%	-100.0%	-	-	-	-	-	-	-	-	-	-	<b>0.33%</b>

### 3.1.3 Travel to Toolern for Work Purposes

Table 3-3 compares the Zenith model's prediction of where workers in Toolern Precinct 3 (Toolern's major employment precinct) will live for the Structure Plan Scenario and the Alternative Scenario.

**Table 3-3: Total Person Trips Commencing at the Home to Work in Precinct 3**

<i>To</i>	Structure Plan Scenario	Alternative Scenario	Difference	%Difference
<i>From</i>				
<b>Toolern</b>	3,418	3,414	-4	-0.1%
<b>Other Melton Shire</b>	7,622	7,588	-34	-0.4%
<b>External to Melton Shire</b>	4,788	4,749	-39	-0.8%
<b>Total</b>	15,828	15,751	-77	-0.5%

Referring to Table 3-3, the following observations in relation to people working in Toolern can be made:

1. the difference in the scenarios has no impact on the number of Toolern residents likely to work in Precinct 3,
2. the lower public transport service levels associated with the Alternative Scenario is likely to have a very small effect on the attractiveness of Precinct 3 as a place of employment for people residing outside Toolern with:
  - a 0.8% less workers likely to be attracted from outside Melton Shire; and
  - a 0.4% less workers likely to be attracted from within Melton Shire, but external to Toolern.

### 3.2 Transport Mode Choice

Table 3-4 shows a comparison of transport mode choice for trips that will originate in the Toolern area against trips originating from other urban areas of Melton Shire.

**Table 3-4: Mode Choice, Toolern vs other urban areas of Melton, 2031**

		Structure Plan Scenario		Alternative Scenario	
		Toolern	Other Melton	Toolern	Other Melton
Mode Choice	Car	80.7%	83.2%	81.2%	83.5%
	PT	3.8%	4.5%	3.2%	4.2%
	Walk/Ride	15.5%	12.3%	15.6%	12.3%

In comparison with the Structure Plan Scenario, the Alternative Scenario is likely to generate a slightly higher rate of car utilisation in both the Toolern area and the remaining Melton Shire region (+0.5% and +0.3% respectively). The higher generation of car trips is at the expense of public transport trips by a similar scale, while walk/ride trips are likely to be unaffected.

### 3.3 Rail Station Utilisation

In the Alternative Scenario, there are only two rail stations in close proximity to the Toolern region - Melton and Rockbank. The predicted utilisation for each station in the Structure Plan Scenario and the Alternative Scenario is presented in Table 3-5 and Table 3-6.

**Table 3-5: Predicted Rail Station Boardings, 2031**

Structure Plan Scenario		Melton	Toolern	Rockbank	TOTAL
	AM peak	1,909	3,487	490	5,886
	PM Peak	68	245	8	321
	Rest of Day	584	1,338	69	1,991
	<b>TOTAL</b>	<b>2,561</b>	<b>5,070</b>	<b>567</b>	<b>8,198</b>

Alternative Scenario		Melton	Toolern	Rockbank	TOTAL	Difference
	AM peak	4,303	-	1,390	5,693	-193
	PM Peak	170	-	67	237	-84
	Rest of Day	1,341	-	188	1,529	-462
	<b>TOTAL</b>	<b>5,814</b>	<b>-</b>	<b>1,645</b>	<b>7,459</b>	<b>-739</b>

**Table 3-6: Predicted Rail Station Alightings, 2031**

Structure Plan Scenario		Melton	Toolern	Rockbank	TOTAL
	AM peak	19	227	16	262
	PM Peak	1,181	1,949	342	3,472
	Rest of Day	1,132	1,640	156	2,928
	<b>TOTAL</b>	<b>2,332</b>	<b>3,816</b>	<b>514</b>	<b>6,662</b>

Alternative Scenario		Melton	Toolern	Rockbank	TOTAL	Difference
	AM peak	128	-	51	179	-83
	PM Peak	2,425	-	807	3,232	-240
	Rest of Day	2,171	-	597	2,768	-160
	<b>TOTAL</b>	<b>4,724</b>	<b>-</b>	<b>1,455</b>	<b>6,179</b>	<b>-483</b>

In the Structure Plan Scenario, the proposed Toolern Station is predicted to be the most popular of the local stations with over 5,000 boardings. Interestingly, based upon DoT rail station boarding counts conducted in 2005/06, only 7% of Melbourne rail stations had more than 5,000 passenger boardings per day.

The Alternative Scenario proposes a reduced level of local public transport provision, including the omission of a Toolern Station. This will result in the increased use of Melton Station and, to a lesser extent, Rockbank Station. However, there will be an overall difference in rail patronage of about -9% (approx. -740) across the local stations throughout the day.

A total of 15% of Melbourne rail stations<sup>1</sup> have less than 740 passenger boardings per day. This means that the inclusion of a Toolern Station will result in an increase in the

<sup>1</sup> based upon DoI rail station boarding counts conducted in 2005/06

total rail system boardings equivalent to stations such as Brunswick and Diamond Creek (based upon 2005/06 boarding counts).

It is noted that the Alternative Scenario provides less bus access to fewer stations than the Structure Plan Scenario. It would be worth investigating whether or not the difference in rail boardings under the two scenarios could be reduced by improving bus access to Melton and, particularly, Rockbank Stations under the Alternative Scenario.

### 3.4 Limitations

The model limitations are discussed in detail in Section 3 of the *Transport Modelling Report* for the Toolern Structure Plans, dated 30<sup>th</sup> September 2008. It should be stressed that the models developed to analyse the Structure Plan Scenario and the Alternative Scenario do not include sensitivity tests on the items listed in Table 3-7.

**Table 3-7: Examples of the Limitations in the Toolern Structure Plan Models**

Model limitation description	Expected effect
Unconstrained passenger carrying capacity on the public transport system	Over estimate rail patronage & under estimate car usage
Unconstrained parking supply and low or nil parking charges	Over estimate car usage & under estimate public transport usage
Model assumes that travel behaviour will not change over time	Unknown, but can be investigated by sensitivity testing
Real fuel prices remain constant	If real fuel costs increase relative to public transport costs, the model would have over estimated car usage & under estimate public transport usage

## 4 Conclusions

In relation to the matters that have been investigated, key conclusions relating to the Alternative Scenario include:

1. the result of not including the Toolern Station (and high frequency bus services) in the proposed development will be less public transport usage within the local Toolern area (i.e. trips commencing and ending in Toolern), between Toolern and the remainder of the Melton Shire and also between Toolern and the City of Melbourne;
2. there appears to be no significant difference in car usage across the two public transport scenarios. This seems to be due to the high provision of employment and community services in the Toolern Structure Plan for local residents, limiting the necessity to travel long distances for shopping, education, employment etc.;
3. the majority of trips are local due to the high level of local services;
4. although the lower level of public transport services under the Alternative Scenario is not expected to have a significant effect on the local road system, it will limit the opportunities for Toolern residents to travel to Melton and Melbourne and also for workers from outside Toolern to access employment opportunities within Toolern.

### 4.1 Recommendations

It should be noted that the scope of this study was limited to provide an initial assessment of the two public transport scenarios. We would recommend further detailed analysis of the public transport alternatives in Toolern. This could involve looking at alternative rail station locations, various bus network strategies, staging the development etc. Also, sensitivity testing could be done on changing the relative price of fuel and including capacity constraints on public transport.