

# ECONOMIC OUTLOOK REPORT 4



**RIO** | regional  
investment  
opportunities

A PROJECT OF  
THE MURRAYLANDS REGIONAL DEVELOPMENT BOARD INC

# Murraylands Economic Outlook Report 4: Headline Analysis

A report prepared for



Prepared by



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## Abbreviations

ABS	Australian Bureau of Statistics
CPI	Consumer Price Index
fte	full time equivalent
GRP	Gross Regional Product
RIO	Regional Investment Opportunities
RISE	Regional Industry Structure and Employment
SA	South Australia

## Document History and Status

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## 1. Introduction

EconSearch Pty Ltd was contracted by the Murraylands Regional Development Board Inc to prepare a series of Economic Outlook Reports that provide investors, stakeholders and the community with an overview of the status of the Murraylands economy. Each Murraylands Economic Outlook Report consists of three key aspects, namely:

- Headline Analysis;
- Regional Investment Opportunities (RIO) Sector Analysis; and
- Standard Economic Analysis.

The aim of the Headline Analysis, the subject of this report, was to provide estimates of the regional economic impact in the Murraylands in 2007/08 of a range of scenarios relating to the further development of the Monarto intermodal road/rail facility, namely:

- the economic impact of an increase in freight movement in the region;
- the economic impact of an increase in food value adding and processing in the region; and
- the economic impact of an increase in wholesale distribution in the region.

The analysis presented in this report was undertaken by Lizzie Clark and Julian Morison (EconSearch Pty Ltd).



## 2. Method

The estimates of economic impact presented in this report were based on a *RISE* (Regional Industry Structure and Employment) model for the Murraylands region for 2002/03 prepared by the consultants for the Office of Regional Affairs (EconSearch 2005).

The method employed for estimation of economic impacts was input-output analysis. Input-output analysis provides a comprehensive economic framework that is extremely useful in the resource planning process. Broadly, there are two ways in which the input-output method can be used.

First, the input-output model provides a numerical picture of the size and shape of an economy and its essential features. The input-output transactions table can be used to describe some of the important features of an economy, the interrelationships between sectors and the relative importance of the individual sectors.

Second, input-output analysis provides a standard approach for the estimation of the economic impact of a particular activity. The input-output model is used to calculate industry multipliers that can then be applied to various growth or decline scenarios.

For a technical description of the input-output modelling procedure refer to Appendix 1 and for a glossary of input-output terminology refer to Appendix 2.

Economic impacts in this report have been specified in terms of the following indicators:

- output;
- employment; and
- contribution to gross regional product (GRP).

**Output** is a measure of the gross revenue of goods and services produced by commercial organisations plus gross expenditure by government agencies. This indicator needs to be used with care as it includes elements of double counting.

**Employment** is a measure of the number of working proprietors, managers, directors and other employees, in terms of the number of full-time equivalent (fte) jobs.

**Contribution to GRP** is a measure of the net contribution of an activity to the regional economy. Contribution to GRP is measured as value of output less the cost of goods and services (including imports) used in producing the output. It can also be measured as household income plus other value added (gross operating surplus and all taxes, less subsidies). It represents payments to the primary inputs of production (labour, capital and land). Using contribution to GRP as a measure of economic impact avoids the problem of double counting that may arise from using value of output for this purpose.

Estimates of the economic impact are presented in terms of

- direct impacts;
- flow-on (or indirect) impacts; and
- total impacts.

**Direct impacts** are the initial round of output, employment and household income generated by an economic activity.

**Flow-on (or indirect) impacts** are the sum of production-induced effects and consumption-induced effects. Production-induced effects are additional output, employment and household income resulting from re-spending by firms (e.g. transport contractors) that receive payments from the sale of services to firms undertaking, for example, meat processing. Consumption-induced effects are additional output, employment and household income resulting from re-spending by households that receive income from employment in direct and indirect activities.



### 3. Background

Its proximity to Adelaide and its strategic location in terms of major roads, highways and transport corridors has led to interest in developing an intermodal hub at Monarto. A number of background studies have been undertaken to investigate the potential for expanding development at Monarto with a view to increasing freight activity in the Murraylands region.

Significant industrial activity already occurs in the Monarto precinct, including:

- wholesale distribution;
- food processing; and
- manufacturing.

The *Monarto Precinct – Strategic Directions Report* was prepared in 2007 on behalf of the Murraylands Regional Development Board and the Adelaide Hills Regional Development Board to provide a summary of the scope for development in the broader Monarto area (Dynamic Project Delivery 2007). The report provides a series of recommendations relating to expanding industrial activity in Monarto as well as providing additional workforce housing.

The Monarto area and the existing and proposed industrial activity are illustrated in Figures 1.1 and 1.2, respectively.



Figure 3.1 Existing industry activity in the Monarto precinct

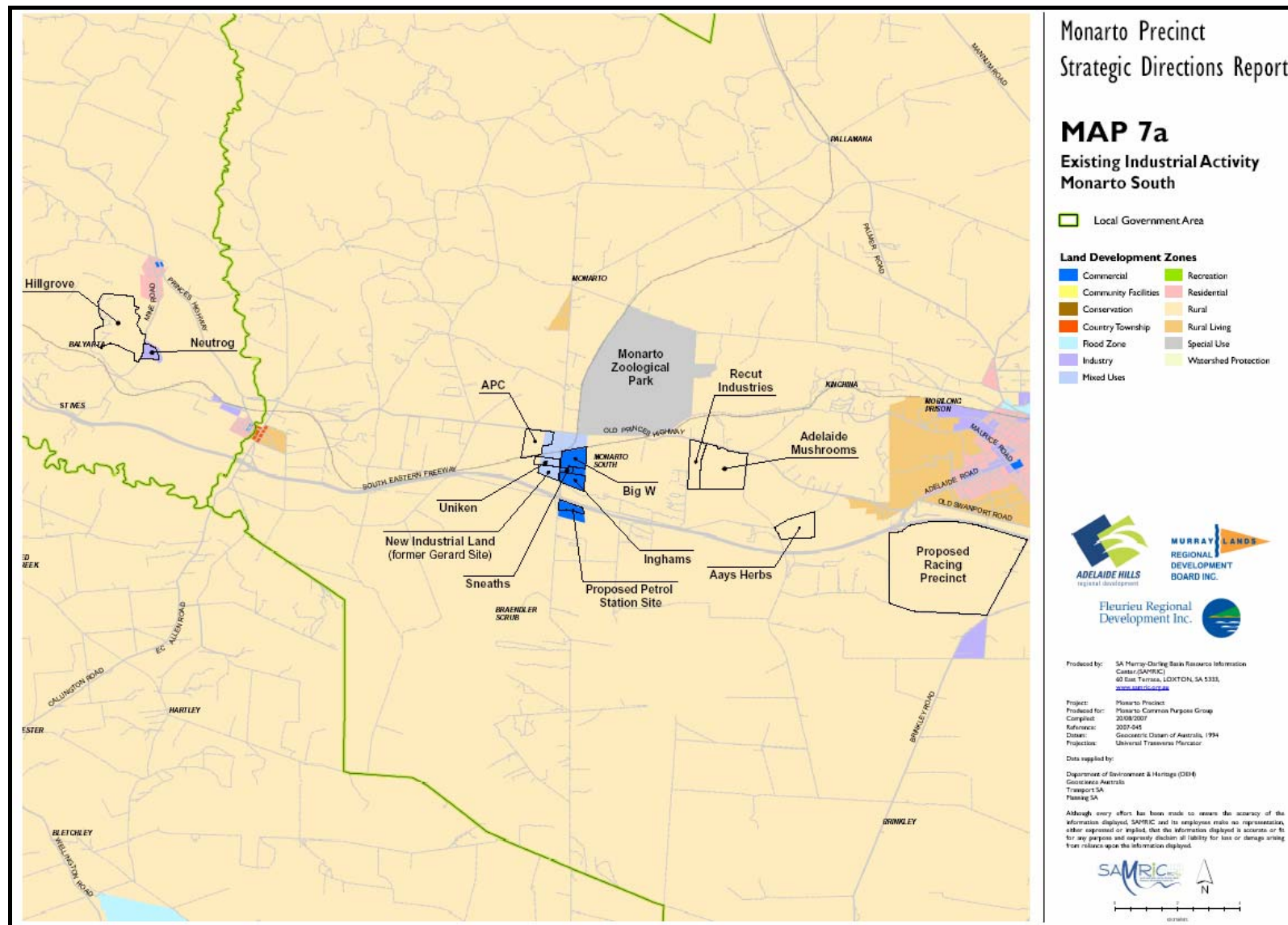
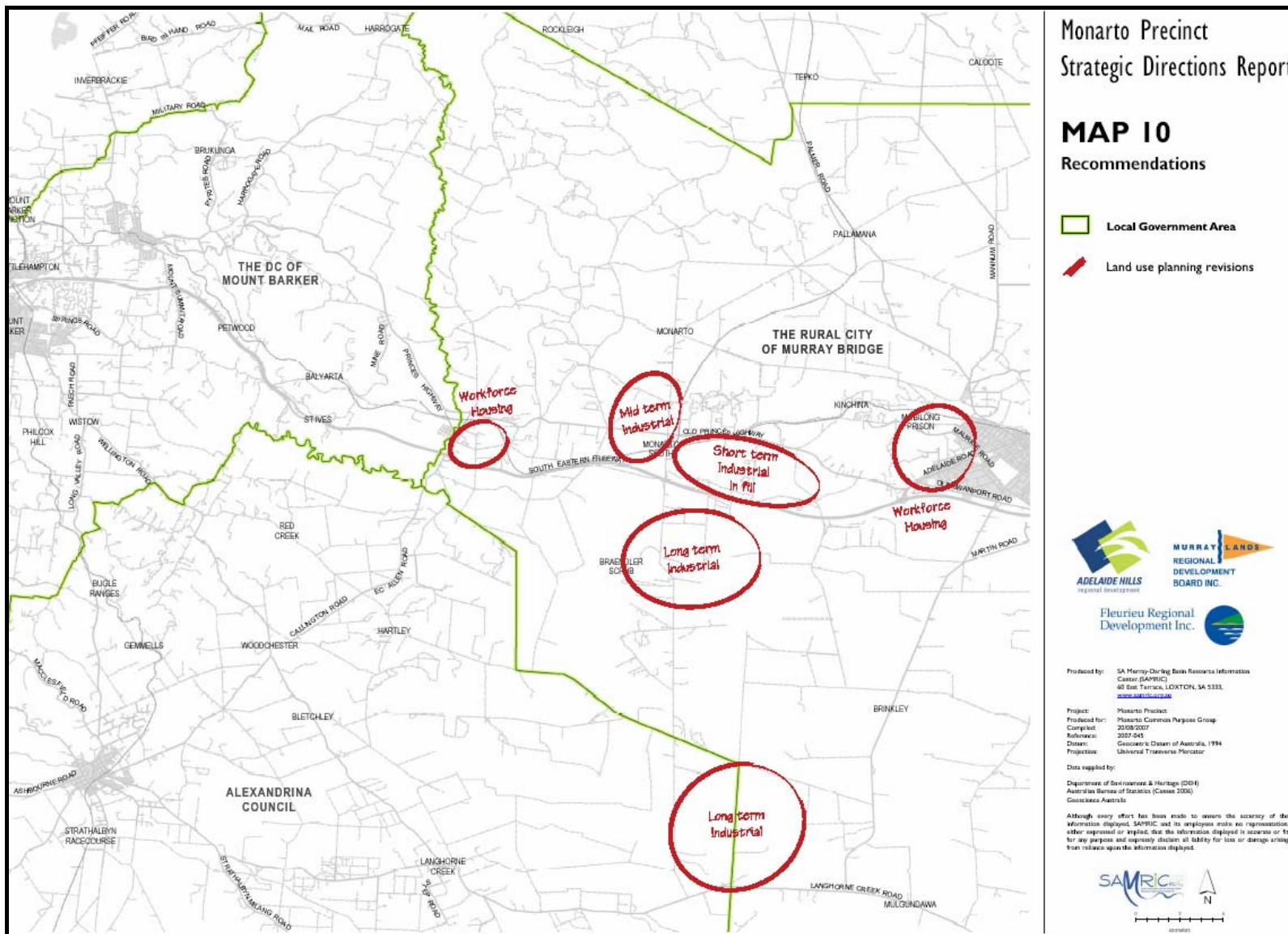


Figure 1.2 Recommended industry activity in the Monarto precinct



## 4. Data and Assumptions

The purpose of this section of the report is to summarise the data sources and assumptions that were used in imputing the regional economic impact of each scenario.

Economic analyses were undertaken for a range of scenarios relating to an increase in freight movement and industry development as a result of the expansion of an intermodal hub at Monarto.

It should be noted that analysis of each of the scenarios assumed that the Murraylands economy has the capacity to meet any additional demands for goods, services and labour. In a relatively open economy which has the capacity to increase output in most of the key supply industries, this is a valid assumption. However, if local supply conditions are tight (for either material inputs or labour), costs may increase as a result of higher demand and inputs, including labour, may be sourced from outside the region.

### 4.1 The Economic Impact of an Increase in Demand for Transport Services

Development of an intermodal road/rail facility at Monarto is expected to increase transport activity in the Murraylands region. Analyses have been undertaken to highlight the economic impact associated with two alternative transport growth scenarios:

- **Scenario One:** Freight movement in the Murraylands region increases by 10 per cent.
- **Scenario Two:** Freight movement in the Murraylands region increases by 25 per cent.

It should be noted that these scenarios were developed to highlight the potential economic benefits associated with increases in freight movement they are not a prediction of growth in freight movement associated with development at Monarto.

Estimates of economic impact were based on Census data obtained from the Australian Bureau of Statistics (ABS) on the number of employees by industry of employment. The total number of persons employed in the Murraylands region in the road transport, rail transport and transport support services is summarised in Table 4.1. Estimates of economic impact were calculated by increasing total employment in freight transport sectors by 10 to 25 per cent. Other measures of economic impact (output and GRP) were calculated based on the employment estimates.

The 2006 ABS Census data indicate that 365 persons were employed in industries relating to freight movement in the Murraylands. It should be noted that the Census data are based on the place of employment and could include persons who reside outside the Murraylands region.

Table 4.1 Employment in freight movement industries in the Murraylands region, 2006

Area	Employment by Industry			Total
	Road Transport	Rail Transport	Transport Support Services	
Karoonda East Murray	6	0	0	6
Mid Murray	67	0	6	73
Murray Bridge	173	0	3	176
Southern Mallee	23	0	0	23
The Coorong	81	3	3	87
Murraylands (no)	350	3	12	365
Murraylands (fte) <sup>a</sup>	334	3	11	348

<sup>a</sup> Estimates of the number of full-time equivalent (fte) employees were based on the average number of hours worked per employee.

Source: ABS Census of Population and Housing

## 4.2 The Economic Impact of an Increase in Food Value Adding and Processing

The RIO Sector Analysis prepared for the second in the series of Economic Outlook Reports included analysis of growth scenarios for food value adding and processing in the region. This analysis has been updated using more recent estimates of the value of food processing in the Murraylands region.

The value of food processing in the Murraylands region in 2006/07 was estimated to be \$627.7 million. This estimate was based on the *Food Scorecard* estimates for the region obtained from PIRSA (Steve Welfare, pers. comm.).

The two growth scenarios were based on the assumption that growth in food manufacturing of five, or ten, per cent would be achieved in 2007/08 by processing otherwise unprocessed, raw agricultural exports or increasing in imports of primary goods from outside the region. That is, the increase in food processing is not in response to an increase in local primary production.

## 4.3 The Economic Impact of an Increase in Wholesale Distribution

Development of an intermodal facility at Monarto has the potential to attract businesses and industries that require a wholesale storage and/or distribution point. Analyses were undertaken to highlight the economic impact associated with two alternative growth scenarios, namely:

- **Scenario One:** Wholesale distribution activity in the Murraylands region increases by 10 per cent.
- **Scenario Two:** Wholesale distribution activity in the Murraylands region increases by 25 per cent.



It should be noted that these scenarios were developed to highlight the potential economic benefits associated with increases in wholesale distribution activity and are not a prediction of growth in wholesale distribution associated with development at Monarto.

Estimates of economic impact were based on Census data obtained from the Australian Bureau of Statistics (ABS) on the number of employees by industry of employment. The total number of persons employed in the Murraylands region in the warehouse and storage sector and wholesale trade sector is summarised in Table 4.2.

Table 4.2 Employment in wholesale distribution industries in the Murraylands region, 2006

Area	Employment by Industry		
	Warehouse and Storage Services	Wholesale Trade	Total
Karoonda East Murray	3	17	20
Mid Murray	3	65	68
Murray Bridge	76	278	354
Southern Mallee	4	63	67
The Coorong	9	55	64
Murraylands (no)	95	478	573
Murraylands (fte) <sup>a</sup>	90	464	554

<sup>a</sup> Estimates of the number of full-time equivalent (fte) employees were based on the average number of hours worked per employee.

Source: ABS Census of Population and Housing

The ABS Census data indicate that 573 persons were employed in industries related to wholesale distribution in the Murraylands in 2006. It should be noted that the Census data are based on the place of employment and could include persons who reside outside the Murraylands region.

Estimates of economic impact were calculated by increasing total employment in the wholesale trade and warehouse and storage sectors by 10 or 25 per cent. Other measures of economic impact (output and GRP) were imputed based on the employment estimates.

## 5. The Economic Impact of an Increase in Demand for Transport Services

Estimates of economic impact have been prepared to highlight the economic benefits associated with two alternative scenarios, namely:

- **Scenario One:** Freight movement in the Murraylands region increases by 10 per cent.
- **Scenario Two:** Freight movement in the Murraylands region increases by 25 per cent.

It should be noted that the estimates of economic impact assume that the increase in freight movement will have no discernable effect on the cost of goods and services used in the transport sector or the cost of labour. In fact, the potential increase in demand for transport services in the Murraylands region is likely to come about, in part at least, from improved transport sector productivity which, in turn, could arise from investment in regional transport infrastructure (e.g. investment in an intermodal hub).

Nevertheless, as noted in Section 4, in a relatively open economy which has reasonable capacity to increase output in most of the key supply industries, this is a valid assumption. If local supply conditions are tight (for either materials inputs or labour), however, costs may increase, inputs and even labour may be sourced from outside the region and the impact on the Murraylands economy may not be as large as Tables 5.1 and 5.2 suggest.

### 5.1 Economic Impact of a 10 per cent Increase in Freight Movement

Estimates of the net regional economic impact of a 10 per cent increase in freight movement in the Murraylands region are provided in Table 5.1 and illustrated in Figures 5.1 and 5.2.

It is estimated that a 10 per cent increase in freight movement would result from an increase in transport services of \$4.9m (in 2008 dollars) (Table 5.1).

A 10 per cent increase in freight movement would generate an estimated 50 fte jobs in the Murraylands regional economy. Approximately 31 of these jobs would be generated directly in freight movement industries (road transport, rail transport and transport support services) and the remaining 19 jobs would be flow-on jobs in other sectors of the regional economy (Table 5.1).

Jobs in freight movement industries would account for 63 per cent of the total employment impact (Figure 5.1). Flow-on employment would be concentrated in trade (14 per cent), public administration (3 per cent), property and business services (2 per cent), health and community services (2 per cent) and manufacturing (2 per cent).

Table 5.1 Estimated net regional economic impact of a 10 per cent increase in freight movement in the Murraylands, 2007/08

Sector	Output <sup>a</sup>	Employment	Contribution to GRP
	\$m	fte	\$m
Freight Movement	4.9	31	2.3
Flow-on impacts			
<i>Trade</i>		7	0.2
<i>Public Administration and Defence</i>		1	0.1
<i>Property &amp; Business Services</i>		1	0.1
<i>Health &amp; Community Services</i>		1	0.1
<i>Manufacturing</i>		1	0.1
<i>Other Flow-ons</i>		7	0.7
Total flow-on impact <sup>b</sup>		19	1.3
Total <sup>b</sup>		50	3.6
Estimated proportion of regional total		0.3%	0.4%

<sup>a</sup> To avoid double counting only direct output impacts have being reported.

<sup>b</sup> Totals may not sum due to rounding.

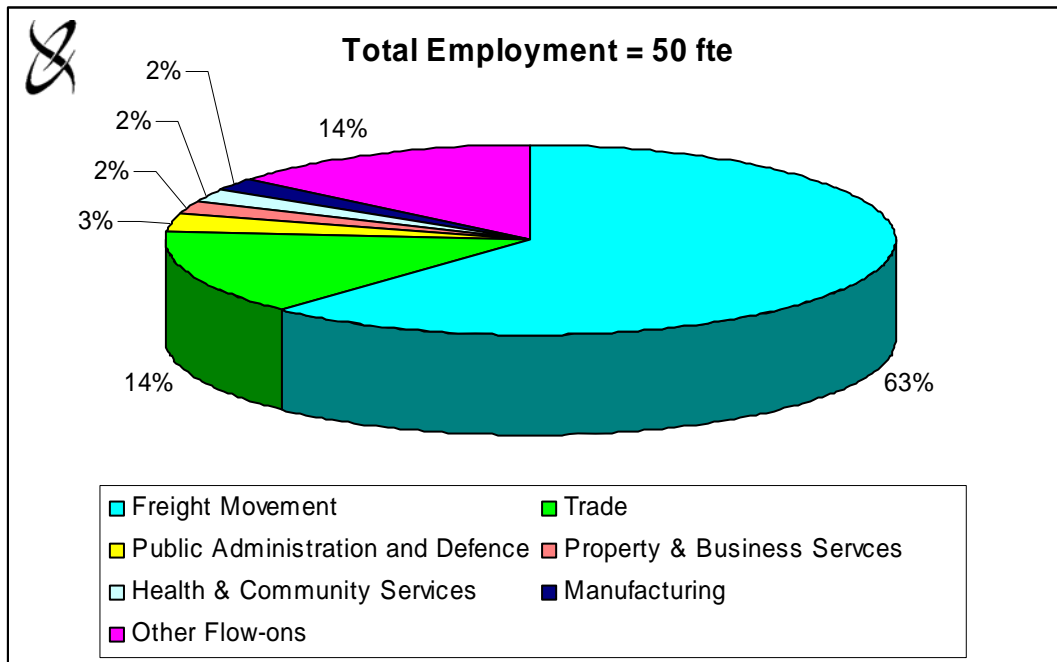
Source: EconSearch analysis.

An estimated \$3.6 million (in 2008 dollars) in GRP would be generated in the Murraylands regional economy in 2007/08 as a result of a 10 per cent increase in output by freight movement industries. An estimated \$2.3 million would be generated directly (road transport, rail transport and transport support services) and the remainder in flow-ons to other industry sectors (Table 5.1).

GRP in freight movement would account for 64 per cent of the total GRP impact (Figure 5.2). The remaining GRP would be generated in the trade (6 per cent), public administration (3 per cent), property and business services (3 per cent), health and community services (2 per cent) and manufacturing (2 per cent).

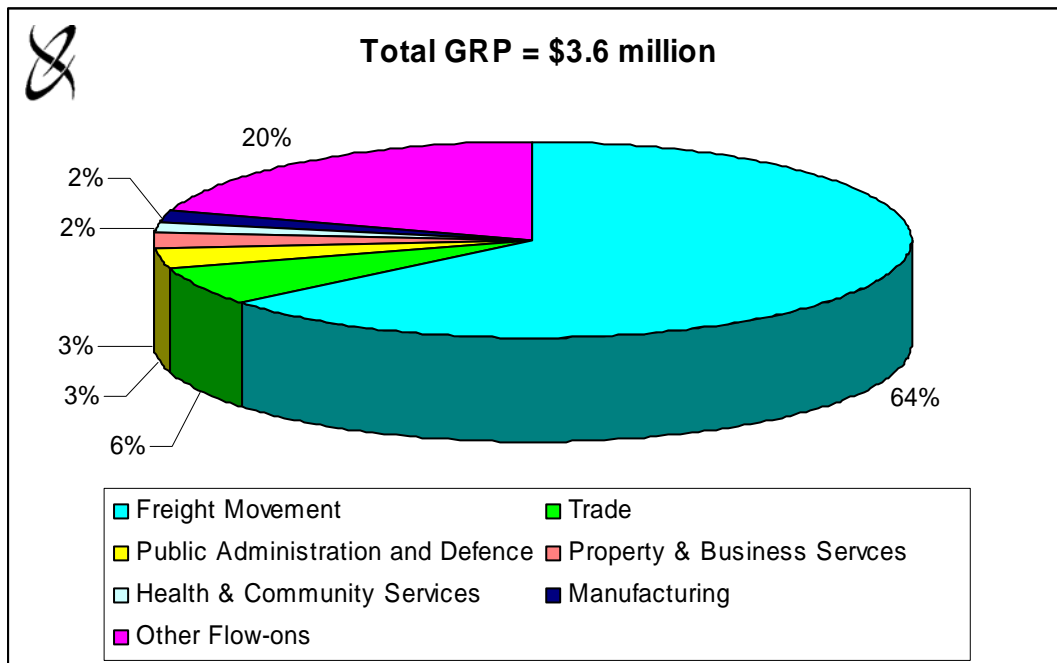


Figure 5.1 Distribution of employment impacts for a 10 per cent increase in freight movement in the Murraylands region, 2007/08



Source: EconSearch analysis.

Figure 5.2 Distribution of GRP impacts for a 10 per cent increase in freight movement in the Murraylands region, 2007/08



Source: EconSearch analysis.



## 5.2 Economic Impact of a 25 per cent Increase in Freight Movement

Estimates of the net regional economic impact of a 25 per cent increase in freight movement in the Murraylands region are provided in Table 5.2. The distribution of these impacts is similar to those presented in Figures 5.1 and 5.2.

It was estimated that a 25 per cent increase in freight movement would result from an increase in freight movement related output of \$12.2 million (in 2008 dollars) (Table 5.2)

It was estimated that 124 fte new jobs would be generated in the Murraylands regional economy as a result of a 25 per cent increase in freight movement. Approximately 77 of these jobs would be generated directly in freight movement industries and 47 flow-on jobs in other sectors of the regional economy.

An estimated \$9.0 million in GRP would be generated in the Murraylands economy by an increase in freight transport, \$5.8 million directly and \$3.3 million in flow-on GRP in other sectors of the regional economy.

Table 5.2 Estimated net regional economic impact of a 25 per cent increase in freight movement in the Murraylands, 2007/08

Sector	Output <sup>a</sup>	Employment	Contribution to GRP
	\$m	fte	\$m
Freight Movement	12.2	77	5.8
Flow-on impacts			
<i>Trade</i>		18	0.6
<i>Public Administration and Defence</i>		4	0.3
<i>Property &amp; Business Services</i>		3	0.2
<i>Health &amp; Community Services</i>		3	0.1
<i>Manufacturing</i>		3	0.2
<i>Other Flow-ons</i>		17	1.8
Total flow-on impact <sup>b</sup>		47	3.3
Total <sup>b</sup>		124	9.0
Estimated proportion of regional total		0.8%	0.9%

<sup>a</sup> To avoid double counting only direct output impacts have being reported.

<sup>b</sup> Totals may not sum due to rounding.

Source: EconSearch analysis.

## 6. The Economic Impact of an Increase in Food Value Adding and Processing

Estimates of economic impact have been prepared to highlight the economic benefits associated with two alternative scenarios, namely:

- **Scenario One:** Food value adding and processing in the Murraylands region increases by 5 per cent.
- **Scenario Two:** Food value adding and processing in the Murraylands region increases by 10 per cent.

The analysis assumes that the economy has the capacity to meet demands for additional goods, services and labour. The extent to which this is not the case, the estimates provided in Tables 6.1 and 6.2 will overstate the impact on the Murraylands economy.

### 6.1 Economic Impact of a 5 per cent Increase in Food Value Adding and Processing

Estimates of the regional economic impact of a 5 per cent increase in food manufacturing and processing in the Murraylands in 2007/08 are provided in Table 6.1 and illustrated in Figures 6.1 and 6.2.

Table 6.1 Estimated net regional economic impact of a 5 per cent increase in food value adding and processing

Sector	Output <sup>a</sup>	Employment	Contribution to GRP
	\$m	fte	\$m
Food Value Adding & Processing	31.4	116	7.6
Flow-on impacts			
<i>Trade</i>		29	1.1
<i>Transport &amp; Storage</i>		12	0.9
<i>Other Flow-ons</i>		13	2.0
Total flow-on impacts <sup>b</sup>		54	4.0
Total <sup>b</sup>		169	11.6
Proportion of regional total		1.0%	1.2%

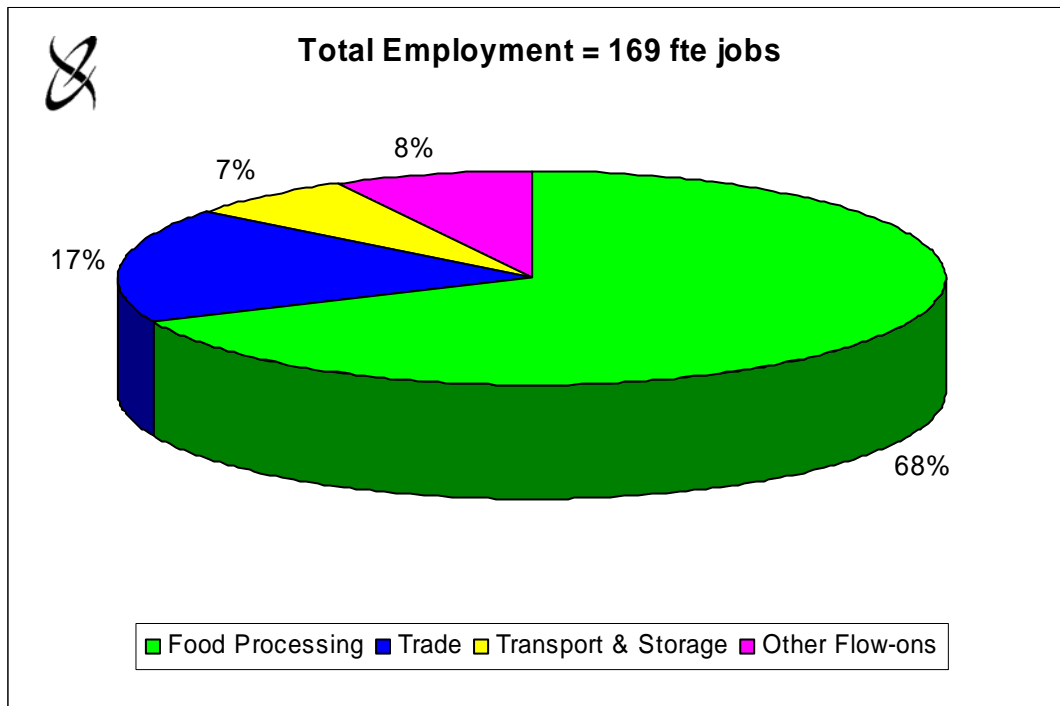
<sup>a</sup> To avoid double counting only direct output impacts have been reported.

<sup>b</sup> Totals may not sum due to rounding.

Source: EconSearch analysis.

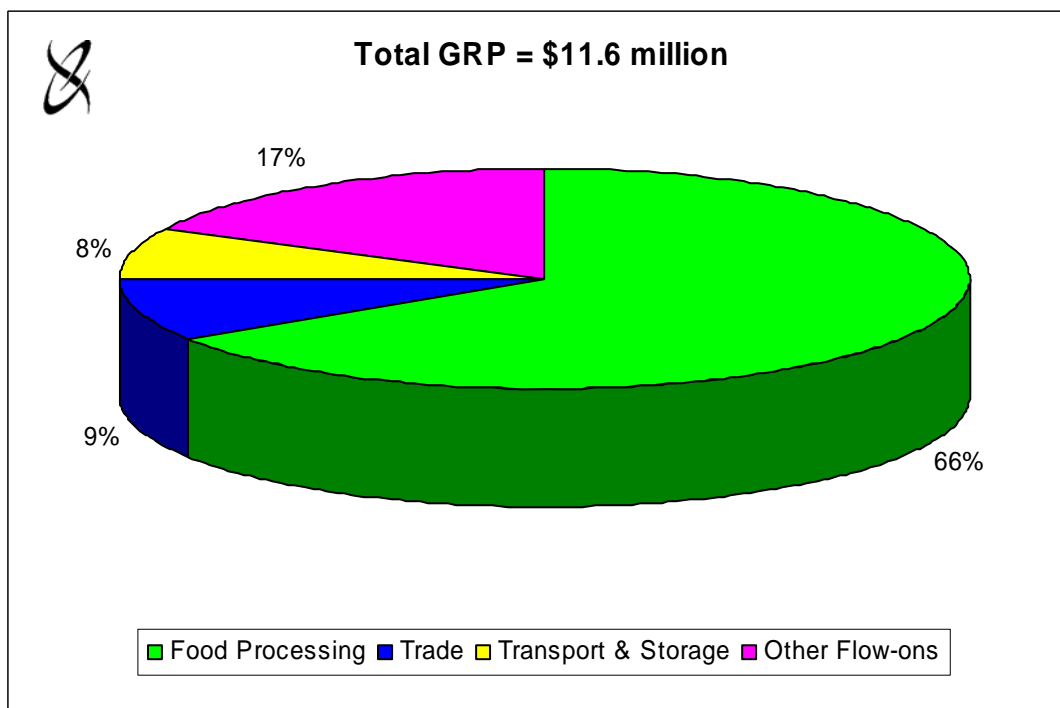
A 5 per cent increase in food value adding and processing would result in an increase in the value of output of just over \$31m (in 2008 dollars) (Table 6.1).

Figure 6.1 Distribution of employment impacts for a 5 per cent increase in food value adding and processing, 2007/08



Source: EconSearch analysis.

Figure 6.2 Distribution of GRP impacts for a 5 per cent increase in food value adding and processing, 2007/08



Source: EconSearch analysis.



It was estimated that almost 170 fte new jobs would be generated in the Murraylands region in response to a 5 per cent increase in food manufacturing and processing. Approximately 116 of these jobs (68 per cent) would be generated directly in food value adding and processing and 54 flow-on jobs would be generated in other sectors of the regional economy (Table 6.1).

Jobs generated in the food manufacturing and processing sector account for approximately 68 per cent of the total employment impact (Figure 6.1). Flow-on jobs would account for the balance of the total employment impact and would be concentrated in trade (17 per cent), transport and storage (7 per cent) and other service sectors.

It was estimated that \$11.6m (in 2008 dollars) in additional GRP would be generated in the Murraylands regional economy in 2007/08 in response to a 5 per cent increase in food value adding and processing. Approximately \$7.6m in GRP would be generated directly in food value adding and processing and \$4.0m in flow-on GRP would be generated in other sectors of the regional economy.

GRP generated in food value adding and processing would account for 66 per cent of the total impact, with the balance being attributable to flow-ons in other sectors of the regional economy (Figure 6.2).

## 6.2 Economic Impact of a 10 per cent Increase in Food Value Adding and Processing

Estimates of the regional economic impact of a 10 per cent increase in food value adding and processing in the Murraylands in 2007/08 are provided in Table 6.3. The distribution of the employment impacts and GRP impacts for the 10 per cent increase scenario are similar to that for the 5 per cent increase scenario (Figures 6.1 and 6.2).

Table 6.2 Estimated net regional economic impact of a 10 per cent increase in food value adding and processing

Sector	Output <sup>a</sup>	Employment	Contribution to GRP
	\$m	fte	\$m
Food Value Adding & Processing	62.8	231	15.3
Flow-on impacts			
<i>Trade</i>		58	2.1
<i>Transport &amp; Storage</i>		23	1.7
<i>Other Flow-ons</i>		26	4.0
Total flow-on impacts <sup>b</sup>		107	7.9
Total <sup>b</sup>		339	23.2
Proportion of regional total		2.1%	2.4%

<sup>a</sup> To avoid double counting only direct output impacts have been reported.

<sup>b</sup> Totals may not sum due to rounding.

Source: EconSearch analysis.

A 10 per cent increase in food value adding and processing would result in an increase in the value of output of almost \$63m (in 2008 dollars).

It was estimated that almost 340 fte new jobs would be generated in the Murraylands region response to 10 per cent growth in food value adding and processing. Approximately 230 of these jobs would be generated directly in the food value adding and processing sector and 107 flow-on jobs would be generated in other sectors of the regional economy.

It was estimated that \$23.2m (in 2008 dollars) in additional GRP would be generated in the Murraylands regional economy each year in response to a 10 per cent increase in food value adding and processing. Approximately \$15.3m in GRP would be generated directly in food value adding and processing and \$7.9m in flow-on GRP would be generated in other sectors of the regional economy.



## 7. The Economic Impact of an Increase in Wholesale Distribution

Estimates of regional economic impact of an increase in wholesale distribution in the Murraylands region were undertaken for two scenarios, namely:

- **Scenario One:** Wholesale distribution activity in the Murraylands region increases by 10 per cent.
- **Scenario Two:** Wholesale distribution activity in the Murraylands region increases by 25 per cent.

The analyses assume that the Murraylands economy has the capacity to meet demands for additional goods, services and labour. The extent to which this is not the case, the estimates provided in Tables 7.1 and 7.2 will overstate the impact on the Murraylands economy.

### 7.1 The Economic Impact of a 10 per cent Increase in Wholesale Distribution

Estimates of the net regional economic impact relating to a 10 per cent increase in wholesale distribution in the Murraylands region are provided in Table 7.1 and illustrated in Figures 7.1 and 7.2.

A 10 per cent increase in wholesale distribution would result in an estimated \$7.6m increase in output (in 2008 dollars), \$1.3m in to warehouse and storage services and \$6.4m in wholesale trade (Table 7.1).

It was estimated that 78 fte new jobs would be generated in the Murraylands regional economy in response to a 10 per cent increase in wholesale distribution. Approximately 49 of these jobs (63 per cent) would be generated directly in the wholesale distribution sector and 29 flow-on jobs would be generated in other sectors of the regional economy.

Job generated in the warehouse and storage services and wholesale sales sectors would account for 10 and 53 per cent, respectively, of the total employment impact (Figure 7.1). Flow-on jobs would account for the balance of the total employment impact and would be concentrated in trade, public administration and defence, property and business services, health and community services and manufacturing.

It was estimated that \$5.3 million (in 2008 dollars) in additional GRP would be generated in the Murraylands regional economy in response to a 10 per cent increase in wholesale distribution. Approximately \$3.3 million in GRP would be generated directly in the wholesale distribution sector and \$2.0 million in flow-on GRP would be generated in other sectors of the regional economy.

GRP generated in the warehouse and storage services and wholesale trade sectors would account for 11 and 51 per cent, respectively, of the total impact, with the balance being attributed to flow-ons in other sectors of the regional economy (Figure 7.2).

Table 7.1 Estimated net regional economic impact of a 10 per cent increase in wholesale distribution in the Murraylands, 2007/08

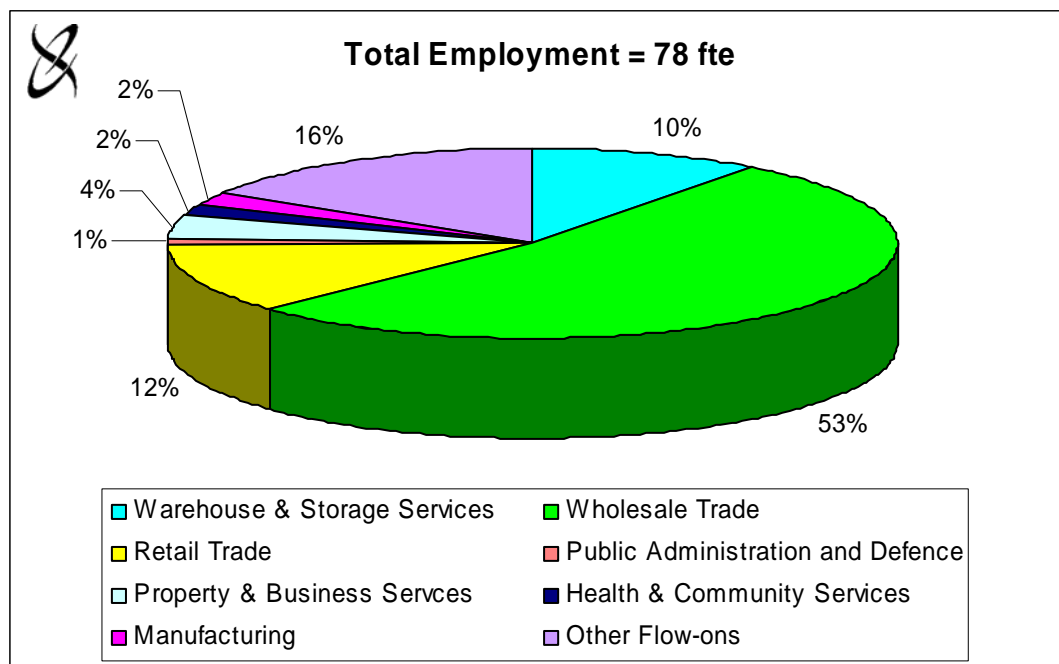
Sector	Output <sup>a</sup>	Employment	Contribution to GRP
	\$m	fte	\$m
Direct impacts (wholesale distribution)			
<i>Warehouse &amp; Storage Services</i>	1.3	8	0.6
<i>Wholesale Trade</i>	6.4	41	2.7
Total direct impact <sup>b</sup>	7.6	49	3.3
Flow-on impacts			
<i>Retail Trade</i>		9	0.3
<i>Public Administration and Defence</i>		1	0.1
<i>Property &amp; Business Services</i>		3	0.2
<i>Health &amp; Community Services</i>		2	0.1
<i>Manufacturing</i>		2	0.1
<i>Other Flow-ons</i>		13	1.3
Total flow-on impact <sup>b</sup>		29	2.0
Total <sup>b</sup>		78	5.3
Estimated proportion of regional total		0.5%	0.5%

<sup>a</sup> To avoid double counting only direct output impacts have being reported.

<sup>b</sup> Totals may not sum due to rounding.

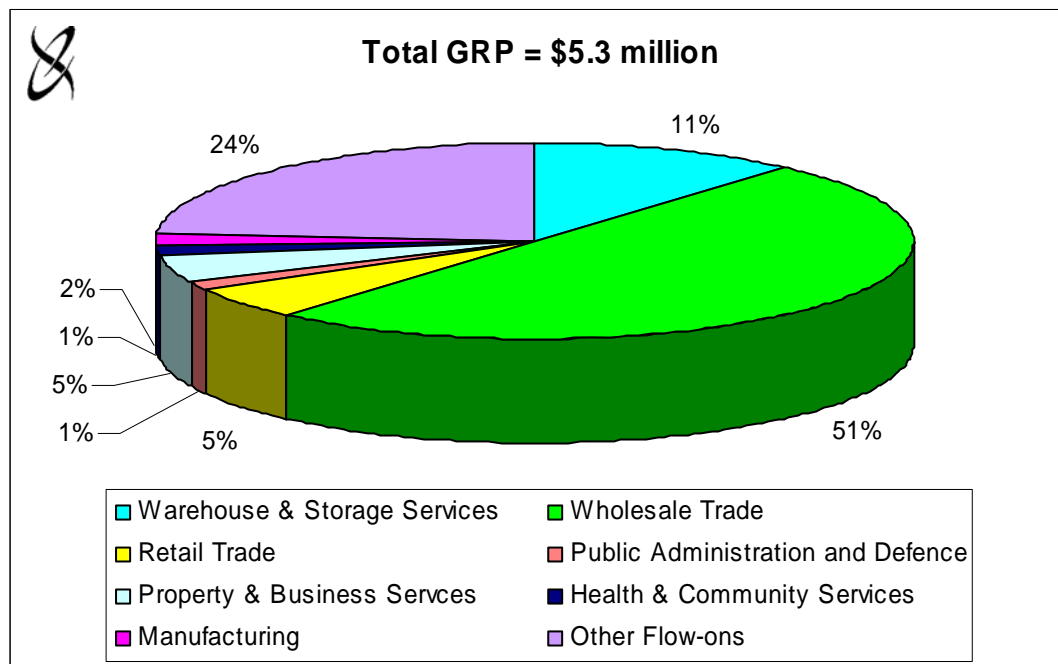
Source: EconSearch analysis.

Figure 7.1 Distribution of employment impacts of a 10 per cent increase in wholesale distribution in the Murraylands, 200708



Source: EconSearch analysis.

Figure 7.2 Distribution of GRP impacts of a 10 per cent increase in wholesale distribution in the Murraylands, 2007/08



Source: EconSearch analysis.

## 7.2 The Economic Impact of a 25 per cent Increase in Wholesale Distribution

Estimates of the net regional economic impact relating to a 25 per cent increase in wholesale distribution in the Murraylands region are provided in Table 7.2. The distribution of these impacts is similar to those presented in Figures 7.1 and 7.2.

A 25 per cent increase in wholesale distribution would result from an estimated \$19.1m increase in output (in 2008 dollars), \$3.2m in warehouse and storage sectors and \$15.9m in wholesale trade (Table 7.2).

It was estimated that approximately 195 fte new jobs would be generated in response to a 25 per cent increase in wholesale distribution in the Murraylands. The majority of these jobs would be generated in the wholesale trade (103 fte) and warehouse and storage services (20 fte) sectors and the remainder (73 fte) in flow-ons to other sectors of the regional economy.

It was estimated that \$13.3m (in 2008 dollars) in GRP was generated in the Murraylands regional economy as a result of 25 per cent growth in wholesale distribution. An estimated \$8.1m as a direct result of the growth in wholesale distribution and \$5.1m in flow-on GRP in other sectors of the regional economy (Table 7.2).

Table 7.2 Estimated net regional economic impact of a 25 per cent increase in wholesale distribution in the Murraylands, 2007/08

Sector	Output <sup>a</sup>	Employment	Contribution to GRP
	\$m	fte	\$m
Direct impacts (wholesale distribution)			
<i>Warehouse &amp; Storage Services</i>	3.2	20	1.5
<i>Wholesale Trade</i>	15.9	103	6.7
Total direct impact <sup>b</sup>	19.1	123	8.1
Flow-on impacts			
<i>Trade</i>		23	0.8
<i>Public Administration and Defence</i>		2	0.2
<i>Property &amp; Business Services</i>		8	0.6
<i>Health &amp; Community Services</i>		4	0.2
<i>Manufacturing</i>		4	0.3
<i>Other Flow-ons</i>		32	3.0
Total flow-on impact <sup>b</sup>		73	5.1
Total <sup>b</sup>		195	13.3
Estimated proportion of regional total		1.2%	1.4%

<sup>a</sup> To avoid double counting only direct output impacts have being reported.

<sup>b</sup> Totals may not sum due to rounding.

Source: EconSearch analysis.



## 8. Summary Results

A number of separate analyses were undertaken to highlight the various aspects of the Monarto intermodal hub namely:

- the economic impact of an increase in freight movement;
- the economic impact of an increase in food processing and value adding; and
- the economic impact of an increase in wholesale distribution.

The results of each of the analyses are summarised in Table 8.1. Details of the data used and assumptions made in undertaking each analysis are provided in Section 4. Detailed results of each individual analysis are provided in Section 5 to 7.

The total employment impact ranged from almost 300 fte employees for the 'low' scenarios (10 per cent growth in freight movement and wholesale distribution and 5 per cent growth in food processing) to almost 660 fte employees for the 'high' scenarios (25 per cent growth in freight movement and wholesale distribution and 10 per cent growth in food processing). The total employment impacts represent between 1.8 and 4.0 per cent of the total employment in the region.

Total GRP impact ranged from \$20.5m for the 'low' scenarios to \$45.5m for the 'high' scenarios. Total GRP impacts represent between approximately 2.1 and 4.7 per cent of the regional total.

It is reiterated that these estimated impacts are for different growth scenarios; they are not predictions of growth in themselves. To make such forecasts, it would be necessary to know the likely productivity improvement (cost advantage) the Monarto intermodal hub would provide transport users and the increase in regional production and demand for transport services that is likely to result from such productivity gains.



Table 8.1 Summary of results of freight movement, wholesale distribution and food processing growth scenarios for the Murraylands region, 2007/08

Sector	Low			High		
	Output <sup>a</sup>	Employment	GRP	Output <sup>a</sup>	Employment	GRP
	\$m	fte	\$m	\$m	fte	\$m
Direct impacts						
<i>Freight Movement</i>	4.9	31	2.3	12.2	77	5.8
<i>Wholesale Trade</i>	6.4	41	2.7	15.9	103	6.7
Warehouse & Storage Services	1.3	8	0.6	3.2	20	1.5
<i>Food Processing &amp; Value Adding</i>	31.4	116	7.6	62.8	231	15.3
Total direct	43.9	196	13.2	94.1	431	29.2
Total flow-ons		102	7.3		227	16
Total		297	20.5		658	45.5

Source: Tables 5.1, 5.2, 6.1, 6.2, 7.1 and 7.2.

## References

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We have prepared the above report exclusively for the use and benefit of our client. Neither the firm nor any employee of the firm undertakes responsibility in any way whatsoever to any person (other than to the above mentioned client) in respect of the report including any errors or omissions therein however caused.



## Appendix 1 Input-Output Methodology

### Overview of Input-Output Analysis

Input-output analysis provides a comprehensive economic framework that is extremely useful in the resource planning process. Broadly, there are two ways in which the input-output method can be used.

First, the input-output model provides a numerical picture of the size and shape of an economy and its essential features. The input-output transactions model can be used to describe some of the important features of an economy, the interrelationships between sectors and the relative importance of the individual sectors.

Second, input-output analysis provides a standard approach for the estimation of the economic impact of a particular activity. The input-output model is used to calculate industry multipliers that can then be applied to various development scenarios.

### Linkages between sectors

The standard approach for the estimation of the regional economic impact of a particular activity, such as pig production, is to employ *input-output analysis*. The input-output model conceives the economy of the region as being divided up into a number of sectors, and this allows the analyst to trace expenditure flows.

To illustrate this, consider the example of a piggery that, in the course of its operation, purchases goods and services from other sectors. These goods and services would include feed, power, and, of course, labour. The direct employment created is regarded in the model as an expenditure flow into the household sector, which is one of several non-industrial sectors recognised in the input-output model.

Upon receiving expenditure by the piggery, the other sectors in the regional economy engage in their own expenditures. For example, as a consequence of winning a contract for work with a piggery, a feedstuff producer buys materials from its suppliers and labour from its own employees. Suppliers and employees in turn engage in further expenditure, and so on. These *indirect effects*, as they are called, are part of the impact of the piggery on the regional economy. They must be added to the *direct effects* (which are expenditures made in immediate support of the piggery itself) in order to arrive at a measure of the total impact of the piggery.

It may be thought that these indirect effects go on indefinitely, and that their amount adds up without limit, the presence of *leakages*, however, prevents this from occurring. In the context of the impact on a *regional* economy, an important leakage is expenditure on imports, that is, products or services that originate from *outside the region, state or country* (e.g. machinery).

Thus some of the expenditure on imports to the region is lost to the local economy. Consequently, the indirect effects get smaller and smaller in successive expenditure rounds, due to this and other leakages. Hence the total expenditure created in the local economy is limited in amount, and so (in principle) it can be measured.

The performance of the input-output analysis calculations require a great deal of information. The analyst needs to know the magnitude of various expenditures and where they occur. Also needed is information on how the sectors receiving this expenditure share *their* expenditures among the various sectors from whom they buy, and so on, for the further expenditure rounds.

In applying the input-output model, the standard procedure is to determine the direct or first-round expenditures only. No attempt is made to pursue such inquiries on expenditure in subsequent rounds, not even (for example) to trace the effects in the local economy on household expenditures by piggery employees on food, clothing, entertainment, and so on, as it is impracticable to measure these effects for an individual case, here the piggery.

The input-output model is instead based on a set of assumptions about constant and uniform proportions of expenditure. If households in general in the local economy spend (say) 13.3 per cent of their income on food and non-alcoholic beverages, it is assumed that those working in piggeries do likewise. Indeed, the effects of all expenditure rounds after the first are calculated by using such standard proportions (*multiplier* calculations).

### Multipliers

Multipliers are an indication of the strength of the linkages between a particular sector and the rest of the regional economy. As well, they can be used to estimate the impact of a change in that particular sector on the rest of the economy. As noted above, detailed explanations on calculating input-output multipliers (and the underlying assumptions) are provided in any regional economics or input-output analysis textbook (see for example Jensen and West (1986)). Suffice to note that they are calculated through a routine set of mathematical operations based on coefficients derived from the input-output transactions model.

### Input-output transactions model

The structure and linkages of a local economy can be described with the aid of input-output analysis. Input-output analysis, as an accounting system of inter-industry transactions, is based on the notion that no industry exists in isolation.

This assumes, within any economy, each firm depends on the existence of other firms to purchase inputs from, or sell products to, for further processing. The firms also depend on final consumers of the product and labour inputs to production. An input-output transactions model is a convenient way to illustrate the purchases and sales of goods and services taking place in an economy at a given time.

Input-output models provide a numerical picture of the size and shape of the economy and its essential features. Products produced in the economy are aggregated into a number of groups of industries and the transactions between them recorded in the transactions model. The rows and columns of the input-output model can be interpreted in the following way:

- The rows of the input-output model illustrate sales for intermediate usage (to other firms) and for final demand (consumers, exports, capital formation).
- The columns show the origin of the inputs and hence the purchases made at that time (labour, capital and intermediate inputs).

- Each item is shown as a purchase by one sector and a sale by another, thus constructing two sides of a double accounting schedule.

In summary, the input-output transactions model can be used to describe some of the important features of a regional economy, the interrelationships between sectors, and the relative importance of the individual sectors. The model is also used for the calculation of sector multipliers and the estimation of economic impacts arising from some change in the local economy.



## Appendix 2 Glossary of Input-Output Terminology

**Basic value** is the price received for a good or service by the producer. It is also known as *producers' price*. It excludes indirect taxes and transport, trade and other margins.

**Consumption-induced effects** are additional output, employment and income resulting from re-spending by households that receive income from employment in direct and indirect activities. Consumption-induced effects are sometimes referred to as "induced effects".

**Contribution to gross state/regional product** is calculated as the value of output less the cost of goods and services (including imports) used in producing the output. It represents payments to the primary inputs of production (labour, capital and land). Contribution to GSP/GRP is consistent with standard measures of economic activity, such as gross domestic, State or regional product and it provides an assessment of the net contribution to regional economic growth of a particular enterprise or activity.

**Direct effects** are the initial round of output, employment and income generated by an economic activity.

**Employment** is the number of working proprietors, managers, directors and other employees, in terms of the number of full-time equivalent jobs.

**Exports** refers to the sale of goods and services to final consumers outside the region of interest. In a state input-output model, exports refers to the sale of goods and services interstate and overseas. In a regional input-output model exports refers to the sale of goods and services interstate, overseas and to other regions within the state.

**Flow-on effects** are the sum of the production-induced effects and the consumption-induced effects.

**Household income** is wages and salaries, drawings by owner operators and other payments to labour including overtime payments and income tax, but excluding payroll tax.

**Input-output analysis** is an accounting system of inter-industry transactions based on the notion that no industry exists in isolation.

**Input-output model** is a transactions model that illustrates and quantifies the purchases and sales of goods and services taking place in an economy at a given point in time. It provides a numerical picture of the size and shape of the economy and its essential features. Each item is shown as a purchase by one sector and a sale by another, thus constructing two sides of a double accounting schedule.

**Multiplier** is an index (ratio) indicating the overall change in the level of activity that results from an initial change in economic activity. They are an indication of the strength of the linkages between a particular sector and the rest of the regional economy. They can be used to estimate the impact of a change in that particular sector on the rest of the economy.

**Other Final Demand** includes government expenditure, private and public sector investment (gross fixed capital formation) and change in stocks (inventories).

**Other Value Added** includes gross operating surplus and all taxes, less subsidies.

**Output** is gross revenue of goods and services produced by commercial organisations plus gross expenditure by government agencies.

**Purchasers' price** is the price paid for a good or service paid by the purchaser. It includes indirect taxes and transport, trade and other margins.

**Production-induced effects** are additional output, employment and income resulting from re-spending by firms that receive income from the sale of goods and services to firms undertaking, for example, agricultural activities. Production-induced effects are sometimes referred to as "indirect effects".

**Total impact** is the sum of the direct effects and the flow-on effects.

**Type I multiplier** is calculated as  $(\text{direct effects} + \text{production-induced effects}) / \text{direct effects}$ .

**Type II multiplier** is calculated as  $(\text{direct effects} + \text{production-induced effects} + \text{consumption-induced effects}) / \text{direct effects}$ .

