



ESSENTIAL ECONOMICS

# Implications of Population Growth on Infrastructure and Resources in Regional Cities

FINAL REPORT

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By

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# Contents

<b>Executive Summary</b> .....	<b>1</b>
<b>Introduction</b> .....	<b>4</b>
<b>1 ABS Population Estimates</b> .....	<b>6</b>
1.1 Methodology .....	6
1.2 ABS Population Projections Results .....	7
1.3 Conclusion .....	9
<b>2 Victoria in Future Estimates</b> .....	<b>10</b>
2.1 Methodology .....	10
2.2 DPCD VIF 2008 Projections .....	13
2.3 Preliminary Regional Cities Projections .....	16
2.4 Conclusion .....	21
<b>3 Infrastructure and Resources Survey</b> .....	<b>23</b>
3.1 Methodology .....	23
3.2 Survey Returns.....	25
3.3 Conclusion .....	25
<b>4 Future Requirements</b> .....	<b>26</b>
4.1 Indicators.....	26
4.2 Population Growth Scenarios .....	27
4.3 Water Requirements .....	29
4.4 Public Transport Requirements .....	30
4.5 Energy Requirements .....	32
4.6 Communication Requirements.....	34
4.7 Land Supply Requirements .....	35
4.8 Health Requirements.....	38
4.9 Education Requirements .....	41
4.10 Social Infrastructure Requirements .....	45
4.11 Recreation Requirements .....	49
4.12 Waste Management Requirements.....	51
4.13 Conclusions.....	53
<b>5 Cost of Providing Required Infrastructure and Resources</b> .....	<b>54</b>
5.1 Water Infrastructure and Resource Costs .....	54
5.2 Public Transport Infrastructure and Resource Costs .....	54
5.3 Energy Infrastructure and Resource Costs .....	56
5.4 Telecommunications Infrastructure and Resource Costs .....	57
5.5 Land Supply Infrastructure and Resource Costs .....	57
5.6 Health Infrastructure Costs .....	59
5.7 Education Infrastructure Costs .....	60
5.8 Social Infrastructure Costs.....	62
5.9 Recreation Infrastructure Costs.....	64
5.10 Waste Management .....	66
5.11 Conclusion .....	66

<b>6</b>	<b>Infrastructure and Resource Provision Cost Comparison: Regional Centres vs Metropolitan Melbourne .....</b>	<b>68</b>
6.1	Population Redistribution Analysis .....	68
6.2	Metropolitan Melbourne Growth Overview .....	69
6.3	Additional Metropolitan Melbourne Dwelling Requirements .....	71
6.4	Costs Associated with Metropolitan Melbourne Development .....	71
6.5	Benefits of Further Development of the Regional Cities .....	74
6.6	Funding Required for Regional Cities Infrastructure through Identified Costs Savings .....	77
6.7	Conclusions.....	79
<b>7</b>	<b>Net State Benefit Associated with Higher Regional Population Outcomes .....</b>	<b>81</b>
7.1	Taxpayer Savings .....	81
7.2	Contribution to Reduced Stress on Metropolitan Melbourne.....	81
7.3	Benefits to Regional Communities .....	81
7.4	Supports Moving Forward in Victoria Policy.....	83
7.5	Conclusion .....	84
<b>8</b>	<b>Key Findings .....</b>	<b>85</b>
<b>Appendix 1: References .....</b>		<b>88</b>
<b>Appendix 2: Regional Cities Data Summary .....</b>		Error! Bookmark not defined.

## EXECUTIVE SUMMARY

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### 1. Background

Regional Cities Victoria (RCV) has engaged Essential Economics to undertake an assessment of future infrastructure and resource requirements and associated costs for Victoria's 10 largest regional centres over the period 2006 to 2036.

The analysis also:

- Compares costs associated with achieving higher population outcomes in Regional Cities against costs associated with on-going development in metropolitan Melbourne; and
- Provides an overview of Net State Benefit arising from higher populations in the established Regional Cities.

Essential Economics worked collaboratively with RCV during this project, and this included a comprehensive infrastructure and resources survey and regular project workshops. Note, infrastructure and resource costs provided in this report should be considered as broad estimates and are subject to further detailed analysis.

### 2. Review of ABS and State Government Population Projections

Regional Victoria has been successful in recent years in attracting a greater share of State population growth, increasing its proportion of population growth from 10% in 2001-02 to 20% in 2006-07. When preparing population growth scenarios for this study, a review of the accuracy of forecasts prepared by the Australian Bureau of Statistics (ABS) (*Population Projections, Australia, 2006-2101*) and the Victorian State Government (through the *Victoria in Future (VIF)*) was undertaken. This review enabled a relevant 'base case' to be prepared and identified that:

- ABS data significantly underestimates regional population growth due to its high-level forecasting methodology which does not capture detailed localised influences such as demographic factors, migration, land-use and other trends.
- In contrast, VIF data does incorporate localised influences and provides more accurate outcomes. While VIF underestimated regional population growth in its initial series (2000), its subsequent series (2004) was more accurate (slight overestimation). VIF data has continued to be refined and improved, therefore the 2008 series is likely to represent a reasonably accurate estimation of population projections for regional Victoria.

In view of these findings, the analysis contained in this report is based on the following three population scenarios (for the period 2006-2036):

Base Case: 21% Scenario (ie regional Victoria secures 21% of future State population growth in line with VIF 2008 population projections)

Medium Case: 25% Scenario (ie regional Victoria secures 25% of future State population growth)

High Case: 30% Scenario (ie regional Victoria secures 30% of future State population growth)

Note, population estimates contained in this report are derived from Statistical District (SD) data contained in the 1<sup>st</sup> release of VIF 2008. At the time of preparing these estimates no data was available at a municipal level. Subsequently data has become available at a municipal level, and while the estimates contained in this analysis have not been revised, cross-referencing shows that there are only small differences at an aggregate level between the base case data (21% Scenario) and officially published data.

### **3. Population Estimates**

The population of the Regional Cities is projected to increase from 690,000 persons in 2006, to between 960,000 persons (21% scenario) and 1,075,000 persons (30% scenario) in 2036. This represents an increase of between 270,000 persons and 385,000 persons over the 30-year period. Importantly, by the end of the period the 25% scenario delivers an additional 50,000 persons and the 30% scenario delivers an additional 115,000 persons compared to VIF 2008 forecasts.

### **4. Resource Requirements**

In view of these strong population projections (under any of the scenarios), significant additional infrastructure and resources will be required in the Regional Cities to support population expansion, business growth, employment and liveability. These requirements include additional infrastructure and resources for: utilities (water, gas, electricity), public transport (rail, bus), land development (residential, industrial), communications (broadband), health (hospital beds, emergency services), education (schools, TAFE, university), social (kindergarten, childcare, aged care), community needs (libraries, arts, recreation) and waste services (kerbside collections). Details of requirements under each population scenario are provided in Chapter 2.

### **5. Cost of Providing Future Infrastructure and Resources**

Significant costs will be associated with meeting these future requirements. These costs will be a shared responsibility between Government, private sector, ratepayers and consumers. Cost estimates under each population scenario are provided in Chapter 3.

### **6. Infrastructure and Resources Cost Comparison: Metropolitan Melbourne v Regional Cities**

Significant costs and inefficiencies are associated with development in metropolitan Melbourne, particularly with regard to its outer suburbs which often have poor or no public transport, and low local job provision and services. This leads to a situation where residents and job seekers commute long distances for work and other purposes – often reliant on car-based trips. Estimates prepared by SGS Economics and Planning (and updated for this study) indicate the cost of congestion and greenhouse gas emissions associated with population growth in metropolitan Melbourne is approximately \$6,270 pa per additional person locating in the metropolitan area. By 2016, SGS data suggests that congestion and emissions costs in metropolitan Melbourne will be \$3.4 billion pa.

In view of this situation, it is important to recognise that established regional centres are well-placed to accommodate larger populations. This is for a number of important reasons such as land availability, competitive business costs, access to natural resources, high liveability, and relatively efficient road networks (low congestion costs – estimated to be only 40% of metropolitan Melbourne costs).

The 25% scenario (an additional 50,000 persons) and 30% scenario (an additional 115,000 persons) represent a 'redistribution' of anticipated metropolitan Melbourne growth of 3% and 6%, respectively, over the period 2006-2036; this can be considered relatively small in the context of overall State population growth anticipated over the coming 30 years.

The cost of providing critical 'hard' infrastructure in Regional Cities to support higher population outcomes compares favourably with congestion inefficiencies associated with a similar level of population growth in metropolitan Melbourne. For example, by 2036:

- The additional cumulative cost of providing critical infrastructure to support a redistribution of 50,000 persons (25% Scenario) from metropolitan Melbourne to the Regional Cities is estimated to be \$1.0 billion; this compares with inefficiency costs of \$3.1 billion associated with the same number of persons being accommodated in metropolitan Melbourne.
- The additional cumulative cost of redistributing 115,000 persons (30% Scenario) between metropolitan Melbourne and the Regional Cities is estimated to be \$2.1 billion compared to

inefficiency costs of \$7.0 billion associated with this level of population being accommodated in metropolitan Melbourne.

#### **7. Net State Benefit Associated with Higher Regional Population Outcomes**

Net State Benefits associated with higher populations in the Regional Cities include:

- Efficient use of taxpayer resources with regard to population settlement and associated infrastructure and service delivery.
- Reduced stress on metropolitan Melbourne infrastructure, which will assist in improving existing congestion-related inefficiencies.
- Enhanced economic and social outcomes for regional communities eg. new business investment opportunities; expanded skills pool; industry diversification; improved service provision; enhanced lifestyle opportunities; improved support for small towns, and enhanced social outcomes.
- Continuation of successful State Government policy with regard to population and business expansion in regional Victoria (eg. *Make it Happen in Provincial Victoria* and *Moving Forward* strategies).

#### **Conclusion**

- The findings of this report show that investing in critical ‘hard’ infrastructure to support moderately higher populations in established Regional Cities (as per the 25% and 30% scenarios) is likely to provide efficient outcomes comparative to current metropolitan Melbourne settlement patterns, particularly with regard to development of new suburbs.
- Importantly, many positive social and economic development outcomes are likely to flow from higher population levels in the Regional Cities (although these benefits have not been quantified for this study).
- Re-distribution of population growth to regional centres should be seen in the context of a number of broader State strategies aimed at producing more efficient settlement outcomes for Victoria, and especially for metropolitan Melbourne. Such strategies include further implementation of Melbourne 2030; improved public transport infrastructure and services to metropolitan growth areas; and increased jobs provision, diversity of employment, and improved community services in new metropolitan Melbourne suburbs.

## INTRODUCTION

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### Background

Regional Cities Victoria (RCV) has engaged Essential Economics to undertake an assessment of future population expansion in regional centres under a number of growth scenarios and to identify resources and infrastructure required to support each growth outcome.

RCV is an organisation which represents the 10 largest provincial centres in Victoria, comprising the municipalities of Ballarat, Bendigo, Geelong, Horsham, Latrobe City, Mildura, Shepparton, Wangaratta, Warrnambool and Wodonga.

RCV is committed to expanding the population of regional Victoria through promoting business and Government investment and skilled migration to regional centres. In particular, it is RCV's view that securing infrastructure and resource investment will improve economic development outcomes, liveability, sustainability and environmental awareness in Victoria's regions, making them attractive alternatives to metropolitan Melbourne from both a population and business investment perspective. This outcome would also relieve metropolitan Melbourne of some of the pressures and costs associated with population growth over the coming decades.

Recent ABS data indicates that Melbourne's population could reach eight million persons by the year 2056, and this is likely to place significant pressure on essential infrastructure, resources and services, and potentially reduce Melbourne's liveability and economic competitiveness.

RCV is of the view that regional Victoria can capture a higher proportion of this expected population growth and thus assist in reducing growth pressures on metropolitan Melbourne. Regional Victoria has been successful in recent years in attracting a greater share of State population growth, increasing its proportion of population growth from 10% in 2001-02 to 20% in 2006-07. RCV believe a higher targeted share of population growth should be aimed for in order to strengthen regional communities and to reduce growth pressures on metropolitan Melbourne. The 10 regional cities are seen as the key drivers to population growth expansion as they currently accommodate nearly 50% of regional Victoria's population. To secure increased levels of population growth for regional Victoria, significant new infrastructure investment may be necessary (particularly in the regional cities) and therefore planning for higher regional population outcomes needs to be advanced as soon as possible with policy makers. Ensuring appropriate infrastructure for regional cities will enable these centres to accommodate significantly larger populations and will also help revitalise regional economies and leverage their many comparative advantages.

One of the key outcomes of this study, therefore, will be to identify future resource and infrastructure requirements for the 10 regional cities, and to highlight the comparative cost advantages of providing infrastructure to support regional population growth compared to infrastructure costs associated with supporting a significantly expanded metropolitan Melbourne population.

### Objectives

1. To review latest ABS and Victorian Government population projections and develop growth scenarios for regional Victoria and the regional cities.
2. To identify and provide cost estimates for additional infrastructure and resource requirements in the Regional Cities in order to facilitate significant population expansion, and to compare these costs against costs associated with population growth in metropolitan Melbourne.
3. To describe Net State Benefits associated with redirection of a proportion of population growth from metropolitan Melbourne to regional cities.



## Approach

This study has been undertaken as follows:

- Review of ABS and State Government population forecasts
- Preparation of population growth scenarios
- Workshop with RCV representatives to discuss potential infrastructure and resource indicators for analysis
- Development and circulation of infrastructure and resources survey
- Compilation and analysis of infrastructure and resources survey data and other supporting data
- Determination of viable indicators and benchmarks to assess future infrastructure and resource requirements
- Preparation of aggregate estimates for the Regional Cities in relation to future infrastructure and resource requirements for each indicator. (Estimates are based on three population growth scenarios for the years 2015 and 2036)
- Estimation of costs for required infrastructure and resources for each population scenario at years 2015 and 2036
- Assessment of costs associated with future population growth in Metropolitan Melbourne
- Assessment of benefits to the State associated with higher populations in the Regional Cities
- Preparation of summary data for each of the 10 regional cities

# 1 ABS POPULATION ESTIMATES

The Chapter describes the population outlook for Victoria, metropolitan Melbourne and regional Victoria based on recently-released ABS estimates (ABS Population Projections, 2006-2010) and provides comments on the veracity of the data in terms of regional Victoria projections.

## 1.1 Methodology

ABS publishes 50-year population projections every two to three years for each state and territory. The projections are prepared for 'metropolitan' and 'balance' categories under low, medium and high growth scenarios. The latest projections were released in September 2008, and cover the period 2006-2101. Note that this data does not provide estimates at a Local Government Area (LGA) level.

ABS projections outline growth and change in population which would occur if certain assumptions about future levels of fertility, mortality, internal migration and overseas migration were to prevail over the projection period. The assumptions are based on recent trends which indicate increasing levels of fertility and net overseas migration for Australia.

Three main series of projections, Series A (High), B (Medium) and C (Low) have been developed. Series B (Medium) reflects current trends in fertility, life expectancy at birth, net overseas migration and net interstate migration. Series A (High) and Series C (Low) are based on high and low assumptions for each of these variables, respectively.

Table 1.1 provides a summary of assumptions for each variable under each series for Australia. Note that adjustments are made to these assumptions for each State/Territory, capital cities and balance categories.

**Table 1.1: Underlying Assumptions, ABS Population Projections, Australia**

	Total Fertility Rate (babies per woman)	Net Overseas Migration (persons)	Life expectancy at Birth (years)	
			Males	Females
Series A (High)	2.0	220,000	93.9	96.1
Series B (Medium)	1.8	180,000	85.0	88.0
Series C (Low)	1.6	140,000	85.0	88.0

Source: ABS Population Projections, Australia, 2006-2101 (Cat.No.3222.0, September, 2008)

For this summary of the ABS projections, reference is confined to the Series B (Medium) projections as these generally represent the mid-point between the High and Low projections.

## 1.2 ABS Population Projections Results

The ABS estimates indicate that:

- Victoria’s population is projected to increase from its 2006 Estimated Resident Population (ERP) level of 5,128,500 persons to between 6,787,530 (low growth scenario) to 7,380,860 (high growth scenario) persons by 2031. This represents an annual average growth rate of between 1.1% and 1.3% and a net increase in population of between 1,659,030 and 2,252,360 persons over the period.
- Metropolitan Melbourne’s population is projected to increase from its 2006 Estimated Resident Population (ERP) level of 3,743,500 persons to between 5,109,390 (low growth scenario) to 5,700,960 (high growth scenario) persons by 2031. This represents an annual average growth rate of between 1.3% and 1.7% and a net increase in population of between 1,366,390 and 1,957,960 persons over the period.
- Regional Victoria’s population is projected to increase from its 2006 Estimated Resident Population (ERP) level of 1,385,500 persons to between 1,678,140 (low growth scenario) to 1,679,900 (high growth scenario) persons by 2031. This represents an annual average growth rate of approximately 0.8% and a net increase in population of between 292,640 and 294,400 persons over the period.

Over the 25-year period, the proportion of total population living in regional Victoria is forecast to decrease from its 2006 level of 27.0%, to between 22.8% (high growth scenario) and 24.7% (low growth scenario).

The proportion of population growth attracted to regional Victoria is projected to decline from between 15.9% (High growth scenario) to 19.3% (low growth scenario) for the period 2006-2011, to between 11.2% (High growth scenario) and 14.4% (low growth scenario) for the period 2026-2031. Over the 25-year period, the proportion of growth estimated for regional Victoria ranges between 13.1% (High Scenario) to 17.6% (Low Scenario). The medium growth scenario would see regional Victoria attract 14.8% of State growth between 2006-2031.

Importantly, projections under any of the ABS scenarios fall well short of recent growth trends for regional Victoria which has averaged approximately 20% between 2005-06 and 2006-07, as shown in Table 1.2. Additionally, regional Victoria has experienced a steady upward trend in the proportion of State population growth secured since 2001, and this is in contrast to ABS forecasts for a declining share of future State population growth.

**Table 1.2: Regional Victoria’s Proportionate Share of Population Growth, ABS Projections, 2001-02 to 2006-07**

	2001-02	2002-03	2003-04	2004-05	2005-06	2006-07
Metropolitan Melbourne	52,680	53,860	49,050	54,860	62,310	61,720
Regional Victoria	6,140	7,060	9,540	12,610	15,480	15,190
Victoria	58,820	60,920	58,590	67,470	77,790	76,910
<b>Regional Victoria share of growth</b>	<b>10.4%</b>	<b>11.6%</b>	<b>16.3%</b>	<b>18.7%</b>	<b>19.9%</b>	<b>19.7%</b>

Source: ABS Population Projections, Australia, 2006-2101 (Cat.No.3222.0, September, 2008).

ABS population projection data is shown in Table 1.3.

**Table 1.3: ABS Population Projections, Selected Locations, 2006-2031**

	2006	2011	2016	2021	2026	2031	Change 2006- 2031	AAGR- 2006- 2031	Share of Growth 2006- 2031
<b>Series A (High)</b>									
Metropolitan Melbourne	3,743,000	4,079,630	4,452,880	4,852,680	5,272,280	5,700,960	1,957,960	+1.7%	86.9%
Regional Victoria	1,385,500	1,449,320	1,507,290	1,567,240	1,626,050	1,679,900	294,400	+0.8%	13.1%
Victoria	5,128,500	5,528,950	5,960,170	6,419,920	6,898,330	7,380,860	2,252,360	+1.5%	100.0%
Regional Victoria share of growth (5-year)	-	15.9%	13.4%	13.0%	12.3%	11.2%	-4.8%	-1.4%	
Regional Victoria share of Victoria Population	27.0%	26.2%	25.3%	24.4%	23.6%	22.8%	-4.3%	-0.7%	
<b>Series B (Medium)</b>									
Metropolitan Melbourne	3,743,000	4,062,290	4,385,580	4,712,460	5,038,110	5,355,240	1,612,240	+1.4%	85.2%
Regional Victoria	1,385,500	1,453,560	1,515,180	1,572,930	1,624,100	1,665,520	280,020	+0.7%	14.8%
Victoria	5,128,500	5,515,850	5,900,760	6,285,380	6,662,220	7,020,760	1,892,260	+1.3%	100.0%
Regional Victoria share of growth (5-year)	-	17.6%	16.0%	15.0%	13.6%	11.6%	-6.0%	-1.7%	
Regional Victoria share of Victoria Population	27.0%	26.4%	25.7%	25.0%	24.4%	23.7%	-3.3%	-0.5%	
<b>Series C (Low)</b>									
Metropolitan Melbourne	3,743,000	4,047,780	4,329,960	4,601,340	4,861,680	5,109,390	1,366,390	+1.3%	82.4%
Regional Victoria	1,385,500	1,458,240	1,524,890	1,584,720	1,636,330	1,678,140	292,640	+0.8%	17.6%
Victoria	5,128,500	5,506,030	5,854,850	6,186,060	6,498,020	6,787,530	1,659,030	+1.1%	100.0%
Regional Victoria share of growth (5-year)	-	19.3%	19.1%	18.1%	16.5%	14.4%	-4.8%	-1.1%	
Regional Victoria share of Victoria Population	27.0%	26.5%	26.0%	25.6%	25.2%	24.7%	-2.3%	-0.4%	

Source: ABS Population Projections 2006-2101, Cat. No. 3220.0, September 2008; Essential Economics

Note: AAGR: Average Annual Growth Rate

The ABS Series B (Medium) differs from the VIF projections, which are described in the following Chapter 2. Note that VIF 2008 projections reflect a medium growth scenario (low and high growth scenarios are not published).

While both ABS and VIF projections provide broadly similar long-term population outcomes for Victoria, VIF 2008 forecasts differ significantly from the ABS forecasts (medium scenario) with regard to outcomes for regional Victoria. For example over the period 2006-2031, the ABS series projects population growth of 0.74% pa for regional Victoria, compared to 1.03% pa forecast in the VIF series. As a result, over the 30-year period the VIF projections show an additional 124,000 persons living in regional Victoria compared with the ABS projections.

As noted, ABS data shows regional cities securing a significantly lower proportion of State population growth compared to recent trends; in contrast, VIF 2008 indicates a 21% share of State population growth which follows a consistent long-term pattern (refer Table 1.2) of regional Victoria gradually securing a greater share of State population growth.

The main reasons for these differences are related to the more detailed and localised modelling contained in the VIF projections. Whereas ABS forecasts are based on national inputs (with some adjustments made at state, cities and balance levels), VIF data is collated at a much more localised level which more accurately reflect factors such as demographic change, migration and land availability.

In view of this situation, VIF 2008 data will be used for this study to project population outcomes for the regional cities.

A comparison between ABS and VIF data is provided in Table 1.4.

**Table 1.4: Population Projections ABS v VIF, Selected Locations, 2006-2031**

	ABS Estimates				VIF Estimates				Difference ABS vs VIF	
	2006	2031	Change	AAGR	2006	2031	Change	AAGR	No.	AAGR
	(No.)	(No.)	2006-2031 (No.)	2006-2031 (%)	(No.)	(No.)	2006-2031 (No.)	2006-2031 (No.)		
Metro Melbourne	3,743,000	5,355,240	+1,612,240	+1.44%	3,744,370	5,278,150	+1,533,780	+1.38%	+77,090	+0.06%
Regional Victoria	1,385,500	1,665,520	+280,020	+0.74%	1,383,940	1,789,540	+405,600	+1.03%	-124,020	-0.29%
Victoria	5,128,500	7,020,760	+1,892,260	+1.26%	5,128,310	7,067,690	+1,929,380	+1.29%	-46,930	-0.03%

Source: ABS Population Projections, Australia, 2006-2101 (Cat.No. 3222.0, September, 2008)

Note: AAGR - Average Annual Growth Rate

### 1.3 Conclusion

Recently-released ABS Population Projections 2006-2101 provide useful information at national and state/territory levels regarding population outcomes for various population growth scenarios.

When outcomes for regional areas (eg regional Victoria) are considered, however, the data contained in the ABS series is unlikely to accurately reflect future population trends.

ABS data anticipates regional Victoria will attract 15% of State population growth (medium scenario) over the period 2006-2031 when, in reality, regional Victoria has been attracting 20% of State population growth over recent years. In contrast, VIF 2008 projections (based on a medium scenario) anticipate a 21% share of State growth over a 30-year period (2006-2036) and this is more in line with recent long-term trends.

The differences in population outcomes are principally due to the level of detail contained in each methodology. For example, the ABS forecasts are prepared at a high level and do not capture detailed localised influences; in contrast, VIF projections (which are prepared at a State level) incorporate important local demographic, migration, land-use and other trends, and as such provide a more accurate basis for projecting regional population outcomes.

## 2 VICTORIA IN FUTURE ESTIMATES

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This Chapter describes the population outlook for metropolitan Melbourne, regional Victoria and the regional cities based on DPCD Victoria in Future (VIF) population estimates. Alternative population scenarios are developed based on redirecting different proportions of anticipated metropolitan Melbourne population growth to regional Victoria and the regional cities.

### 2.1 Methodology

DPCD has recently released its latest 30-year population projections for Victoria (Victoria in Future - VIF), 2008). These projections cover the period 2006-2036 and provide information at the metropolitan Melbourne and regional Victoria levels.

VIF projections are based on ABS Census and ABS ERP data and focus on two main components of population change:

- Natural increase (births less deaths)
- Net migration (people moving into an area minus those moving out).

Within these components, more detailed analysis is undertaken when estimating future change and this analysis includes:

#### Natural increase

- How births are affected by age structures and fertility rates
- How deaths are affected by age structures and mortality rates

#### Migration

- Overseas migration
- Interstate migration
- Within-state migration

The first issue of VIF 2008 provides estimates at a Local Government Area (LGA) level for metropolitan Melbourne; however, for regional areas this data is only available at a Statistical District (SD) level. At this stage it is unclear when data will be available for regional LGAs, and therefore for the purposes of this study SD data is apportioned to regional LGAs in order to derive population estimates for the regional cities.

The apportionment of SD data is based on the proportionate allocations of projected growth contained in VIF 2004 for the regional cities. These projections anticipated a greater share of regional growth gravitating to the regional cities over time. In our view, this approach is likely to produce the most accurate estimates for the 10 regional cities, noting that the alternative approach of using historical trends (10-15 years) would tend to underestimate population levels due to recent strength of migration to the regional cities.

#### Accuracy of VIF projections

VIF 2008 represents the third series of detailed projections prepared by the Victorian Government; previous versions were released in 2000 (by the Department of Infrastructure) and 2004 (by the Department of Environment and Sustainability). Concern has been expressed in some quarters as to the accuracy of these previous releases when compared against actual outcomes revealed in subsequent ABS Census and ABS ERP data.

A review of historic VIF data shows that the 2000 release significantly under-estimated regional population growth. For example, comparison of the VIF projections (prepared in 2000) for the year 2006 compared with the actual ERP for 2006 shows that the VIF projections under-estimated population growth in the 10 regional Centres by -3.9% or -25,950 persons. The most significant under-estimations were focused on the larger population centres of Greater Bendigo (-8.1% pa), Ballarat (-6.5%), and Greater Geelong (-4.3%), while Wodonga was significantly over-estimated (+5.8% pa). Projections for the smaller centres were generally more accurate.

A comparison of VIF (2000) projections for 2006 against ERP outcomes for 2006 is provided in Table 2.1.

**Table 2.1: Victoria In Future (2000) Projections vs ABS EPR Outcomes for Year 2006, Selected Locations**

	VIF Projection in 2000 for Year 2006	ERP for Year 2006	Over/Under-estimation (No.)	Over/Under-estimation (%)
Ballarat (C)	83,040	88,440	-5,400	-6.5%
Greater Bendigo (C)	89,460	96,740	-7,280	-8.1%
Greater Geelong (C)	197,510	205,930	-8,420	-4.3%
Greater Shepparton (C)	58,080	59,200	-1,120	-1.9%
Horsham (RC)	18,590	19,100	-510	-2.7%
La Trobe (S)	70,580	72,080	-1,500	-2.1%
Mildura (RC)	50,370	51,820	-1,450	-2.9%
Wangaratta (RC)	26,290	27,320	-1,030	-3.9%
Warrnambool (C)	30,130	31,500	-1,370	-4.5%
Wodonga (RC)	36,630	34,500	+2,130	+5.8%
<b>Regional Cities</b>	<b>660,680</b>	<b>686,630</b>	<b>-25,950</b>	<b>-3.9%</b>

Source: Department of Infrastructure, *Victoria in Future 2000*; ABS Estimated Resident Population,

In contrast to VIF 2000, VIF 2004 projections for 2006, as shown in Table 2.2, slightly over-estimated regional population outcomes. Review of data shows an over-estimation of +0.9% (or 5,960 persons) for the ten regional cities. The most significant over-estimates were observed for Greater Shepparton (+4.6%) and Wodonga (+3.9%), while the significant under-estimate was for Latrobe (-2.3%). Projections for the remaining seven regional cities were fairly accurate ranging between -0.3% (Warrnambool) to +1.3 (Mildura) over the five-year period. Of particular note is the more accurate population forecasting for the larger regional cities (ie Ballarat, Greater Bendigo, Greater Geelong) compared to 2000 VIF forecasts.

Table 2.2 is presented on the following page.

**Table 2.2: Victoria in Future (2004) Projections vs ABS ERP Outcomes for Year 2006, Selected Locations**

	VIF Projection in 2004 for Year 2006	ERP for Year 2006	Over/Under-estimation (No.)	Over/Under-estimation (%)
Ballarat (C)	88,970	88,440	+530	+0.6%
Greater Bendigo (C)	97,000	96,740	+260	+0.3%
Greater Geelong (C)	208,010	205,930	+2,080	+1.0%
Greater Shepparton (C)	62,030	59,200	+2,830	+4.6%
Horsham (RC)	19,120	19,100	+20	+0.1%
La Trobe (S)	70,450	72,080	-1,630	-2.3%
Mildura (RC)	52,510	51,820	+690	+1.3%
Wangaratta (RC)	27,010	27,320	-310	-1.1%
Warrnambool (C)	31,590	31,500	+90	+0.3%
Wodonga (RC)	35,900	34,500	+1,400	+3.9%
<b>Regional Cities</b>	<b>692,590</b>	<b>686,630</b>	<b>+5,960</b>	<b>+1.1%</b>

Source: Department of Sustainability and Environment, *Victoria in Future 2004*; ABS Estimated Resident Population

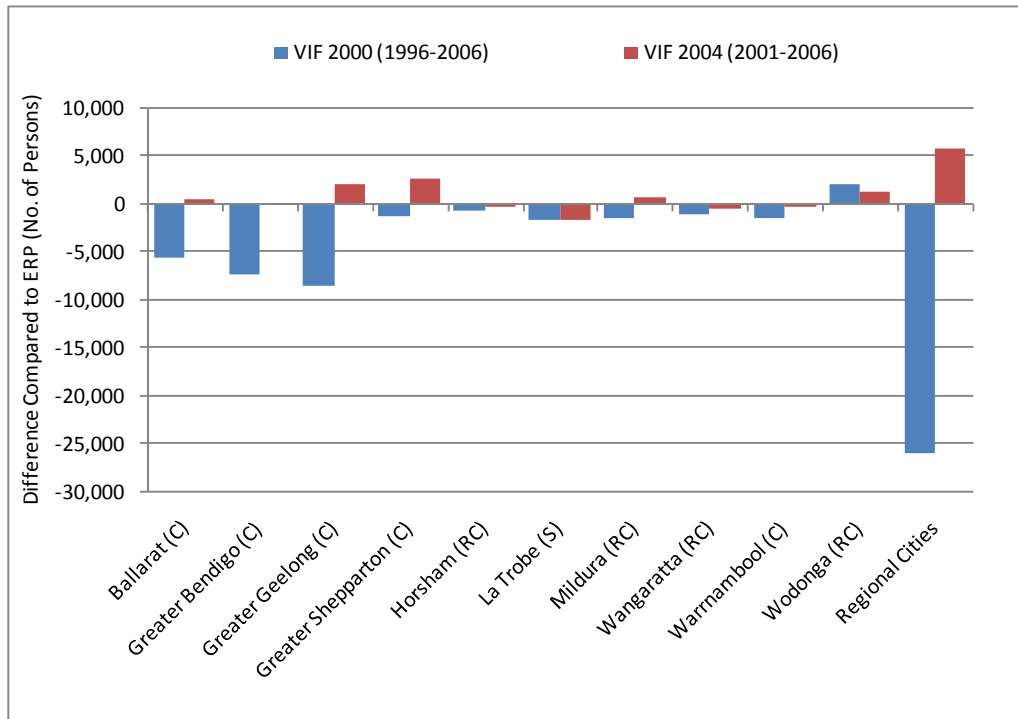
### Assessment

When the outcomes of the VIF 2000 and 2004 series are considered it is evident that significant variations from actual ERP outcomes have occurred for most regional centres. Of importance, however, is the improvement in accuracy which has occurred between VIF series one (2000) and two (2004). While VIF series one considerably under-estimated population for most centres, series two appears to provide reasonably accurate data, especially with respect to the major population centres. Assuming the VIF 2008 series includes additional refinements which further improve the robustness of the data, VIF can be considered to be an appropriate base from which to derive regional population scenarios.

A comparison of population outcomes for VIF 2000 and VIF 2004 for the Year 2006 is illustrated in Figure 2.1.



**Figure 2.1: Comparison of Population Outcomes, VIF 2000 and VIF 2004**



Source: Department of Infrastructure, *Victoria in Future 2000*; Department of Sustainably and Environment, *Victoria in Future 2004*.

## 2.2 DPCD VIF 2008 Projections

### Overview

The first release of VIF 2008 was issued on 2 December 2008 and covers a 30-year planning horizon, 2006 to 2036). The projections are summarised in Table 2.3 and illustrated in Figures 2.2, 2.3 and 2.4. In summary, between 2006 and 2036:

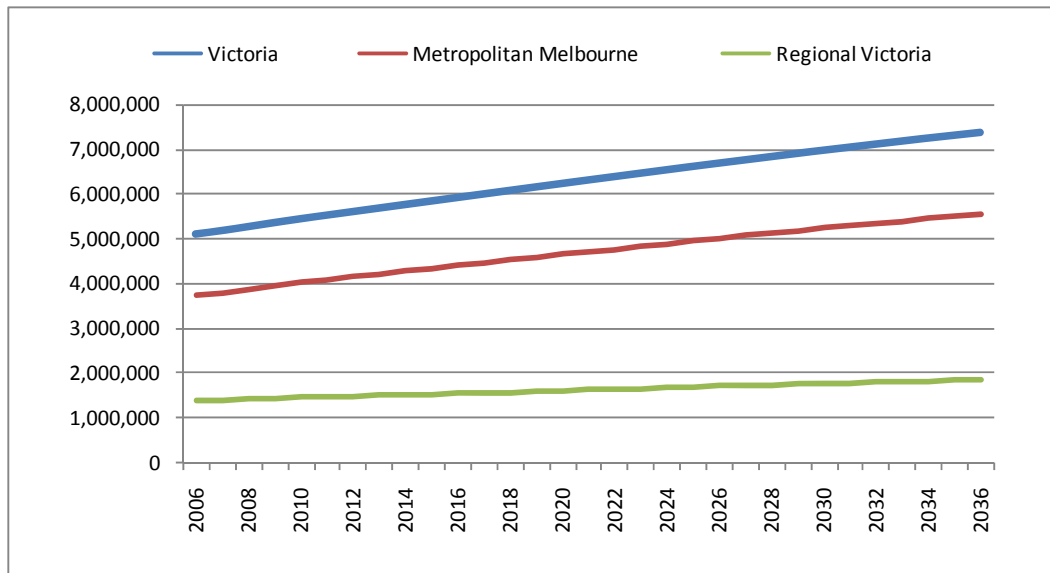
- Victoria’s population is forecast to expand from 5,128,310 persons to 7,395,870 persons. Over the period this represents an increase of +2,267,560 persons and an annual average growth rate of +1.23%.
- Metropolitan Melbourne’s population is forecast to expand from 3,744,370 persons to 5,535,480 persons. Over the period this represents an increase of +1,791,110 persons and an annual average growth rate of +1.31%.
- Regional Victoria’s population is forecast to expand from 1,383,940 persons to 1,860,390 persons. Over the period this represents an increase of +476,450 persons and an annual average growth rate of +0.99%.
- Regional Victoria’s share of total State population is forecast to decline from 27% in 2006 to 25% in 2036, and Regional Victoria is forecast to account for 21% of Victoria’s net population growth in the period 2006 to 2036.

**Table 2.3: Victoria in Future 2008 Projections, Selected Locations, 2006-2036**

	2006	2011	2016	2021	2026	2031	2036	Population Change 2006-2036	Annual Average Growth Rate 2006-2036
Victoria	5,128,310	5,549,810	5,942,910	6,332,780	6,711,190	7,067,690	7,395,870	+2,267,560	+1.23%
Metropolitan Melbourne	3,744,370	4,082,870	4,396,920	4,704,720	5,000,050	5,278,150	5,535,480	+1,791,110	+1.31%
Regional Victoria	1,383,940	1,466,940	1,546,000	1,628,060	1,711,140	1,789,540	1,860,390	+476,450	+0.99%

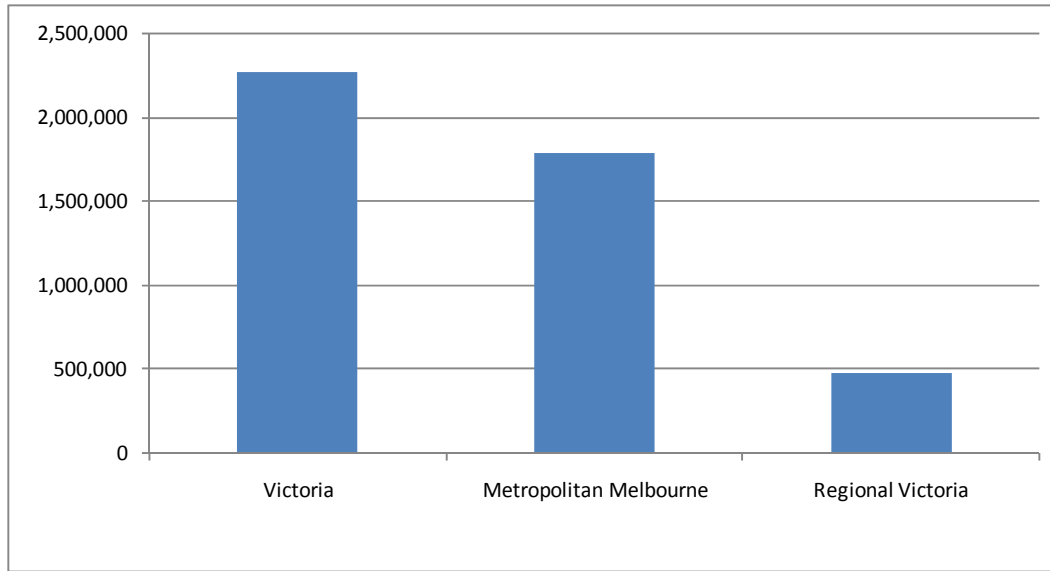
Source: Department of Planning and Community Development, *Victoria in Future 2008*.

**Figure 2.2: Population Estimates, Selected Locations, 2006-2036**



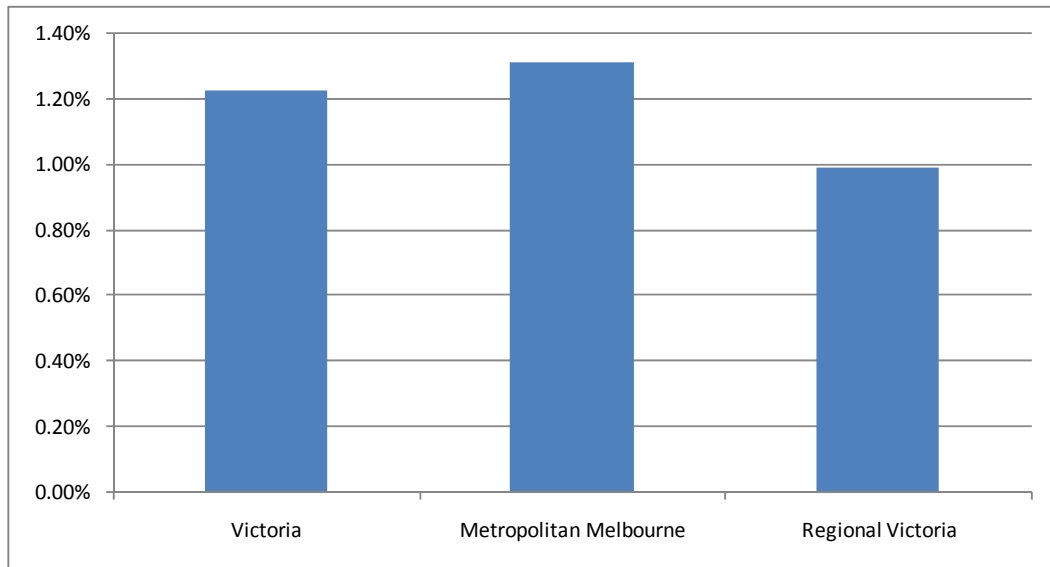
Source: Department of Planning and Community Development, *Victoria in Future 2008*.

**Figure 2.3: Population Growth Estimates (No.), Selected Locations, 2006-2036**



Source: Department of Planning and Community Development, *Victoria in Future 2008*.

**Figure 2.4: Annual Average Growth Rate (%), Selected Locations, 2006-2036**



Source: Department of Planning and Community Development, *Victoria in Future 2008*.

**Comparison to VIF 2004 Estimates**

The VIF 2008 projections indicate significantly stronger population growth for Victoria, metropolitan Melbourne and regional Victoria than anticipated in the VIF 2004 series. The main differences between the two sets of forecasts for the period 2006-2031 (note, data not available for 2036 in the VIF 2004 series) are summarised as follows:

- Victoria’s population is now projected to increase by 1,940,000 persons, compared to the VIF 2004 estimate of 1,148,000 persons (a difference of +792,000 persons or +69% over the 2004 projections), while annual average growth of 1.29% is now forecast and this compares to the VIF 2004 estimate of 0.82% (a difference of +0.47% pa)

- Metropolitan Melbourne’s population is now projected to increase by 1,534,000 persons, compared to the VIF 2004 estimate of 857,000 persons (a difference of +677,000 persons or +79%), while annual average growth of 1.38% is now forecast and this compares to the VIF 2004 estimate of 0.84% (a difference of +0.54% pa)
- Regional Victoria’s population is now projected to increase by 405,600 persons, compared to the VIF 2004 estimate of 292,000 persons (a difference of +113,600 persons or 39%), while annual average growth of 1.03% is now forecast and this compares to the VIF 2004 estimate of 0.76% (a difference of +0.27% pa)

Comparisons between VIF 2004 and VIF 2008 projections are detailed in Table 2.4.

**Table 2.4: Comparison of Population Projections – VIF 2004 and VIF 2008**

Year VIF Projections Prepared	Victoria	Metropolitan Melbourne	Regional Victoria
<i>Population 2006</i>			
VIF 2004	5,077,210	3,681,260	1,395,950
VIF 2008	5,128,310	3,744,370	1,383,940
<i>Population 2031</i>			
VIF 2004	6,225,480	4,538,460	1,687,020
VIF 2008	7,067,690	5,278,150	1,789,540
<i>Population Change 2006-2031</i>			
VIF 2004	1,148,270	857,200	291,070
VIF 2008	1,939,380	1,533,780	405,600
<i>Annual Average Growth Rate 2006-2031</i>			
VIF 2004	0.82%	0.84%	0.76%
VIF 2008	1.29%	1.38%	1.03%
<i>Additional Growth Projected in VIF 2008 compared to VIF 2004</i>			
Change in Forecast Population 2006-2031	+791,110	+676,580	+114,530
Proportionate Change in Population 2006-2031	+69%	+79%	+39%

Source: Department of Sustainability and Environment, *Victoria in Future 2004*; Department of Planning and Community Development, *Victoria in Future 2008*.

## 2.3 Preliminary Regional Cities Projections

### VIF 2008 Projections

The first release of VIF 2008 does not include data for regional municipalities, although it does provide forecasts for regional Statistical Districts (SD). This SD data has been used to derive estimates for the regional cities by estimating the proportion of population each regional city is likely to secure from its SD between 2006 and 2036. This proportion is derived by applying VIF 2004 modelling for the period 2006-2031, while a five-year average (2026-2031) is used to project proportions from 2031-2036 (as no data is available for this period in VIF 2004).

Using this methodology, a summary of outcomes is provided as follows.

- The population of the Regional Cities is forecast to expand from 686,630 persons in 2006 to 958,160 persons in 2036. Over the period this represents an increase of 271,530 persons and an annual average growth rate of 1.12%.
- Each of the 10 regional cities is forecast to experience population growth over the coming 30 years, with annual average growth rates in excess of 1% projected for Wodonga (+1.56% pa), Warrnambool (+1.53% pa), Greater Bendigo (+1.39% pa), Greater Shepparton (+1.33% pa), Greater Geelong (+1.31% pa) and Ballarat (+1.22% pa). More modest population growth is forecast for the

remaining four centres comprising Mildura (+0.63% pa), Horsham (+0.32% pa), Latrobe (+0.20% pa) and Wangaratta (+0.10% pa).

- The Regional Cities share of regional Victoria's population is projected to increase steadily from 49.6% in 2006 to 51.5% in 2036, with Regional Cities projected to secure 56.9% of regional Victoria's population growth over the coming 30 years.

Preliminary population data is shown in Table 2.5 and Figure 2.5.

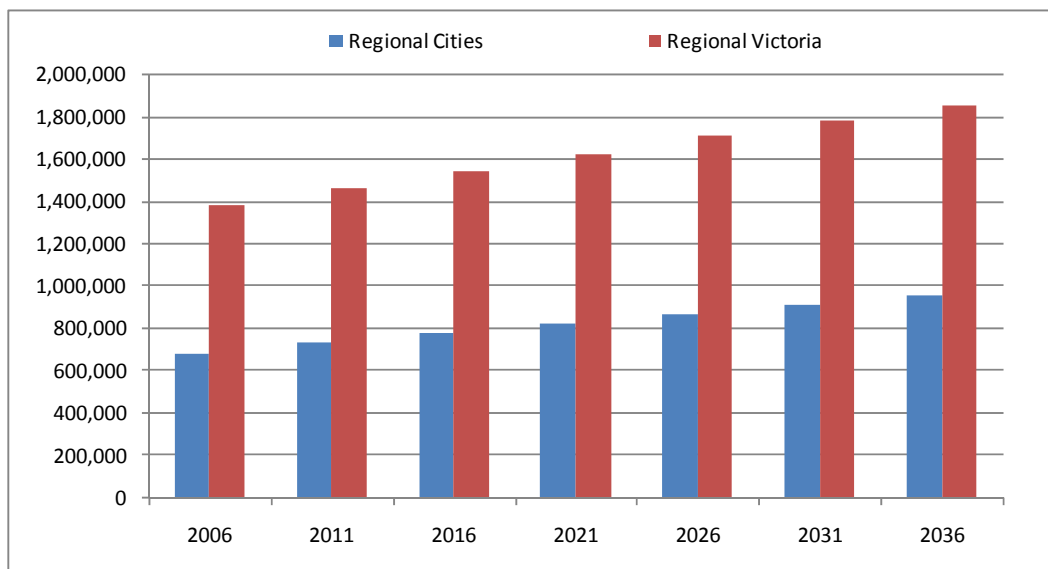
**Table 2.5: Preliminary Population Projections, Regional Cities, 2006-2036**

Statistical Division (SD) and Regional City	2006 <sup>(1)</sup>	2036 <sup>(2) (3)</sup>	Change 2006-2036	AAGR 2006-2036
<b>Barwon</b>	<b>269,990</b>	<b>395,530</b>	<b>+125,540</b>	<b>+1.28%</b>
Greater Geelong	205,930	304,170	+98,240	+1.31%
% of SD population	76.27%	76.90%	+0.63%	+0.02%
<b>Western District</b>	<b>102,390</b>	<b>119,840</b>	<b>+17,450</b>	<b>+0.53%</b>
Warrnambool	31,500	49,610	+18,110	+1.53%
% of SD population	30.77%	41.40%	+10.63%	+0.09%
<b>Central Highlands</b>	<b>147,540</b>	<b>210,230</b>	<b>+62,690</b>	<b>+1.19%</b>
Ballarat	88,440	127,180	+38,740	+1.22%
% of SD population	59.94%	60.50%	+0.56%	+0.03%
<b>Wimmera</b>	<b>50,020</b>	<b>45,250</b>	<b>-4,770</b>	<b>-0.33%</b>
Horsham	19,100	21,030	+1,930	+0.32%
% of SD population	38.64%	45.41%	+6.8%	+0.05%
<b>Mallee</b>	<b>91,850</b>	<b>93,930</b>	<b>+2,080</b>	<b>+0.08%</b>
Mildura	51,820	62,560	+10,740	+0.63%
% of SD population	58.21%	66.60%	+8.39%	+0.04%
<b>Loddon</b>	<b>175,220</b>	<b>261,520</b>	<b>+86,300</b>	<b>+1.34%</b>
Greater Bendigo	96,740	146,280	+49,540	+1.39%
% of SD population	55.09%	55.96%	+0.84%	+0.06%
<b>Goulburn</b>	<b>202,100</b>	<b>280,900</b>	<b>+78,800</b>	<b>+1.10%</b>
Greater Shepparton	59,200	88,080	+28,880	+1.33%
% of SD population	30.35%	31.36%	+1.01%	+0.01%
<b>Ovens-Murray</b>	<b>96,410</b>	<b>119,810</b>	<b>+23,400</b>	<b>+0.73%</b>
Wangaratta	27,320	28,140	+820	+0.10%
% of SD population	26.91%	23.49%	-3.42%	-0.44%
Wodonga	34,500	54,570	+20,070	+1.56%
% of SD population	38.04%	45.55%	+7.51%	+0.06%
<b>Gippsland</b>	<b>165,470</b>	<b>223,480</b>	<b>+58,010</b>	<b>+1.01%</b>
Latrobe	72,080	76,550	+4,470	+0.20%
% of SD population	41.28%	34.25%	-7.03%	-0.05%
<b>Regional Cities</b>	<b>686,630</b>	<b>958,160</b>	<b>+271,530</b>	<b>+1.12%</b>
<b>Regional Victoria</b>	<b>1,383,940</b>	<b>1,860,390</b>	<b>+476,450</b>	<b>+0.99%</b>
<b>Regional Cities: % share of population/growth</b>	<b>49.6%</b>	<b>51.5%</b>	<b>56.9%</b>	<b>n/a</b>

Source: Department of Sustainability and Environment, *Victoria in Future 2004*; Department of Planning and Community Development, *Victoria in Future 2008*; Essential Economics

Note: (1) 2006: ABS Estimated Resident Population  
 (2) 2036: SD data from VIF 2008-12-11  
 (3) 2036: City forecasts by Essential Economics, based on extrapolation of VIF 2004 growth rates for cities for 2026-2031

**Figure 2.5: Preliminary Population Projections, Selected Locations, 2006-2036**



Source: Department of Planning and Community Development, *Victoria in Future 2008*.

**Comparison between VIF 2004 and VIF 2008 Projections for Year 2031**

When compared to VIF 2004 projections (2006-2031), population outcomes outlined in VIF 2008 indicate significantly higher population outcomes for regional cities than anticipated in the previous State projections. Compared to the VIF 2004 forecasts, at 2031 the population of regional Victoria is now projected to expand by an additional 114,530 persons, while the population of the regional cities is forecast to increase by an additional 41,500 persons. When growth rates are considered, VIF 2008 projections for 2006-2031 show the population of regional Victoria is forecast to expand at 1.03% pa (compared to 0.76% anticipated in VIF 2004), while the regional cities are forecast to expand by 1.17% (compared to 0.98% anticipated in VIF 2004).

Thus, the new VIF 2008 projections forecast higher levels of population growth in Regional Victoria, and especially in the main regional cities compared with earlier forecasts.

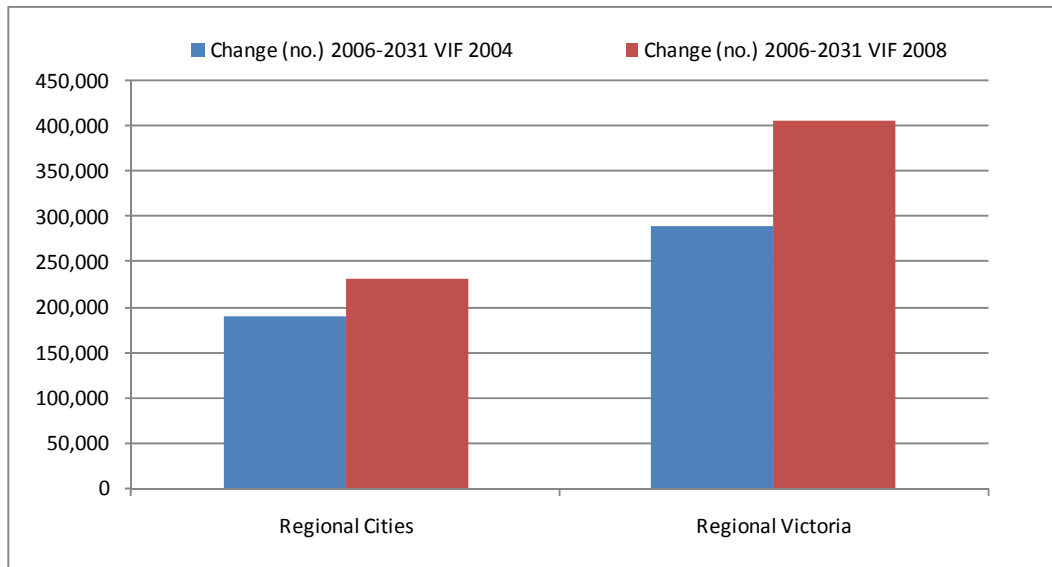
Population comparisons between the two series are shown in Table 2.6 and illustrated in Figures 2.6 and 2.7. Note that forecasts to 2036 were not included in VIF 2004.

**Table 2.6: Comparison of VIF 2004 and VIF 2008 Population Projections to 2031, Selected Locations, 2006-2031**

	VIF 2004				VIF 2008				Difference VIF 2004 vs VIF 2008	
	2006	2031	Change (no.) 2006-2031	Change AAGR 2006-2031	2006	2031	Change (no.) 2006-2031	Change AAGR 2006-2031	Persons (no.)	AAGR (%)
Regional Cities	685,730	875,750	+190,020	+0.98%	686,630	918,150	+231,520	+1.17%	+41, 500	+0.19%
Regional Victoria	1,395,950	1,687,020	+291,070	+0.76%	1,383,940	1,789,540	+405,600	+1.03%	+114,530	+0.27%

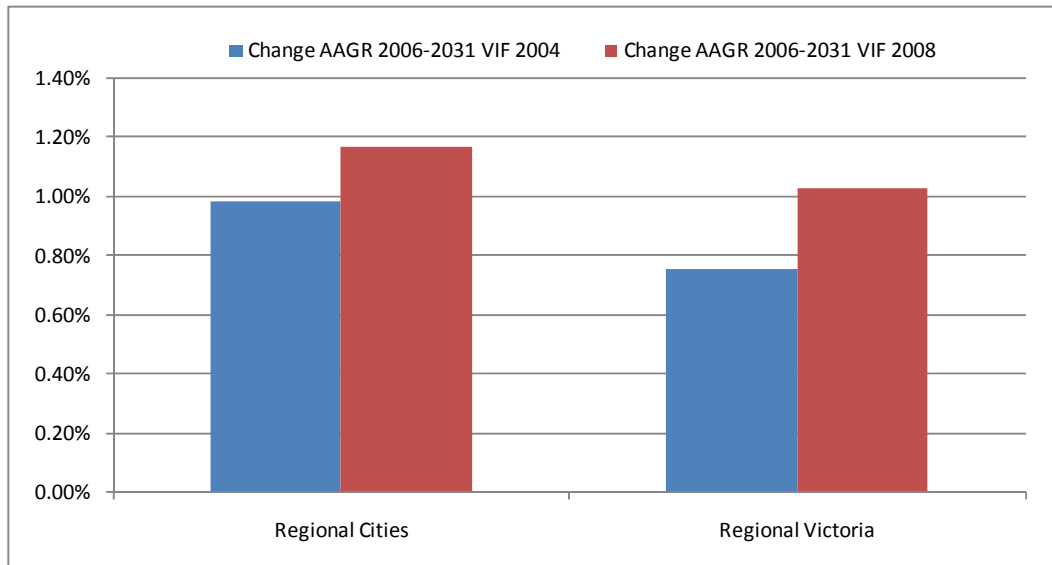
Source: Department of Sustainability and Environment, *Victoria in Future 2004*; Department of Planning and Community Development, *Victoria in Future 2008*; Essential Economics.

**Figure 2.6: Comparison of Population Growth (VIF 2004 and VIF 2008), Selected Locations, 2006-2031**



Source: Department of Sustainability and Environment, *Victoria in Future 2004*; Department of Planning and Community Development, *Victoria in Future 2008*.

**Figure 2.7: Comparison of Annual Average Growth Rates (VIF 2004 and VIF 2008), Selected Locations, 2006-2031**



Source: Department of Sustainability and Environment, *Victoria in Future 2004*; Department of Planning and Community Development, *Victoria in Future 2008*.

### Population Growth Scenarios

This project involves the preparation of population forecasts for ten regional cities, and to identify a number of scenarios in which these regional cities take an increasing share of Victoria’s population growth over the period to 2036.

On this basis five population growth scenarios have been prepared, with Regional Victoria increasing its share of Victoria’s population growth from a 21% share identified for 2006 to 2036 in the VIF 2008 forecasts, to reach 22%, 23%, 24%, 25% and 30% of Victoria’s population by 2036. With these scenarios in place for Regional Victoria, forecasts are then made for the ten regional cities on the basis that each city maintains its share of population growth in each surrounding SD over the forecast period.

These scenarios are shown in Table 2.7 and Figure 2.8.

Compared to the estimated 2036 population level for the regional cities of 958,160 persons (based on a 21% scenario derived from VIF 2008), the following population outcomes are projected for selected growth scenarios:

- 22% Scenario: this involves a +1% redistribution of forecast State population growth to Regional Victoria, and would result in a population outcome of 971,090 persons (representing an increase +12,930 persons over the 21% share in VIF 2008).
- 25% Scenario: this involves a +4% redistribution of forecast State population growth to Regional Victoria, and would result in a population outcome of 1,009,870 persons (representing an increase +51,710 persons over the 21% share in VIF 2008).
- 30% Scenario: this involves a +9% redistribution of forecast State population growth to Regional Victoria, and would result in a population outcome of 1,074,520 persons (representing an increase +116,360 persons over the 21% share in VIF 2008).

Note that under these scenarios, regional cities increase their share of Victoria’s population in 2036 from 12.0% under VIF 2008 forecasts, to reach 14.3% under the 25% Regional Victoria share scenario and 17.1% under the 30% Regional Victoria share scenario.

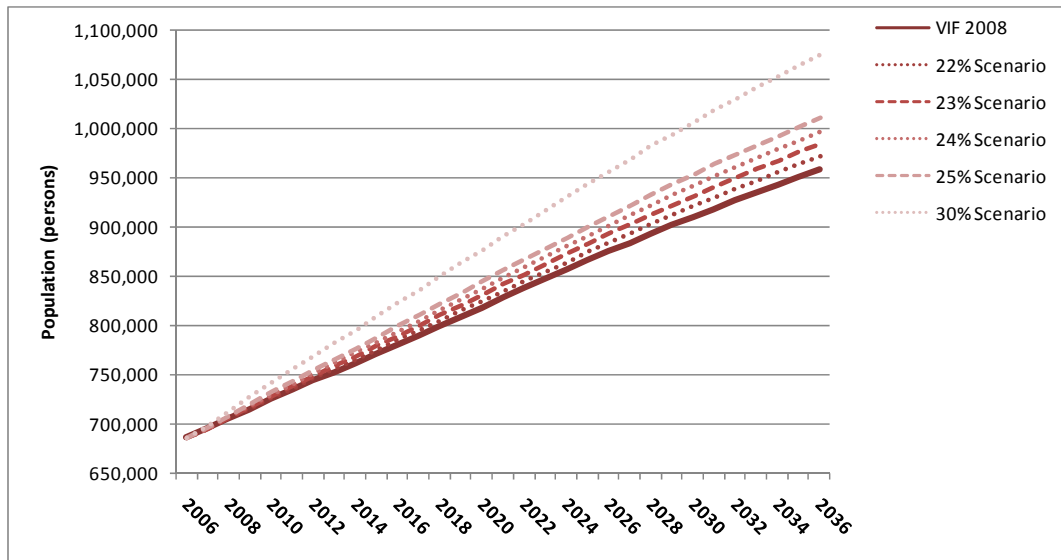
**Table 2.7: Population Growth Scenarios, Regional Cities, 2006-2036**

Scenario	2006	2011	2016	2021	2026	2031	2036	Change 2006-36	AAGR 2006-36	Regional Cities' Share of Victorian Population
VIF 2008	686,630	733,800	780,100	827,470	874,490	918,150	958,160	+271,530	1.12%	11.97%
22% Scenario	686,630	736,190	784,800	834,420	883,580	929,230	971,090	+284,460	1.16%	12.54%
23% Scenario	686,630	738,590	789,490	841,360	892,670	940,300	984,020	+297,390	1.21%	13.11%
24% Scenario	686,630	740,980	794,190	848,310	901,760	951,380	996,950	+310,320	1.25%	13.69%
25% Scenario	686,630	743,380	798,890	855,260	910,850	962,450	1,009,870	+323,240	1.29%	14.25%
30% Scenario	686,630	755,360	822,370	890,000	956,300	1,017,830	1,074,520	+387,890	1.50%	17.11%

Source: Department of Planning and Community Development, *Victoria in Future 2008*; Essential Economics.



**Figure 2.8: Population Growth Scenarios, Regional Cities, 2006-2036**



Source: Department of Planning and Community Development, *Victoria in Future 2008*; Essential Economics.

## 2.4 Conclusion

The key findings in relation to Victoria in Future population estimates are as follows:

1. A review of VIF data for 2000 and 2004 shows that the initial series significantly under-estimated regional population growth by 3.9% or 26,000 persons between 1996 and 2006. The subsequent series over-estimated population growth, albeit by a relatively small amount (1.1% pa or 6,000 persons between 2001 and 2006). In view of the ongoing refinements contained in VIF data, in our view the 2008 series is likely to represent a reasonably accurate estimation for population outcomes for regional Victoria.
2. VIF 2008 data for 2006-2036 forecasts significant population growth for Victoria (1.23% pa), metropolitan Melbourne (1.31% pa) and regional Victoria (0.99% pa) over the period.
3. By 2036, Victoria's population is expected to expand by 2.3 million persons, comprising an additional 1.8 million persons in metropolitan Melbourne and an additional 0.5 million persons in regional Victoria. Regional Victoria is forecast to secure 21% of State population growth over the 30-year period.
4. Importantly, these most recent population projections anticipate a significantly higher population outcome than was projected when the VIF 2004 forecasts were released. Comparative data (2006-2031) shows that Victoria's population is now expected to be approximately 800,000 persons higher than anticipated in 2004, comprising an additional 675,000 persons in metropolitan Melbourne and an additional 115,000 persons in regional Victoria.
5. Population projections derived from VIF 2008 indicate that the population of the regional cities will expand by 1.12% pa over the period 2006-2036, increasing the population of the regional cities from 686,000 persons in 2006 to 958,000 persons in 2036 and representing a net increase of approximately +272,000 persons.
6. This outcome is considerably higher than that expected when the 2004 VIF projections were prepared. For example, for the comparison period 2006-2031 VIF 2004 anticipated growth of an additional 190,000 persons for the regional cities and a growth rate of 0.98% pa for the period. This is in contrast to VIF 2008 data which projects population growth of an additional 232,000 persons and an average growth rate of 1.17% pa for the period.

7. When alternative growth scenarios are considered the population outcome for regional cities would be expected to be much higher. For example, if regional cities secure a 22% share of State population growth over the period 2006-2036, then their combined population would increase by an additional 13,000 persons; if a 25% share of State population growth is achieved, then the population of the regional cities would expand by an additional 52,000 persons.
8. VIF 2008 projections and alternative growth scenarios prepared in this report indicate higher population outcomes for regional Victoria (and regional cities) than anticipated in previous Victorian State Government projections. A significantly higher regional Victoria population outcome is likely to have implications for regional cities in terms of resources required to deliver adequate levels of infrastructure and services to support rapidly expanding regional communities.

## 3 INFRASTRUCTURE AND RESOURCES SURVEY

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This Chapter describes the infrastructure and resources survey that was undertaken for this project, and which identifies the existing infrastructure and resource situation in each municipality. A discussion of survey data quality is also provided.

### 3.1 Methodology

A data collection survey was compiled and circulated to each of the 10 participating municipalities. The aim of the survey was to collect local data on a range of variable which could potentially be used to assess future infrastructure and resource needs. Data categories were grouped under the following 10 broad categories:

1. Water
2. Public transport
3. Energy
4. Communications
5. Land supply
6. Health
7. Education
8. Social infrastructure
9. Recreation
10. Waste management

Under these broad categories a number of sub-categories were developed to provide a range of benchmarks to be used in the analysis. These sub- categories are shown in Table 1.1.

**Table 3.1: Regional Cities Victoria, Infrastructure Survey – Categories and Measures**

Category	Measures
<b>1. Water</b>	
Household usage	Litres per person per day
<b>2. Public Transport</b>	
Bus services	Number of daily bus routes operating within the municipality
Rail services	No. of regular weekly train/coach passenger services <u>to and from</u> Metropolitan Melbourne
Rail services	Rail patronage
Air services	Number of aircraft movements per annum
<b>3. Energy</b>	
Household electricity consumption	Kilo Watt hours (KWh) per annum per household
Household gas consumption	Giga joules (GJ) per annum per household
<b>4. Communications</b>	
Broadband access	Estimated broadband coverage across municipality
Mobile phone coverage	Estimated mobile phone coverage
<b>5. Land supply</b>	
Total dwellings	Number of occupied and unoccupied dwellings
Residential land supply	Estimated amount of <u>serviced</u> residential land available (vacant)
Commercial land supply	Estimated amount of <u>serviced</u> commercial land available (vacant)
Industrial land supply	Estimated amount of <u>serviced</u> industrial land available (vacant)
<b>6. Health</b>	
Hospitals	No. of public and private hospitals located in municipality
Hospital beds	No. of private and public beds located in municipality
Hospital emergency department presentations	No. of emergency patients attended to each year (admitted and non-admitted)
No of GPs	No. of GPs located in municipality
<b>7. Education</b>	
Primary schools	No. of public and private primary schools located in municipality
Primary schools places	No. of public and private primary school places located in municipality
Secondary schools	No. of public and private secondary schools located in municipality
Secondary schools places	No. of public and private secondary school places located in municipality
Tertiary establishments	No. of tertiary establishments located in municipality
Tertiary places (TAFE, university etc)	No. of tertiary places located in municipality
<b>8. Social Infrastructure</b>	
Library branches	No. of library branches located in municipality
Library floorspace	Amount of public access library floorspace (m2) located in municipality
Kindergartens	No. of kindergarten's located in municipality
Kindergarten places	No. of kindergarten places located in municipality
Childcare centres	No. of childcare centres located in municipality
Childcare places	No. of childcare places located in municipality
Aged care facilities	No. of aged care facilities located in municipality
Aged care	Estimated number of aged care beds located in municipality
<b>9. Recreation</b>	
Open space	Estimated amount of public access opens space located in municipality (ha)
Arts and cultural facilities	No. of arts centres, museums, galleries located in the municipality
Sports facilities	No. of indoor and outdoor sports centres/stadiums/ovals located in municipality
<b>10. Waste Management</b>	
Municipal waste	Amount of Kerbside municipal waste (tonnes pa)

### 3.2 Survey Returns

Essential Economics and each of the 10 participating municipalities collaboratively completed the survey, and in most cases the data received was of sufficient quality to be used to forecast long-term infrastructure and resource requirements. There were, however, several variables where data was insufficient, incomplete, inconsistent across the municipality, or not available at all. Despite this situation, at least one indicator has been able to be developed for each of the nine broad category areas.

Unsuitable data sub-categories are described in Table 3.2.

**Table 3.2: Data Unsuitable for Analysis**

Category	Measure	Why data unusable
Rail services	Rail patronage	Rail patronage data relates to whole service rather than patronage by specific locations.
Air services	Number of aircraft movements per annum	Not all regional cities have airports. Data provided was inconsistent as not all municipalities had access to full aircraft movement records.
Commercial land supply	Estimated amount of <u>serviced</u> commercial land available (vacant)	Few municipalities were able to provide this data
Open space	Estimated amount of public access open space located in municipality (ha)	Many municipalities could not provide this data
Sports facilities	No. of indoor and outdoor sports centres/stadiums/ovals located in municipality	Inconsistent data provided. Note, an alternative measure has been used in the analysis.

### 3.3 Conclusion

An infrastructure and resources survey was developed and circulated to each of the 10 regional cities. The survey requested information of a range of resource areas including water, public transport, energy, communications, land supply, health, education, social infrastructure, recreation and waste management.

While there were a small number of categories where data was insufficient for use, the survey information (together with additional data sourced by the consultant) has been used to develop 23 indicators to assess future infrastructure and resource requirements in the Regional Cities. These indicators are described in detail the following Chapter.

## 4 FUTURE REQUIREMENTS

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This Chapter describes future requirements in the Regional Cities for 23 infrastructure and resource indicators. Requirements are described for three population growth scenarios and for the years 2015 and 2036.

### 4.1 Indicators

Using the data provided from the surveys and other data sourced by the consultants, 22 indicators have been developed to assess future infrastructure and resource requirements for regional cities.

Projections for each indicator are provided for the years 2015 and 2036 and are based on the following three scenarios

- 21% scenario: Regional Victoria secures 21% of State population growth between 2006-2036, as per Victoria in Future 2008 projections.
- 25% scenario: Regional Victoria secures 25% of State population growth between 2006-2036 (ie +4% compared to Victoria in Future 2008 projections).
- 30% scenario: Regional Victoria secures 30% of State population growth between 2006-2036, (ie +9% compared to Victoria in Future 2008 projections).

The indicators developed are described as follows:

#### Water

1. Additional household water requirements

#### Transport

2. Additional number of bus routes required
3. Additional number of rail/coach services required

#### Energy

4. Additional household electricity required
5. Additional household gas required

#### Communications

6. Additional broadband coverage required

#### Land supply

7. Additional number of dwellings required
8. Additional residential land required
9. Additional industrial land required

#### Health

10. Additional hospital beds required
11. Additional hospital emergency department presentations
12. Additional GPs required

### Education

13. Additional primary school places required
14. Additional secondary school places required
15. Additional university places required
16. Additional TAFE places required

### Social Infrastructure

17. Additional library floorspace required
18. Additional kindergarten places required
19. Additional childcare places required
20. Additional aged care beds required

### Recreation

21. Additional arts and cultural facilities required
22. Additional recreational indoor facilities

### Waste Management

23. Additional kerbside household municipal waste generated

The following sections provide detailed analysis of each indicator at an aggregated Regional Cities level, while information for each the 10 regional cities are included in Appendix 2.

## 4.2 Population Growth Scenarios

The following population growth scenarios have been developed for the purposes of this analysis:

Base Case: 21% Scenario or VIF Scenario (ie regional Victoria secures 21% of future State population growth in line with VIF 2008 population projections)

Medium Case: 25% Scenario (ie regional Victoria secures 25% of future State population growth)

High Case: 30% Scenario (ie regional Victoria secures 30% of future State population growth)

By 2015, the combined population of the Regional Cities is forecast to increase from an estimated 2006 level of 686,630 persons to between 766,040 persons (VIF scenario) and 803,460 persons (30% scenario). This represents an increase of between +79,410 persons (VIF scenario) and +116,830 persons (30% scenario) over the 2006-2015 period.

When the 30 year outlook is considered, the combined population of the Regional Cities in 2036 is projected to reach between 958,160 persons (VIF scenario) and 1,074,520 persons (30% scenario) representing an increase of between +271,530 (VIF scenario) and +387,890 persons (30% scenario) over the period 2006-2036.

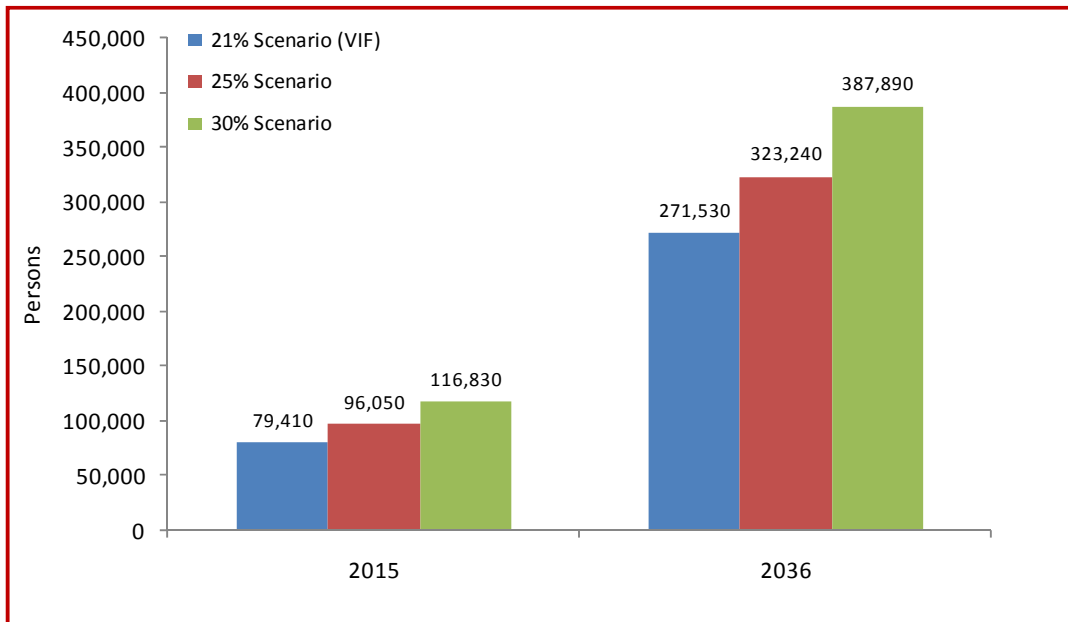
Data relating to population levels for Regional Cities under three scenarios (21% scenario (VIF), 25% scenario and 30% scenario) are shown in Table 4.1 and Figure 4.1, and this data forms the basis for assessing future resource and infrastructure requirements outlined in this Chapter.

**Table 4.1: Estimated Population Levels, Regional Cities at 2015 and 2036**

Scenario		2015	2036
<b>Existing Situation</b>	<b>686,630 persons (2006)</b>	<b>No. of Persons</b>	
21% Scenario (VIF)	Estimated Population Level	766,040	958,160
	<i>Change from existing situation</i>	<i>+79,410</i>	<i>+271,530</i>
25% Scenario	Estimated Population Level	782,680	1,009,870
	<i>Change from existing situation</i>	<i>+96,050</i>	<i>+323,240</i>
30% Scenario	Estimated Population Level	803,460	1,074,520
	<i>Change from existing situation</i>	<i>+116,830</i>	<i>+387,890</i>

Source: Department of Planning and Community Development, *Victoria in Future 2008*; Essential Economics.

**Figure 4.1: Estimated Additional Persons, Regional Cities, 2006-2036**



Source: Department of Planning and Community Development, *Victoria in Future 2008*; Essential Economics.



### 4.3 Water Requirements

Households in the Regional Cities consumed 50.9 billion litres of water in 2007/08, according to estimates derived from State Government data ([www.ourwater.vic.gov.au](http://www.ourwater.vic.gov.au)). These estimates take into account different levels of water usage across each of the 10 municipalities.

Using these current estimates as a base, household consumption estimates have been prepared for the Regional Cities for the periods 2006-2015 and 2006-2036. A permanent 10% reduction in annual water consumption for each municipality has been factored into the modelling, reflecting State Government policies aimed at reducing domestic water usage (such as the Target 155 Campaign).

By 2015, water consumption in the Regional Cities is estimated to increase to between 56.6 billion litres (VIF scenario) and 59.3 billion litres (30% scenario). This represents an annual increase of between +5.7 billion litres (VIF scenario) and +8.4 billion litres persons over the 2006-2015 period.

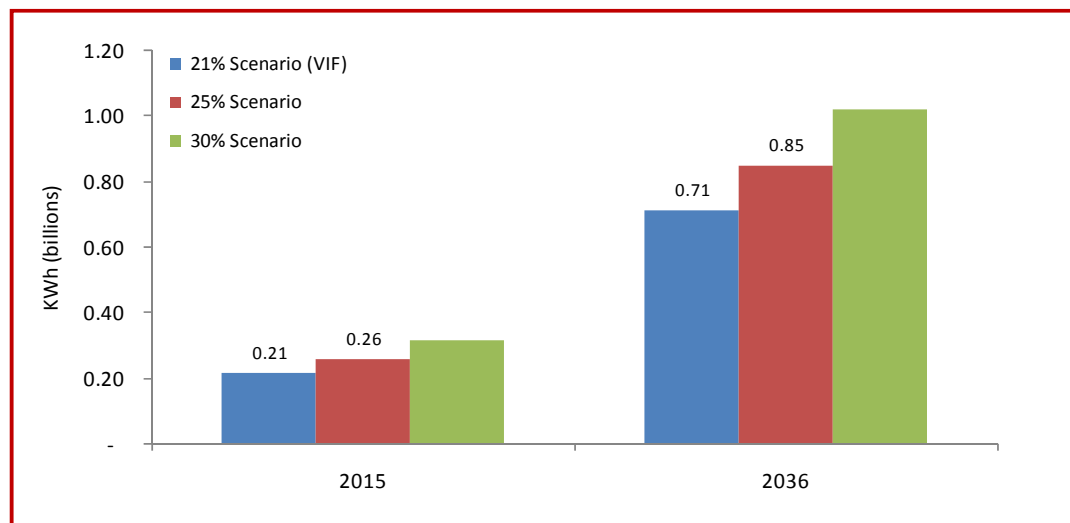
By 2036, water consumption in the Regional Cities is estimated to reach between 69.7 billion litres pa (VIF scenario) and 77.8 billion litres pa (30% scenario) representing an annual increase of between +18.8 billion litres (VIF scenario) and +26.9 billion litres (30% scenario) over the 30-year period. Data relating to water consumption forecasts is contained in Table 4.2 and Figure 4.2.

**Table 4.2: Estimated Household Water Requirements, Regional Cities at 2015 and 2036**

Scenario		2015	2036
<b>Existing Situation</b>	<b>50.9 (billion litres)</b>	<b>Litres (billions)</b>	
21% Scenario (VIF)	Estimated requirement	56.6	69.7
	<i>Change from existing situation</i>	+5.7	+18.8
25% Scenario	Estimated requirement	57.8	73.3
	<i>Change from existing situation</i>	+6.9	+22.4
30% Scenario	Estimated requirement	59.3	77.8
	<i>Change from existing situation</i>	+8.4	+26.9

Source: [www.ourwater.vic.gov.au/target155/calculating-consumption](http://www.ourwater.vic.gov.au/target155/calculating-consumption); Essential Economics

**Figure 4.2: Additional Household Water Requirements, Regional Cities at 2015 and 2036**



Source: [www.ourwater.vic.gov.au/target155/calculating-consumption](http://www.ourwater.vic.gov.au/target155/calculating-consumption); Essential Economics.

## 4.4 Public Transport Requirements

### Bus Services

There are currently 146 public bus routes operating in the Regional Cities, according to data provided by each municipality. Using existing population to bus route ratios for each municipality, estimates of future requirements have been derived for the Regional Cities for the periods 2006-2015 and 2006-2036.

By 2015, the number of bus routes required in the Regional Cities is estimated to increase to between 166 routes (VIF scenario) and 170 routes (30% scenario). This represents an annual increase of between +16 routes (VIF scenario) and +24 routes (30% scenario) over the 2006-2015 period.

By 2036, the number of bus routes required in the Regional Cities is estimated to reach between 199 routes (VIF scenario) and 222 routes (30% scenario) representing an increase of between +53 routes (VIF scenario) and +76 routes (30% scenario) over the 30-year period.

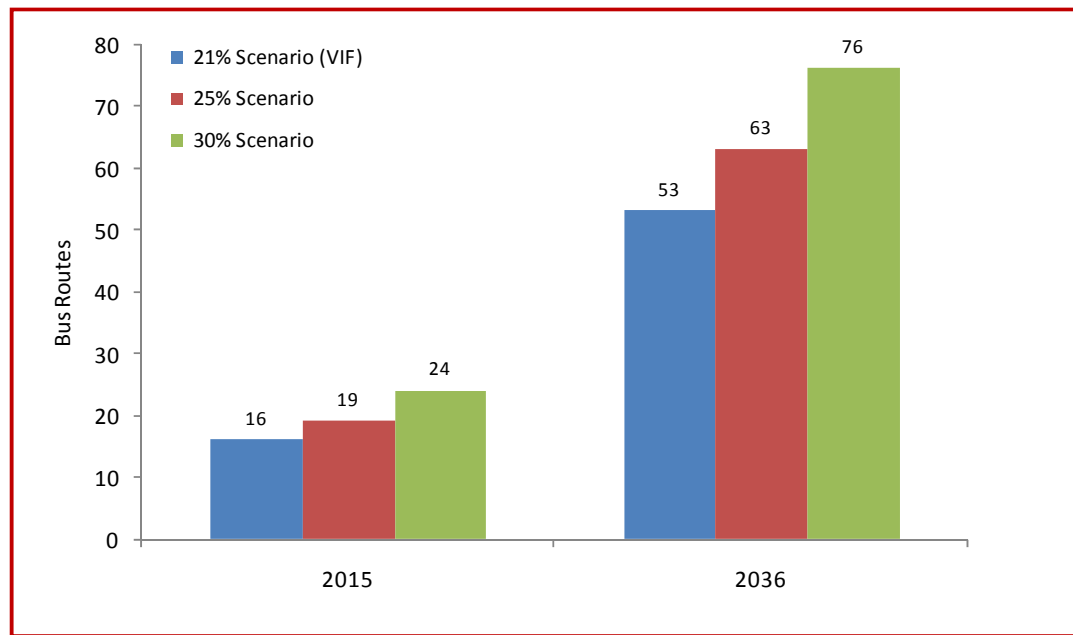
Data relating to future bus route requirements are contained in Table 4.3 and Figure 4.3.

**Table 4.3: Estimated Bus Route Requirements, Regional Cities at 2015 and 2036**

Scenario		2015	2036
<b>Existing Situation</b>	<b>146 (public bus routes)</b>	<b>No. of Bus Routes</b>	
21% Scenario (VIF)	Estimated requirement	162	199
	<i>Change from existing situation</i>	+16	+53
25% Scenario	Estimated requirement	165	209
	<i>Change from existing situation</i>	+19	+63
30% Scenario	Estimated requirement	170	222
	<i>Change from existing situation</i>	+24	+76

Source: Regional Cities Victoria, Essential Economics.

**Figure 4.3: Additional Number of Bus Routes Requirements, Regional Cities at 2015 and 2036**



Source: Regional Cities Victoria, Essential Economics.

**Rail Services**

There are currently approximately 1,190 weekly rail/coach services connecting the Regional Cities to Metropolitan Melbourne, according to data sourced from V/Line (noting that some services connect more than one regional city). Using existing population to rail/coach services ratios for each municipality (and accounting for some services connecting multiple destinations); estimates of future requirements have been derived for the Regional Cities for the periods 2006-2015 and 2006-2036.

By 2015, the number of weekly rail/coach services required in the Regional Cities is estimated to increase to between 1,340 services (VIF scenario) and 1,410 services (30% scenario). This represents an annual increase of between +150 services (VIF scenario) and +220 services (30% scenario) over the 2006-2015 period.

By 2036, the number of weekly services required in the Regional Cities is estimated to reach between 1,680 services (VIF scenario) and 1,890 services (30% scenario) representing an increase of between +490 services (VIF scenario) and +700 services (30% scenario) over the 30-year period.

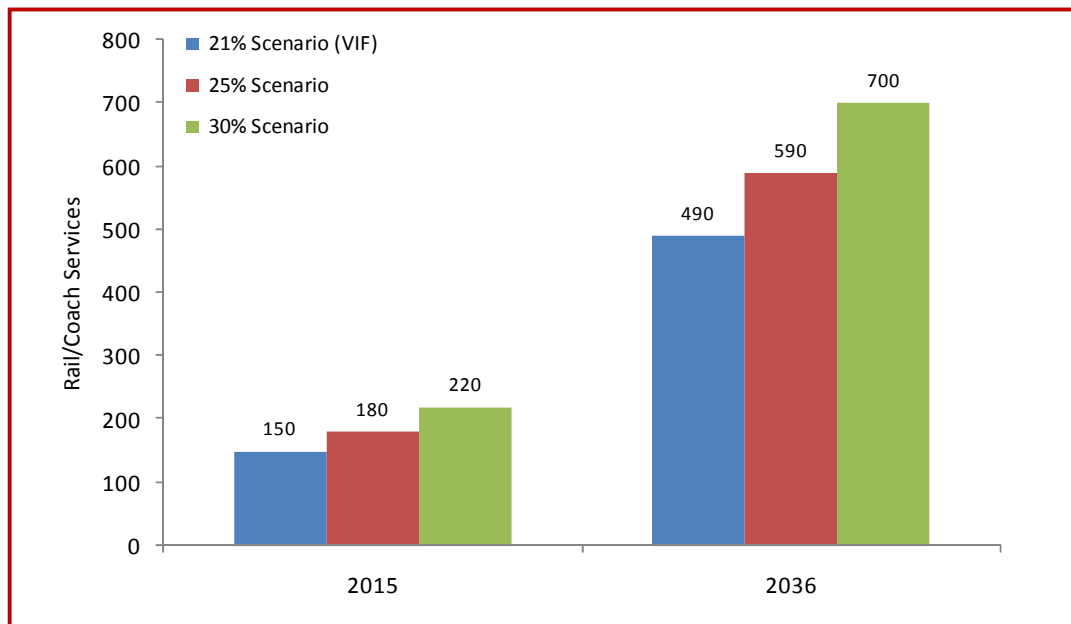
Data relating to future rail/coach services requirements are contained in Table 4.4 and Figure 4.4.

**Table 4.4: Estimated Rail/Coach Service Requirements, Regional Cities at 2015 and 2036**

Scenario		2015	2036
<b>Existing Situation</b>	<b>1,190 (direct rail/coach services to and from Metropolitan Melbourne)</b>	<b>No. of Rail/Coach Services</b>	
21% Scenario (VIF)	Estimated requirement	1,340	1,680
	Change from existing situation	+150	+490
25% Scenario	Estimated requirement	1,370	1,780
	Change from existing situation	+180	+590
30% Scenario	Estimated requirement	1,410	1,890
	Change from existing situation	+220	+700

Source: Vline.com.au, Essential Economics.

**Figure 4.4: Additional Number of Rail/Coach Services Required, Regional Cities at 2015 and 2036**



Source: Regional Cities Victoria, Essential Economics.

## 4.5 Energy Requirements

### Household Electricity

Households in the Regional Cities consume approximately 1.85 billion KWh of electricity per year. This estimate is based on applying the Victoria average consumption rate of 6,500 KWh per household (Essential Services Commission), to the existing number of dwellings located in the Regional Cities. Based on the assumption that the existing per household consumption rate continues, estimates future consumption have been prepared for the Regional Cities for the periods 2006-2015 and 2006-2036,

By 2015, household electricity consumption in the Regional Cities is estimated to increase to between 2.06 billion KWh (VIF scenario) and 2.16 billion KWh (30% scenario). This represents an annual increase of between +0.21 billion KWh (VIF scenario) and + 0.31 billion KWh (30% scenario) over the 2006-2015 period.

By 2036, household electricity consumption in the Regional Cities is estimated to reach between 2.56 billion KWh (VIF scenario) and 2.86 billion KWh (30% scenario) representing an increase of between +0.71 billion KWh services (VIF scenario) and +1.02 billion KWh (30% scenario) over the 30-year period.

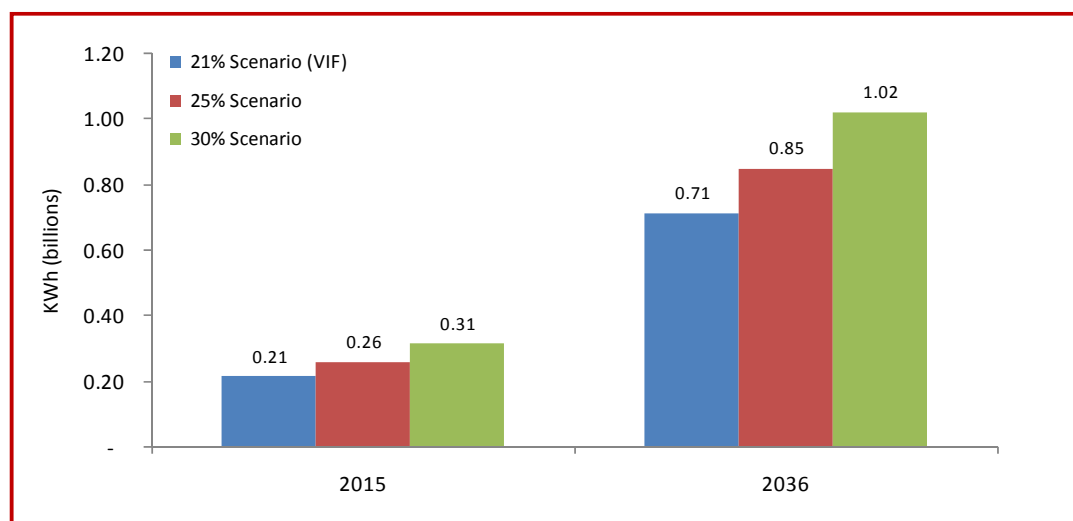
Data relating to future household electricity consumption is contained in Table 4.5 and Figure 4.5.

**Table 4.5: Estimated Household Electricity Requirements, Regional Cities at 2015 and 2036**

Scenario		2015	2036
<b>Existing Situation</b>	<b>1.85 (billion KWh)</b>		<b>KWhs (billions)</b>
21% Scenario (VIF)	Estimated requirement	2.06	2.56
	<i>Change from existing situation</i>	<i>+0.21</i>	<i>+0.71</i>
25% Scenario	Estimated requirement	2.10	2.69
	<i>Change from existing situation</i>	<i>+0.26</i>	<i>+0.85</i>
30% Scenario	Estimated requirement	2.16	2.86
	<i>Change from existing situation</i>	<i>+0.31</i>	<i>+1.02</i>

Source: Essential Services Commission, Essential Economics.

**Figure 4.5: Additional Household Electricity Requirements, Regional Cities at 2015 and 2036**



Source: Essential Services Commission, Essential Economics.

**Household Gas**

Households in the Regional Cities consume 17.0 million gigajoules (GJ) of gas on an annual basis. This estimate is based on applying the average Victoria household consumption rate of 60 GJ (Essential Services Commission), to the existing number of dwellings located in the Regional Cities. Based on the assumption that existing household consumption rates continue, estimates of future consumption have been prepared for the Regional Cities for the periods 2006-2015 and 2006-2036.

By 2015, household gas consumption in the Regional Cities is estimated to increase to between 19.0 million GJ (VIF scenario) and 19.9 million GJ (30% scenario). This represents an annual increase of between +2.0 million GJ (VIF scenario) and +2.9 million GJ (30% scenario) over the 2006-2015 period.

By 2036, household gas consumption in the Regional Cities is estimated to reach between 23.6 million GJ (VIF scenario) and 26.4 million GJ (30% scenario) representing an increase of between +6.6 million GJ (VIF scenario) and +9.4 million GJ (30% scenario) over the 30-year period.

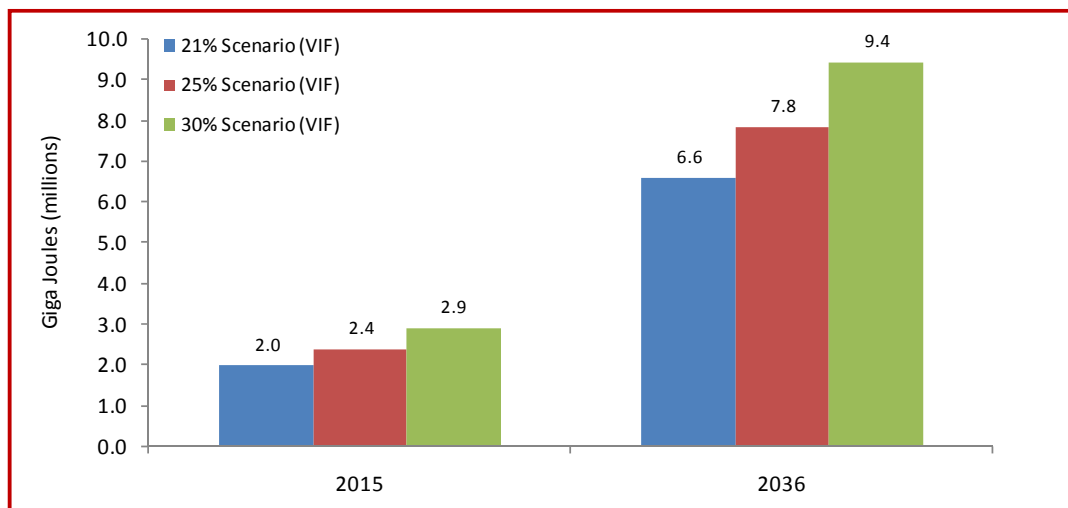
Data relating to future household gas consumption is contained in Table 4.6 and Figure 4.6.

**Table 4.6: Estimated Household Gas Requirements, Regional Cities at 2015 and 2036**

Scenario		2015	2036
<b>Existing Situation</b>	<b>17.0 million gigajoules</b>		
		<b>GJs (millions)</b>	
21% Scenario (VIF)	Estimated requirement	19.0	23.6
	<i>Change from existing situation</i>	<i>+2.0</i>	<i>+6.6</i>
25% Scenario	Estimated requirement	19.4	24.9
	<i>Change from existing situation</i>	<i>+2.4</i>	<i>+7.8</i>
30% Scenario	Estimated requirement	19.9	26.4
	<i>Change from existing situation</i>	<i>+2.9</i>	<i>+9.4</i>

Source: Essential Services Commission; Essential Economics  
 Figures rounded

**Figure 4.6: Additional Household Gas Requirements, Regional Cities at 2015 and 2036**



Source: Essential Services Commission; Essential Economics  
 Figures rounded

## 4.6 Communication Requirements

### Broadband Access

Data sourced from Multi Media Victoria indicates wide variations in the level of broadband coverage across the Regional Cities. For example, in 2004 (latest information available) broadband coverage ranged from 55% to 85%. Overall, it is estimated that on average broadband coverage across the Regional Cities was 72% in 2004.

The preparation of estimates for future broadband requirements (in the absence of updated data), is based on the assumption of a 25% improvement in broadband coverage over the period 2004-2015, with further on-going improvements ensuring 100% coverage by 2036. Note that for some municipalities, 100% coverage might be achieved prior to 2015.

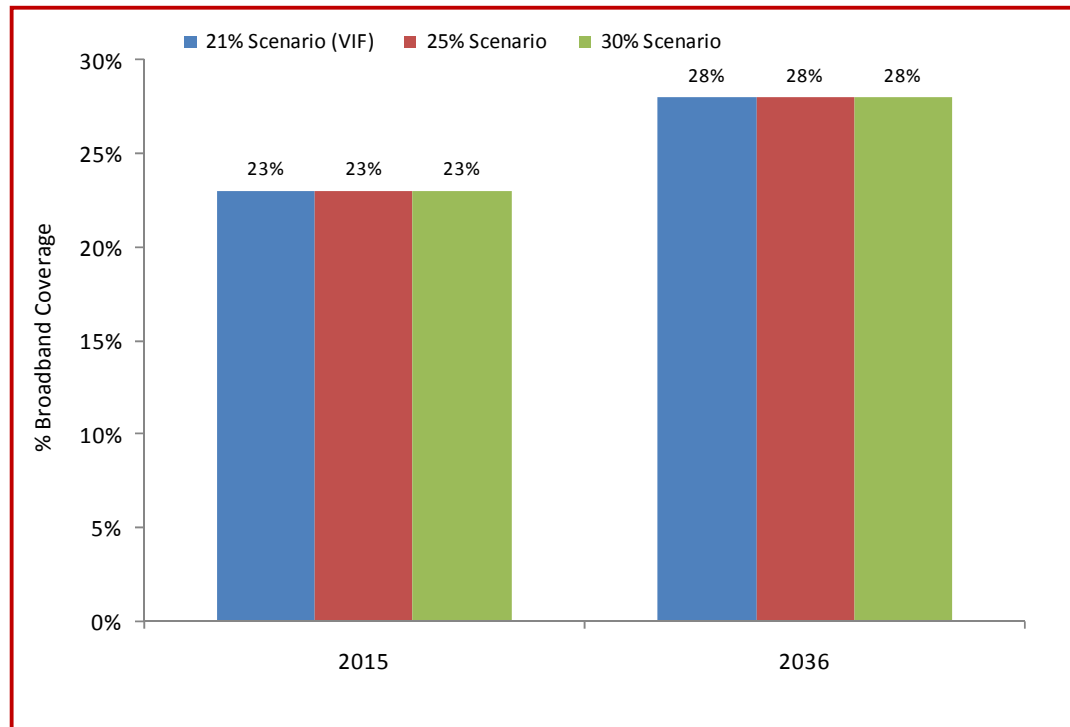
Data relating to future broadband coverage is shown in Table 4.7 and Figure 4.7.

**Table 4.7: Broadband Access Requirements, Regional Cities at 2015 and 2036**

Scenario		2015	2036
<b>Existing Situation</b>	<b>72% of population has broadband coverage</b>	<b>% Broadband Coverage</b>	
21% Scenario (VIF)	Estimated requirement	95%	100%
	<i>Change from existing situation</i>	+23%	+28%
25% Scenario	Estimated requirement	95%	100%
	<i>Change from existing situation</i>	+23%	+28%
30% Scenario	Estimated requirement	95%	100%
	<i>Change from existing situation</i>	+23%	+28%

Source: Regional Economic Impacts of Broadband Adoption in Victoria, ACIL Tasman (2004) for Multi Media Victoria; Essential Economics

**Figure 4.7: Additional Broadband Coverage Requirements, Regional Cities at 2015 and 2036**



Source: Regional Economic Impacts of Broadband Adoption in Victoria, ACIL Tasman (2004) for Multi Media Victoria; Essential Economics

## 4.7 Land Supply Requirements

### Estimated Additional Dwellings

Regional Cities contain approximately 284,000 occupied and unoccupied dwellings (ABS Census 2006). Based on applying current population per dwelling ratios (2006) for each municipality, estimates of future required dwellings have been prepared for the Regional Cities for the periods 2006-2015 and 2006-2036.

By 2015, the number of dwellings required in the Regional Cities is estimated to be between 316,510 dwellings (VIF scenario) and 331,910 dwellings (30% scenario). This represents an increase of between +32,640 dwellings (VIF scenario) and +48,040 dwellings (30% scenario) over the 2006-2015 period.

By 2036, the number of dwellings required in the Regional Cities is estimated to reach between 393,210 dwellings (VIF scenario) and 440,600 dwellings (30% scenario) representing an increase of between +109,340 dwellings (VIF scenario) and + 156,750 dwellings (30% scenario) over the 30-year period.

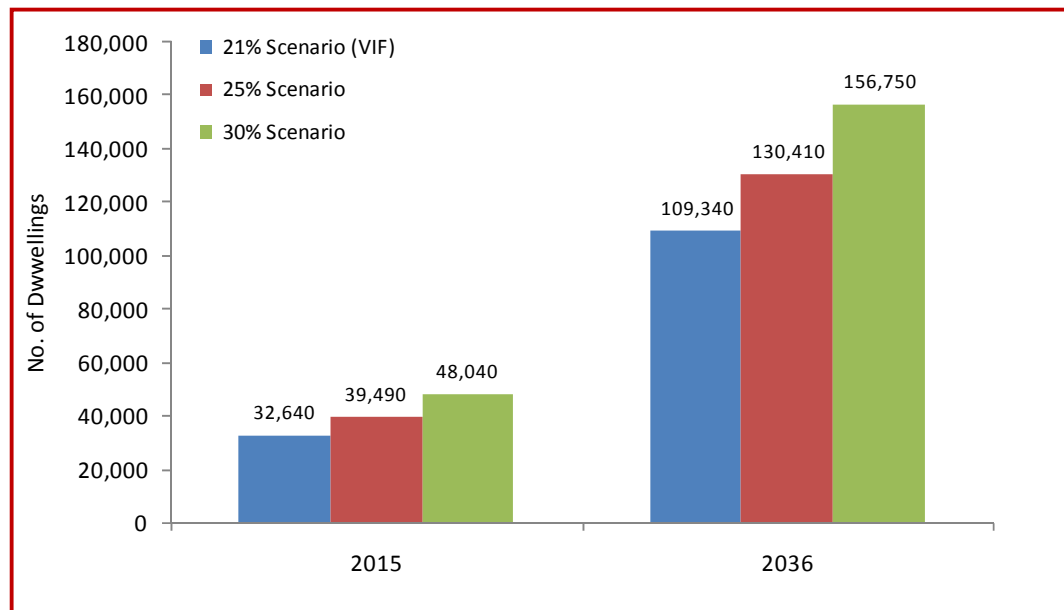
Data relating to future dwelling requirements is included in Table 4.8 and Figure 4.8.

**Table 4.8: Estimated Additional Dwellings Requirements, Regional Cities at 2015 and 2036**

Scenario		2015	2036
<b>Existing Situation</b>	<b>283, 870 dwellings</b>		<b>No. of Dwellings</b>
21% Scenario (VIF)	Estimated requirement	316,510	393,210
	<i>Change from existing situation</i>	<i>+32,640</i>	<i>+109,340</i>
25% Scenario	Estimated requirement	323,360	414,280
	<i>Change from existing situation</i>	<i>+39,490</i>	<i>+130,410</i>
30% Scenario	Estimated requirement	331,910	440,620
	<i>Change from existing situation</i>	<i>+48,040</i>	<i>+156,750</i>

Source: Victoria in Future 2004 and 2008; Essential Economics

**Figure 4.8: Additional Number of Dwellings Requirements, Regional Cities at 2015 and 2036**



Source: Victoria in Future 2004 and 2008; Essential Economics

**Estimated Additional Residential Land Required**

Based on the additional dwelling requirements outlined above and assuming an average development yield of 10 dwellings per gross ha, land requirement estimates have been prepared for 2015 and 2036.

By 2015 it is estimated that between +3,260 ha (VIF scenario) and +4,810 ha (30% scenario) of additional serviced residential land will be required in the Regional Cities.

By 2036, the additional serviced residential land requirement is estimated to be between +10,930 ha (VIF scenario) and +15,680 ha (30% scenario).

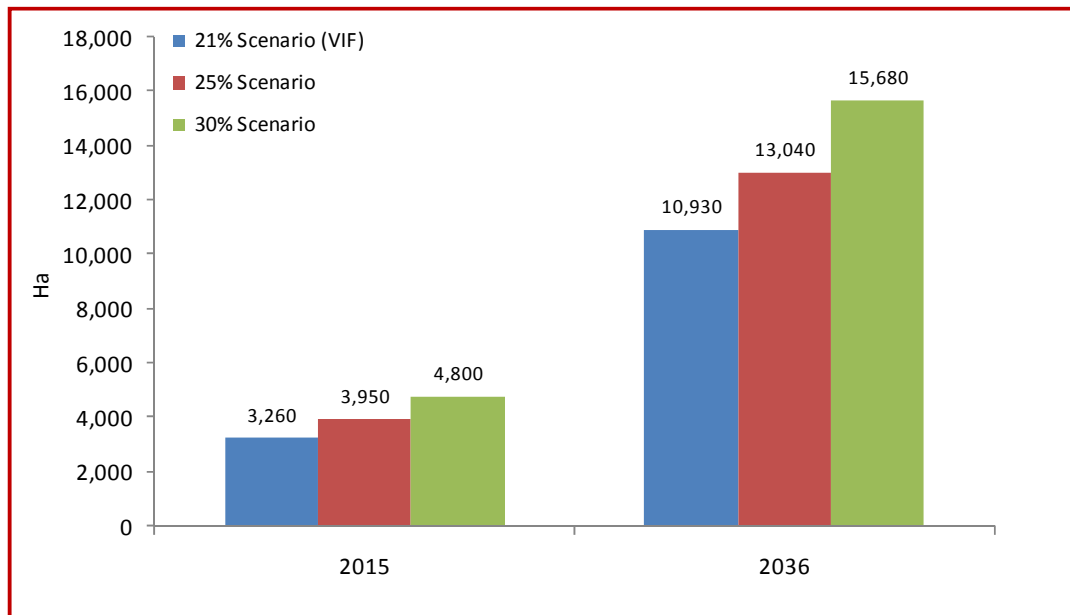
Future residential land requirement data is included in Table 4.9 and Figure 4.9.

**Table 4.9: Estimated Additional Residential Land Required, Regional Cities at 2015 and 2036**

Scenario		2015	2036
<b>Existing Situation</b>	<b>No data available</b>	<b>Additional Residential Land (ha)</b>	
21% Scenario (VIF)	Estimated requirement	+3,260 ha	+10,930 ha
25% Scenario	Estimated requirement	+3,950 ha	+13,040 ha
30% Scenario	Estimated requirement	+4,810 ha	+15,680 ha

Source: Victoria in Future 2004 and 2008; Essential Economics

**Figure 4.9: Additional Residential Land Required, Regional Cities at 2015 and 2036**



Source: Victoria in Future 2004 and 2008; Essential Economics

**Estimated Additional Industrial Land Required**

The Regional Cities currently contain approximately 3,320 ha of vacant zoned industrial land (Urban Development Program, 2007). Significant additional serviced industrial land will be required in the Regional Cities in the future to support industrial-related activities and employment. Data derived from UDP 2007, indicates that the Regional Cities have approximately 1ha of industrial land per 70 persons (SGS, Take up of Industrial Land – Six Regional Victorian Centres, 2008) and this ratio has been used and applied to projected population growth in the Regional Cities.

By 2015 it is estimated that between +1,180 ha (VIF scenario) and +1,730 ha (30% scenario) of additional vacant serviced industrial land will be required.



By 2036, the additional vacant serviced industrial land requirement is estimated to be between +3,860 ha (VIF scenario) and +5,540 ha (30% scenario).

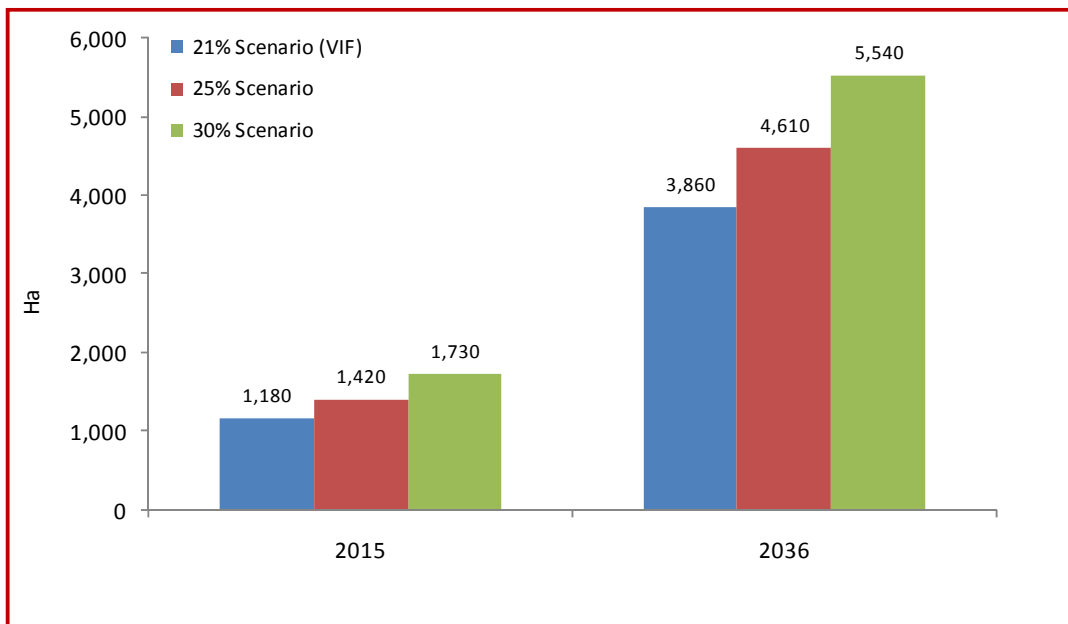
Future industrial land requirement data is included in Table 4.10 and Figure 4.10.

**Table 4.10: Estimated Additional Serviced Industrial Land Required, Regional Cities at 2015 and 2036**

Scenario		2015	2036
<b>Existing Situation</b>	<b>11,000 (ha) total stock of which 3,320 (ha) are vacant</b>	<b>Additional Industrial Land (ha)</b>	
21% Scenario (VIF)	Estimated requirement	+1,180 ha	+3,860 ha
25% Scenario	Estimated requirement	+1,420 ha	+4,610 ha
30% Scenario	Estimated requirement	+1,730 ha	+5,540 ha

Source: Department of Planning and Community Development, Urban Development Program 2007; SGS Planning and Economics, Take up of Industrial Land – Six Regional Victorian Centres, 2008; Essential Economics

**Figure 4.10: Additional Industrial Land Required, Regional Cities at 2015 and 2036**



Source: Department of Planning and Community Development, Urban Development Program 2007; SGS Planning and Economics, Take up of Industrial Land – Six Regional Victorian Centres, 2008; Essential Economics

## 4.8 Health Requirements

### Hospital Beds

There are approximately 3,810 hospital beds (private and public) located in the Regional Cities. Using existing population to hospital bed provision ratios for each municipality, estimates of future requirements have been derived for the Regional Cities for the periods 2006-2015 and 2006-2036.

By 2015, the number of hospital beds required in the Regional Cities is estimated to be between 4,280 beds (VIF scenario) and 4,500 beds (30% scenario). This represents an increase of between +470 beds (VIF scenario) and +690 beds (30% scenario) over the 2006-2015 period.

By 2036, the number of hospital beds required in the Regional Cities is estimated to reach between 5,360 beds (VIF scenario) and 6,030 beds (30% scenario) representing an increase of between +1,550 beds (VIF scenario) and +2,220 beds (30% scenario) over the 30-year period.

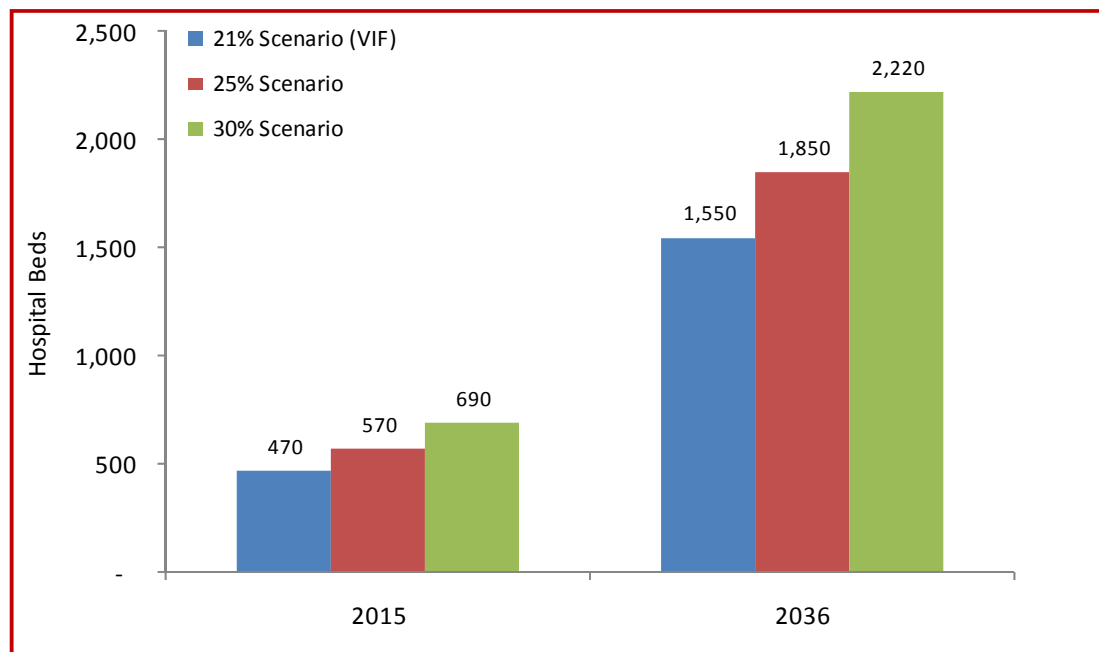
Hospital bed requirement data is shown in Table 4.11 and Figure 4.11.

**Table 4.11: Estimated Hospital Bed Requirements, Regional Cities at 2015 and 2036**

Scenario		2015	2036
<b>Existing Situation</b>	<b>3,810 (public and private hospital beds)</b>	<b>No. of Hospital Beds</b>	
21% Scenario (VIF)	Estimated requirement	4,280	5,360
	<i>Change from existing situation</i>	+ 470	+ 1,550
25% Scenario	Estimated requirement	4,380	5,660
	<i>Change from existing situation</i>	+570	+1,850
30% Scenario	Estimated requirement	4,500	6,030
	<i>Change from existing situation</i>	+690	+2,220

Source: Regional Cities Victoria, Essential Economics.

**Figure 4.11: Additional Hospital Beds Required, Regional Cities at 2015 and 2036**



Source: Regional Cities Victoria, Essential Economics.

**Hospital Emergency Department Presentations**

Currently there are approximately 493,000 presentations to Regional Cities emergency departments on an annual basis. Using existing population to emergency hospital presentation ratios for each municipality, estimates of future demand on emergency departments have been prepared for the Regional Cities for the periods 2006-2015 and 2006-2036.

By 2015, the number of hospital emergency department presentations in the Regional Cities is estimated to be between 538,640 presentations (VIF scenario) and 559,580 presentations (30% scenario). This represents an increase of between +45,550 presentations (VIF scenario) and +66,490 presentations (30% scenario) over the 2006-2015 period.

By 2036, the number of hospital emergency department presentations in the Regional Cities is estimated to reach between 631,680 presentations (VIF scenario) and 691,510 presentations (30% scenario) representing an increase of between +138,580 presentations (VIF scenario) and +198,420 presentations (30% scenario) over the 30-year period.

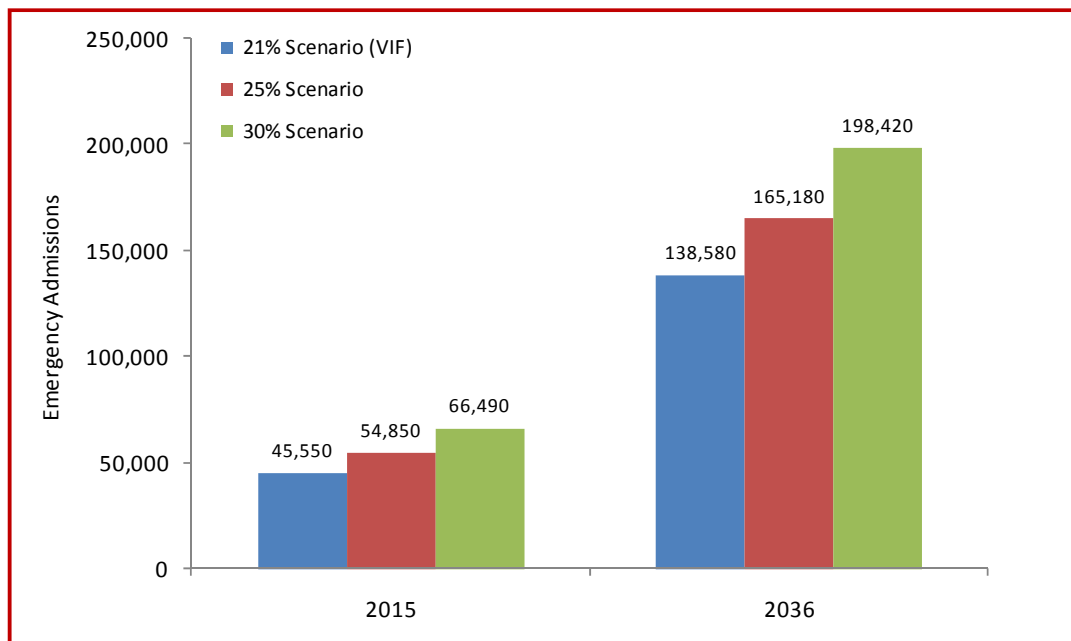
Data relating to hospital emergency department presentations is included Table 4.12 and Figure 4.12.

**Table 4.12: Estimated Hospital Emergency Department Presentations, Regional Cities at 2015 and 2036**

Scenario		2015	2036
<b>Existing Situation</b>	<b>493,090 (Emergency department presentations)</b>	<b>No. of Emergency Department Presentations</b>	
21% Scenario (VIF)	Estimated presentations	538,640	631,680
	<i>Change from existing situation</i>	<i>+45,550</i>	<i>+138,580</i>
25% Scenario	Estimated presentations	547,950	658,270
	<i>Change from existing situation</i>	<i>+54,850</i>	<i>+165,180</i>
30% Scenario	Estimated presentations	559,580	691,510
	<i>Change from existing situation</i>	<i>+66,490</i>	<i>+198,420</i>

Source: Regional Cities Victoria, Essential Economics.

**Figure 4.12: Additional Hospital Emergency Department Presentations, Regional Cities at 2015 and 2036**



Source: Regional Cities Victoria, Essential Economics.

**General Practitioners**

There are approximately 835 general practitioners (GPs) located in the Regional Cities. Using existing population to GP ratios for each municipality, estimates of future GP requirements have been derived for the Regional Cities for the periods 2006-2015 and 2006-2036.

By 2015, the number of GPs required in the Regional Cities is estimated to be between 935 GPs (VIF scenario) and 985 GPs (30% scenario). This represents an increase of between +100 GPs (VIF scenario) and +150 GPs (30% scenario) over the 2006-2015 period.

By 2036, the number of GPs required in the Regional Cities is estimated to reach between 1,175 GPs (VIF scenario) and 1,320 GPs (30% scenario) representing an increase of between +340 GPs (VIF scenario) and +485 GPs (30% scenario) over the 30-year period.

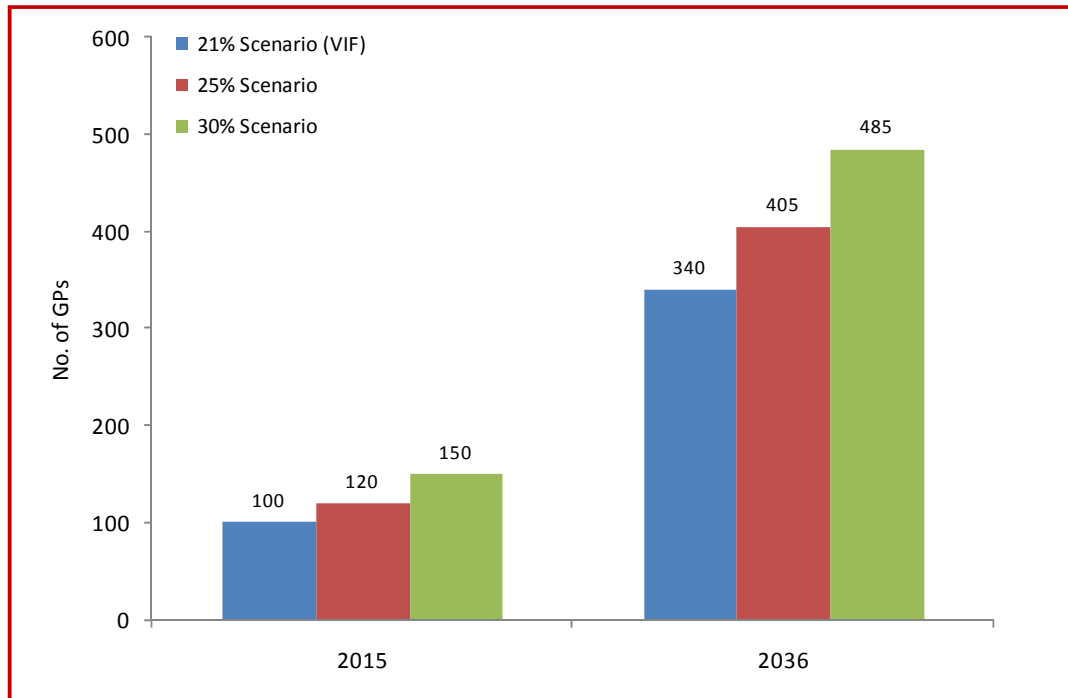
Data relating to future GP requirements is included Table 4.13 and Figure 4.13.

**Table 4.13: Estimated General Practitioner Requirements, Regional Cities at 2015 and 2036**

Scenario		2015	2036
<b>Existing Situation</b>	<b>835 (General practitioners)</b>	<b>No of GPs</b>	
21% Scenario (VIF)	Estimated requirements	935	1,175
	<i>Change from existing situation</i>	+100	+340
25% Scenario	Estimated requirements	955	1,240
	<i>Change from existing situation</i>	+120	+405
30% Scenario	Estimated requirements	985	1,320
	<i>Change from existing situation</i>	+150	+485

Source: Regional Cities Victoria, Essential Economics.

**Figure 4.13: Additional GPs Required, Regional Cities at 2015 and 2036**



Source: Regional Cities Victoria, Essential Economics.

## 4.9 Education Requirements

### Primary School Places

There are approximately 63,430 primary school places located in the Regional Cities. Estimates for future primary school place requirements have been derived for the Regional Cities (for the periods 2006-2015 and 2006-2036), by using existing population to place ratios as a base and then adjusting these ratios to reflect demographic change (recognising long-term fluctuations in the proportion of the school aged population). Note that demographic adjustments have been made on the basis of available aged-based projections data contained in VIF 2008 at a Statistical District (SD) level, as no data at a municipal level is currently available.

By 2015, the number of primary school places required in the Regional Cities is estimated to be between 64,720 places (VIF scenario) and 67,840 places (30% scenario). This represents an increase of between +1,380 places (VIF scenario) and +4,500 places (30% scenario) over the 2006-2015 period.

By 2036, the number of primary school places required in the Regional Cities is estimated to reach between 72,390 places (VIF scenario) and 81,130 places (30% scenario) representing an increase of between +9,050 places (VIF scenario) and +17,790 (30% scenario) over the 30-year period.

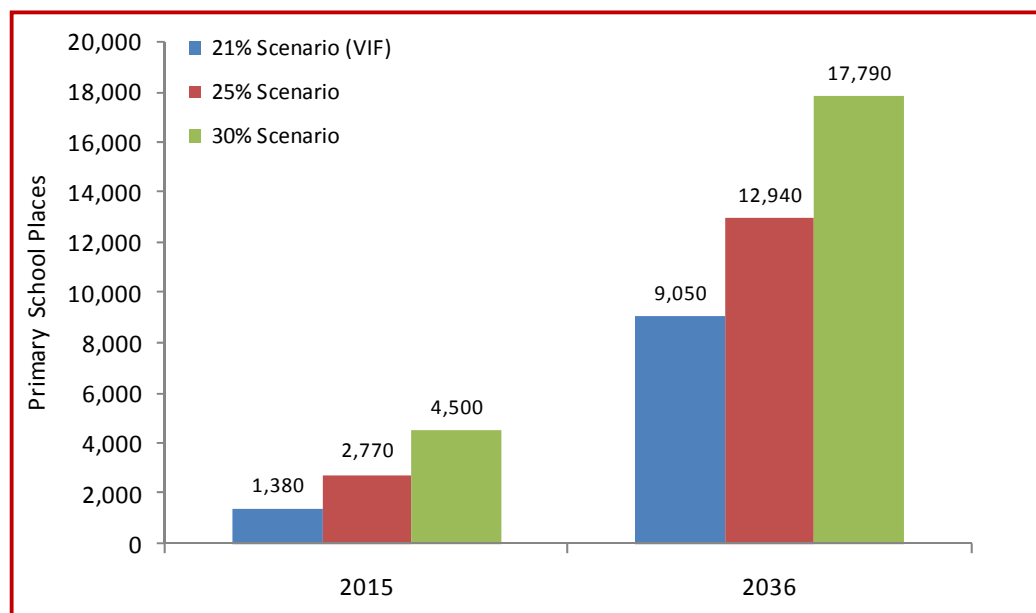
Data relating to future primary school place requirements is included Table 4.14 and Figure 4.14.

**Table 4.14: Estimated Primary School Places Required, Regional Cities at 2015 and 2036**

Scenario		2015	2036
<b>Existing Situation</b>	<b>63,340 (primary school places)</b>	<b>No. of Primary School Places</b>	
21% Scenario (VIF)	Estimated requirement	64,720	72,390
	<i>Change from existing situation</i>	<i>+1,380</i>	<i>+9,050</i>
25% Scenario	Estimated requirement	66,110	76,280
	<i>Change from existing situation</i>	<i>+2,770</i>	<i>+12,940</i>
30% Scenario	Estimated requirement	67,840	81,130
	<i>Change from existing situation</i>	<i>+4,500</i>	<i>+17,790</i>

Source: Regional Cities Victoria, Essential Economics.

**Figure 4.14: Additional Primary School Places Required, Regional Cities at 2015 and 2036**



Source: Regional Cities Victoria, Essential Economics.

**Secondary School Places**

There are approximately 55,010 secondary school places located in the Regional Cities. Estimates for future secondary school place requirements have been derived for the Regional Cities (for the periods 2006-2015 and 2006-2036), by using existing population to place ratios as a base and then adjusting these ratios to reflect demographic change (recognising long-term fluctuations in the proportion of the school aged population). Note, demographic adjustments have been made on the basis of available aged-based projections data contained in VIF 2008 at a Statistical District (SD) level, as no data at a municipal level is currently available.

By 2015, the number of secondary school places required in the Regional Cities is estimated to be between 56,360 places (VIF scenario) and 59,110 places (30% scenario). This represents an increase of between +1,350 places (VIF scenario) and +4,100 places (30% scenario) over the 2006-2015 period.

By 2036, the number of secondary school places required in the Regional Cities is estimated to reach between 63,250 places (VIF scenario) and 70,980 places (30% scenario) representing an increase of between +8,240 places (VIF scenario) and +15,970 (30% scenario) over the 30-year period.

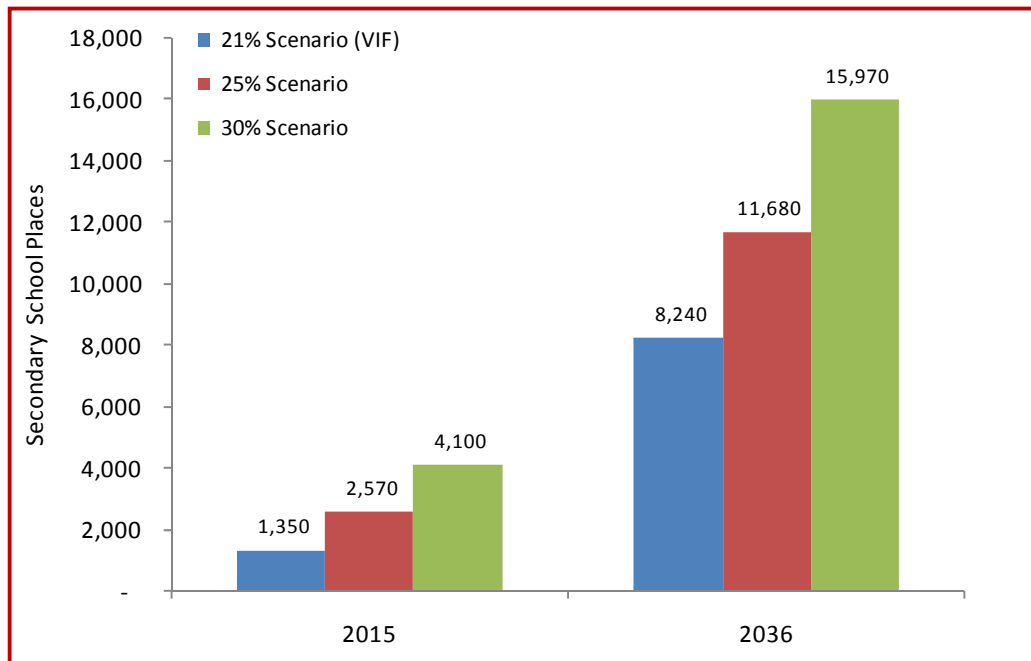
Data relating to future secondary school place requirements is included Table 4.15 and Figure 4.15.

**Table 4.15: Estimated Secondary School Places Required, Regional Cities at 2015 and 2036**

Scenario		2015	2036
<b>Existing Situation</b>	<b>55,010 (secondary school places)</b>	<b>No. of Secondary School Places</b>	
21% Scenario (VIF)	Estimated requirement	56,360	63,250
	<i>Change from existing situation</i>	<i>+1,350</i>	<i>+8,240</i>
25% Scenario	Estimated requirement	57,580	66,690
	<i>Change from existing situation</i>	<i>+2,570</i>	<i>+11,680</i>
30% Scenario	Estimated requirement	59,110	70,980
	<i>Change from existing situation</i>	<i>+4,100</i>	<i>+15,970</i>

Source: Regional Cities Victoria, Essential Economics.

**Figure 4.15: Additional Secondary School Places Required, Regional Cities at 2015 and 2036**



Source: Regional Cities Victoria, Essential Economics.

**University Places**

There are approximately 15,500 university places located in the Regional Cities. This represents approximately 2,250 regional university places per 100,000 population (which is approximately three-quarters of the metropolitan Melbourne provision rate.) Estimates for future university place requirements have been derived for Regional Cities (for the periods 2006-2015 and 2006-2036), by applying this ratio into the future. Note, this would only ensure the existing level of provision continues and should therefore be considered a minimum target.

By 2015, the number of university places required in the Regional Cities is estimated to be between 17,330 places (VIF scenario) and 18,180 places (30% scenario). This represents an increase of between +1,830 places (VIF scenario) and +2,680 places (30% scenario) over the 2006-2015 period.

By 2036, the number of university places required in the Regional Cities is estimated to reach between 21,540 places (VIF scenario) and 24,140 places (30% scenario) representing an increase of between +6,040 places (VIF scenario) and +8,640 (30% scenario) over the 30-year period.

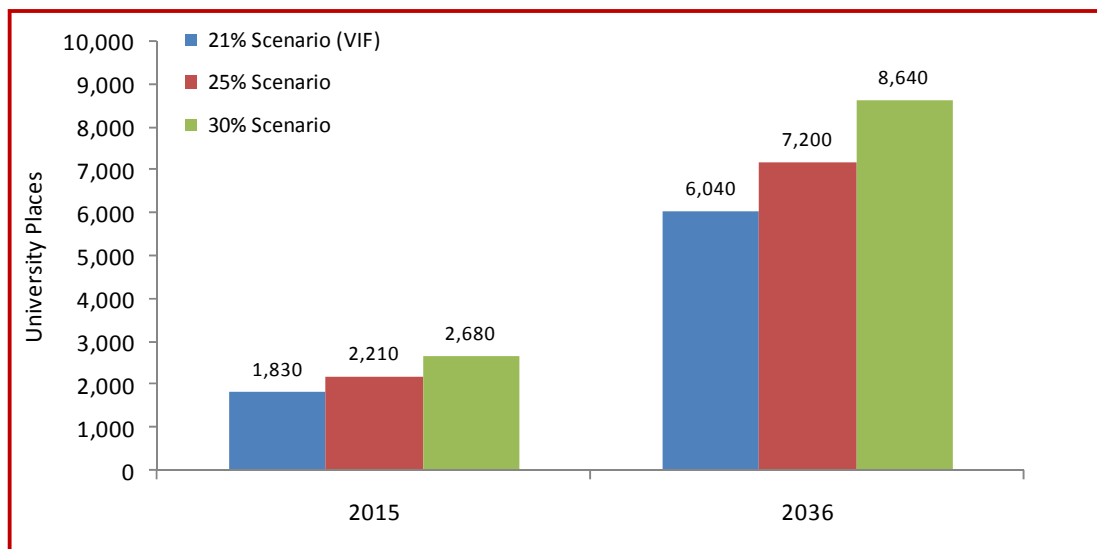
Data relating to future university place requirements is included Table 4.16 and Figure 4.16.

**Table 4.16: Estimated University Places Required, Regional Cities at 2015 and 2036**

Scenario		2015	2036
<b>Existing Situation</b>	<b>15,500 (university places)</b>	<b>No. of University Places</b>	
21% Scenario (VIF)	Estimated requirement	17,330	21,540
	<i>Change from existing situation</i>	<i>+1,830</i>	<i>+6,040</i>
25% Scenario	Estimated requirement	17,710	22,700
	<i>Change from existing situation</i>	<i>+2,210</i>	<i>+7,200</i>
30% Scenario	Estimated requirement	18,180	24,140
	<i>Change from existing situation</i>	<i>+2,680</i>	<i>+8,640</i>

Source: Regional Cities Victoria, Essential Economics.

**Figure 4.16: Additional University Places Required, Regional Cities at 2015 and 2036**



Source: Regional Cities Victoria, Essential Economics.

**TAFE Places**

There are approximately 93,000 TAFE places located in the Regional Cities. This represents approximately 13,500 places per 100,000 population. Estimates for future TAFE requirements have been derived for Regional Cities (for the periods 2006-2015 and 2006-2036), by applying this ratio into the future.

By 2015, the number of TAFE places required in the Regional Cities is estimated to be between 104,250 places (VIF scenario) and 109,530 places (30% scenario). This represents an increase of between +11,250 places (VIF scenario) and +16,530 places (30% scenario) over the 2006-2015 period.

By 2036, the number of TAFE places required in the Regional Cities is estimated to reach between 131,040 places (VIF scenario) and 147,500 places (30% scenario) representing an increase of between +38,040 places (VIF scenario) and +54,500 (30% scenario) over the 30-year period.

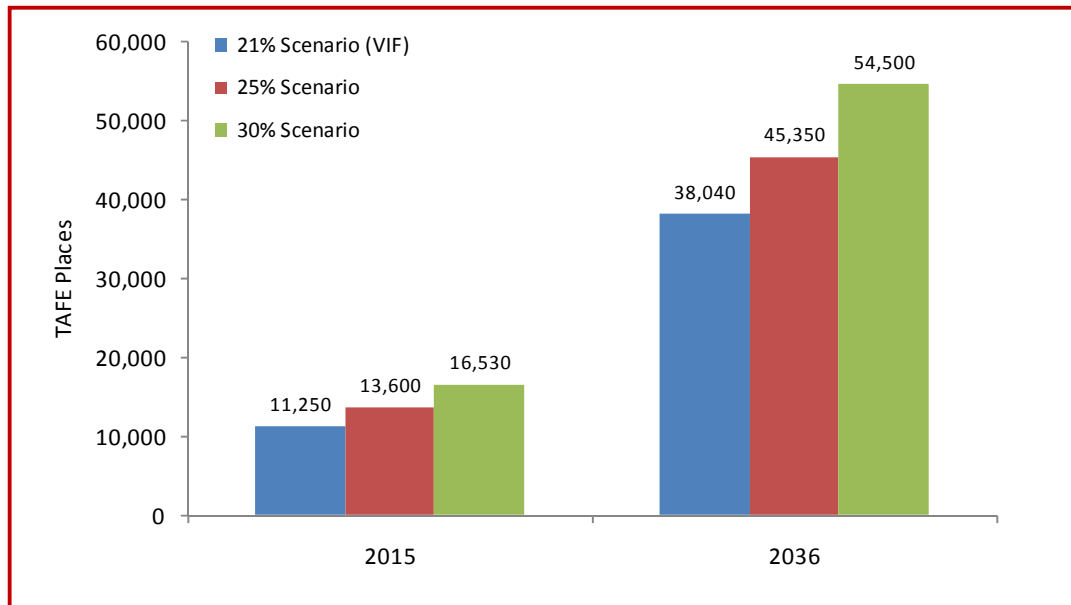
Data relating to future TAFE place requirements is included Table 4.17 and Figure 4.17.

**Table 4.17: Estimated TAFE Places Required, Regional Cities at 2015 and 2036**

Scenario		2015	2036
<b>Existing Situation</b>	<b>93,000 (TAFE places)</b>	<b>No. of TAFE Places</b>	
21% Scenario (VIF)	Estimated requirement	104,250	131,040
	<i>Change from existing situation</i>	<i>+11,250</i>	<i>+38,040</i>
25% Scenario	Estimated requirement	106,600	138,350
	<i>Change from existing situation</i>	<i>+13,600</i>	<i>+45,350</i>
30% Scenario	Estimated requirement	109,530	147,500
	<i>Change from existing situation</i>	<i>+16,530</i>	<i>+54,500</i>

Source: Regional Cities Victoria, Essential Economics.

**Figure 4.17: Additional TAFE Places Required, Regional Cities at 2015 and 2036**



Source: Regional Cities Victoria, Essential Economics.



## 4.10 Social Infrastructure Requirements

### Library Floorspace

The Regional Cities currently contain approximately 20,850m<sup>2</sup> of public access library floorspace. Based on applying current population to floorspace ratios for each municipality, estimates of future required library floorspace have been prepared the Regional Cities for the periods 2006-2015 and 2006-2036.

By 2015, the amount of library floorspace required in the Regional Cities is estimated to be between 23,370m<sup>2</sup> (VIF scenario) and 24,470m<sup>2</sup> (30% scenario). This represents an increase of between +2,520m<sup>2</sup> (VIF scenario) and +3,620m<sup>2</sup> places (30% scenario) over the 2006-2015 period.

By 2036, the amount of library floorspace required in the Regional Cities is estimated to reach between 28,780 m<sup>2</sup> (VIF scenario) and 32,140m<sup>2</sup> (30% scenario) representing an increase of between +7,930m<sup>2</sup> (VIF scenario) and +11,290m<sup>2</sup> (30% scenario) over the 30-year period.

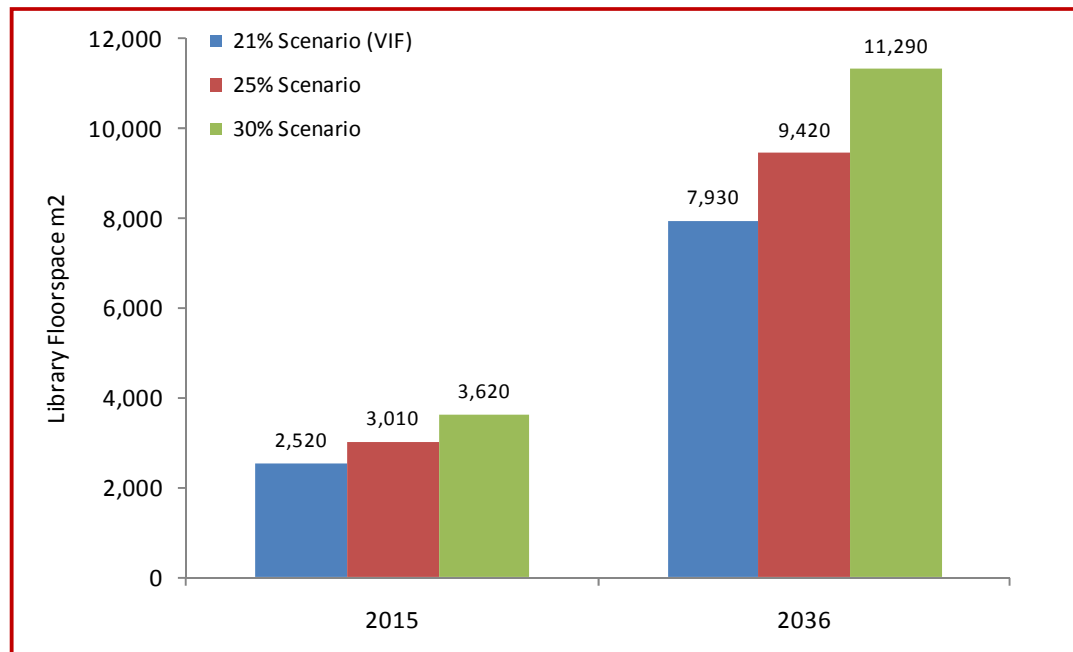
Date relating to future library floorspace requirements is included Table 4.18 and Figure 4.18.

**Table 4.18: Estimated Library Floorspace Required, Regional Cities at 2015 and 2036**

Scenario		2015	2036
<b>Existing Situation</b>	<b>20,850m<sup>2</sup> (library floorspace)</b>	<b>Library Floorspace (m<sup>2</sup>)</b>	
21% Scenario (VIF)	Estimated requirement	23,370m <sup>2</sup>	28,780m <sup>2</sup>
	<i>Change from existing situation</i>	+2,520m <sup>2</sup>	+7,930m <sup>2</sup>
25% Scenario	Estimated requirement	23,860m <sup>2</sup>	30,270m <sup>2</sup>
	<i>Change from existing situation</i>	+3,010m <sup>2</sup>	+9,420m <sup>2</sup>
30% Scenario	Estimated requirement	24,470m <sup>2</sup>	32,140m <sup>2</sup>
	<i>Change from existing situation</i>	+3,620m <sup>2</sup>	+11,290m <sup>2</sup>

Source: Regional Cities Victoria, Essential Economics.

**Figure 4.18: Additional Library Floorspace Required, Regional Cities at 2015 and 2036**



Source: Regional Cities Victoria, Essential Economics.

**Kindergarten Places**

There are approximately 9,500 kindergarten places located in the Regional Cities. Estimates for future Kindergarten places requirements have been derived for the Regional Cities (for the periods 2006-2015 and 2006-2036), by using existing population to place ratios as a base and then adjusting these ratios to reflect demographic change (recognising a long-term decline in the pre-school aged population as the general population ages). Note, demographic adjustments have been made on the basis of available aged-based projections data contained in VIF 2008 at a Statistical District (SD) level, as no data at a municipal level is currently available.

By 2015, the number of Kindergarten places required in the Regional Cities is estimated to be between 10,260 places (VIF scenario) and 10,770 places (30% scenario). This represents an increase of between +760 places (VIF scenario) and +1,270 places (30% scenario) over the 2006-2015 period.

By 2036, the number of Kindergarten places required in the Regional Cities is estimated to reach between 11,180 places (VIF scenario) and 12,550 places (30% scenario) representing an increase of between +1,680 places (VIF scenario) and +3,050 (30% scenario) over the 30-year period.

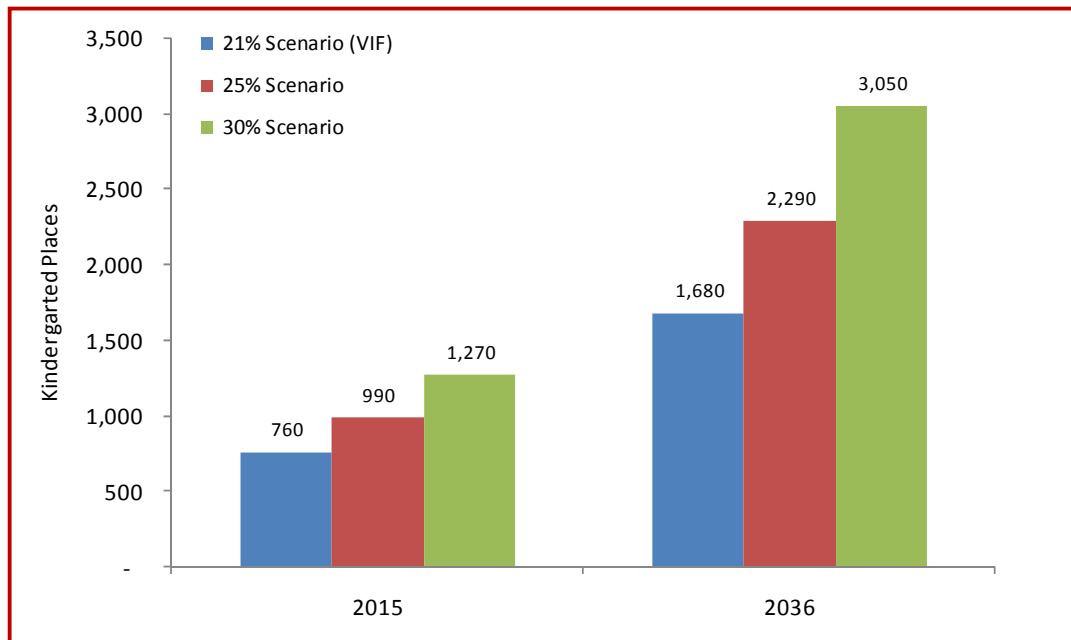
Data relating to future kindergarten place requirements is included Table 4.19 and Figure 4.19.

**Table 4.19: Estimated Kindergarten Places Required, Regional Cities at 2015 and 2036**

Scenario		2015	2036
<b>Existing Situation</b>	<b>9,500 (kindergarten places)</b>	<b>No. of Kindergarten Places</b>	
21% Scenario (VIF)	Estimated requirement	10,260	11,180
	<i>Change from existing situation</i>	+760	+1,680
25% Scenario	Estimated requirement	10,490	11,790
	<i>Change from existing situation</i>	+990	+2,290
30% Scenario	Estimated requirement	10,770	12,550
	<i>Change from existing situation</i>	+1,270	+3,050

Source: Regional Cities Victoria, Essential Economics.

**Figure 4.19: Additional Kindergarten Places Required, Regional Cities at 2015 and 2036**



Source: Regional Cities Victoria, Essential Economics.

**Childcare Places**

There are approximately 8,320 childcare places located in the Regional Cities. Estimates for future childcare places requirements have been derived for the Regional Cities (for the periods 2006-2015 and 2006-2036), by using existing population to place ratios as a base and then adjusting these ratios to reflect demographic change (recognising a long-term decline in the pre-school aged population as the general population ages). Note, demographic adjustments have been made on the basis of available aged-based projections data contained in VIF 2008 at a Statistical District (SD) level, as no data at a municipal level is currently available.

By 2015, the number of childcare places required in the Regional Cities is estimated to be between 9,000 places (VIF scenario) and 9,440 places (30% scenario). This represents an increase of between +680 places (VIF scenario) and +1,120 places (30% scenario) over the 2006-2015 period.

By 2036, the number of childcare places required in the Regional Cities is estimated to reach between 9,680 places (VIF scenario) and 10,820 places (30% scenario) representing an increase of between +1,360 places (VIF scenario) and +2,500 (30% scenario) over the 30-year period.

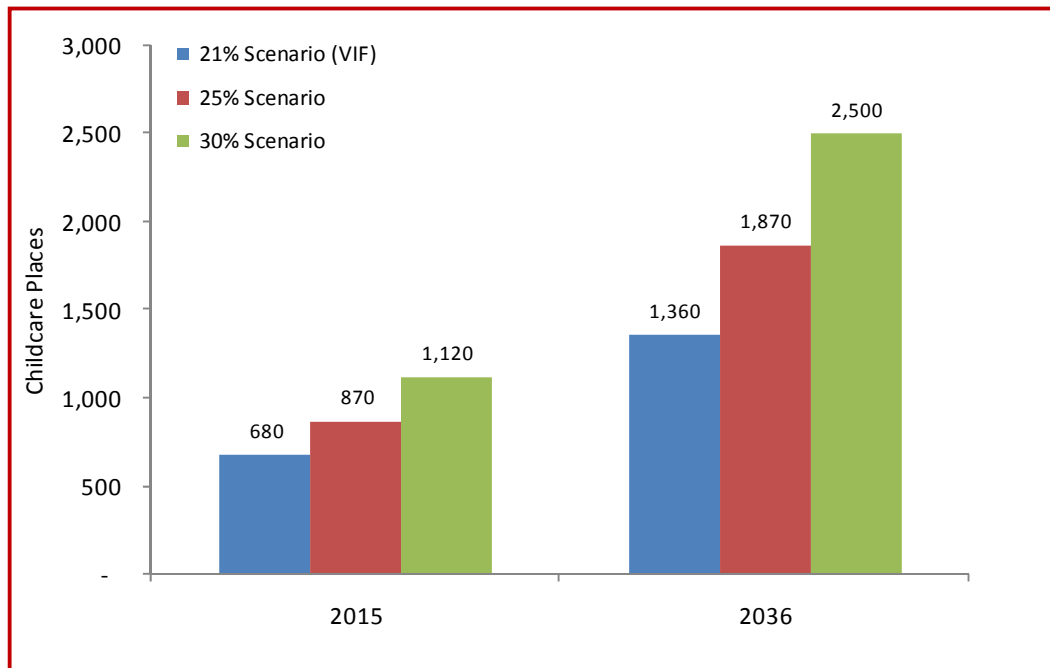
Data relating to future childcare place requirements is included Table 4.20 and Figure 4.20.

**Table 4.20: Estimated Childcare Places Required, Regional Cities at 2015 and 2036**

Scenario		2015	2036
<b>Existing Situation</b>	<b>8,320 (childcare places)</b>	<b>No. of Childcare Places</b>	
21% Scenario (VIF)	Estimated requirement	9,000	9,680
	<i>Change from existing situation</i>	<i>+680</i>	<i>+1,360</i>
25% Scenario	Estimated requirement	9,190	10,190
	<i>Change from existing situation</i>	<i>+870</i>	<i>+1,870</i>
30% Scenario	Estimated requirement	9,440	10,820
	<i>Change from existing situation</i>	<i>+1,120</i>	<i>+2,500</i>

Source: Regional Cities Victoria, Essential Economics.

**Figure 4.20: Additional Childcare Places Required, Regional Cities at 2015 and 2036**



Source: Regional Cities Victoria, Essential Economics.

**Aged Care Beds**

There are approximately 6,560 aged care places located in the Regional Cities. Estimates for future aged care beds have been derived for the Regional Cities (for the periods 2006-2015 and 2006-2036), by using existing population to place ratios as a base and then adjusting these ratios to reflect demographic change (recognising a significant long-term increase in the 70+ aged population across Victoria). Note, demographic adjustments have been made on the basis of available aged-based projections data contained in VIF 2008 at a Statistical District (SD) level, as no data at a municipal level is currently available. The estimates prepared broadly reflect current Federal Government target of providing 88 aged care places per 1,000 residents aged 70 years and above.

By 2015, the number of aged care places required in the Regional Cities is estimated to be between 8,630 places (VIF scenario) and 9,040 places (30% scenario). This represents an increase of between +2,070 places (VIF scenario) and +2,480 places (30% scenario) over the 2006-2015 period.

By 2036, the number of aged care places required in the Regional Cities is estimated to reach between 17,130 places (VIF scenario) and 19,180 places (30% scenario) representing an increase of between +10,570 places (VIF scenario) and +12,620 (30% scenario) over the 30-year period.

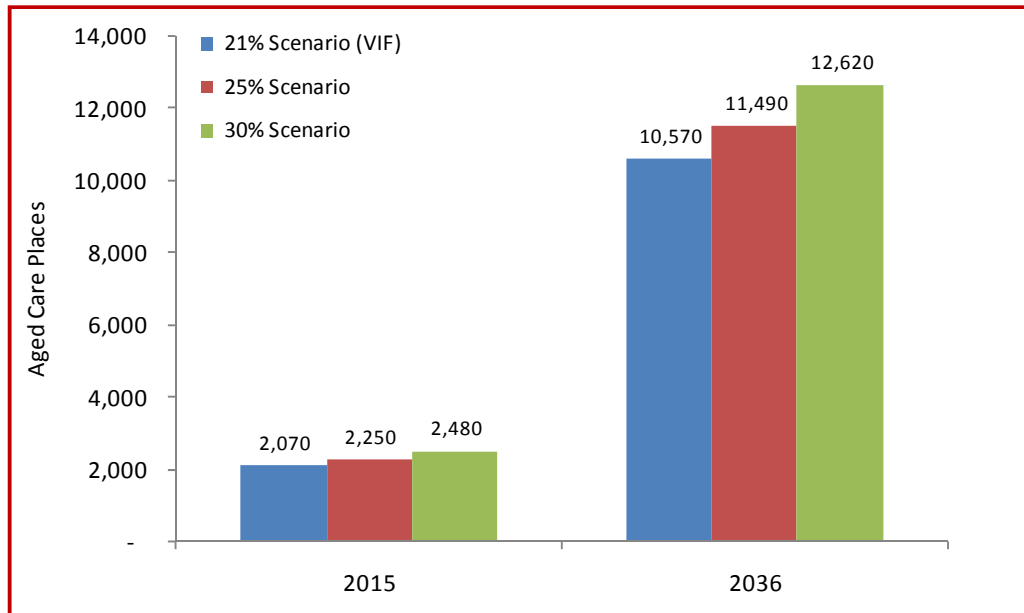
Data relating to future aged care place requirements is included Table 4.21 and Figure 4.21.

**Table 4.21: Estimated Aged Care Beds Required, Regional Cities at 2015 and 2036**

Scenario		2015	2036
<b>Existing Situation</b>	<b>6,560 (aged care beds)</b>	<b>No. of Aged Care Beds</b>	
21% Scenario (VIF)	Estimated requirement	8,630	17,130
	<i>Change from existing situation</i>	<i>+2,070</i>	<i>+10,570</i>
25% Scenario	Estimated requirement	8,810	18,050
	<i>Change from existing situation</i>	<i>+2,250</i>	<i>+11,490</i>
30% Scenario	Estimated requirement	9,040	19,180
	<i>Change from existing situation</i>	<i>+2,480</i>	<i>+12,620</i>

Source: Regional Cities Victoria, Essential Economics.

**Figure 4.21: Additional Aged Care Places Required, Regional Cities at 2015 and 2036**



Source: Regional Cities Victoria, Essential Economics.

## 4.11 Recreation Requirements

### Arts and Cultural Facilities

There are approximately 59 major arts and cultural facilities (museums, galleries etc) located in the Regional Cities. Using existing population to major arts and cultural facilities ratios for each municipality, estimates of future requirements have been derived for the Regional Cities for the periods 2006-2015 and 2006-2036.

By 2015, the number of major arts and cultural facilities required in the Regional Cities is estimated to be between 65 facilities (VIF scenario) and 68 facilities (30% scenario). This represents an increase of between +6 facilities (VIF scenario) and +9 facilities (30% scenario) over the 2006-2015 period.

By 2036, the number of major arts and cultural facilities required in the Regional Cities is estimated to reach between 80 facilities (VIF scenario) and 89 facilities (30% scenario) representing an increase of between +21 facilities (VIF scenario) and +30 facilities (30% scenario) over the 30-year period.

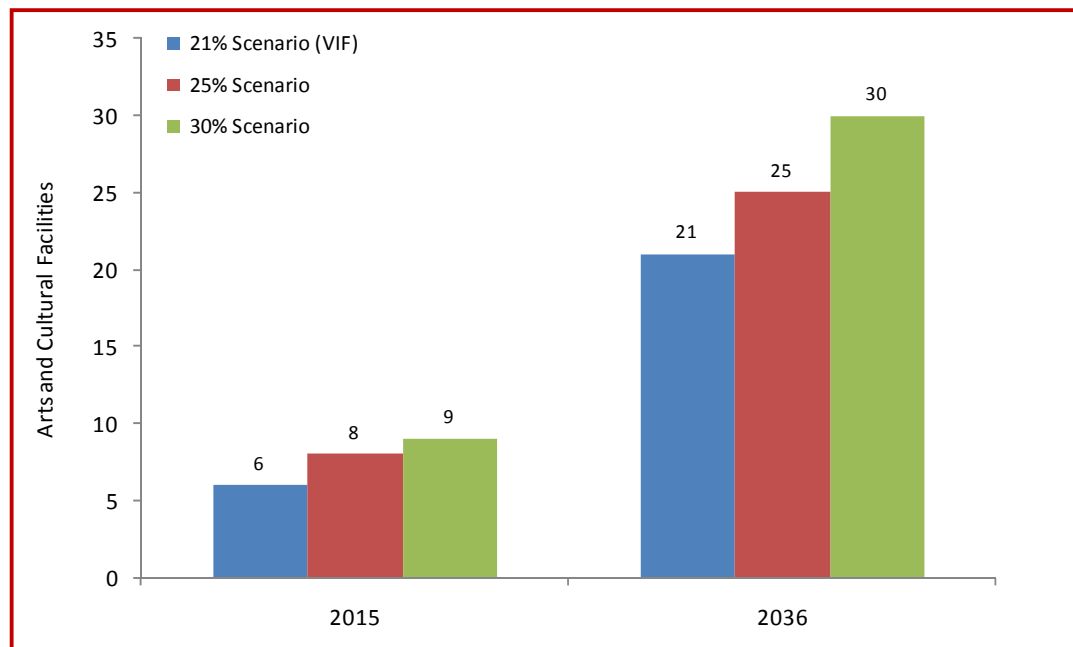
Data relating to future major arts and cultural facilities requirements is included Table 4.22 and Figure 4.22.

**Table 4.22: Estimated No. of Arts and Cultural Facilities Required, Regional Cities at 2015 and 2036**

Scenario		2015	2036
<b>Existing Situation</b>	<b>59 (Arts and cultural facilities)</b>	<b>No. of Arts and Cultural Facilities</b>	
21% Scenario (VIF)	Estimated requirement	65	80
	<i>Change from existing situation</i>	+6	+21
25% Scenario	Estimated requirement	67	84
	<i>Change from existing situation</i>	+8	+25
30% Scenario	Estimated requirement	68	89
	<i>Change from existing situation</i>	+9	+30

Source: Regional Cities Victoria, Essential Economics.

**Figure 4.22: Additional Arts and Cultural Facilities Required, Regional Cities at 2015 and 2036**



Source: Regional Cities Victoria, Essential Economics.

**Recreational Indoor Facilities**

The infrastructure and resources survey provided insufficient information required to determine future recreational needs in the Regional Cities. However, using recreational provision ratios developed by Australian Social & Recreation Research Pty Ltd, broad estimates for future requirements relating to Council-run indoor recreational centres/stadiums have been derived for the Regional Cities for the periods 2006-2015 and 2006-2036. These estimates are based on a provision ration of 1 new Council-run indoor recreation centre / stadium for every 15,000 additional persons.

By 2015, the number of additional indoor recreational centres / stadiums required in the Regional Cities is estimated to be between 5 facilities (VIF scenario) and 8 facilities (30% scenario). By 2036, the number of additional indoor recreational centres / stadiums required in the Regional Cities is estimated to be between 18 (VIF scenario) and 26 facilities (30% scenario).

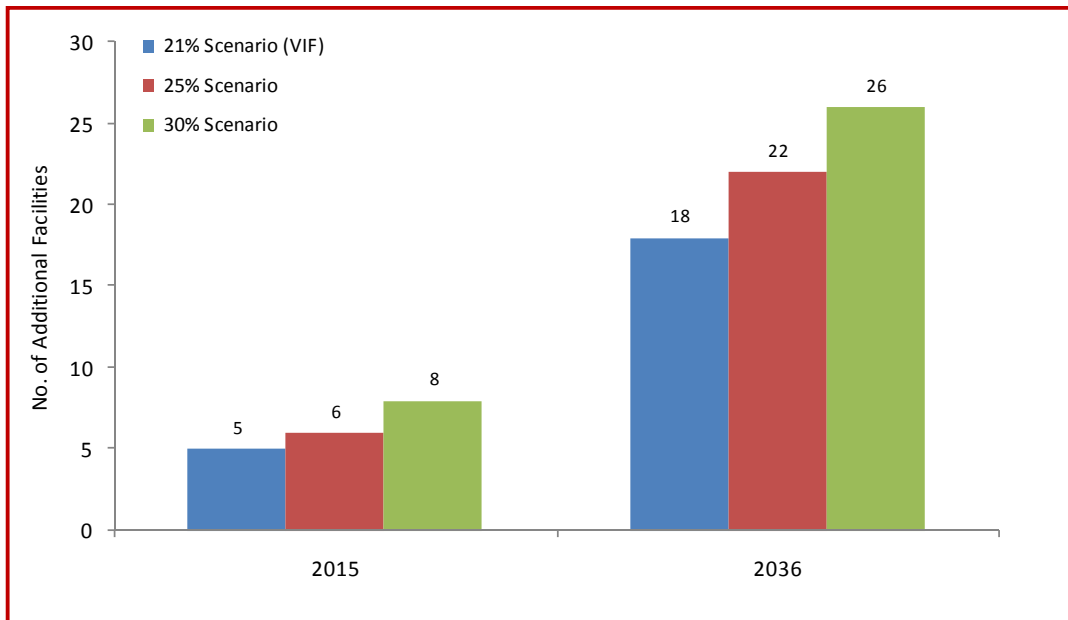
Data relating to future indoor recreational centres / stadiums requirements is included Table 4.23 and Figure 4.23.

**Table 4.23: Estimated No. of Additional Indoor Recreational Facilities Required, Regional Cities at 2015 and 2036**

Scenario		2015	2036
<b>Existing Situation</b>	<b>Not Known</b>	<b>Additional No. of Indoor Recreational Facilities</b>	
21% Scenario (VIF)	Estimated requirement	+5	+18
25% Scenario	Estimated requirement	+6	+22
30% Scenario	Estimated requirement	+8	+26

Source: Planning for Community Infrastructure in Growth Area – Australian Social & Recreational Research Pty Ltd; Essential Economics.

**Figure 4.23: Additional Indoor Recreational Facilities Required, Regional Cities at 2015 and 2036**



Source: Planning for Community Infrastructure in Growth Area – Australian Social & Recreational Research Pty Ltd; Essential Economics.

## 4.12 Waste Management Requirements

### Household Municipal Waste

According to Sustainability Victoria data for 2006/07, approximately 210,000 tonnes of waste is collected through kerbside services in the Region Cities pa. This equates to approximately 735 kg of waste per household each year, of which approximately a third is then recycled after collection. Estimates for future kerbside household waste collection have been derived for the Regional Cities (for the periods 2006-2015 and 2006-2036), by using this ratio.

By 2015, the amount of kerbside household waste collected in the Regional Cities is estimated to be between 235,000 tonnes (VIF Scenario) and 245,000 tonnes (30% scenario). This represents an increase of between +25,000 tonnes pa (VIF scenario) and +35,000 tonnes (30% scenario) over the 2006-2015 period.

By 2036, the amount of kerbside household waste collected in the Regional Cities is estimated to reach between 290,000 tonnes pa (VIF scenario) and 325,000 tonnes pa (30% scenario) representing an increase of between +80,000 tonnes pa (VIF scenario) and +115,000 tonnes pa (30% scenario) over the 30-year period.

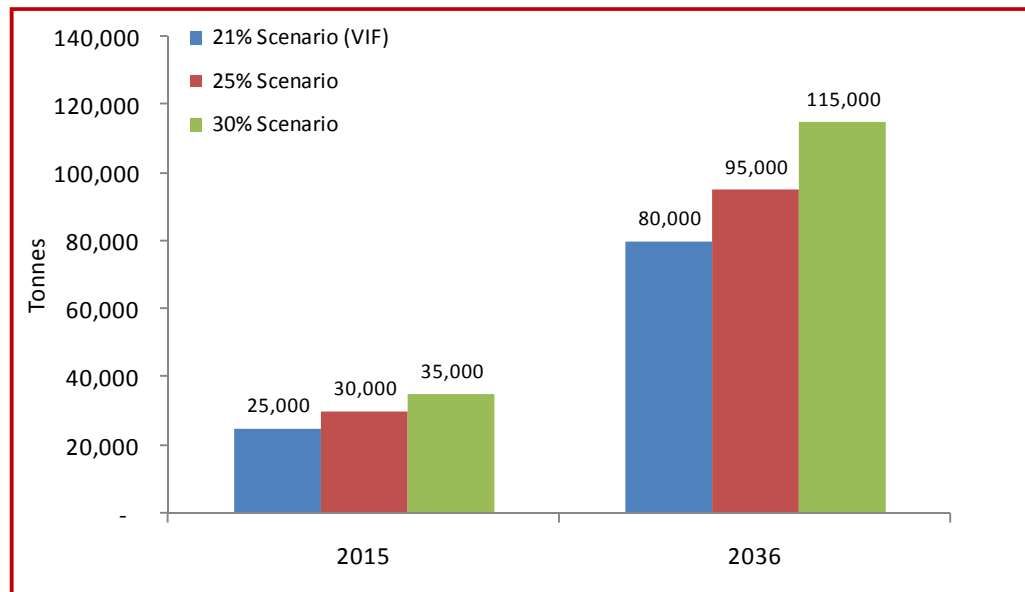
Data relating to future kerbside household municipal waste generation is included Table 4.24 and Figure 4.24.

**Table 4.24: Estimated Kerbside Household Municipal Waste, Regional Cities at 2015 and 2036**

Scenario		2015	2036
<b>Existing Situation</b>	<b>210,000 (tonnes pa)</b>	<b>Kerbside Household Waste (tonnes)</b>	
21% Scenario (VIF)	Estimated volume	235,000	290,000
	<i>Change from existing situation</i>	<i>+25,000</i>	<i>+80,000</i>
25% Scenario	Estimated volume	240,000	305,000
	<i>Change from existing situation</i>	<i>+30,000</i>	<i>+95,000</i>
30% Scenario	Estimated volume	245,000	325,000
	<i>Change from existing situation</i>	<i>+35,000</i>	<i>+115,000</i>

Source: Victorian Local Government Annual Survey 2006-2007, Sustainability Victoria; Essential Economics.

**Figure 4.24: Additional Kerbside Household Waste to be Collected, Regional Cities at 2015 and 2036**



Source: Victorian Local Government Annual Survey 2006-2007, Sustainability Victoria; Essential Economics.





### 4.13 Conclusions

The key findings or this future requirements assessment are:

1. Significant additional infrastructure and resources will be required in the Regional Cities both in the short-term (the period to 2015) and the longer-term (the period to 2036).
2. Additional requirements identified under the 21% (VIF Scenario) should be considered as the base case (or minimum requirements) as these are based on State Government projections.
3. The 25% and 30% Scenario outcomes represent additional requirements under a situation where population growth is in effect 'redistributed' from metropolitan Melbourne to the Regional Cities.

The following table provides a summary of future additional infrastructure and resource requirements under each scenario.

**Estimated Additional Infrastructure and Resource Requirements, Regional Cities 2015 and 2036**

	2015			2036		
	21% Scenario (VIF)	25% Scenario	30% Scenario	21% Scenario (VIF)	25% Scenario	30% Scenario
1. Household water (billion litres)	+5.7	+6.9	+8.4	+18.8	+73.3	+77.8
2. Bus routes	+16	+19	+24	+53	+63	+76
3. Rail/coach services	+150	+180	+220	+490	+590	+700
4. Household electricity (billion KWh)	+0.21	+0.26	+0.31	+0.71	+0.85	+1.02
5. Household gas (million GJ)	+2.0	+2.4	+2.9	+6.6	+7.8	+9.4
6. Broadband coverage (% coverage)	+23%	+23%	+23%	+28%	+28%	+28%
7. Dwellings	+32,640	+39,490	+48,040	+109,340	+130,410	+156,750
8. Residential land (ha)	+3,260	+3,950	+4,810	+10,930	+13,040	+15,680
9. Industrial land (ha)	+1,180	+1,420	+1,730	+3,860	+4,610	+5,540
10. Hospital beds	+470	+570	+690	+1,550	+1,850	+2,220
11. Hospital emergency department presentations	+45,550	+54,850	+66,490	+138,580	+165,180	+198,420
12. General practitioners	+100	+120	+150	+340	+405	+485
13. Primary school places	+1,380	+2,770	+4,500	+9,050	+12,940	+17,790
14. Secondary school places	+1,350	+2,570	+4,100	+8,240	+11,680	+15,970
15. University places	+1,830	+2,210	+2,680	+6,040	+7,200	+8,640
16. TAFE places	+11,250	+13,600	+16,530	+38,040	+45,350	+54,500
17. Library floorspace (m2)	+2,520m2	+3,010m2	+3,620m2	+7,930m2	+9,420m2	+11,290m2
18. Kindergarten places	+760	+990	+1,270	+1,680	+2,290	+3,050
19. Childcare places	+680	+870	+1,120	+1,360	+1,870	+2,500
20. Aged care beds	+2,070	+2,250	+2,480	+10,570	+11,490	+12,620
21. Arts and cultural facilities	+6	+8	+9	+21	+25	+30
22. Recreational facilities (indoor)	+5	+6	+8	+18	+22	+26
23. Household municipal waste (tonnes generated)	+25,000	+30,000	+35,000	+80,000	+95,000	+115,000

Source: Essential Economics

Note: Figures rounded

## 5 COST OF PROVIDING REQUIRED INFRASTRUCTURE AND RESOURCES

This Chapter provides broad cost estimates for identified future infrastructure and resource requirements in the Regional Cities, and covers three population growth scenarios relating to the years 2015 and 2036. Note that data is unavailable for some of the indicators, while data is consolidated for a number of other indicators. Where possible, costs estimates have been split between infrastructure and on-going / operational costs; however, due to data limitations some estimates are presented as a combined value.

### 5.1 Water Infrastructure and Resource Costs

Water infrastructure and resource costs in Victoria are closely aligned with household water bills in that consumers pay for the cost of new infrastructure and on-going maintenance and water supply through their bills (ie cost recovery basis). The Victorian Essential Services Commission (ESC) has recently released an updated five-year household pricing structure for the period 2007-08 to 2012-13. This new pricing structure shows a significant increase in water bills over the coming years, due mainly to the cost of significant new water-related infrastructure (eg Victorian Desalination Project, North-South Pipeline, recycling projects etc). In view of this situation, the average household water bill for 2012-13 in regional Victoria is used as the base for estimating infrastructure costs in 2015 and 2036, as this value more accurately reflects future costs rather than current average household costs (which do not reflect current infrastructure investments). According to ESC data, the average regional Victorian household water bill will be \$1,040 per household in 2012-13. This value has been applied to the number of additional dwellings required in the Regional Cities at 2015 and 2026 to determine broad overall additional water infrastructure and resource costs.

By 2015, additional water infrastructure and resource costs in the Regional Cities are estimated to be between \$34 million (VIF scenario) and \$50 million (30% scenario). By 2036, additional water infrastructure costs in the Regional Cities are estimated to be between \$114 million (VIF scenario) and \$163 million (30% scenario).

Estimated water infrastructure costs are shown in Table 5.1.

**Table 5.1: Estimated Water Infrastructure Costs, at 2015 and 2036**

	Additional Dwellings		Estimated Cost	
	2015	2036	2015	2036
21% Scenario (VIF)	+32,640 dwellings	+109,340 dwellings	\$34m	\$114m
25% Scenario	+39,490 dwellings	+130,410 dwellings	\$41m	\$136m
30% Scenario	+48,040 dwellings	+156,750 dwellings	\$50m	\$163m
Source:	Essential Services Commission – Media Release No.4, 28 April 2008; Essential Economics			
Note:	Figures rounded			

### 5.2 Public Transport Infrastructure and Resource Costs

#### Bus services

As there is no State-based data relating to bus service infrastructure and operating costs, a 'proxy' for this indicator has been developed for the purposes of this study. It is assumed that each additional service will require one new bus, one FTE employee and supporting infrastructure (bus shelters, lighting, signage, marketing/administration etc). The following assumptions have been made:

- New modern air-conditioned 48 seat bus = @\$400,000
- 1FTE employee (driver) = \$75,000 (includes on-costs)

- Supporting infrastructure = \$50,000 per service

In total it is estimated the total cost of providing a new bus service in the Regional Cities will be approximately \$525,000 per service (in 2009 dollars). Using this estimated value, bus infrastructure costs have been calculated for 2015 and 2036.

By 2015, additional bus infrastructure and resource costs in the Regional Cities are estimated to be between \$8 million (VIF scenario) and \$13 million (30% scenario). By 2036, additional bus infrastructure and resource costs in the Regional Cities are estimated to be between \$28 million (VIF scenario) and \$40 million (30% scenario). Note, data relates to 2009 dollars.

Estimated bus service infrastructure and resource cost data is shown in Table 5.2.

**Table 5.2: Estimated Bus Services Infrastructure Costs, at 2015 and 2036**

	Additional Requirements		Estimated Cost	
	2015	2036	2015	2036
21% Scenario (VIF)	+16 services	+53 services	\$8m	\$28m
25% Scenario	+19 services	+63 services	\$10m	\$33m
30% Scenario	+24 services	+76 services	\$13m	\$40m
Source:	Essential Economics			
Note:	Figures rounded			

## **Rail services**

### *Capital*

The analysis assumes that 1 new train carriage (and associated infrastructure) is required per 10 additional services and the cost of providing this infrastructure is approximately \$6 million per carriage (based on estimates included in the Victorian Transport Plan). Using these values, rail infrastructure costs have been estimated for the Regional Cities.

By 2015, additional rail infrastructure costs in the Regional Cities are estimated to be between \$90 million (VIF scenario) and \$130 million pa (30% scenario). By 2036, additional rail infrastructure and resource costs in the Regional Cities are estimated to be between \$295 million (VIF scenario) and \$420 million (30% scenario). Note, data relates to 2009 dollars.

### *Operational*

The average cost of operating a rail service in regional Victoria is \$5,760 per service according to data sourced from V/Line Annual Report 2007/08, and this includes maintenance and operating costs. Rail infrastructure and resource costs for future requirements in the Regional Cities have been derived from this average cost ratio.

By 2015, additional rail infrastructure and resource costs in the Regional Cities are estimated to be between \$45 million pa (VIF scenario) and \$65 million pa (30% scenario). By 2036, additional rail infrastructure and resource costs in the Regional Cities are estimated to be between \$145 million (VIF scenario) and \$210 million (30% scenario). Note, data relates to 2009 dollars.

Estimated rail service infrastructure and resource cost data is shown in Table 5.3.

**Table 5.3: Estimated Rail Services Infrastructure Costs, at 2015 and 2036**

	Additional Requirements		Estimated Cost	
	2015	2036	2015	2036
<b>Infrastructure Costs</b>				
21% Scenario (VIF)	+150 services	+490 services	\$90m	\$295m
25% Scenario	+180 services	+590 services	\$110m	\$355m
30% Scenario	+220 services	+700 services	\$130m	\$420m
<b>Operational Costs</b>				
21% Scenario (VIF)	+150 services	+490 services	\$45m pa	\$145m pa
25% Scenario	+180 services	+590 services	\$55m pa	\$175m pa
30% Scenario	+220 services	+700 services	\$65m pa	\$210m pa

Source: V/line Annual Report 2007-08; Victorian Transport Plan 2009; Essential Economics  
 Note: Figures rounded

### 5.3 Energy Infrastructure and Resource Costs

#### Electricity

Electricity infrastructure and resource costs in Victoria are generally associated with household electricity bills in that consumers pay for the cost of new infrastructure, on-going maintenance and operational costs through their bills on a cost recovery basis. The ESC monitors household electricity charges and sets pricing guidelines for electricity retailers which include an appraisal of costs associated with providing new infrastructure over the pricing period. The ESC indicates the current average household bill is \$955 pa, and this figure has been applied to the number of additional dwellings required in the Regional Cities at 2015 and 2036 to determine broad overall additional electricity infrastructure and resource costs.

By 2015, additional electricity infrastructure and resource costs in the Regional Cities are estimated to be between \$76 million pa (VIF scenario) and \$112 million pa (30% scenario). By 2036, additional electricity infrastructure and resource costs in the Regional Cities are estimated to be between \$259 million pa (VIF scenario) and \$370 million pa (30% scenario). Note, data relates to 2009 dollars.

Estimated electricity infrastructure and resource costs are shown in Table 5.4.

**Table 5.4: Estimated Electricity Infrastructure and Resource Costs, at 2015 and 2036**

	Additional Requirements		Estimated Cost	
	2015	2036	2015	2036
21% Scenario (VIF)	+0.88 billion KWh	+2.92 billion KWh	\$76m pa	\$259m pa
25% Scenario	+1.06 billion KWh	+3.49 billion KWh	\$92m pa	\$309m pa
30% Scenario	+1.29 billion KWh	+4.19 billion KWh	\$112m pa	\$370m pa

Source: Essential Services Commission; Essential Economics.  
 Note: Figures rounded

#### Gas

Similar to electricity, gas infrastructure and resource costs in Victoria are closely associated with household gas bills (ie new infrastructure, on-going maintenance and operational costs are recovered through bills). The ESC monitors gas electricity charges and sets pricing guidelines for gas retailers which include an appraisal of costs associated with providing new infrastructure over the pricing period. The ESC indicates the current average household bill is \$700 pa; this figure has been applied to the number of additional dwellings required in the Regional Cities at 2015 and 2036 to determine broad overall additional gas infrastructure and resource costs.

By 2015, additional gas infrastructure and resource costs in the Regional Cities are estimated to be between \$23 million pa (VIF scenario) and \$34 million pa (30% scenario). By 2036, additional gas infrastructure and resource costs in the Regional Cities are estimated to be between \$77 million pa (VIF scenario) and \$110 million pa (30% scenario). Note, data relates to 2009 dollars.

Estimated gas infrastructure and resource costs are shown in Table 5.5.

**Table 5.5: Estimated Gas Infrastructure and Resource Costs, at 2015 and 2036**

	Additional Requirements		Estimated Cost	
	2015	2036	2015	2036
21% Scenario (VIF)	+2.0 million GJ	+6.6 million GJ	\$23m pa	\$77m pa
25% Scenario	+2.4 million GJ	+7.8 million GJ	\$28m pa	\$92m pa
30% Scenario	+2.9 million GJ	+9.4 million GJ	\$34m pa	\$110m pa

Source: Essential Services Commission; Essential Economics.  
 Note: Figures rounded

## 5.4 Telecommunications Infrastructure and Resource Costs

On 7 April 2009, the Federal Government announced a \$43 billion public/private initiative to provide high speed broadband access to all Australian households and businesses. The project is anticipated to be completed within seven to eight years, with roll-out of the network expected to begin in 2010.

The fibre-optic network, providing speeds of up to 100 megabits per second, will cover 90 per cent of the nation’s population, while the rest will have access to a mix of wireless and satellite connections (which might include some remote areas located within the 10 regional municipalities).

In view of this situation, it is assumed that broadband infrastructure requirements outlined in this report will be met through this new infrastructure initiative; therefore, costs have not been calculated.

**Table 5.6: Estimated Telecommunications Infrastructure and Resource Costs, at 2015 and 2036**

	Population Growth		Estimated Additional Cost	
	2006-2015	2006-2036	2015	2036
21% Scenario (VIF)	+79,410	+271,530	Covered by Federal Government Broadband Initiative	Covered by Federal Government Broadband Initiative
25% Scenario	+96,050	+323,240	Covered by Federal Government Broadband Initiative	Covered by Federal Government Broadband Initiative
30% Scenario	+116,830	+387,890	Covered by Federal Government Broadband Initiative	Covered by Federal Government Broadband Initiative

Source: Multi Media Victoria; Essential Economics.

Note: Figures rounded

## 5.5 Land Supply Infrastructure and Resource Costs

### Residential land

The infrastructure and resources survey indicates that the Regional Cities have over 3,000 ha of zoned residential land potentially available for development. Should all this land eventuate to the market, it would be sufficient to accommodate anticipated residential growth to 2015 (under any scenario). In the longer-term additional land will be required, however significant stocks of unzoned land exist in the Regional Cities which has potential to be developed for residential purposes. However, costs associated with servicing undeveloped land can be prohibitive for investors, particularly in regard to vital core infrastructure such as roads, utilities, telecommunications etc which generally supports a broader area in which the development site is situated.

A review of data contained in the National Housing Infrastructure Costs Study (Urbis JHD, 2006), indicates the average infrastructure charge per lot in metropolitan Melbourne is approximately \$8,000 (in 2006). This represents approximately 2.3% of the market value of the final product (using the median metropolitan house price for 2006 as a guide). This average cost includes direct infrastructure charges (such as sewerage, water etc) and indirect infrastructure costs which benefit the broader community (such as open space, parklands, street scapes, roads etc). In general, infrastructure costs are shared between the private sector (eg development contributions) and public sector (eg infrastructure grants). By applying this estimated value (2.3%) to the median house price in regional Victoria for 2006 (\$230,000), infrastructure costs associated with future residential development in the Regional Cities have been estimated for 2015 and 2036.

By 2015, additional residential infrastructure costs in the Regional Cities are estimated to be between \$195 million pa (VIF scenario) and \$287 million pa (30% scenario). By 2036, additional residential infrastructure costs in the Regional Cities are estimated to be between \$654 million (VIF scenario) and \$937 million (30% scenario). Note, data relates to 2009 dollars.

Data relating to estimated residential development infrastructure costs is shown in Table 5.7.

**Table 5.7: Residential Land Supply Infrastructure Costs, at 2015 and 2036**

	Additional Dwellings Required		Estimated Cost	
	2015	2036	2015	2036
21% Scenario (VIF)	+32,640	+109,340	\$195m	\$654m
25% Scenario	+39,490	+130,410	\$236m	\$780m
30% Scenario	+48,040	+156,750	\$287m	\$937m

Source: National Housing Infrastructure Costs Study, Urbis JHD (2006); Essential Economics.

Note: Figures rounded

### **Industrial land**

The Regional Cities have over 3,300 ha of zoned industrial land available for development, according to the Urban Development Program 2007. Should this land eventuate to the market, it would be sufficient to accommodate anticipated industrial growth to 2015 (under any scenario) and contribute to 60-85% (depending on scenario) of total additional land requirements to 2036. Additionally, significant amounts of unzoned land exist which have potential to be developed for industrial purposes in the longer term. Similar to the residential development situation, costs associated with servicing industrial land can be a deterrent to investors, particularly in regard to vital core infrastructure supporting industry activities (eg sewerage, road access, water supply, telecommunications, utilities etc).

Limited information is available regarding the servicing costs for industrial land; therefore, a value of \$100,000 per ha has been used as a broad 'proxy' to determine infrastructure costs. This is based on information associated with recent regional industrial estates development (*Evaluation of Industrial Estate Development*, Impact Consulting Group 2008). Note that the level of infrastructure required may vary considerably from location to location and that the estimates provided assume all additional land required is currently unserviced.

Costs associated with servicing industrial land are shown in Table 5.8.

**Table 5.8: Industrial Land Supply Infrastructure Costs, at 2015 and 2036**

	Demand		Estimated Cost	
	2015	2036	2015	2036
21% Scenario (VIF)	+ 1,180ha	+3,860ha	\$118m	\$386m
25% Scenario	+ 1,420ha	+4,610ha	\$142m	\$461m
30% Scenario	+1,730ha	+5,540ha	\$173m	\$554m

Source: *Evaluation of Industrial Estate Development*, Impact Consulting Group 2008; Essential Economics.

Note: Figures rounded

## 5.6 Health Infrastructure Costs

### Infrastructure

Victorian Department of Human Services data indicates the capital cost of a new hospital development can vary from \$200,000 to over \$500,000 per bed inclusive of design cost, furniture and equipment. The midpoint of this estimate (\$350,000 per new hospital bed) has been used to derive infrastructure cost for the Regional Cities.

By 2015, additional hospital infrastructure costs in the Regional Cities are estimated to be between \$165 million (VIF scenario) and \$240 million pa (30% scenario). By 2036, additional hospital infrastructure costs in the Regional Cities are estimated to be between \$540 million (VIF scenario) and \$775 million (30% scenario). Note, data relates to 2009 dollars.

Hospital infrastructure cost estimates are shown in Table 5.9.

**Table 5.9: Additional Hospital Infrastructure Costs, at 2015 and 2036**

	Additional Hospital Beds Required		Estimated Additional Cost	
	2015	2036	2015	2036
21% Scenario (VIF)	+470 beds	+1,550 beds	\$165m	\$540m
25% Scenario	+570 beds	+1,850 beds	\$200m	\$650m
30% Scenario	+690 beds	+2,220 beds	\$240m	\$775m

Source: [www.capital.dhs.vic.gov.au/capdev/ProjectProposals/Benchmarking/HospitalCapitalModule](http://www.capital.dhs.vic.gov.au/capdev/ProjectProposals/Benchmarking/HospitalCapitalModule); Essential Economics.

Note: Figures rounded

### Recurrent expenditure

The recurrent cost of public hospital provision in Victoria was \$1,300 per capita in 2006/07 (Productivity Commission, Report on Government Services 2009 – Table 10A.3). Using this benchmark as a proxy for all hospital provision (including private hospitals) estimates for recurrent hospital costs have been derived for the Regional Cities.

By 2015, additional recurrent hospital costs in the Regional Cities are estimated to be between \$105 million pa (VIF scenario) and \$150 million pa (30% scenario). By 2036, additional recurrent hospital costs in the Regional Cities are estimated to be between \$355 million pa (VIF scenario) and \$505 million pa (30% scenario). Note, data relates to 2009 dollars.

Data relating to estimated additional recurrent hospital expenditure is provided in Table 5.10.

**Table 5.10: Estimated Additional Hospital Recurrent Expenditure, at 2015 and 2036**

	Population Growth		Estimated Additional Cost	
	2006-2015	2006-2036	2015	2036
21% Scenario (VIF)	+79,410 persons	+271,530 persons	\$105m pa	\$355m pa
25% Scenario	+96,050 persons	+323,240 persons	\$125m pa	\$420m pa
30% Scenario	+116,830 persons	+387,890 persons	\$150m pa	\$505m pa

Source: Productivity Commission, Report on Government Services 2009; Essential Economics.

Note: Figures rounded

### Hospital Emergency Services

Information included in the 2008/09 Victorian Government Budget papers (sourced from the Department of Human Services) indicates that the State Government currently invests approximately \$220 per emergency presentation at hospitals with emergency departments (2008 data). This investment relates to admitted and non-admitted patients. Using this estimated value, infrastructure

and resource costs have been calculated for hospital emergency department presentations for 2015 and 2036.

By 2015, additional emergency services costs in the Regional Cities are estimated to be between \$10 million pa (VIF scenario) and \$15 million pa (30% scenario). By 2036, additional emergency services costs in the Regional Cities are estimated to be between \$30 million pa (VIF scenario) and \$43 million pa (30% scenario). Note, data relates to 2009 dollars.

Hospital emergency services infrastructure and resource cost estimates are shown in Table 5.11.

**Table 5.11: Additional Emergency Department Costs, at 2015 and 2036**

	Additional Presentations		Estimated Additional Cost	
	2006-2015	2006-2036	2015	2036
21% Scenario (VIF)	+45,550 presentations	+138,580 presentations	\$10m pa	\$30m pa
25% Scenario	+54,850 presentations	+165,180 presentations	\$12m pa	\$36m pa
30% Scenario	+66,490 presentations	+198,420 presentations	\$15m pa	\$43m pa
Source:	Productivity Commission, Report on Government Services 2009; Essential Economics.			
Note:	Figures rounded			

## 5.7 Education Infrastructure Costs

### Schools

Information included in the 2008/09 Victorian Government Budget papers (sourced from the Department of Education and Early Childhood Development) indicates that the State Government currently invests approximately \$8,740 per school place in Victoria (2008 data). This investment includes primary and secondary schools and applies to Government and non-Government facilities. The investment figure includes capital for buildings and materials, as well as teaching resources. Using this estimated value, school infrastructure and resource costs have been calculated for 2015 and 2036.

By 2015, additional infrastructure and resource costs in the Regional Cities are estimated to be between \$24 million pa (VIF scenario) and \$75 million pa (30% scenario). By 2036, additional infrastructure and resource costs in the Regional Cities are estimated to be between \$151 million pa (VIF scenario) and \$295 million pa (30% scenario). Note, data relates to 2009 dollars.

School infrastructure and resource cost estimates are shown in Table 5.12.

**Table 5.12: Additional School Infrastructure and Resource Costs, at 2015 and 2036**

	Additional Requirements		Estimated Cost	
	2015	2036	2015	2036
<b>School Places Required (Primary and Secondary)</b>				
21% Scenario (VIF)	+2,730 places	+17,290 places	\$24m pa	\$151m pa
25% Scenario	+5,340 places	+24,620 places	\$47m pa	\$215m pa
30% Scenario	+8,600 places	+33,760 places	\$75m pa	\$295m pa
Source:	Victorian Government Budget Papers 2008/09; Department of Education and Early Childhood Development – Summary Statistics for Victorian Schools, March 2008; Essential Economics.			
Note:	Figures rounded			

### Universities

#### *Infrastructure*

No reliable infrastructure data exists for the university sector; therefore, the annual capital expenditure ratio per student (\$620) for the VET sector (see above) has been used to estimate university capital costs for the Regional Cities for 2015 and 2036.



By 2015, additional university infrastructure funding in the Regional Cities is estimated to be between \$0.9 million pa (VIF scenario) and \$1.1 million pa (30% scenario). By 2036, additional infrastructure costs in the Regional Cities are estimated to be between \$2.5 million pa (VIF scenario) and \$3.5 million pa (30% scenario). Note, data relates to 2009 dollars.

*Resources*

According to Department of Education, Employment and Workplace Relations data, on average each university place (Equivalent Full Time Student Load) receives a Commonwealth Government subsidy of \$11,000. This subsidy is supplemented through student contributions (HECS) to make up the full cost of each course. Using this subsidy value, additional on-going funding costs have been calculated for 2015 and 2036. As noted earlier, these costs should be considered as minimal requirements in view of the significant under-representation of university places in regional Victoria.

By 2015, additional university funding (to support student places) in the Regional Cities are estimated to be between \$13 million pa (VIF scenario) and \$19 million pa (30% scenario). By 2036, additional university funding in the Regional Cities is estimated to be between \$44 million pa (VIF scenario) and \$63 million pa (30% scenario). Note, data relates to 2009 dollars.

University infrastructure and resource cost estimates are shown in Table 5.13.

**Table 5.13: University Infrastructure and Resource Costs, at 2015 and 2036**

	Additional Requirements		Estimated Cost	
	2015	2036	2015	2036
<b>University Infrastructure</b>				
21% Scenario (VIF)	+1,190 places	+3,980 places	+\$0.7m pa	+\$2.5m pa
25% Scenario	+1,440 places	+4,750 places	+\$0.9m pa	+\$2.9m pa
30% Scenario	+1,750 places	+5,710 places	+\$1.1m pa	+\$3.5m pa
<b>University Resources</b>				
21% Scenario (VIF)	+1,190 places	+3,980 places	\$13m pa	\$44m pa
25% Scenario	+1,440 places	+4,750 places	\$16m pa	\$52m pa
30% Scenario	+1,750 places	+5,710 places	\$19m pa	\$63m pa
Source:	Review of Australian Higher Education, Department of Education, Employment and Workplace Relations (2080); Productivity Commission, Report on Government Services 2009; Essential Economics.			
Note:	Figures rounded			

**Vocational Education and Training (VET)**

*Infrastructure*

According the Productivity Commission (Report on Government Services 2008), Government capital expenditure per VET student is approximately \$620 pa in Victoria. This includes contributions from Federal and State Governments. Using this value, infrastructure costs have been developed for the Regional Cities for 2015 and 2036.

By 2015, additional VET infrastructure funding in the Regional Cities are estimated to be between \$7 million pa (VIF scenario) and \$10 million pa (30% scenario). By 2036, additional infrastructure costs in the Regional Cities are estimated to be between \$24 million pa (VIF scenario) and \$34 million pa (30% scenario). Note, data relates to 2009 dollars.

*Resources*

Productivity Commission data also shows that the average recurrent cost per VET student in Victoria is \$3,380 pa in terms Federal and State funding (additional operational revenue is generated through student fees and other service charges etc). Using this value recurrent TAFE costs have been developed for the Regional Cities for 2015 and 2036.

By 2015, additional VET funding (to support student places) in the Regional Cities are estimated to be between \$38 million pa (VIF scenario) and \$56 million pa (30% scenario). By 2036, additional recurrent VET funding in the Regional Cities is estimated to be between \$129 million pa (VIF scenario) and \$184 million pa (30% scenario). Note, data relates to 2009 dollars.

VET infrastructure and resource cost estimates are shown in Table 5.14.

**Table 5.14: VET Infrastructure and Resource Costs, at 2015 and 2036**

	Additional Requirements		Estimated Cost	
	2015	2036	2015	2036
<b>TAFE Infrastructure</b>				
21% Scenario (VIF)	+11,250 places	+38,040 places	+\$7m pa	+\$24m pa
25% Scenario	+13,600 places	+45,350 places	+\$8m pa	+\$28m pa
30% Scenario	+16,530 places	+54,500 places	+\$10m pa	+\$34m pa
<b>TAFE Resources</b>				
21% Scenario (VIF)	+11,250 places	+38,040 places	+\$38m pa	+\$129m pa
25% Scenario	+13,600 places	+45,350 places	+\$46m pa	+\$153m pa
30% Scenario	+16,530 places	+54,500 places	+\$56m pa	+\$184m pa

Source: Productivity Commission, Report on Government Services 2009; Essential Economics.

Note: Figures rounded

## 5.8 Social Infrastructure Costs

### Public Library Infrastructure and resources

Approximately \$33 per capita is spent on public libraries in Victoria per year according to Department of Planning and Community Development data (Annual Survey of Public Library Services in Victoria 2006/07). This per capita value includes building works, materials and staff resources, and the funding is principally the responsibility of local and State governments. This existing per capita value has been used to estimate future public library infrastructure and resource costs for the Regional Cities.

By 2015, additional library infrastructure and resource costs in the Regional Cities are estimated to be between \$2.6 million pa (VIF scenario) and \$3.9 million pa (30% scenario). By 2036, additional library infrastructure and resource costs in the Regional Cities are estimated to be between \$9.0 million pa (VIF scenario) and \$12.8 million pa (30% scenario). Note, data relates to 2009 dollars.

Public library infrastructure and resource cost estimates are shown in Table 5.15.

**Table 5.15: Estimated Additional Public Library Capital Expenditure, at 2015 and 2036**

	Population Growth		Estimated Additional Cost	
	2006-2015	2006-2036	2015	2036
21% Scenario (VIF)	+79,410 persons	+271,530 persons	\$2.6m pa	\$9.0m pa
25% Scenario	+96,050 persons	+323,240 persons	\$3.2m pa	\$10.7m pa
30% Scenario	+116,830 persons	+387,890 persons	\$3.9m pa	\$12.8m pa

Source: DPCD – Annual Survey of Public Library Services 2006/07; Essential Economics.

Note: Figures rounded

### Kindergarten places

Currently, State funding per Kindergarten place in Victoria averages approximately \$2,500 per child per year. This includes per capita grants to Kindergarten operators (for capital works, maintenance, operational costs etc) and subsidies to parents (who also contribute fees). This existing per capita value has been used to estimate additional future Kindergarten ongoing costs the Regional Cities.

By 2015, additional Kindergarten funding in the Regional Cities is estimated to be between \$1.9 million pa (VIF scenario) and \$3.2 million pa (30% scenario). By 2036, additional Kindergarten funding in the Regional Cities are estimated to be between \$4.2 million pa (VIF scenario) and \$12.8 million pa (30% scenario). Note, data relates to 2009 dollars.

Kindergarten ongoing cost estimates are shown in Table 5.16.

**Table 5.16: Kindergarten Infrastructure and Resource Costs, at 2015 and 2036**

	Additional Requirements		Estimated Cost	
	2015	2036	2015	2036
21% Scenario (VIF)	+760 places	+1,680 places	\$1.9m pa	\$4.2m pa
25% Scenario	+990 places	+2,290 places	\$2.5m pa	\$5.7m pa
30% Scenario	+1,270 places	+3,050 places	\$3.2m pa	\$7.6m pa
Source:	Victorian kindergarten policy, procedures and funding criteria update 2009, Department of Education and Early Childhood Development; Essential Economics.			
Note:	Figures rounded			

### **Childcare places**

Commonwealth funding per approved childcare place in Australia is currently \$7,500 per child per year. This funding is provided in the form of rebates to parents utilising approved facilities (mainly operated by the private sector which is responsible for the provision of infrastructure). This existing subsidy payment has been used to estimate additional future childcare costs in the Regional Cities.

By 2015, additional childcare funding in the Regional Cities is estimated to be between \$5.1 million pa (VIF scenario) and \$8.4 million pa (30% scenario). By 2036, additional childcare funding in the Regional Cities is estimated to be between \$10.2 million pa (VIF scenario) and \$18.8 million pa (30% scenario). Note, data relates to 2009 dollars.

Additional childcare funding requirements are included in Table 5.17.

**Table 5.17: Childcare Infrastructure and Resource Costs, at 2015 and 2036**

	Additional Requirements		Estimated Cost	
	2015	2036	2015	2036
	<b>Childcare Places</b>			
21% Scenario (VIF)	+680 places	+1,360 places	\$5.1m pa	\$10.2m pa
25% Scenario	+870 places	+1,870 places	\$6.5m pa	\$14.0m pa
30% Scenario	+1,120 places	+2,500 places	\$8.4m pa	\$18.8m pa
Source:	Federal Government; Essential Economics.			
Note:	Figures rounded			

### **Aged care places**

#### *Infrastructure*

According to research undertaken by Aged Care Association Australia, the capital cost of providing new aged care facilities is approximately \$176,000 per bed (in 2008 - excludes land costs). This existing per bed estimate has been used to project future aged care infrastructure costs for the Regional Cities.

By 2015, additional aged care infrastructure costs in the Regional Cities are estimated to be between \$366 million (VIF scenario) and \$435 million (30% scenario). By 2036, additional aged care infrastructure costs in the Regional Cities are estimated to be between \$1,860 million (VIF scenario) and \$2,220 million (30% scenario). Note, data relates to 2009 dollars.

## Resources

Significant recurrent Government resources are required to support each residential aged-care place. Data sourced from the Productivity Commission (Report on Government Services, 2009) show the average subsidy in Victoria was \$33,270 per occupied place in 2008. This existing subsidy value has been used to project future residential-based aged care recurrent costs for the Regional Cities.

By 2015, additional aged care recurrent costs in the Regional Cities are estimated to be between \$69 million (VIF scenario) and \$83 million (30% scenario). By 2036, additional recurrent aged care costs in the Regional Cities are estimated to be between \$352 million (VIF scenario) and \$420 million (30% scenario). Note, data relates to 2009 dollars.

While not quantified in this report, significant additional recurrent aged-care expenditure will also be required for care in the community programs (non-residential aged care services).

Aged care infrastructure and resource cost estimates are shown in Table 5.18.

**Table 5.18: Aged Care Infrastructure and Resource Costs, at 2015 and 2036**

	Additional Requirements		Estimated Cost	
	2015	2036	2015	2036
<b>Aged Care Infrastructure</b>				
21% Scenario (VIF)	+2,070 places	+10,570 places	\$365m	\$1,860m
25% Scenario	+2,250 places	+11,490 places	\$395m	\$2,020m
30% Scenario	+2,480 places	+12,620 places	\$435m	\$2,220m
<b>Aged Care Recurrent Expenditure (Residential Services Only)</b>				
21% Scenario (VIF)	+2,070 places	+10,570 places	\$69m pa	\$352m pa
25% Scenario	+2,250 places	+11,490 places	\$75m pa	\$383m pa
30% Scenario	+2,480 places	+12,620 places	\$83m pa	\$420m pa

Source: Aged Care Association Australia, Submission to the Inquiry into Residential and Community Aged Care in Australia (December 2008); Report on Government Services 2009, Productivity Commission (Table 13.2); Essential Economics.

Note: Figures rounded

## 5.9 Recreation Infrastructure Costs

### Arts and Cultural Facilities

The capital cost of arts and cultural facilities are based on the development costs for a small Civic Centre of 1,000m<sup>2</sup> @ \$1,800 per m<sup>2</sup> (Rawlingsons Handbook 2008). Operating costs are based on an a recurrent budget of \$500,000 per year for each new facility (eg staff, marketing, maintenance). Using these benchmarks, infrastructure and resource costs have been estimated for the Regional Cities for 2015 and 2036.

### *Infrastructure*

By 2015, additional arts and cultural facilities infrastructure costs in the Regional Cities are estimated to be between \$10.8 million (VIF scenario) and \$16.2 million (30% scenario). By 2036, additional costs in the Regional Cities are estimated to be between \$37.8 million (VIF scenario) and \$54.0 million (30% scenario). Note, data relates to 2009 dollars.

*Resources*

By 2015, additional arts and cultural operating costs in the Regional Cities are estimated to be between \$3.0 million pa (VIF scenario) and \$4.5 million pa (30% scenario). By 2036, additional costs in the Regional Cities are estimated to be between \$10.5 million (VIF scenario) and \$15.0 million (30% scenario). Note, data relates to 2009 dollars.

Arts and cultural infrastructure and resource cost estimates are included in Table 5.19.

**Table 5.19: Arts and Cultural Facilities Infrastructure Costs, at 2015 and 2036**

	Additional Requirements		Estimated Cost	
	2015	2036	2015	2036
<b>Infrastructure</b>				
21% Scenario (VIF)	6	21	\$10.8m	\$37.8m
25% Scenario	8	25	\$14.4m	\$45.0m
30% Scenario	9	30	\$16.2m	\$54.0m
<b>Operating costs</b>				
21% Scenario (VIF)	6	21	\$3.0m pa	\$10.5m pa
25% Scenario	8	25	\$4.0m pa	\$12.5m pa
30% Scenario	9	30	\$4.5m pa	\$15.0m pa

Source: Rawlingsons Handbook 2008; Essential Economics.

Note: Figures rounded

**Recreational Facilities**

The capital cost of recreational facilities are based on the development costs for a medium standard Community Recreation Centre of 1,000m<sup>2</sup> @ \$1,100 per m<sup>2</sup> (Rawlingsons Handbook 2008). Operating costs are based on an a recurrent budget of \$500,000 per year for each new facility (eg staff, marketing, maintenance). Using these benchmarks, infrastructure and resource costs have been estimated for the Regional Cities for 2015 and 2036.

*Infrastructure*

By 2015, additional recreation facilities infrastructure costs in the Regional Cities are estimated to be between \$5.5 million (VIF scenario) and \$8.8 million (30% scenario). By 2036, additional infrastructure costs in the Regional Cities are estimated to be between \$19.8 million (VIF scenario) and \$28.6 million (30% scenario). Note, data relates to 2009 dollars.

*Resources*

By 2015, additional arts and cultural operating costs in the Regional Cities are estimated to be between \$2.5 million pa (VIF scenario) and \$4.0 million pa (30% scenario). By 2036, additional costs in the Regional Cities are estimated to be between \$9.0 million (VIF scenario) and \$13.0 million (30% scenario). Note, data relates to 2009 dollars.

Recreational infrastructure and resource cost estimates are included in Table 5.20.

**Table 5.20: Recreational Facilities Infrastructure and Resource Costs, at 2015 and 2036**

	Additional Requirements		Estimated Cost	
	2015	2036	2015	2036
<b>Infrastructure</b>				
21% Scenario (VIF)	5	18	\$5.5m	\$19.8m
25% Scenario	6	22	\$6.6m	\$24.2m
30% Scenario	8	26	\$8.8m	\$28.6m
<b>Operating Costs</b>				
21% Scenario (VIF)	5	18	\$2.5m	\$9.0m
25% Scenario	6	22	\$3.0m	\$11.0m
30% Scenario	8	26	\$4.0m	\$13.0m

Source: Rawlingsons Handbook 2008; Essential Economics.

Note: Figures rounded

## 5.10 Waste Management

According to Sustainability Victoria data (2006/07), the kerbside collection cost per tonne in regional Victoria locations is approximately \$140 per year. This existing cost per tonne has been used to project future waste management collection costs for the Regional Cities.

By 2015, additional kerbside waste collection costs in the Regional Cities are estimated to be between \$3.5 million pa (VIF scenario) and \$4.9 million pa (30% scenario). By 2036, additional kerbside collection costs in the Regional Cities are estimated to be between \$11.2 million pa (VIF scenario) and \$16.1 million pa (30% scenario). Note, data relates to 2009 dollars.

Estimated costs associated with additional kerbside waste collection are included in Table 5.21

**Table 5.21: Waste Management Collection Costs, at 2015 and 2036**

	Additional Waste to be Collected pa		Estimated Cost	
	2015	2036	2015	2036
21% Scenario (VIF)	+25,000 tonnes	+80,000 tonnes	\$3.5m pa	\$11.2m pa
25% Scenario	+30,000 tonnes	+95,000 tonnes	\$4.2m pa	\$13.3m pa
30% Scenario	+35,000 tonnes	+115,000 tonnes	\$4.9m pa	\$16.1m pa

Source: Sustainability Victoria; Essential Economics.

Note: Figures rounded

## 5.11 Conclusion

Considerable additional costs will be associated with future infrastructure and resource requirements in the Regional Cities under each of the three scenarios. Funding the required level of infrastructure and resources will be a joint responsibility between all levels of Government, private sector, utility providers, ratepayers and consumers. The following table provides a summary of future additional infrastructure and operational costs (where quantifiable) to meet these requirements.

**Summary of Estimated Infrastructure and Resources Costs Required, Regional Cities 2015 and 2036**

Category	Requirement Type	2015			2036		
		21% Scenario (VIF)	25% Scenario	30% Scenario	21% Scenario (VIF)	25% Scenario	30% Scenario
1. Water	Operational and capital	\$34m pa	\$41m pa	\$50m pa	\$114m pa	\$136m pa	\$163m pa
2. Bus services	Operational and capital	\$8m pa	\$10m pa	\$13m pa	\$28m pa	\$33m pa	\$40m pa
3. Rail services	Capital	\$90m	\$110m	\$130m	\$295m	\$355m	\$420m
4. Rail services	Operational	\$45m pa	\$55m pa	\$65m pa	\$145m pa	\$175m pa	\$210m pa
5. Residential Land (servicing)	Capital	\$195m	\$236m	\$287m	\$654m	\$780m	\$937m
6. Hospital	Capital	\$165m	\$200m	\$240m	\$540m	\$650m	\$775m
7. Hospital	Operational	\$105m pa	\$125m pa	\$150m pa	\$355m pa	\$420m pa	\$505m pa
8. Emergency department costs	Operational	\$10m pa	\$12m pa	\$15m pa	\$30m pa	\$36m pa	\$43m pa
9. Aged care	Capital	\$365m	\$395m	\$435m	\$1,860m	\$2,020m	\$2,220m
10. Electricity	Operational and capital	\$75m pa	\$90m pa	\$110m pa	\$260m pa	\$310m pa	\$370m pa
11. Universities	Capital	\$0.7m pa	\$0.9m pa	\$1.1m pa	\$2.5m pa	\$2.9m pa	\$3.5m pa
12. Universities	Operational	\$13m pa	\$16m pa	\$19m pa	\$44m pa	\$52m pa	\$63m pa
13. VET	Capital	\$7m pa	\$8m pa	\$10m pa	\$24m pa	\$28m pa	\$34m pa
14. VET	Operational	\$38m pa	\$46m pa	\$34m pa	\$129m pa	\$153m pa	\$184m pa
15. Gas	Capital and operational	\$23m pa	\$28m pa	\$34m pa	\$77m pa	\$92m pa	\$110m pa
16. Broadband	Capital	Assumed funded	Assumed funded	Assumed Funded	Assumed funded	Assumed funded	Assumed funded
17. Industrial Land (servicing)	Capital	\$118m	\$142m	\$173m	\$386m	\$461m	\$554m
18. Schools	Operational and capital	\$24m pa	\$47m pa	\$75m pa	\$151m pa	\$215m pa	\$295m pa
19. Libraries	Operational and capital	\$2.6m pa	\$3.2m pa	\$3.9m pa	\$9.0m pa	\$10.7 m pa	\$12.8m pa
20. Kindergarten	Operational and capital	\$1.9m pa	\$2.5m pa	\$3.2m pa	\$4.2m pa	\$5.7m pa	\$7.6m pa
21. Childcare	Operational and capital	\$5.1m pa	\$6.5m pa	\$8.4m pa	\$10.2m pa	\$14.0m pa	\$18.8m pa
22. Arts and cultural	Capital	\$10.8m	\$14.4m	\$16.2m	\$37.8m	\$45.0m	\$54.0m
23. Arts and cultural	Operational	\$3.0m pa	\$4.0m pa	\$4.5m pa	\$10.5m pa	\$12.5m pa	\$15.0m pa
24. Recreational	Capital	\$5.5m	\$6.6m	\$8.8m	\$19.8m	\$24.2m	\$28.6m
25. Recreational	Operational	\$2.5m	\$3.0m	\$4.0m	\$9.0m	\$11.0m	\$13.0m
26. Waste Management	Operational and capital	\$3.5m pa	\$4.2m pa	\$4.9m pa	\$11.2m pa	\$13.3m pa	\$16.1m pa

## 6 INFRASTRUCTURE AND RESOURCE PROVISION COST COMPARISON: REGIONAL CENTRES VS METROPOLITAN MELBOURNE

This Chapter examines infrastructure and resource costs associated with continuing expansion of metropolitan Melbourne (and in particular the nominated Growth Areas) compared with costs associated with redistributing a proportion of anticipated metropolitan population growth to the Regional Cities.

### 6.1 Population Redistribution Analysis

VIF 2008 data shows that the population of metropolitan Melbourne is forecast to increase from its 2006 ERP level of 3.7 million to 5.5 million by 2036. Over the period 2006-2036, this represents an additional 1.8 million persons living in metropolitan Melbourne, or a population increase of approximately 50% compared to current levels. In the shorter term (2006-2015), the population of metropolitan Melbourne is projected to increase by approximately 600,000 persons, representing a 16% increase in the population in less than a decade.

The analysis included in this study shows that the Regional Cities have the capacity to accommodate significantly larger populations than forecast in VIF 2008 (assuming appropriate infrastructure and services are provided), and this would contribute to a reduction in population growth and associated infrastructure and resource requirements in metropolitan Melbourne.

For example by 2036 the 25% Scenario would 'redistribute' approximately 50,000 persons from metropolitan Melbourne to the Regional Cities, while the 30% Scenario would result in approximately 115,000 persons living in the Regional Cities who would otherwise be located in metropolitan Melbourne. These outcomes represent a 3% (25% Scenario) and 6% (30% Scenario) redistribution of forecast metropolitan Melbourne population growth (VIF 2008) to the Regional Cities.

Population redistribution analysis is shown in Table 6.1.

**Table 6.1: Population Redistribution Analysis 2015 and 2036**

	Regional Cities		Metropolitan Melbourne		Redistribution from Metropolitan Melbourne to Regional Cities	
<b>2015</b>						
	Population Estimate	Growth (No.)	Population Estimate	Growth (No.)	Redistribution (No.)	Redistribution (%)
Existing (2006 ERP)	686,630	n/a	3,744,370	n/a	n/a	n/a
21% Scenario (VIF)	766,050	+79,420	4,334,340	+589,970	n/a	n/a
25% Scenario	782,680	+96,050	4,317,710	+573,340	- 16,630	-2.8%
30% Scenario	803,460	+116,830	4,296,930	+552,560	- 37,410	-6.3%
<b>2036</b>						
Existing (2006 ERP)	686,630	n/a	3,744,370	n/a	n/a	n/a
21% Scenario (VIF)	952,190	+265,560	5,535,480	+1,791,110	n/a	n/a
25% Scenario	1,003,340	+316,710	5,484,330	+1,739,960	- 51,150	-2.9%
30% Scenario	1,067,290	+380,660	5,420,380	+1,676,010	- 115,100	-6.4%

Source: VIF 2008, Essential Economics.

Note: Figures rounded



## 6.2 Metropolitan Melbourne Growth Overview

Approximately 50% of metropolitan Melbourne’s future residential growth has been planned (through the Melbourne 2030 policy framework) for five nominated Growth Areas which are:

- Casey-Cardinia
- Hume
- Melton-Caroline Springs
- Whittlesea
- Wyndham.

For example, between 2006-2015 the Growth Areas are forecast to expand by 300,000 persons (or 4.4% pa compared with 1.6% for metropolitan Melbourne). Between 2006-2026 (no official data is currently available for 2036), the population of the Growth Areas is projected to increase by 610,000 persons (or 3.5% compared with 1.5% for metropolitan Melbourne). With reference to analysis included in Table 4.1, if population ‘redistribution’ was to focus exclusively on these metropolitan Melbourne Growth Areas, then the percentage shift in population would be approximately 6% (25% Scenario) and 12% (30% Scenario) from these areas, with no redistribution occurring from other metropolitan Melbourne locations.

Generally, locations situated in the Growth Areas are very distant from Melbourne’s CBD (20km-60km), with many of these areas having little existing public transport (particularly rail). Additionally, in some growth areas there is only limited access to local employment in view of the distances to key employment nodes (although it is acknowledged that Melbourne 2030 seeks to generate significant new employment in growth areas).

Population growth forecasts for Growth Areas and metropolitan Melbourne are shown in Table 6.2.

**Table 6.2: Population Growth Forecasts, Metropolitan Melbourne Growth Areas, 2006 to 2026**

Locality	2006	2015	Growth 2006-15 (No.)	Growth 2006-15 (%)	2021	2026	Growth 2006-2026 (No.)	Growth 2006-2026 (%)
Cardinia (S)	58,560	95,980	+37,420	+5.64%	118,160	148,000	+89,440	+4.74%
Casey (C)	222,240	303,820	+81,580	+3.54%	350,370	370,290	+148,050	+2.59%
Hume (C)	153,730	199,280	+45,550	+2.93%	225,370	251,100	+97,370	+2.48%
Melton (S)	80,910	137,880	+56,970	+6.10%	171,980	198,310	+117,400	+4.58%
Wyndham (C)	116,000	194,700	+78,700	+5.92%	241,960	277,680	+161,680	+4.46%
<b>Growth Areas</b>	<b>631,440</b>	<b>931,660</b>	<b>+300,220</b>	<b>+4.42%</b>	<b>1,107,840</b>	<b>1,245,380</b>	<b>+613,940</b>	<b>+3.45%</b>
<b>MSD</b>	<b>3,744,370</b>	<b>4,334,340</b>	<b>+589,970</b>	<b>+1.64%</b>	<b>4,704,720</b>	<b>5,000,050</b>	<b>1,255,680</b>	<b>+1.46%</b>

Source: VIF 2008, Essential Economics.

Note: Figures rounded

Melbourne @ 5 Million has identified a number of investigation areas in which the UGB may be expanded to accommodate population growth forecast in VIF 2008. These investigation areas will expand the nominated Growth Areas outwardly (ie further away from Melbourne CBD).

Growth and investigation areas are identified in Figures 6.1 and 6.2.

Figure 6.1: Location of Metropolitan Melbourne Urban Growth Boundary and Growth Areas

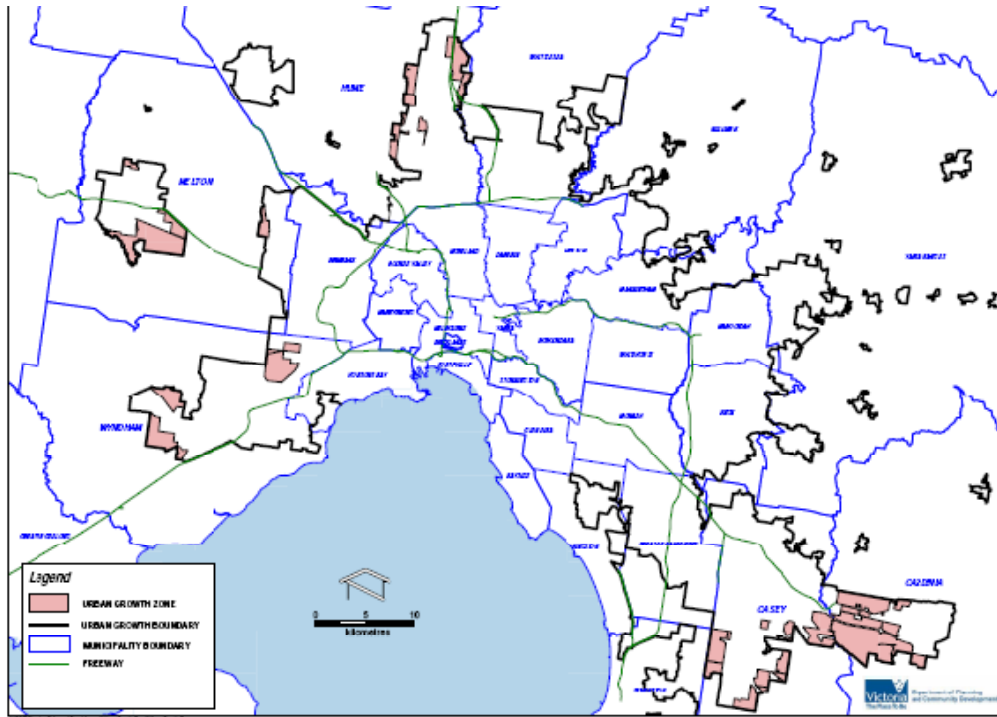
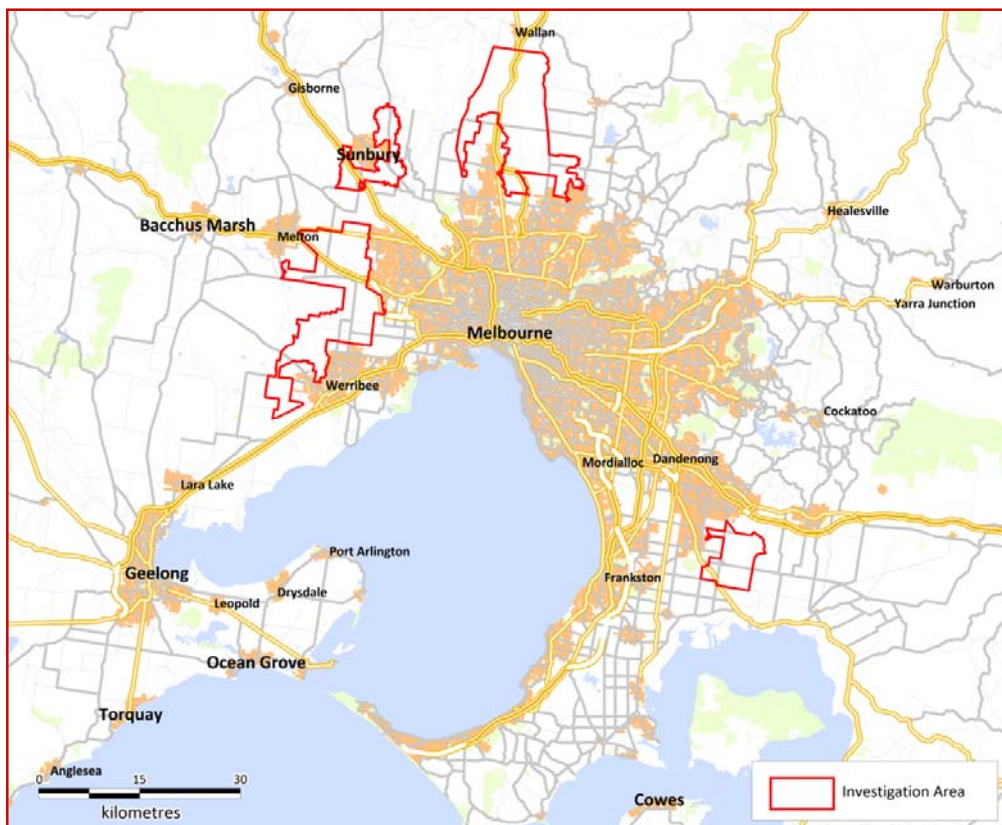


Figure 6.2: Location of Metropolitan Melbourne Urban Growth Boundary Investigation Areas



Produced by Essential Economics using MapInfo and StreetPro

### 6.3 Additional Metropolitan Melbourne Dwelling Requirements

Between 2006-2015, metropolitan Melbourne is projected to require approximately 280,000 new dwellings, of which approximately 115,000 dwellings will be located in the Growth Areas. Over the period 2006-2026 (no data is currently available for 2036), metropolitan Melbourne is forecast to require approximately 600,000 additional dwellings, of which approximately 245,000 dwellings are likely to be located in the Growth Areas.

The Infrastructure and Resources survey indicated that the Regional Cities currently have approximately 3,500 ha of zoned residential land available, with significant stocks of additional land available for rezoning as required. While a significant proportion of this existing zoned land will be required to support projected population growth (as per VIF 2008 forecasts), capacity exists to accommodate a higher level of residential development, subject to appropriate infrastructure and services being provided.

For example, between 2006-2015 approximately 2,200 ha of residential land will be required in Regional Cities to support population growth anticipated in VIF 2008. In effect, this leaves approximately 1,300 ha of remaining zoned residential land which could potentially be developed to support some 13,000 new dwellings (@ 10 dwellings per gross hectare). Over the period this is the equivalent of providing 5% of metropolitan Melbourne’s additional dwelling supply requirement or, importantly, 11% of dwelling supply requirement within the Growth Areas. In the longer term (2015-2036), the Regional Cities have the capacity to rezone additional land to support significant residential growth.

Dwelling growth forecasts for Growth Areas and Metropolitan Melbourne are shown in Table 6.3.

**Table 6.3: Dwelling Growth Forecasts, Metropolitan Melbourne Growth Areas, 2006 to 2026**

	2006	2015	Growth 2006-15 (No.)	Growth 2006-15 (%)	2021	2026	Growth 2006-2026 (No.)	Growth 2006-2026 (%)
Cardinia (S)	21,510	36,410	+14,900	+6.0%	45,550	57,690	+36,190	+5.1%
Casey (C)	76,650	108,190	+31,540	+3.9%	126,800	135,530	+58,880	+2.9%
Hume (C)	51,590	69,080	+17,490	+3.3%	79,390	89,460	+37,860	+2.8%
Melton (S)	28,560	50,270	+21,710	+6.5%	63,710	74,280	+45,720	+4.9%
Wyndham (C)	41,810	72,490	+30,680	+6.3%	91,540	106,220	+64,410	+4.8%
<b>Growth Areas</b>	<b>220,120</b>	<b>336,440</b>	<b>+116,320</b>	<b>+4.8%</b>	<b>406,990</b>	<b>463,180</b>	<b>+243,060</b>	<b>+3.8%</b>
<b>MSD</b>	<b>1,504,970</b>	<b>1,784,740</b>	<b>+279,770</b>	<b>+1.9%</b>	<b>1,964,800</b>	<b>2,109,370</b>	<b>+604,400</b>	<b>+1.7%</b>

Source: VIF 2008, Essential Economics.

Note: Figures rounded

### 6.4 Costs Associated with Metropolitan Melbourne Development

Significant population expansion in metropolitan Melbourne’s Growth Areas (and potentially the metropolitan Investigation Areas) has the potential to generate additional economic costs unless considerable resources are allocated to create more efficient patterns of residential settlement and/or significant investment in road, rail and other infrastructure.

There is currently strong debate regarding the merits and effectiveness of Melbourne 2030 with regard to securing higher dwelling growth in established metropolitan areas, rather than continuing growth in the outer suburbs (particularly the growth areas), and which has been the trend in recent years. One of the major concerns associated with building new suburbs is the anticipated infrastructure costs needed to connect and service these areas. For example, a report commissioned by Melbourne City Council (The Age, 30 April 2009) indicates that it would be \$110 billion cheaper to house future population along major transport routes in established metropolitan areas rather than develop new suburbs. This highlights the potential scale of costs related to developing growth areas, including the infrastructure for

new rail and road infrastructure, utilities, telecommunications, community facilities, employment nodes etc.

Research undertaken by SGS Economics and Planning (submission into Enhancing Victoria’s Liveability), shows that existing settlement patterns are likely to lead to a ‘two tone’ metropolitan structure, with a strong and prosperous urban core surrounded by weaker suburban economies characterised by relatively low levels of employment and investment. As part of this scenario, SGS identified additional economic costs associated with commuting and greenhouse gas emissions. The SGS analysis indicates that by 2016, congestion costs would be \$3.4 billion pa and greenhouse emissions costs \$34 million pa higher than in 2006. A summary of the SGS research findings are shown in Table 6.4.

**Table 6.4: Estimated Commuter Travel Congestion and Greenhouse Gas Emissions Costs**

	<b>Commuter Travel Congestion Costs (2006 dollars)</b>	<b>Greenhouse Gas Emissions (2006 dollars)</b>
2006	\$6,850,000,000 pa	\$212,000,000 pa
2016	\$10,240,000,000 pa	\$246,000,000 pa
<b>Change 2006-2016</b>	<b>\$3,390,000,000 pa</b>	<b>\$34,000,000 pa</b>

Source: SGS Economics and Planning, submission into Enhancing Victoria’s Liveability.

Note: Figures rounded

The inference of the SGS research is that a ‘poly-centric’ urban settlement pattern is required to ensure economic efficiency, liveability and associated economic benefits. To create such a structure more compact centres of settlement are required which are well linked to public transport and are efficiently connected to the major road network. SGS note that at present current policy settings are not in place to deliver a strong poly-centric outcome.

For example, commuting patterns identified in ABS Journey to Work 2006 show that of approximately 262,000 workers living in Growth Areas, only 31% are employed locally (ie within their own municipality), with 15% (approximately 40,000 persons) working in inner Melbourne locations and 54% (approximately 140,000 persons) commuting to other locations for work purposes. The Journey-to-Work data is shown in Table 6.5.

**Table 6.5: Location of Work for Working Resident Located in Growth Area Municipalities, 2006**

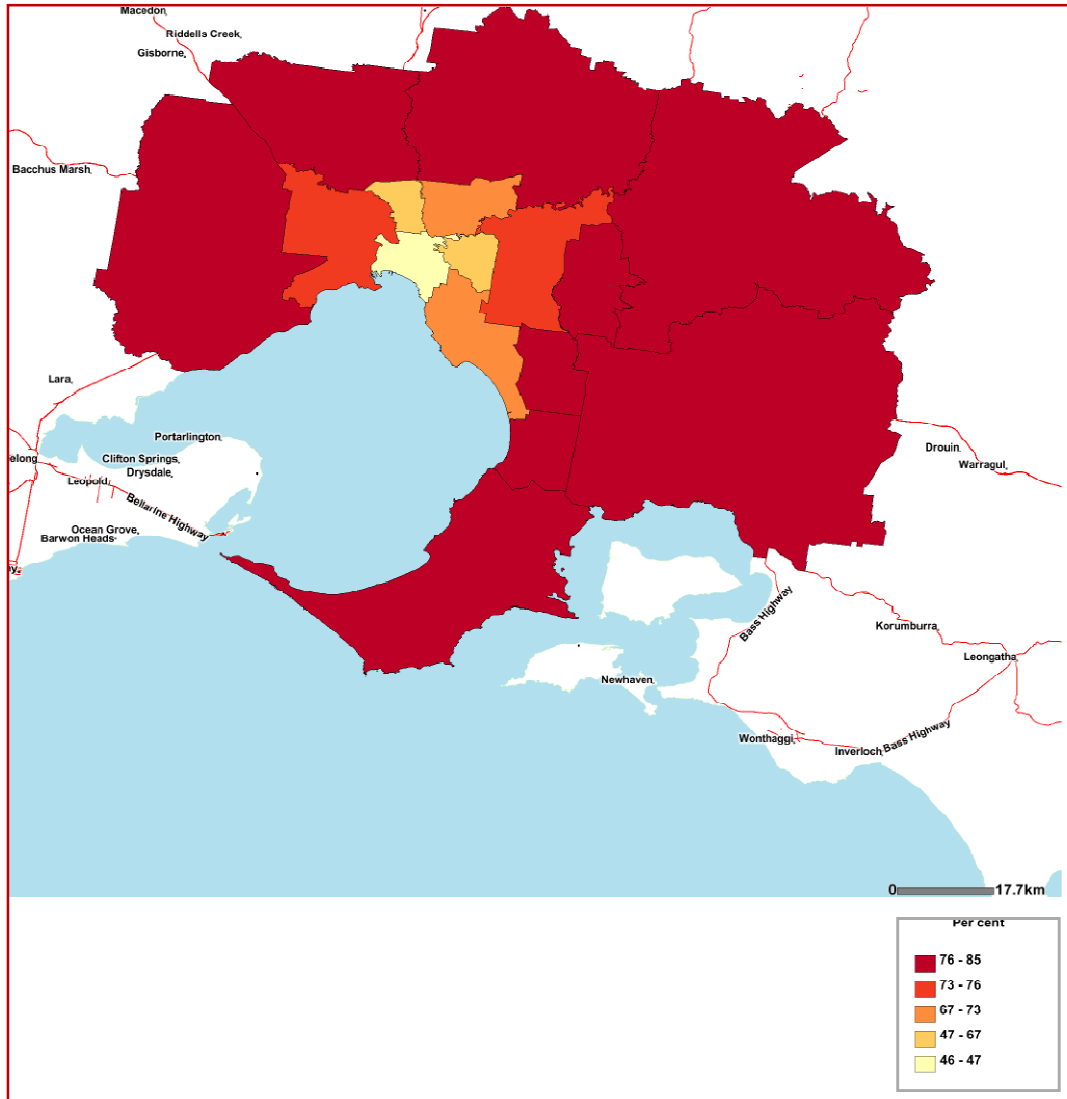
	<b>Working in Local Municipality</b>	<b>Working in Inner Melbourne</b>	<b>Working in Other Locations</b>	<b>Total</b>
<b>Cardinia (S)</b>				
<b>No.</b>	8,940	1,350	15,400	25,690
<b>%</b>	35%	5%	60%	100%
<b>Casey (C)</b>				
<b>No.</b>	25,800	8,040	60,270	94,110
<b>%</b>	27%	9%	64%	100%
<b>Hume (C)</b>				
<b>No.</b>	22,240	10,180	24,590	57,010
<b>%</b>	39%	18%	43%	100%
<b>Melton (S)</b>				
<b>No.</b>	6,630	7,410	20,560	34,600
<b>%</b>	19%	21%	59%	100%
<b>Wyndham (C)</b>				
<b>No.</b>	17,770	12,280	20,380	50,430
<b>%</b>	35%	24%	40%	100%
<b>Total</b>				
<b>No.</b>	<b>81,380</b>	<b>39,250</b>	<b>141,200</b>	<b>261,830</b>
<b>%</b>	<b>31%</b>	<b>15%</b>	<b>54%</b>	<b>100%</b>

Source: ABS Journey to Work, 2006

Note: Figures rounded

ABS Census data for 2006 also highlights the heavy reliance on motor vehicle transport across metropolitan Melbourne to access work locations. This is particularly evident in Melbourne’s outer suburbs where up to 85% of working residents (refer to Figure 6.3) in these locations travel to work by motor vehicle, principally due to poor or in many cases no public transport options.

**Figure 6.3: Percentage of Working Residents who Travel to Work by Car, Metropolitan Melbourne 2006**



Source: Commonwealth of Australia & PSMA Australia 2007

In a State context, the Regional Cities could be considered as part of a poly-centric settlement structure as they provide important compact and often unique economic modules which are generally self-sustaining but provide significant support to the metropolitan core (and indeed the wider-regional, State and national economies). Encouraging the further development of Regional Cities through higher levels of population growth, thus generating further critical mass, would assist in dispersing investment, employment and prosperity across the State, rather than focusing economic benefits principally on metropolitan Melbourne locations.

Additionally, Regional Cities provide established alternative options to suburban metropolitan development, as major transport infrastructure, community and health facilities, industry and diverse employment opportunities already exist in these centres.

The following sections provide broad estimates of potential cost savings associated with redistribution of projected population growth from metropolitan Melbourne to the Regional Cities.

## 6.5 Benefits of Further Development of the Regional Cities

### Reduced congestion costs

The SGS analysis shows substantial congestion costs are associated with population growth in metropolitan Melbourne. Applying the increase in total annual congestion costs (\$3.4 billion) to population growth for the period 2006-2015 (+650,000 persons), indicates that the cost of congestion per additional person living in metropolitan Melbourne is approximately \$5,200 pa (2006 dollars) or \$5,700 pa when updated to 2009 dollars.

Redistribution of a small portion of forecast population growth to the Regional Cities is likely to have a noticeable impact on congestion costs in metropolitan Melbourne for the following reasons:

- On average, it is likely that most employees based in Regional Cities will have significantly shorter commuting times than their metropolitan Melbourne counterparts, due to closer proximity to place of work.
- There are likely to be more opportunities for Regional Cities employees to walk or cycle to work compared to metropolitan-based employees.
- Less road congestion exists in Regional Cities (in general) compared to metropolitan Melbourne, providing relatively efficient car-based and public transport outcomes.

In order to assess congestion costs in the Regional Cities, a proxy for congestion has been developed. This uses ABS 2006 Census data relating to vehicle ownership, to develop a ratio of vehicles per km<sup>2</sup> for metropolitan Melbourne, individual regional cities and the Regional Cities combined.

This approach shows that metropolitan Melbourne has approximately 265 vehicles per km<sup>2</sup> compared to just 10 vehicles per km<sup>2</sup> across the Regional Cities (combined). It is important to recognise that the number of vehicles per km<sup>2</sup> differs considerably across the individual regional cities due to population densities, geographical size etc, ranging from 1 vehicle per km<sup>2</sup> (Mildura) to 153 vehicles per km<sup>2</sup> (Warrnambool).

For the purposes of this analysis the combined ratio (100 vehicles per km<sup>2</sup>) for the two most densely populated regional cities (ie Greater Geelong and Warrnambool) has been used to determine the congestion costs. This ratio (100 vehicles per km<sup>2</sup>) is approximately 40% compared to the metropolitan Melbourne ratio (265 vehicles per km<sup>2</sup>). Note, the 40% figure is should be considered as a conservative estimate as it is based only on the most congested regional cities. In reality overall congestion rates in the Regional Cities are is likely to be much lower in a comparative sense to metropolitan Melbourne.

Date relating to car ownership per Km<sup>2</sup> is provided in Table 6.6.

**Table 6.6: Car Ownership per km<sup>2</sup>, Selected Locations, 2006**

Location	Area km <sup>2</sup>	No. of cars	Cars per km <sup>2</sup>
Metropolitan Melbourne	8,090	2,145,000	265
Victoria	230,550	2,960,000	13
Ballarat	740	52,210	71
Bendigo	3,000	46,920	16
Geelong	1,250	121,725	97
Shepparton	2,420	35,970	15
Horsham	4,250	12,690	3
Latrobe	1,430	42,360	30
Mildura	22,090	31,300	1
Wangaratta	3,640	17,990	5
Warrnambool	120	18,330	153
Wodonga	430	20,570	48
<i>Geelong/Warrnambool</i>	<i>1,370</i>	<i>140,055</i>	<i>102</i>
<b>Regional Cities (Total)</b>	<b>39,370</b>	<b>400,065</b>	<b>10</b>

Source: ABS Census, 2006

Note: Figures rounded

Based on the methodology outlined above, a cost saving of 60% has been applied to SGS estimates. This shows that \$3,420 pa would be realised for each person ‘relocated’ from metropolitan Melbourne to the Regional Cities. If this value is applied to the population scenarios, then the cost savings associated with congestion would be between \$57m pa (25% Scenario) and \$128m pa (30% Scenario) by 2015; and 175m pa (25% Scenario) and \$394m pa (30% Scenario) in 2036. Note, these estimates relate to 2009 dollars.

Estimated annual congestion cost savings are shown in Table 6.7

**Table 6.7: Estimated Annual Congestion Cost Savings, Redistribution Analysis 2015 and 2036**

2015		2036	
Change	Congestion Saving	Change	Congestion Saving
<b>25% Scenario</b>			
+ 16,630	\$57m pa	+ 51,150	\$175m pa
<b>30% Scenario</b>			
+ 37,410	\$128m pa	+ 115,100	\$394m pa

Source: SGS Economics and Planning – submission into Enhancing Victoria’s Liveability 2008; Essential Economics.

Note: Figures rounded

Cumulatively, it is estimated that commuter travel congestion savings would amount to between \$285m (25% Scenario) and \$640m (30% Scenario) by 2015; and between \$2,835m (25% Scenario) and \$6,375m (30% Scenario) by 2036. Note, these estimates relate to 2009 dollars.

Estimated cumulative congestion cost savings are shown in Table 6.8

**Table 6.8: Estimated Cumulative Commuter Travel Congestion Savings, Under the 25% and 30% Population Scenarios**

	2006-2015	2016-2036	2006-2036
25% Scenario	\$285m	\$2,550m	\$2,835m
30% Scenario	\$640m	\$5,735m	\$6,375m

Source: SGS Economics and Planning – submission into Enhancing Victoria’s Liveability 2008; Essential Economics.

Note: Figures rounded

**Reduced greenhouse gas emissions**

The SGS analysis also shows considerable greenhouse gas emission costs are associated with population growth in metropolitan Melbourne. Applying the increase in total greenhouse emission costs (\$34 million pa) to population growth for the period 2006-2015 (+650,000 persons), indicates that the greenhouse emissions costs associated with commuting per additional person living in metropolitan Melbourne are approximately \$520 pa (2006 dollars), or \$570 pa when updated to 2009 dollars.

Assuming greenhouse emissions costs in Regional Cities are approximately 40% of metropolitan Melbourne (this allows for some additional emission costs in the Regional Cities, but at lower rates recognising the significantly shorter average commuting distances and lesser congestion in regional locations), then a cost saving of \$340 pa would be realised for each person ‘relocated’ from metropolitan Melbourne to the Regional Cities. If this value is applied to the population scenarios, then the cost savings associated with congestion would be between \$6m pa (25% Scenario) and \$13m pa (30% Scenario) by 2015; and \$17m pa (25% Scenario) and \$39m pa (30% Scenario) in 2036. Note, these estimates relate to 2009 dollars.

Estimated annual greenhouse gas emission savings are included in Table 6.9

**Table 6.9: Estimated Greenhouse Gas Emission Savings, Redistribution Analysis 2015 and 2036**

2015		2036	
Change	Congestion Saving	Change	Congestion Saving
<b>25% Scenario</b>			
+ 16,630	\$6m pa	+ 51,150	\$17m pa
<b>30% Scenario</b>			
+ 37,410	\$13m pa	+ 115,100	\$39m pa

Source: SGS Economics and Planning – submission into Enhancing Victoria’s Liveability; Essential Economics.  
 Note: Figures rounded

Cumulatively, it is estimated that greenhouse gas emissions savings associated with commuting would amount to between \$30m (25% Scenario) and \$65m (30% Scenario) by 2015; and between \$255m (25% Scenario) and \$570m (30% Scenario) by 2036. Note, these estimates relate to 2009 dollars.

Estimated cumulative greenhouse gas emission savings are shown in Table 6.10.

**Table 6.10: Estimated Cumulative Greenhouse Gas Emission Savings, Redistribution Analysis 2015 and 2036**

	2006-2015	2016-2036	2006-2036
25% Scenario	\$30m	\$255m	\$285m
30% Scenario	\$65m	\$570m	\$635m

Source: SGS Economics and Planning – submission into Enhancing Victoria’s Liveability 2008; Essential Economics.  
 Note: Figures rounded

**Summary**

When savings associated with congestion and greenhouse gas emissions are considered together, the scale of benefits from population relocation to the Regional Cities becomes clearer. By 2015 these savings amount to between \$65 million pa (25% Scenario) and \$140 million pa (30% Scenario) and by 2036 the annual savings increase to between \$190 million (25% Scenario) and \$430 million (30% Scenario).

In cumulative terms, estimated savings by 2015 are between \$315 million (25% Scenario) and \$705 million (30% Scenario); and by 2036 estimated savings are between \$3,120 million (25% Scenario) and \$7,010 million (30% Scenario).



Cumulative savings (which are expressed in 2009 dollars) are shown in Table 6.11.

**Table 6.11: Estimated Cumulative Total Savings (Congestion and Greenhouse Gas Emissions), Redistribution Analysis 2015 and 2036**

Estimated Annual Savings			
	2015	2036	
25% Scenario	\$65m pa	\$190m pa	
30% Scenario	\$140mpa	\$430m pa	
Estimated Cumulative Savings			
	2006-2015	2016-2036	2006-2036
25% Scenario	\$315m	\$2,805m	\$3,120m
30% Scenario	\$705m	\$6,305m	\$7,010m

Source: SGS Economics and Planning – submission into Enhancing Victoria’s Liveability 2008; Essential Economics.

Note: Figures rounded

## 6.6 Funding Required for Regional Cities Infrastructure through Identified Costs Savings

The scale of cumulative cost savings identified above would be sufficient to make a significant contribution to developing infrastructure required to support higher regional population levels.

The following analysis provides an estimate of additional infrastructure costs required to deliver population outcomes for the 25% and 30% scenarios – that is, additional population levels compared to VIF 2008 estimates (21% Scenario). Note, these estimates are not intended to provide detailed costs for all infrastructure requirements, rather they provide an estimate of the costs associated with delivering the most critical ‘hard’ infrastructure to support population and employment growth and liveability.

Critical infrastructure requirements are described as follows:

- Public transport infrastructure (rail and bus) – to provide additional capacity to ensure improved local services and to ensure connectivity between the regional cities and metropolitan Melbourne.
- Residential land servicing – to support the development of identified residential growth areas to accommodate population expansion.
- Industrial land servicing – to support the development of identified industrial/employment sites development to facilitate new industry and employment opportunities.
- Hospital infrastructure and emergency resources – to ensure medical facilities are adequate and responsive to support growing populations.
- Aged care infrastructure – to ensure sufficient aged care facilities are developed to meet long-term challenges associated with demographic change.
- TAFE and university infrastructure – to ensure facilities are in place to support skills and training requirements required by industry, business and the community.
- School infrastructure – to ensure educational facilities are sufficient to meet expanding population levels (note, as no specific data relating to capital costs available, infrastructure costs are assumed to be 20% of total costs identified in section 3.7 – this is similar to VET capital/total cost ratio).
- Kindergarten and childcare infrastructure – to ensure facilities are in place to support expanding population and labour force levels.

- Library infrastructure – to assist in improving liveability by providing community meeting places, learning facilities and opportunities for local cultural advancement.
- Arts and cultural infrastructure – to provide sufficient facilities to support cultural activities and liveability.
- Recreational infrastructure – to provide sufficient facilities to support recreational activities, health and liveability outcomes.
- Waste management (kerbside collection) – to assist with additional services required to remove domestic waste and recoverable materials.

Utilities and telecommunications infrastructure (electricity, gas, water and broadband) have not been included in the analysis as the cost of providing additional infrastructure and resources is assumed to be recovered from consumers through future price rises (eg. as reflected in long-term ESC pricing schemes for electricity, gas and water). Additionally, in many cases large-scale infrastructure is developed to benefit the state as a whole (eg. Desalination Plant, power stations etc) rather than focused on specific areas. Operational costs are excluded as they are assumed to be funded on a ‘user pays’ basis (such as rail travel) or would need to be funded regardless of location (such as aged care subsidies).

**Additional critical ‘hard’ infrastructure costs**

The additional cumulative costs associated with providing critical ‘hard’ infrastructure are estimated to be:

- By 2015: Between \$205 million (25% Scenario) and \$440 million (30% Scenario)
- By 2036: Between \$1,030 million (25% Scenario) and \$2,130 million (30% Scenario)

This data shows that costs associated with providing key or critical infrastructure to support higher population levels in Regional Cities compares favourably against congestion and emission inefficiencies/costs generated through ongoing expansion of metropolitan Melbourne’s outer growth areas.

In summary, the cost of providing key infrastructure and resources required to support higher population outcomes in Regional Cities (ie ‘distribution’ of a proportion of population from Melbourne’s growth areas) would be significantly lower than the congestion and greenhouse gas emission inefficiencies/costs incurred through locating same numbers of persons in Melbourne’s outer suburbs. Note this assumes existing metropolitan Melbourne settlement patterns continue.

Costs savings are particularly apparent in the longer-term (period to 2036) when cumulative savings accrue, with costs associated with required infrastructure being only approximately a third of inefficiencies/costs associated with the location of the same number of persons in outer metropolitan Melbourne growth areas. In the short-term (period to 2015), selected infrastructure costs in the Regional Cities represent approximately between two-thirds of the cost inefficiencies generated over this period in metropolitan Melbourne.

Cumulative cost estimates for critical ‘hard’ infrastructure requirements under the 25% and 30% scenarios are included in Table 6.12.

**Table 6.12: Additional Infrastructure Costs Required for 25% and 30% Scenarios, 2015 and 2036**

Item	2015		2036	
	25% Scenario	30% Scenario	25% Scenario	30% Scenario
Rail Infrastructure	\$20m	\$40m	\$60m	\$125m
Bus infrastructure	\$1m	\$2m	\$11m	\$14m
Residential land servicing	\$41m	\$92m	\$126m	\$283m
Industrial land servicing	\$24m	\$55m	\$75m	\$168m
Hospital infrastructure	\$35m	\$75m	\$110m	\$235m
Hospital emergency services	\$7m	\$24m	\$84m	\$225m
Kindergarten infrastructure	\$2m	\$5m	\$22m	\$51m
Childcare infrastructure	\$6m	\$14m	\$60m	\$137m
Aged care facilities infrastructure	\$30m	\$70m	\$160m	\$360m
School infrastructure	\$24m	\$29m	\$202m	\$259m
TAFE infrastructure	\$7m	\$16m	\$69m	\$156m
University infrastructure	\$1m	\$3m	\$12m	\$26m
Library infrastructure	\$3m	\$6m	\$27m	\$61m
Arts and cultural infrastructure	\$4m	\$5m	\$7m	\$16m
Recreational infrastructure	\$1m	\$1m	\$4m	\$9m
Waste management (kerbside collection)	\$1m	\$2m	\$2m	\$5m
<b>Total infrastructure and resource costs (rounded)</b>	<b>\$205m</b>	<b>\$440m</b>	<b>\$1,030m</b>	<b>\$2,130m</b>
<b>Estimated congestion/emissions costs (rounded)</b>	<b>\$315m</b>	<b>\$705m</b>	<b>\$3,120m</b>	<b>\$7,010m</b>
<b>Comparative cost analysis</b> regional cities development costs as percentage of congestion /emissions costs generated in metropolitan Melbourne	65%	62%	33%	30%

Source: Essential Economics

## 6.7 Conclusions

1. According to State Government estimates, the population of metropolitan Melbourne is forecast to expand by 1.8 million persons over the period 2006-2036. This represents a 50% increase in population compared with current levels (5.5 million persons in 2036 compared with 3.7 million persons in 2006) and this will significantly increase pressure on infrastructure and resources in the metropolitan area.
2. Population projections show that approximately 50% of future population growth in metropolitan Melbourne is anticipated to occur in outer suburban locations, especially the growth area municipalities of Cardinia, Casey, Hume, Melton and Wyndham. Many of these locations are poorly serviced in terms of public transport infrastructure and this situation increases pressure on the road network, thereby leading to economic inefficiencies associated with congestion costs.
3. Estimates prepared by SGS Economics and Planning indicate the cost of congestion and greenhouse gas emissions associated with population growth in metropolitan Melbourne is approximately \$5,700 pa per additional person locating in the metropolitan area. By 2016, SGS data suggests that congestion and emissions costs in metropolitan Melbourne will be \$3.4 billion pa.
4. In view of this situation, it is important to recognise that Regional Cities are well-placed to accommodate a greater proportion of anticipated State population growth than these cities currently accommodate, and that this would assist in relieving urban growth pressures and costs on metropolitan Melbourne.
5. If regional Victoria were to attract 25% of anticipated State population growth between 2006-2036, an additional 50,000 persons (compared to VIF 2008 estimates) would be living in the Regional Cities by the end of the period. If a 30% scenario were achieved, then an additional 115,000 persons

would be living in the Regional Cities by 2036. In effect, these outcomes represent a ‘redistribution’ of population growth from metropolitan Melbourne to regional areas. The 25% Scenario represents a 3% redistribution of projected metropolitan Melbourne population growth, while the 30% Scenario represents a 6% redistribution.

6. The Regional Cities have the capacity to accommodate large increases in population, particularly in view of significant available land supply for residential development and employment purposes. However, new and improved infrastructure and resources will be required to facilitate population growth in these cities. This includes funding for servicing of residential and industrial land; new rail infrastructure; additional hospitals, schools, childcare, kindergarten and aged care facilities; and improved community facilities such as libraries and arts centres.
7. While the cumulative costs of providing supporting infrastructure and resources in Regional Cities are considerable, these costs compare favourably with congestion inefficiencies associated with ongoing residential development in metropolitan Melbourne, especially its outer suburbs (ie, if the same number of people were to be accommodated in Melbourne and not the Regional Cities).
8. In summary:

By 2015:

- The additional cumulative cost of providing critical infrastructure to support a redistribution of approximately 15,000 persons (25% Scenario) from metropolitan Melbourne to the Regional Cities is estimated to be \$205 million; this compares with inefficiency costs of \$315 million associated with the same number of persons being accommodated in metropolitan Melbourne.
- The additional cumulative cost of redistributing approximately 40,000 persons (30% Scenario) between metropolitan Melbourne and the Regional Cities is estimated to be \$440 million compared to inefficiency costs of \$705 million associated with this level of population being accommodated in metropolitan Melbourne.

By 2036:

- The additional cumulative cost of providing critical infrastructure to support a redistribution of approximately 50,000 persons (25% Scenario) from metropolitan Melbourne to the Regional Cities is estimated to be \$1.0 billion; this compares with inefficiency costs of \$3.1 billion associated with the same number of persons being accommodated in metropolitan Melbourne.
- The additional cumulative cost of redistributing approximately 115,000 persons (30% Scenario) between metropolitan Melbourne and the Regional Cities is estimated to be \$2.1 billion compared to inefficiency costs of \$7.0 billion associated with this level of population being accommodated in metropolitan Melbourne.

## 7 NET STATE BENEFIT ASSOCIATED WITH HIGHER REGIONAL POPULATION OUTCOMES

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This Chapter provides an assessment of the Net State Benefits arising from a redistribution of population growth from metropolitan Melbourne to the Regional Cities. The analysis includes an overview of benefits that would be likely to be achieved for metropolitan Melbourne associated with lower population outcomes, and an appraisal of the benefits for Regional Cities associated with higher population levels.

### 7.1 Taxpayer Savings

The analysis undertaken for this study shows that it is cost efficient to divert a proportion of population growth away from metropolitan Melbourne (particularly with regard to new growth areas lacking critical infrastructure and employment opportunities) and towards established Regional Cities. The analysis indicates the long-term costs associated with providing critical infrastructure to support additional population growth in established regional cities are likely to be between 60%-70% less than locating the same number of persons in metropolitan Melbourne. Note, this finding relates only to the scale of redistribution outlined in this report ie between 3%-6% and assumes the current pattern of metropolitan Melbourne settlement continues. In view of the fact that a significant amount of funding for additional infrastructure and resources will be responsibility of Government (all levels) and paid for through tax receipts, it is important that decisions regarding the location of population expansion are taken with regard to cost efficiency.

### 7.2 Contribution to Reduced Stress on Metropolitan Melbourne

As noted in the previous Chapter, considerable congestion and emissions costs are associated with population expansion in metropolitan Melbourne, especially in outer metropolitan areas which are poorly serviced by public transport. In view of this situation, the redistribution of a small proportion of population growth to the Regional Cities will assist in reducing stress caused by ongoing population growth in these areas. Although the 25% and 30% scenarios represent relatively small redistribution levels over a 30 year period (3% and 6% respectively), it is likely that locations in regional Victoria could also be candidates to accommodate further population growth (although these locations are not the focus of this report). Overall, a transfer of a proportion of population growth from metropolitan Melbourne to regional Victoria would be expected to assist in improving liveability outcomes for metropolitan areas through reduced congestion, emissions and inefficiencies. At the same time, regional areas accommodating increased population levels would generate expanded critical mass to further enhance economic and social development of regional cities and the communities they serve.

### 7.3 Benefits to Regional Communities

The generation of higher population levels in Regional Cities would be beneficial to these communities in the following ways.

#### Investment Opportunities for Business

A larger population base and an expanded supply of industrial/employment land in the Regional Cities will create the conditions for investment and business growth. Business growth will also be supported by the presence of an expanded labour force and skills pool, and through increased local spending capacity associated with higher household formation.

#### Enhanced Skills Base

The expansion of labour force numbers in the Regional Cities is likely to improve the skills base within these communities. This is due to the fact that population growth in Victoria is anticipated to be driven by skilled migration to the State, whether this originates from overseas or interstate. The redistribution

of population growth to the Regional Cities would be expected to contain a high proportion of these skilled migrants (particularly if supported by specific resettlement policies), and these new residents will bring a diversity of skills currently in short supply (or lacking) in many regional areas. Improved provision of TAFE and university facilities will also support skills advancement.

### **Industry Diversity**

The improved investment environment associated with an expanded labour force, increased land supply, improved skills base and increased local available expenditure will provide an opportunity for new industry sectors (including *niche* sectors) to locate to the Regional Cities, and for existing 'sunset' sectors to transform and regenerate. In a regional context, long-term diversification is particularly relevant to industries such as agriculture, forestry and manufacturing, and these sectors may benefit from investment outcomes generated by higher population levels.

### **Improved Service Provision**

Population and household growth is a key driver for improved services in any particular location. This is especially so when critical mass is reached which makes the provision of such services viable. Although many of the larger Regional Cities already provide a full range of retail, business and community services, others do not. The generation of significantly higher population and household outcomes in each of the Regional Cities will therefore facilitate the provision of new (or expanded) services which might include upgraded hospitals and emergency services, additional educational facilities (eg TAFE, university campuses), expanded retail services (speciality shops and in some case Discount Department Stores) and improved public transport access (eg rail services, bus routes).

### **Enhanced Lifestyle Opportunities**

Larger population bases in the Regional Cities will enhance the liveability of these locations by facilitating improved recreational (sports centres, open space etc), cultural (libraries, arts centres, theatres etc) and entertainment facilities (cinemas etc). Liveability will also be enhanced by improved essential services such as broadband coverage. Increased available household spending is likely to generate more diverse retail (speciality shops, department stores) and dining options (cafes, restaurants, bars etc) creating more dynamic, diverse and vibrant regional communities.

### **Support for Small Towns**

Small towns located in close proximity to Regional Cities are likely to be the beneficiaries of higher population levels and associated economic benefits. Often, these towns have strong linkages to their Regional Centre and provide attractive and affordable housing options for those locating to the region. Additionally, small towns often provide lifestyle, recreational and tourism opportunities for new migrants and visitors to the region. Conversely, significantly improved infrastructure and resources in the Regional Cities (driven by population expansion) will further support small town residents by ensuring their retail, health and education and other needs are provided for within the region.

### **Social outcomes**

A number of social benefits arise from higher population levels in the Regional Cities. For example, ethnic diversity may be improved as many new residents are likely to be overseas migrants and this has positive implications for the community, such as the contribution of migrants' skills to local businesses and the introduction of new cultures and traditions. Other important outcomes are the attraction of young families to the Regional Cities which will enhance the long-term employment pool required to support the ageing population, and support for surrounding small towns (as noted above).

## 7.4 Supports Moving Forward in Victoria Policy

The State Governments' *Make it Happen in Provincial Victoria* Campaign, was aimed at reversing population decline in regional Victoria and restoring vital infrastructure and services to create the conditions for investment and economic growth. Government data indicates that over the period 1999-2005, regional Victoria's population increased by 66,000 persons and employment increased by 80,000 jobs. More than 300 major investments took place over this period with a total value of \$5.4 billion, and the value of tourism increased significantly.

The current *Moving Forward* policy aims to build on this success by assisting in attracting further population growth, employment generation, and investment and business opportunities for regional Victoria.

The *Moving Forward* policy (p5) states that:

*Moving Forward will help to power the next wave of growth and development in provincial Victoria by:*

- *further stimulating economic activity and attracting more people, jobs and investment;*
- *delivering the right foundation of infrastructure, skills and industry needed to drive future growth;*
- *supporting small towns to capture new opportunities and meet the challenges ahead; and*
- *working closely with local councils to help regional communities to solve problems, manage growth and change, plan for the future and maintain the quality and amenity of life in provincial Victoria.*

With regard to population growth, *Moving Forward* (p23) states that:

*People are provincial Victoria's greatest asset. To secure economic growth into the future, provincial Victoria must attract more people to live and work in regional areas, maintain the attractiveness of country lifestyles and develop diverse, vibrant and confident communities.*

Of particular importance are key overriding strategies aimed at increasing population growth in regional Victoria, and these include:

- The Provincial Victoria Growth Fund (\$100m) which seeks to drive economic and population growth through marketing and promotion, identifying new business and investment opportunities and improving the regional skills base.
- The Regional Development Infrastructure Fund (\$200m) which aims to provide vital infrastructure to support further population and business growth.

In summary, it is clear that current State Government policy actively supports ongoing population growth in regional Victoria, recognising that attraction of people to regional areas is the key to long-term investment and economic growth.

The analysis outlined in this report highlights the potential of the Regional Cities to support population outcomes higher than those outlined in VIF 2008 projections. Population outcomes as represented by the 25% and 30% scenarios deliver tangible net state benefits by reducing inefficiencies associated with population growth in metropolitan Melbourne, while at the same time creating in Regional Cities the environment for stronger communities and economic prosperity.

## 7.5 Conclusion

A number of Net State Benefits are associated with the redistribution of population growth from metropolitan Melbourne to the Regional Cities, including the following:

1. Efficient use of taxpayer funds associated with the provision of infrastructure and resources to support population growth.
2. Redistribution of population growth reduces stress on metropolitan Melbourne infrastructure and reduces associated congestion and greenhouse gas emission costs.
3. Better economic and social outcomes for regional communities are likely to be achieved, such as:
  - Enhanced investment opportunities for business
  - Improved skills base
  - Industry diversification
  - Improved service provision
  - Enhanced lifestyle
  - Support for small towns
  - Improved social outcomes
4. Support to State Government policy is achieved in relation to regional Victoria, particularly with regard to *Make it Happen in Provincial Victoria* and *Moving Forward* strategies.



## 8 KEY FINDINGS

### 1. Population Scenarios

The analysis contained in this report is based on the following three population scenarios (2006-2036):

- Base Case: 21% or VIF Scenario (ie regional Victoria secures 21% of future State population growth)
- Medium Case: 25% Scenario (ie regional Victoria secures 25% of future State population growth)
- High Case: 30% Scenario (ie regional Victoria secures 30% of future State population growth)

### 2. Future Requirements

- Considerable additional infrastructure and resources will be required in the Regional Cities, both in the short-term (the period to 2015) and the longer-term (the period to 2036).
- Additional requirements identified under the 21% (VIF Scenario) should be considered as the base case (or minimum requirements) as these are based on State Government projections.
- The 25% and 30% Scenario outcomes represent additional requirements under a situation where population growth is in effect 'redistributed' from metropolitan Melbourne to the Regional Cities.

Additional infrastructure and resource requirements under each scenario are summarised as follows:

#### Estimated Additional Infrastructure and Resource Requirements, Regional Cities 2015 and 2036

	2015			2036		
	21% Scenario (VIF)	25% Scenario	30% Scenario	21% Scenario (VIF)	25% Scenario	30% Scenario
1. Household water (billion litres)	+5.7	+6.9	+8.4	+18.8	+73.3	+77.8
2. Bus routes	+16	+19	+24	+53	+63	+76
3. Rail services	+150	+180	+220	+490	+590	+700
4. Household electricity (billion KWh)	+0.21	+0.26	+0.31	+0.71	+0.85	+1.02
5. Household gas (million GJ)	+2.0	+2.4	+2.9	+6.6	+7.8	+9.4
6. Broadband coverage (% coverage)	+23%	+23%	+23%	+28%	+28%	+28%
7. Dwellings	+32,640	+39,490	+48,040	+109,340	+130,410	+156,750
8. Residential land (ha)	+3,260	+3,950	+4,810	+10,930	+13,040	+15,680
9. Industrial land (ha)	+1,180	+1,420	+1,730	+3,860	+4,610	+5,540
10. Hospital beds	+470	+570	+690	+1,550	+1,850	+2,220
11. Hospital emergency department presentations	+45,550	+54,850	+66,490	+138,580	+165,180	+198,420
12. General practitioners	+100	+120	+150	+340	+405	+485
13. Primary school places	+1,380	+2,770	+4,500	+9,050	+12,940	+17,790
14. Secondary school places	+1,350	+2,570	+4,100	+8,240	+11,680	+15,970
15. University places	+1,830	+2,210	+2,680	+6,040	+7,200	+8,640
16. TAFE places	+11,250	+13,600	+16,530	+38,040	+45,350	+54,500
17. Library floorspace (m2)	+2,520m2	+3,010m2	+3,620m2	+7,930m2	+9,420m2	+11,290m2
18. Kindergarten places	+760	+990	+1,270	+1,680	+2,290	+3,050
19. Childcare places	+680	+870	+1,120	+1,360	+1,870	+2,500
20. Aged care beds	+2,070	+2,250	+2,480	+10,570	+11,490	+12,620
21. Arts and cultural facilities	+6	+8	+9	+21	+25	+30
22. Recreational facilities (indoor)	+5	+6	+8	+18	+22	+26
23. Household municipal waste (tonnes generated)	+25,000	+30,000	+35,000	+80,000	+95,000	+115,000

**3. Cost of Providing Future Infrastructure and Resources**

- Significant additional costs will be associated with future infrastructure and resource requirements in the Regional Cities under each of the three scenarios. The following table provides a summary of future additional infrastructure and operational costs associated with meeting identified requirements.

**Summary of Estimated Infrastructure and Resources Costs Required, Regional Cities 2015 and 2036**

Category	Requirement Type	2015			2036		
		21% Scenario (VIF)	25% Scenario	30% Scenario	21% Scenario (VIF)	25% Scenario	30% Scenario
1. Water	Operational and capital	\$34m pa	\$41m pa	\$50m pa	\$114m pa	\$136m pa	\$163m pa
2. Bus services	Operational and capital	\$8m pa	\$10m pa	\$13m pa	\$28m pa	\$33m pa	\$40m pa
3. Rail services	Capital	\$90m	\$110m	\$130m	\$295m	\$355m	\$420m
4. Rail services	Operational	\$45m pa	\$55m pa	\$65m pa	\$145m pa	\$175m pa	\$210m pa
5. Residential Land (servicing)	Capital	\$195m	\$236m	\$287m	\$654m	\$780m	\$937m
6. Hospital	Capital	\$165m	\$200m	\$240m	\$540m	\$650m	\$775m
7. Hospital	Operational	\$105m pa	\$125m pa	\$150m pa	\$355m pa	\$420m pa	\$505m pa
8. Emergency department costs	Operational	\$10m pa	\$12m pa	\$15m pa	\$30m pa	\$36m pa	\$43m pa
9. Aged care	Capital	\$365m	\$395m	\$435m	\$1,860m	\$2,020m	\$2,220m
10. Electricity	Operational and capital	\$75m pa	\$90m pa	\$110m pa	\$260m pa	\$310m pa	\$370m pa
11. VET	Capital	\$7m pa	\$8m pa	\$10m pa	\$24m pa	\$28m pa	\$34m pa
12. VET	Operational	\$38m pa	\$46m pa	\$34m pa	\$129m pa	\$153m pa	\$184m pa
13. Universities	Capital	\$0.7m pa	\$0.9m pa	\$1.1m pa	\$2.5m pa	\$2.9m pa	\$3.5m pa
14. Universities	Operational	\$13m pa	\$16m pa	\$19m pa	\$44m pa	\$52m pa	\$63m pa
15. Gas	Capital and operational	\$23m pa	\$28m pa	\$34m pa	\$77m pa	\$92m pa	\$110m pa
16. Broadband	Capital	Assumed funded	Assumed funded	Assumed funded	Assumed Funded	Assumed funded	Assumed funded
17. Industrial Land (servicing)	Capital	\$118m	\$142m	\$173m	\$386m	\$461m	\$554m
18. Schools	Operational and capital	\$24m pa	\$47m pa	\$75m pa	\$151m pa	\$215m pa	\$95m pa
19. Libraries	Operational and capital	\$2.6m pa	\$3.2m pa	\$3.9m pa	\$9.0m pa	\$10.7 m pa	\$12.8m pa
20. Kindergarten	Operational and capital	\$1.9m pa	\$2.5m pa	\$3.2m pa	\$4.2m pa	\$5.7m pa	\$7.6m pa
21. Childcare	Operational and capital	\$5.1m pa	\$6.5m pa	\$8.4m pa	\$10.2m pa	\$14.0m pa	\$18.8m pa
22. Arts and cultural	Capital	\$10.8m	\$14.4m	\$16.2m	\$37.8m	\$45.0m	\$54.0m
23. Arts and cultural	Operational	\$3.0m pa	\$4.0m pa	\$4.5m pa	\$10.5m pa	\$12.5m pa	\$15.0m pa
24. Recreational	Capital	\$5.5m	\$6.6m	\$8.8m	\$19.8m	\$24.2m	\$28.6m
25. Recreational	Operational	\$2.5m pa	\$3.0m pa	\$4.0m pa	\$9.0m pa	\$11.0m pa	\$13.0m pa
26. Waste Management	Operational and capital	\$3.5m pa	\$4.2m pa	\$4.9m pa	\$11.2m pa	\$13.3m pa	\$16.1m pa

**4. Infrastructure and Resources Cost Comparison: Metropolitan Melbourne v Regional Cities**

- The population of metropolitan Melbourne is forecast to expand by 1.8 million persons over the period 2006-2036 and this will significantly increase pressure on infrastructure and resources in the metropolitan area.
- 50% of future population growth in metropolitan Melbourne is anticipated to occur in outer suburban locations and many of these locations are poorly serviced in terms of public transport infrastructure, thus placing increasing pressure on the road network and thereby leading to economic inefficiencies associated with congestion costs.
- Estimates prepared by SGS Economics and Planning indicate the cost of congestion and greenhouse gas emissions associated with population growth in metropolitan Melbourne is approximately \$6,270

pa per additional person locating in the metropolitan area. By 2016, SGS data suggests that congestion and emissions costs in metropolitan Melbourne will be \$3.4 billion pa.

- The Regional Cities are well-placed to accommodate higher population levels and that this would assist in relieving urban growth pressures and costs on metropolitan Melbourne. This is due to factors such as land availability, competitive business costs, access to natural resources and low congestion costs.
- If regional Victoria were to attract 25% of anticipated State population growth between 2006-2036, an additional 50,000 persons (over and above VIF 2008 projections) would be living in the Regional Cities by the end of the period, while a 30% scenario would deliver an additional 115,000 persons. The 25% and 30% scenarios represent a 'redistribution' of population growth from metropolitan Melbourne to regional areas of 3% and 6% respectively.
- While the Regional Cities have the capacity to accommodate large increases in population, additional infrastructure and resources will be required to support this growth such as servicing of residential and industrial land; new rail infrastructure; additional hospitals, schools, childcare, kindergarten and aged care facilities; and improved community facilities such as libraries and arts centres.
- The costs of providing critical 'hard' infrastructure in Regional Cities compares favourably with congestion inefficiencies associated with a similar level of residential development in metropolitan Melbourne, especially in its outer suburbs. For example by 2036:
  - The additional cumulative cost of providing critical infrastructure to support a redistribution of 50,000 persons (25% Scenario) from metropolitan Melbourne to the Regional Cities is estimated to be \$1.0 billion; this compares with inefficiency costs of \$3.1 billion associated with the same number of persons being accommodated in metropolitan Melbourne.
  - The additional cumulative cost of redistributing 115,000 persons (30% Scenario) between metropolitan Melbourne and the Regional Cities is estimated to be \$2.1 billion compared to inefficiency costs of \$7.0 billion associated with this level of population being accommodated in metropolitan Melbourne.

##### **5. Net State Benefit Associated with Higher Regional Population Outcomes**

Many Net State Benefits are associated with higher populations in the Regional Cities, including:

- Efficient use of taxpayer funds compared to the location of a similar level of population in metropolitan Melbourne.
- Contribution to reduced stress on metropolitan Melbourne infrastructure and reduced congestion and greenhouse gas emission costs.
- Enhanced economic and social outcomes for regional communities such as new investment opportunities for business; improved skills pool; diversification of industry; enhanced service provision; creation of improved lifestyle opportunities; continued support for small towns; and improved social outcomes.
- Alignment with State Government policy with regard to regional Victoria, especially *Make it Happen in Provincial Victoria* and *Moving Forward* strategies.

## APPENDIX 1: REFERENCES

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