

ECONOMIC OUTLOOK REPORT 3



RIO | regional
investment
opportunities

A PROJECT OF
THE MURRAYLANDS REGIONAL DEVELOPMENT BOARD INC.

Murraylands Economic Outlook Report 3: RIO Sector Analysis

A report prepared for



Prepared by



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Abbreviations

ABS	Australian Bureau of Statistics
fte	full time equivalent
GRP	Gross Regional Product
PIRSA	Primary Industries and Resources South Australia
RIO	Regional Investment Opportunities

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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. The 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 RIO Sector Analysis, the subject of this report, was to provide analysis of a major industry sector. This report provides estimates of regional economic impact of housing growth in the Murraylands at its current (2006/07) level and of two alternative growth scenarios, namely:

- Scenario 1: impact of housing growth of 27 per cent over 10 years; and
- Scenario 2: impact of housing growth of 45 per cent in Murray Bridge and 27 per cent in the remainder of the region over 10 years.

These scenarios are consistent with estimates of population growth in *The Murray Bridge Urban Growth Plan* (QED 2007).

Each council within the Murraylands region has land available for housing developments. *The Murray Bridge Urban Growth Plan* (QED 2007) has identified areas for residential development and potential for urban infill within the Rural City of Murray Bridge. Land is available within the Mid Murray Council area for residential development, opportunities also exists for conversion of existing fruit blocks for residential use. Opportunities exist in the Karoonda East Murray area to provide affordable housing for the expanding Murray Bridge workforce. Townships within the Southern Mallee Council area have implemented strategies to attract and retain young people in the region including making affordable land available for housing. Areas and townships within the Coorong District Council have land suitable for affordable housing blocks for the expanding workforce and also for holiday makers and retirees. Expansion of industry throughout the Murraylands will require affordable housing to be made available for working families (Murraylands RDB).

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. Data and Assumptions

3.1 The Economic Impact of Current Housing Growth

Data on the number and value of residential building approvals were obtained from the Australian Bureau of Statistics (ABS) (*Building Approvals, Australia* Cat. No. 8731.0). The total number of building approvals in the Murraylands increased from 233 in 2001/02 to 298 in 2006/07, and increase of 28 per cent. The total value of approvals increased from almost \$24 million in 2001/02 to nearly \$45 million in 2006/07, an increase of 87 per cent (Table 3.1).

Table 3.1 Number and value of new residential dwelling approvals in the Murraylands, 2001/02 to 2006/07

Year	Number of Approvals	Value of Approvals ^a	Value per Approval ^a
	no.	\$'000	\$'000
2001/02	233	23,985	103
2002/03	237	27,535	116
2003/04	278	33,756	121
2004/05	253	35,882	142
2005/06	241	36,313	151
2006/07	298	44,954	151

^a In 2007 dollars.

Source: ABS (2007)

The total number of residential dwellings in the Murraylands region increased by approximately 2.1 per cent in 2006/07. This estimate is based on the number of building approvals reported in 2006/07 (Table 3.1) and the total number of residential dwellings in the Murraylands (2006 Census of Population and Housing).

3.2 The Economic Impact of Housing Growth: Scenario One

Scenario one is based on the assumption that the number of residential dwellings in the Murraylands region will increase by 27 per cent over 10 years. This scenario was devised based on population projections in *The Murray Bridge Urban Growth Plan* (QED 2007). The total number and value of residential dwellings required to achieve 27 per cent growth over 10 years are detailed in Table 3.2.

Table 3.2 Number and value of dwelling approvals, growth scenario one, 2006/07 to 2016/17

Year	Number of Approvals	Value of Approval	Value per Approval
	no.	\$'000	\$'000
2006/07	298	44,954	151
2007/08	313	47,191	151
2008/09	328	49,428	151
2009/10	342	51,665	151
2010/11	357	53,903	151
2011/12	372	56,140	151
2012/13	387	58,377	151
2013/14	402	60,614	151
2014/15	417	62,851	151
2015/16	431	65,088	151
2016/17	446	67,326	151
Total	3,796	572,583	151

^a In 2007 dollars.

Source: ABS (2007).

To achieve 27 per cent housing growth over 10 years, the total number of building approvals would have to increase by approximately 15 per year. The total number of new residential dwellings in the Murraylands would need to increase by almost 3,800 with a total value of \$572.6 million (in 2007 dollars).

The number of approvals is based on the assumption that the average value per approvals remains at the 2006/07 level (excluding the effects of inflation).

3.3 The Economic Impact of Housing Growth: Scenario Two

Scenario two is based on the assumption that over the next 10 years the number of dwellings will increase by 45 per cent in the Murray Bridge local government area and 27 per cent in the remainder of the Murraylands. This scenario was devised based on population projections in *The Murray Bridge Urban Growth Plan* (QED 2007). The total number and value of residential dwellings required to achieve this growth over 10 years are detailed in Table 3.3.

Table 3.3 Number and value of dwelling approvals, scenario two, 2007/08 to 2016/17

Year	Number of Approvals		Value of Approval \$'000	Value per Approval \$'000
	Murray Bridge	Remainder of Region		
	no.	no.		
2006/07	169	129	44,954	151
2007/08	196	140	50,659	151
2008/09	223	151	56,365	151
2009/10	249	162	62,070	151
2010/11	276	173	67,775	151
2011/12	303	184	73,481	151
2012/13	330	195	79,186	151
2013/14	356	206	84,892	151
2014/15	383	218	90,597	151
2015/16	410	229	96,302	151
2016/17	437	240	102,008	151
Total	3,161	1,899	763,335	151

^a In 2007 dollars.

Source: ABS (2007).

The total number of new residential dwellings would need to increase by just over 5,000 (3,160 in Murray Bridge and 1,900 in the remaining areas) with a total value of \$763 million (in 2007 dollars).

The number of approvals is based on the assumption that the average value per approval remains at the 2006/07 level (excluding the effects of inflation).

4. Regional Economic Impact of Current Housing Growth

Estimates of the regional economic impact of residential housing construction in the Murraylands region in 2006/07 are provided in Table 4.1.

Table 4.1 Estimated regional economic impact of residential housing construction, 2006/07

Sector	Output ^a \$m	Employment fte	Contribution to GRP \$m
Residential Building	45	136	21.4
Flow-on impacts			
<i>Trade</i>		45	1.5
<i>Property & Business Services</i>		12	0.9
<i>Transport & Storage</i>		7	0.5
<i>Other Service Sectors</i>		20	1.4
<i>Other Flow-ons</i>		50	4.7
Total flow-on impacts ^b		135	9.1
Total ^b		270	30.5

^a To avoid double counting only direct output impacts have been reported.

^b Totals may not sum due to rounding.

Source: EconSearch analysis.

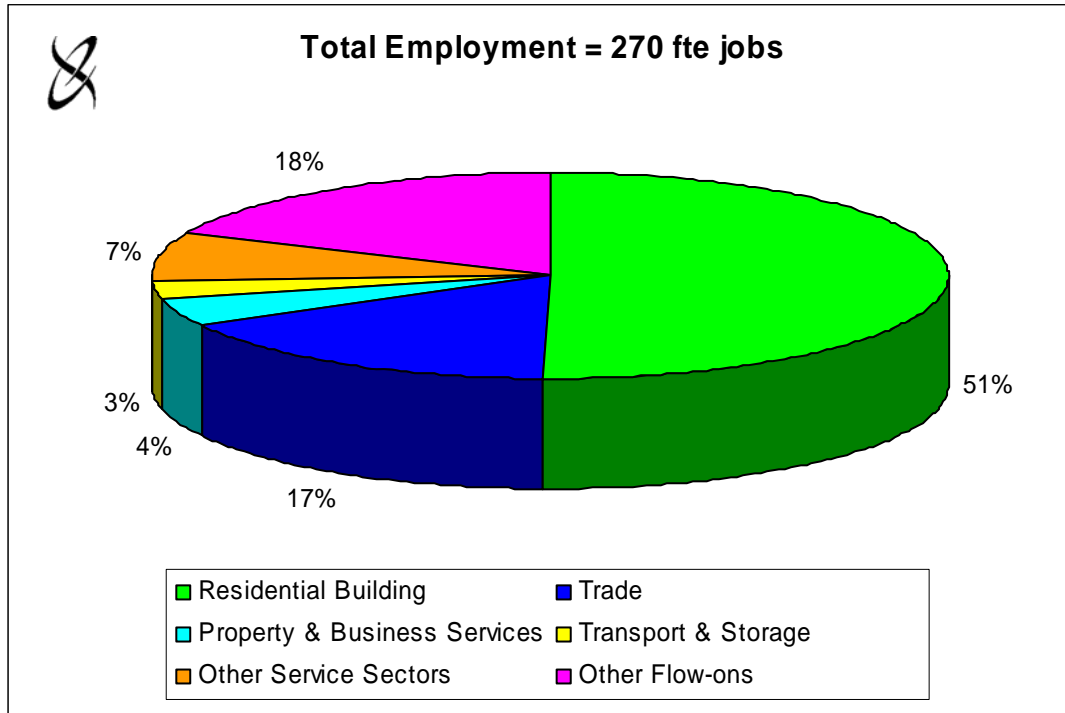
It was estimated that 270 fte jobs were generated in the Murraylands regional economy in 2006/07 by residential construction activity. Approximately 136 of these jobs were generated directly in the residential building sector and 135 flow-on jobs in other sectors of the regional economy. The total employment impact was 1.7 per cent of the regional total in 2006/07.

Jobs in residential building accounted for 51 per cent of the total employment impact (Figure 4.1). Flow-on employment was concentrated in trade, property and business services and transport and storage sectors.

It was estimated that \$30.5m (in 2007 dollars) in GRP was generated in the Murraylands regional economy in 2006/07 by residential construction activity, \$21.4m directly and \$9.1m in flow-on GRP in other sectors of the regional economy.

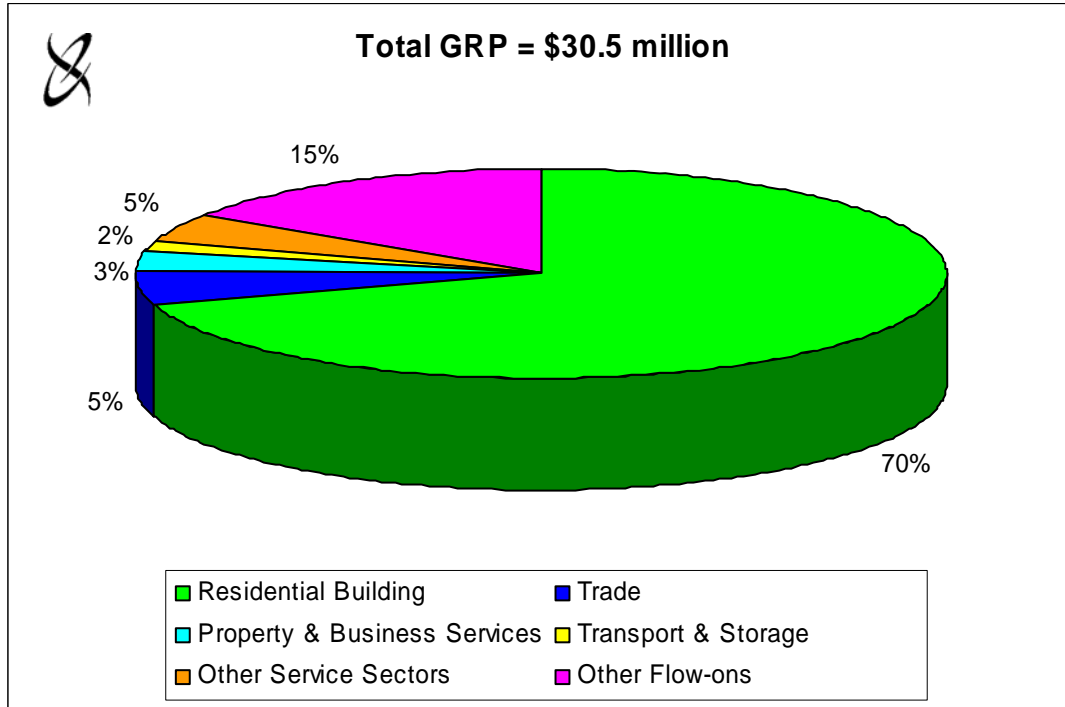
GRP in the residential building sector accounted for 70 per cent of the total GRP impact (Figure 4.2). The remaining GRP was generated in the trade, property and business services and transport and storage sectors of the regional economy.

Figure 4.1 Distribution of employment impacts for residential construction, 2006/07



Source: EconSearch analysis.

Figure 4.2 Distribution of GRP impacts for residential construction, 2006/07



Source: EconSearch analysis.

5. Regional Economic Impact of Housing Growth: Scenario One

Estimates of the net regional economic impact of 27 per cent growth in residential construction over 10 years are provided in Table 5.1. The distribution of these impacts is similar to those presented in Figures 4.1 and 4.2.

Table 5.1 Net economic impact of residential housing growth, scenario one

Sector	Output ^a \$m	Employment fte	Contribution to GRP \$m
Residential Building	21	62	10.2
Flow-on impacts		0	0.0
<i>Trade</i>		21	0.7
<i>Property & Business Services</i>		5	0.4
<i>Transport & Storage</i>		3	0.3
<i>Other Service Sectors</i>		9	0.7
<i>Other Flow-ons</i>		23	2.2
Total flow-on impacts ^b		61	4.3
Total ^b		123	14.5

^a To avoid double counting only direct output impacts have been reported.

^b Totals may not sum due to rounding.

Source: EconSearch analysis.

It was estimated that 123 fte additional jobs would be generated in the Murraylands regional economy over the 10 years in response to growth in residential construction. Just over 60 of these jobs would be generated directly in the residential building sector and the remaining 61 in flow-on jobs in other sectors of the regional economy.

Over the 10 years, the net impact of this growth would represent a 0.4 per cent increase in regional employment above 2006/07 levels.

It was estimated that \$14.5 m (in 2007 dollars) in additional GRP would be generated in the Murraylands regional economy over the 10 years in response the growth in residential construction. Approximately \$10.2m in additional GRP would be generated directly in the residential building sector and \$4.3m in additional flow-on GRP would be generated in other sectors of the regional economy.

6. Regional Economic Impact of Housing Growth: Scenario Two

Estimates of the net regional economic impact of growth in residential construction of 45 per cent in Murray Bridge and 27 per cent growth in the remainder of the Murraylands region over 10 years are provided in Table 6.1. The distribution of these impacts is similar to those presented in Figures 4.1 and 4.2.

Table 6.1 Net economic impact of residential housing growth, scenario two

Sector	Output ^a \$m	Employment fte	Contribution to GRP \$m
Residential Building	61	176	29.0
Flow-on impacts		0	0.0
<i>Trade</i>		59	2.0
<i>Property & Business Services</i>		16	1.3
<i>Transport & Storage</i>		9	0.7
<i>Other Service Sectors</i>		26	1.9
<i>Other Flow-ons</i>		64	6.4
Total flow-on impacts ^b		174	12.3
Total ^b		350	41.2

^a To avoid double counting only direct output impacts have been reported.

^b Totals may not sum due to rounding.

Source: EconSearch analysis.

It was estimated that 350 fte additional jobs would be generated in the Murraylands regional economy over the 10 years in response to growth of in residential construction. Almost 180 of these jobs would be generated directly in the residential building sector and the remaining 170 in flow-on jobs in other sectors of the regional economy.

Over the 10 years, the net impact of this growth would represent a 1.2 per cent increase in regional employment above 2006/07 levels.

It was estimated that \$41.2m (in 2007 dollars) in additional GRP would be generated in the Murraylands regional economy over the 10 years in response the growth in residential construction. Approximately \$29.0 m in additional GRP would be generated directly in the residential building sector and \$12.3 m in additional flow-on GRP would be generated in other sectors of the regional economy.

References

Australian Bureau of Statistics, 2007, *Building Approvals, Australia*, Cat. No. 8731.0, Canberra, August.

EconSearch 2005, *Regional Development Board Economic Models*, a series of RISE impact models prepared for the Office of Regional Affairs, Department of Trade and Economic Development.

Jensen, R.C. and West, G.R. 1986, *Input-Output for Practitioners, Vol.1, Theory and Applications*, Office of Local Government, Department of Local Government and Administrative Services, AGPS, Canberra.

QED Pty Ltd 2007, *Murray Bridge Urban Growth Plan*, report prepared for The Rural City of Murray Bridge, Murraylands Regional Development Board, South Australian Murray-Darling Basin Natural Resources Management Boards and SA Water, April.

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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 $(\text{direct effects} + \text{production-induced effects} + \text{consumption-induced effects}) / \text{direct effects}$.

