



# The Contribution of Montague Island Nature Reserve to Regional Economic Development





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Technical Report

Economics and  
Regulatory Reform Unit,  
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## PREFACE

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National Parks and other protected areas play a very significant role in the conservation of nature and of indigenous and non-indigenous cultural heritage. However, such protected areas are also being increasingly recognised by policy makers and communities as valuable public assets in terms of their potential to encourage economic activity in rural and regional areas.

The NPWS Economics and Regulatory Reform Unit is currently carrying out a program of research to identify the economic and social benefits of protected areas for rural and regional communities. The present study is part of this program, and examines the regional economic impacts associated with the management and recreational use of the Montague Island Nature Reserve in the Eurobodalla Shire, on the South Coast of NSW.

## EXECUTIVE SUMMARY

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Montague Island is located 350 kilometres south of Sydney, and 9 kilometres offshore from Narooma on the south coast of NSW. The island supports around 10,000 nesting pairs of little penguins, as well as providing breeding habitats for crested terns, silver gulls and shearwaters. In addition, Australian fur seals regularly inhabit the rocky foreshores of the Island - one of the few remaining haul-out sites on the Australian coastline.

The island contains a lighthouse which has been operating since 1881 and a collection of historic buildings. It also has significance for indigenous cultural heritage.

The National Parks and Wildlife Service (NPWS) restricts access to the Island in order to protect the seal, penguin and seabird habitats from disturbance and damage. However, the Service offers guided tours, which include an inspection of the historic lighthouse and buildings, and a view of the fur seal colony. These tours cater for approximately 4,300 visitors to the Island each year.

This report describes the results of an economic impact assessment carried out by the NPWS to identify the contribution of the Montague Island Nature Reserve to the regional economy of the Eurobodalla Local Government Area (LGA), in which the Island is situated. This contribution arises from NPWS expenditure on managing and protecting the natural and cultural heritage values of the Nature Reserve, and the expenditure on goods and services made by visitors to the Island, which accrues to the local economy.

Input-Output (I-O) analysis has been used in this study to assess the impacts of this expenditure on the regional economy of the Eurobodalla LGA. This technique is used to illustrate the financial linkages which connect industries in a regional economy, and enables prediction of changes in gross regional output, gross regional product, household income and employment.

To conduct an I-O analysis, an input-output, or regional transactions, table needs to be constructed. This table identifies the purchases and sales of goods and services between sectors in an economy over a specified time period. Once a table has been constructed, financial transaction information about the impacting agent is incorporated into it in order to estimate the impact of the agent on the local economy. These impacts are expressed as direct effects and flow-ons (indirect effects). Multipliers, which measure the size of these flow-ons relative to the initial direct impact, are also calculated.

Information on NPWS expenditure on managing Montague Island Nature Reserve was provided by staff at the NPWS District Office in Narooma. Visitor

expenditure information was obtained from a visitor survey undertaken by NPWS tour guides.

The study found that the direct impact of the \$121,000 per year spent by the NPWS in managing the Montague Island Nature Reserve generated an estimated \$17,000 in flow-ons to other sectors through production induced effects, and a further \$95,000 to other sectors, as households employed in the management of the Nature Reserve spent their income on locally supplied goods and services. Therefore, the total impact of the Service's management expenditure is estimated at \$233,000 in gross regional output. This represents a multiplier of 1.92, indicating that for every dollar spent by the NPWS on the management of the Reserve, another \$0.92 in gross regional output is generated elsewhere in the local economy.

The total gross regional output figure above includes an estimated total of \$162,000 in gross regional product, including \$121,000 in household income paid to the equivalent of 7 jobs in the local economy.

Expenditure by visitors to the Island contributed an estimated \$1.4M in gross regional output per year to the regional economy, which was linked to \$695,000 in gross regional product, including household income of \$468,000 paid to the equivalent of 19 people in the local economy.

The aggregated NPWS and visitor expenditure impacts are estimated to be \$1.65M in gross regional output and \$857,000 in gross regional product, including \$588,000 in household incomes which equates to 26 local jobs.

It should be noted that potential variations in visitor responses and visitor type, and survey administration, may mean that the information obtained from surveys may not always relate only to the study area in question. In the present study, the visitor information collected represents the total expenditure made in the local economy by people who visit the study site. As part of this total expenditure may relate to other attractions in the region, it may be inaccurate to attribute all of the local expenditure to the study site alone.

Notwithstanding this, all of the impacts associated with NPWS management expenditure can be attributed to the existence of Montague Island Nature Reserve. Furthermore, the location and unique experience offered by the Reserve can also help attract visitors to the region, and local businesses, eg. in Narooma, can then capture the expenditure made by these visitors.

The results of this study have important implications from a management and regional development perspective. For example, although programs to improve facilities and increase visitor numbers to the Reserve would be expected to lead to increased economic benefits to the regional economy, there would also be a

risk that the unforeseen cost of achieving such benefits would be a reduction in the economic use and non-use values associated with the Island. The loss of these values through excessive tourism could reduce the well-being of the community.

An additional implication for regional development is that, although protected areas such as national parks and nature reserves can contribute to local economic development through expenditure on management, and attracting visitors from outside the region, these benefits are not the only ones that can flow from the existence of a protected area in a particular region. If rural and regional communities are to take advantage of these additional opportunities for economic development, then local public and private organisations will need to provide the principal goods and services that visitors want to purchase, such as accommodation and other supporting attractions, as well as the services needed by NPWS for protected area management.

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## 1. INTRODUCTION

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### 1.1 Background

National Parks and other protected areas such as nature reserves, are generally considered in terms of their biological attributes and the numerous recreation and tourism opportunities they may provide. However, such areas can also have significant use and non-use economic values and can contribute to the economic activity of the regions within which they are located (NPWS 1999, Bennett *et al.* 1996, Gillespie 1997).

This study examines the direct and indirect regional economic contribution associated with NSW National Parks and Wildlife Service (NPWS) expenditure on the management of Montague Island Nature Reserve, and expenditure on local goods and services made by visitors to the Reserve. It has been carried out as part of a series of investigations into the economic value and regional economic impacts of selected areas of the NPWS estate.

### 1.2 Objectives of the Study

The three principal objectives of the study are :

1. to present a regional economic profile of the Eurobodalla LGA using an input-output (I-O) table developed for the NPWS by the Centre for Agricultural and Regional Economics (CARE);
2. to develop economic sectors relevant to the activities of the Montague Island Nature Reserve for incorporation into the I-O table; and
3. to use the I-O table to determine the direct and indirect regional economic contribution associated with the management and recreational use of the Nature Reserve.

### 1.3 Outline of the Study

Following the introduction and background to the study in Section 1, Section 2 of the study discusses the application of input-output (I-O) analysis for estimating the regional economic impacts associated with Montague Island Nature Reserve. Section 3 considers the expenditure activities associated with the management and recreational use of the Reserve. The economic impacts related to the management and visitation use of the nature reserve are discussed in Section 4, which presents the results of the I-O study, including the estimated regional economic impacts associated with the management and recreational use of the Reserve. Section 5 discusses some conclusions drawn from the results of the study.

## 1.4 Montague Island Nature Reserve

The following background information has been adapted from the Montague Island Nature Reserve - Plan of Management (NPWS 1996).

### *Location*

Montague Island Nature Reserve occupies a small island, located 9 km offshore, south-east of the coastal town of Narooma, on the South Coast of NSW approximately 350 kilometres south of Sydney (see Figure 1.1 below).

### *Landform and Soils*

The island itself is the second largest island off the NSW coast after Lord Howe Island, and is 1.4 kilometres long, 525m wide and oriented north-south. A ravine divides it into a northern section, covering approximately one third of the total area (82 ha), and a larger, rockier southern section, on which the lighthouse and other developments are located. The coastline is rugged with cliffs in some areas, especially around the northern section. These features, combined with the lightstation, give the Island its dramatic landscape quality.

Figure 1-1: Location of Montague Island Nature Reserve



Much of the Island is covered by remnant sand dunes up to 1 metre thick, with thin soils. Swampy areas occur on slopes, particularly near the southern end of the Island.

#### *History and Significance of Montague Island*

The island was managed from the 1880s for the provision of lighthouse, weather recording and coastal surveillance functions. In 1953, it became the first Flora and Fauna Reserve under the control of the National Trust of Australia, while continuing its lighthouse functions. In 1987, after automation of the lighthouse, management of the Island was transferred to the NPWS, and the Island was dedicated as a nature reserve in 1990, except for the small area containing the lighthouse, which remains under control of the Australian Maritime Safety Authority. The other lightstation buildings, the lightkeeper's quarters and sheds are dedicated as part of the nature reserve.

In order to protect its conservation values, public access to the Island is restricted to guided tours conducted by the NPWS in association with private tour operators.

In addition to its status as a nature reserve, the Island has been classified by the National Trust as a Landscape Conservation Area for its scenic, scientific and historical values. The lightstation buildings are entered on the Register of the National Estate because of the architectural quality of the tower and residences. The natural, cultural and social values of the Island are discussed in more detail below.

#### *Natural Values*

Montague Island is one of the most important breeding areas along the NSW coast for sea birds, particularly little penguins (*Eudyptula minor*), wedge-tailed shearwaters (*Puffinus pacificus*), short-tailed shearwaters (*Puffinus tenuirostris*), sooty shearwaters (*Puffinus griseus*), silver gulls (*Larus novaehollandiae*) and crested terns (*Sterna bergii*).

The threatened sooty oystercatcher (*Haematopus fuliginosus*) breeds on the Island, and the wandering albatross (*Diomedea exulans*) and fleshy-footed shearwater (*Puffinus carneipes*) have been recorded in adjacent waters.

The island contains the only important Australian fur seal (*Arctocephalus pusillus*) haul-out site along the NSW coast and is the northernmost colony in eastern Australia. Large numbers of seals were commercially harvested here during the early part of last century. New Zealand fur seals (*Arctocephalus forsteri*) also use Montague Island as a haul-out site.

### *Cultural Values*

The island contains numerous Aboriginal sites, comprising artefact scatters and middens. These sites have high scientific value because of their potential to provide information about Aboriginal use of island resources, such as the consumption of mutton birds and penguins, the manufacture of water craft and the transportation of raw materials for making stone artefacts. Such island Aboriginal sites are rare.

The southern section of the Island has significant historical value, with over 110 years of light-keeping represented on the Island by the tower, the keeper's quarters and associated features such as sheds, gardens, tracks and jetties.

The lightstation retains most of its original form and fabric and has changed little from the time of construction to the present day. This enhances its historical value. The modifications that have been made reflect progressive changes in lighthouse technology and improved living standards and working conditions for lighthouse staff and their families. The lightkeeper's quarters were designed by the colonial architect James Barnet in the Georgian style. The materials used in their construction were an adaptation to the exposed island environment, and the distinctive architectural style of the quarters reflects the social values and the work ethic of the time.

The historic features scattered over the Island provide evidence of the harsh island life experienced by the families that occupied the Island for 100 years. These features provide significant potential for further cultural research.

### *Landscape and Aesthetic Value*

The island and the lighthouse station are visually impressive and are significant district landmarks.

The island gives a feeling of peace and isolation, with high scenic values which vary according to weather and light conditions. A long stretch of coastline is visible from the Island and large numbers of birds can be seen and heard on the Island and in the surrounding waters. The spectacular island setting is characterised by granitic rock exposed between tussock plants, which forms a dramatic backdrop to the lightstation and other buildings.

### *Eco-tourism and Educational Value*

The presence of wildlife and interesting historic features give Montague Island high value for ecotourism and education. With its combination of features, it offers a unique destination close to the popular coastal tourist area around Narooma, and is within reasonable distance of the major population centres of

Sydney, Illawarra and Canberra. The lightstation is one of only four stations in NSW currently open to the public.

As discussed below, the Island provides an attraction for visitors to the area, and features in promotional material to market the region to tourists from other regions.

#### 1.5 The Eurobodalla Local Government Area

The island is located in the Eurobodalla Local Government Area (LGA), which covers 110 kilometres of the NSW south coast. The LGA comprises 3,402 km<sup>2</sup>, of which nearly 80% is national park and state forest. The climate in the region is mild with the natural environment providing the main attraction.

The LGA has an estimated population of 30,500 people (ABS, 1997), with the main centres being Moruya, Batemans Bay and Narooma. The Eurobodalla Coast is a prime holiday and retirement destination, with other major economic activity occurring in the building, forestry, fishing, tourism, retail, service, and dairying industries (Eurobodalla Shire Council, 1996).

## 2. INPUT-OUTPUT ANALYSIS AND AN ECONOMIC PROFILE OF THE EUROBODALLA LGA

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### 2.1 Input-Output Analysis

The present study uses an Input-Output (I-O) analysis approach to assess the regional economic impacts of Montague Island Nature Reserve. This technique has been used in a number of studies already carried out by NPWS (see Section 8 below).

A prerequisite for I-O analysis is the construction of an I-O (or regional transactions) table, which can be described as:

*“a numerical snapshot or picture, capturing the size, shape and essential features of an economy in question.....”* (Jensen and West 1986, p. 7)

An I-O table can be used to describe some of the important features of a regional economy, the inter-relationships between economic sectors within that economy, and the relative importance of the individual sectors (Morison and Zorzetto 1995). It records the production and disposal of goods and services in an economic system over a set period of time - usually one year. This is done by disaggregating the goods and services produced in an economy into a number of individual industries, or sectors, and recording the transactions that take place between these sectors in the I-O table (Jensen and West, 1986).

The table is presented as a matrix, with rows indicating the sales from each sector to all other sectors, and the columns indicating the purchases by a sector from all other sectors. The transaction information can be derived from a number of sources including regional business and agency surveys, and regional economic statistics derived from secondary sources.

Once an I-O table has been compiled for a particular region, multipliers can be constructed for each sector of the economy. These multipliers are a convenient way of estimating the effects of a change in the final demand of a sector, or sectors, on the level of activity in the overall economy, and in particular industries (NPWS, 1999). A more detailed explanation of the multipliers used in this study can be found in Appendix 1.

An I-O table consists of 107 national input-output sectors. These sectors can be aggregated or disaggregated as required, with the level of sector disaggregation generally being determined by the availability of data and the purpose of the study (NPWS, 1999).

In the case of the present study, the Centre for Agricultural and Regional Economics (CARE) was commissioned by NPWS to draw up a 107 sector transaction table for Eurobodalla LGA, which represented the regional economic context for Montague Island (the 107 sectors are listed in Appendix 2).

To facilitate further analyses, the 107 sectors of the Eurobodalla LGA I-O table were aggregated into related groups, so reducing the size of the table to 21 sectors (see Appendix 2). The aggregated sectors used in the Montague Island study are explained in Table 2-1.

Table 2-1: Sectoral Aggregation and Classification

No.	Aggregated Sector	Description
1.	Animal agriculture	Sheep, beef cattle, dairy cattle, pigs and poultry.
2.	Other agriculture	Fruit and vegetables, nursery operations, hay and horses.
3.	Agricultural services	Contract services, including harvesting, aerial spraying, shearing etc.
4.	Forestry and fishing	Forestry operations, logging and haulage, ocean and inland fishing.
5.	Mining	All mining and mining services excluding coal, oil and gas.
6.	Food manufacturing	Abattoir operations, milk manufacturing, fruit and vegetables, oils and fats, flour and cereals, baking, confectionary, other food, soft drink, beer and malt, wines etc and tobacco.
7.	Other manufacturing	Fibre, fabrics, textiles, knitting, clothing, footwear, leather, petrol, coal, basic chemicals, paints, pharmaceuticals, soaps, detergents, cosmetics, other chemicals, rubber and plastics, other manufacturing.
8.	Wood manufacturing	Sawmill production, prefabricated building, furniture, other wood production.
9.	Paper manufacturing	Pulp, paper, paper products, printing, publishing.
10.	Non-metal mineral manufacturing	Glass products, ceramic products, cement, lime, concrete products, other non-metal mineral products.
11.	Metal manufacturing	Iron and steel production, basic non-ferrous metal production, structural metal, sheet metal, fabricated metal, tools.
12.	Equipment manufacturing	Machinery and equipment manufacturing for: ships, boats, railway, aircraft, scientific electronic, household appliances, electrical, other machinery equipment.
13.	Utilities	Electricity, gas, water and sewerage.
14.	Building and construction	Residential building and other construction including road, bridge, earthworks, building trades.
15.	Trade	Wholesale trade, retail trade, mechanical repairs, other repairs.
16.	Transport	Road, rail, water, air and transport services.
17.	Communications	Postal and telecommunications.
18.	Finance	Finance, banking, insurance and other business services including: real estate, architecture, surveying, legal, accounting, office services, pest control, cleaning, short term leasing etc.
19.	Public administration	Federal, State, Local government, justice and defence.
20.	Community services	Education, health, library, museum, research, meteorological, welfare, employment, police, correctional



21.	Personal services	services, fire brigade, waste services. Entertainment and recreation facilities including, national parks, zoos, fun parks, amusement arcades etc. Cafes, restaurants, bars, hotels, motels, accommodation, clubs, laundries, hairdressers, beauty salons, photography, funeral services, sports and gambling.
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## 2.2 An Economic Profile of the Eurobodalla LGA

The aggregated regional transactions table (Table 2-2 below) provides the basis for describing the Eurobodalla LGA economy. This regional input-output information shows the sectoral distribution of gross regional output (GRO) (or regional business turnover), gross regional product (GRP), household income, employment, imports, and exports, thus providing a description of the economic structure of the LGA. Figures 2-1 to 2-12 below provide a graphical representation of these sectoral distributions.

### 2.2.1 The Eurobodalla LGA Economy

#### *Gross Regional Output (Figures 2-1 and 2-2)*

The region's trade and building sectors are the largest contributors to GRO at 17.3% and 16.1% of the regional share respectively. These are followed by the community services sector at 13.8%, the finance sector at 12.7%, and the personal services sector at 8.6%. The forestry and fishing sector is most notable of the primary industry sectors in the region, with a regional contribution to GRO of 3.7%, followed by animal agriculture at 1.2%. Except for wood manufacturing (4.1%) and food manufacturing (1.7%), all other manufacturing sectors contribute less than 1% each to GRO.

#### *Gross Regional Product (Figures 2-3 and 2-4)*

The trade and community services sectors dominate the regional contributions to GRP, contributing 18.3% each. These are followed by the finance sector at 15.4% and the building sector at 13.4%. In the case of the primary industry and manufacturing sectors, the major contributors to GRP are the forestry and fishing sector at 2.9%, and the wood manufacturing sector at 2.6%.

#### *Household Income (Figures 2-5 and 2-6)*

Around 75% of the region's household income is generated by the community service, trade, building, finance and personal services sectors. Except for the transport and public administration sectors at 3.3% and 5.7% respectively, none of the remaining sectors individually contribute more than 2.5% of regional household incomes.

#### *Employment (Figures 2-7 and 2-8)*

The largest sources of regional employment identified in the I-O table are the trade and community services sectors which provide just over 46% of the region's jobs. The next most significant sector is the personal services sector at 13.5%, reflecting the significant recreation and tourism characteristics of the region. The finance and building sectors are the next highest contributors to regional employment, with a combined contribution of just under 17%. The primary industry sectors and the manufacturing sectors contribute 5.9% and 7.3% of region's employment respectively.

*Imports (Figures 2-9 and 2-10)*

Just over 33% of the region's imports can be attributed to the building and trade sectors, with a further 26.4% of the regional total being imported by the personal services, community services and finance sectors. Of the primary industry sectors, the forestry and fishing sector is responsible for the most imports at 6.2%, with the wood manufacturing sector dominating the manufacturing sectors with 4.2% of regional imports.

*Exports (Figures 2-11 and 2-12)*

The dominant exporting sectors in the region are the trade sector at 25.9%, the community services sector at 21.7% and the personal services sector at 16.7%. The forestry and fishing sector is the dominant primary industry sector, contributing 8.4% of regional exports, the majority of which, according to the input-output transaction table, are attributable to the fishing industry.

Table 2-2. Aggregated Input-output Table for the Eurobodalla LGA \$'000

SECTOR	AnnMfg	ObstMfg	AgSvcs	ForFish	Mining	FoodMfg	ChemMfg	WoodMfg	PaperMfg	MetMfg	EquipMfg	Utilities	Building	Trade	Transport	Comm.	Finance	Pub/Admn	Concrs	PerSvcs	TOTAL	Hdld	OPD	Exports	TOTAL	
AnnMfg	309	22	273	0	0	1,401	11	9	14	1	1	1	12	5	0	0	0	15	2	451	1,414	907	11	7,154	8,579	
AgSvcs	109	94	0	24	1	37	9	10	1	0	0	0	9	1	2	1	8	15	103	451	1,419	176	19	2,331	2,579	
ForFish	8	3	0	279	4	25	0	0	31	1	1	0	0	0	0	0	0	0	11	0	309	176	106	1,390	1,981	
Mining	0	1	0	369	6	0	149	1	758	6	6	6	173	2	1	11	15	9	46	29	4,233	461	1,886	19,712	26,592	
FoodMfg	66	1	4	115	6	719	16	10	4	3	1	3	14	72	6	0	66	51	117	1,510	2,298	5,137	74	4,288	12,297	
ObstMfg	32	14	28	707	10	53	170	125	24	58	27	27	292	237	43	26	90	42	284	340	16,457	2,415	3,778	7,923	29,512	
WoodMfg	12	0	1	205	7	5	25	6,484	5	46	104	66	8,435	284	86	159	210	103	168	599	16,457	1,354	3,778	7,923	29,512	
PaperMfg	0	0	0	85	5	82	35	140	133	75	32	26	7	203	43	41	636	438	663	599	5,119	781	24	402	6,327	
MetMfg	3	2	2	239	34	22	22	353	7	66	507	70	8,975	160	6	1	130	25	134	247	11,466	87	125	2,907	14,585	
EquipMfg	12	2	1	341	18	4	12	18	76	6	10	144	471	550	108	66	139	57	136	113	5,988	238	193	223	6,643	
Utilities	179	34	7	145	76	100	30	179	34	424	19	57	471	550	244	119	74	90	248	101	2,549	795	2,100	479	5,923	
Building	64	2	0	22	22	1	0	8	2	5	1	9	52	38	33	2	609	43	50	293	1,235	3,088	148	4,001	16,545	
Trade	410	87	32	2,317	126	386	190	1,161	202	193	161	275	4,926	4,157	1,427	507	810	344	50	293	12,626	108,123	5,020	5,020	114,378	
Transport	295	38	46	467	300	261	55	1,092	91	1,235	74	44	2,007	1,233	2,457	223	576	405	833	824	20,939	35,484	5,868	60,695	122,986	
Comm.	91	12	3	146	52	66	43	157	71	82	51	36	458	2,974	544	1,164	1,938	988	1,601	768	11,273	3,766	24	11,468	16,531	
Finance	222	54	21	442	179	282	110	472	219	297	138	151	7,886	12,313	1,448	261	8,818	2,464	5,890	6,205	48,239	26,297	3,943	12,754	65,733	
Pub. Admn	4	5	21	82	5	19	9	74	107	24	14	15	345	510	69	107	257	4,380	382	65	6,572	2,280	26,955	16	35,773	
CommSvcs	116	9	13	115	396	143	64	269	255	124	72	45	372	1,342	589	70	1,448	1,176	2,102	1,504	10,206	10,112	27,253	50,834	98,465	
PerSvcs	148	10	8	152	28	54	25	95	79	39	20	22	282	1,295	290	65	939	292	967	340	5,169	16,396	60	39,191	54,426	
TOTAL	2,087	396	462	5,889	1,647	3,874	1,009	13,311	1,265	4,811	1,305	972	13,471	38,937	28,093	7,568	2,792	18,873	11,862	16,450	180,024	112,389	184,581	234,210	712,360	
Hdld	2,632	2,202	575	6,112	819	3,209	2,340	5,797	2,990	2,078	3,063	1,557	2,966	26,075	48,324	7,963	4,812	23,514	13,921	56,681	24,791	181,181	112,389	184,581	234,210	712,360
O.V.A.	977	-48	146	5,205	1,408	488	-299	4,283	-26	3,080	-553	611	9,026	25,254	21,880	8,578	6,282	35,503	2,106	13,290	4,411	19,033	19,033	18,886	19,712	160,336
Imports	2,683	429	798	9,086	1,490	4,726	2,713	6,122	2,098	4,616	2,838	2,777	3,005	24,112	24,689	5,568	2,646	12,842	7,884	14,200	147,256	54,187	184,581	234,210	712,360	
TOTAL	8,579	2,579	1,981	26,292	5,365	12,297	5,763	29,512	6,327	14,585	6,643	5,923	16,545	48,239	29,677	16,531	96,733	35,773	98,465	150,443	712,360	184,581	234,210	712,360	1,316,739	
Employment	170	128	19	198	22	94	62	204	85	51	85	51	72	290	210	227	132	420	203	1,193	8,844	185,609	184,581	234,210	8,844	

Figure 2-1: Sectoral Contribution to Gross Regional Output - Eurobodalla LGA - \$'000

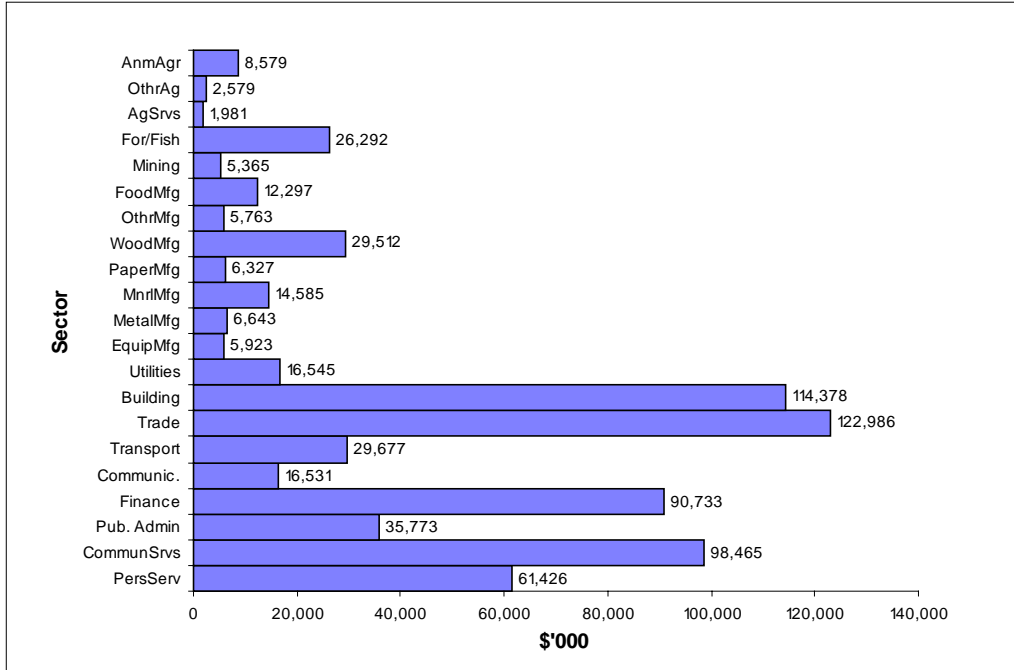


Figure 2-2: Sectoral Contribution to Gross Regional Output - Eurobodalla LGA - %

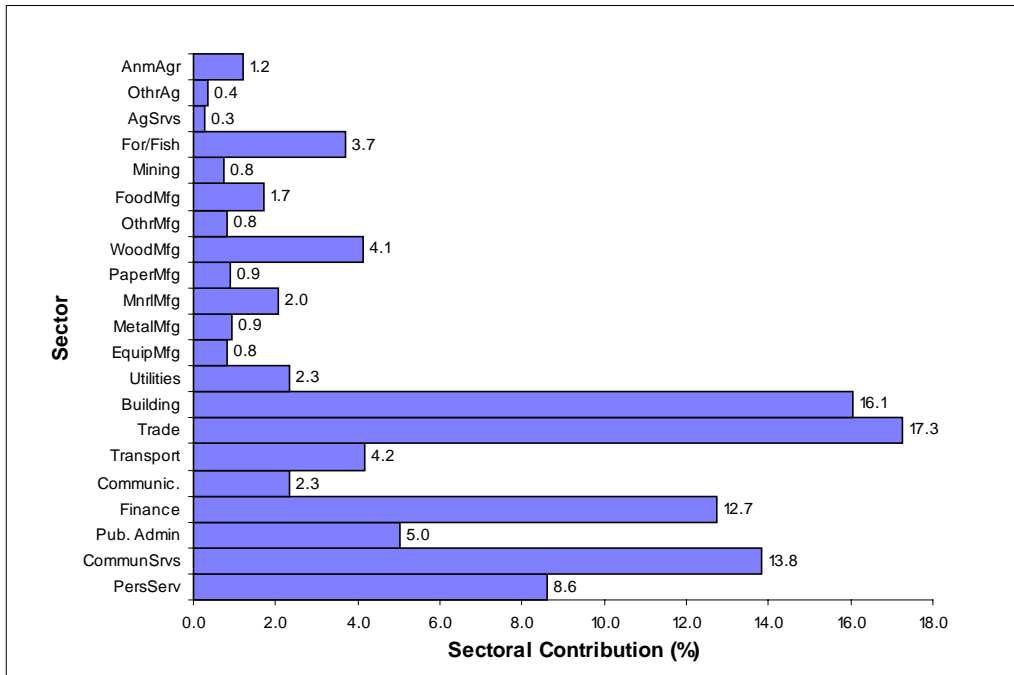


Figure 2-3: Sectoral Contribution to Gross Regional Product - Eurobodalla LGA - \$'000

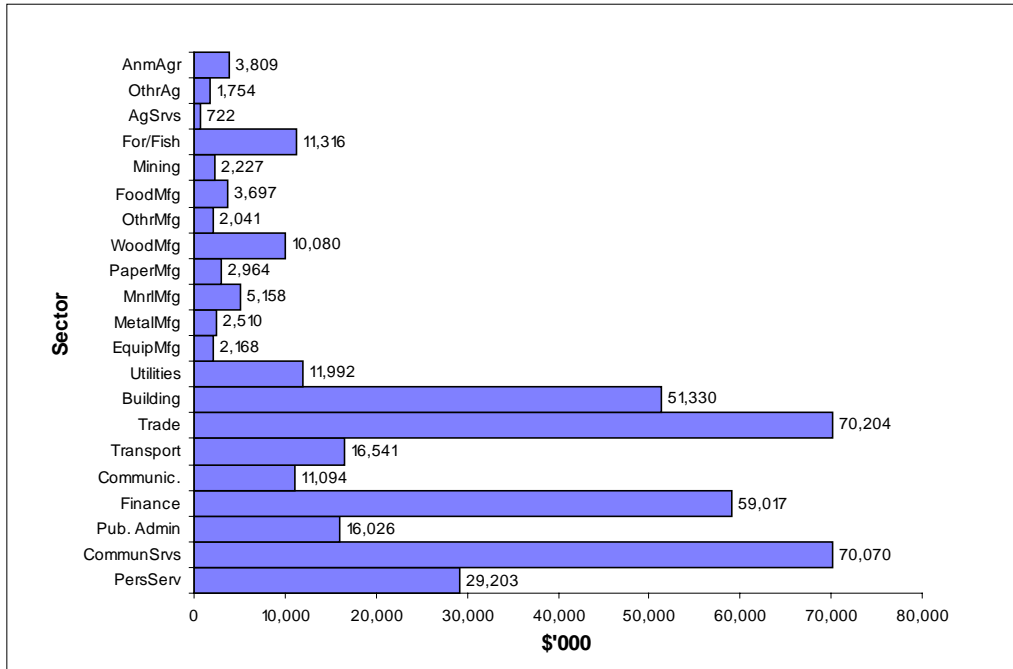


Figure 2-4: Sectoral Contribution to Gross Regional Product - Eurobodalla LGA - %

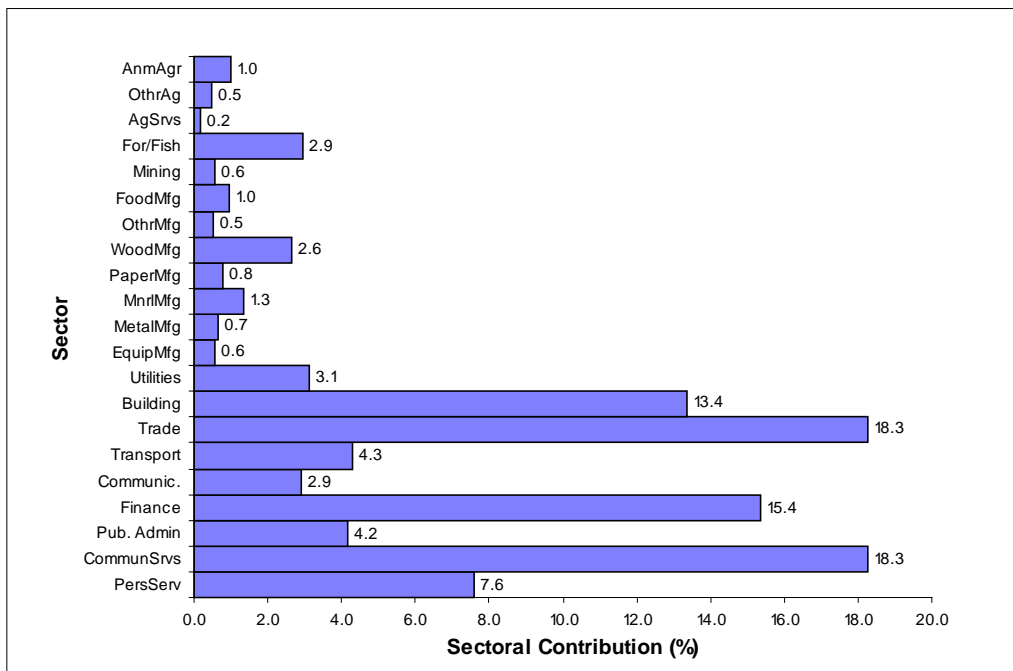


Figure 2-5 Sectoral Contributions to Household Income - Eurobodalla LGA - \$'000

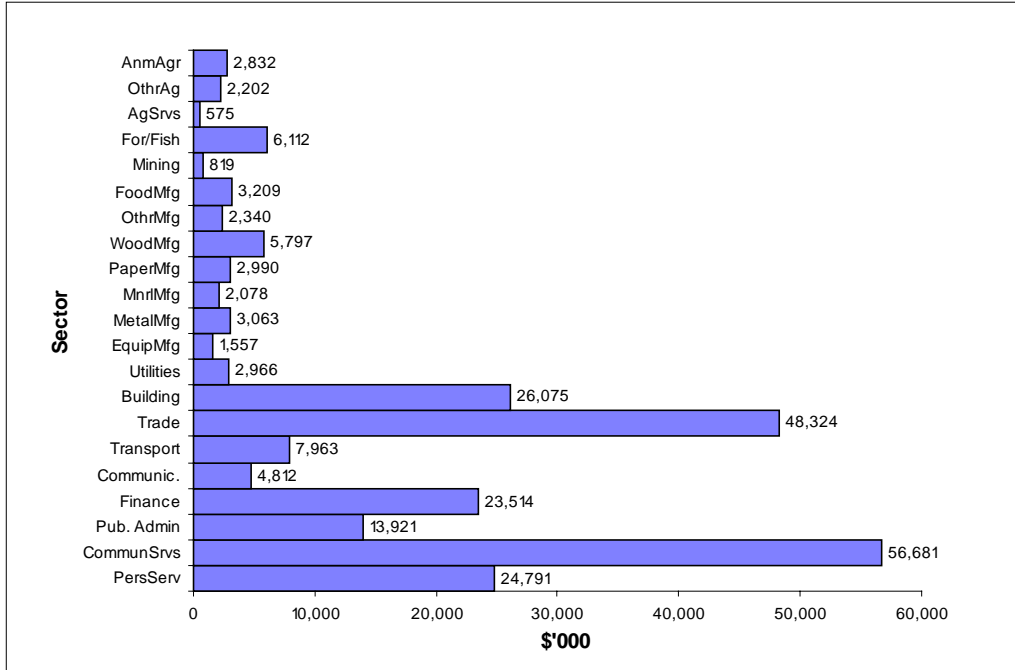


Figure 2-6: Sectoral Contributions to Household Income - Eurobodalla LGA - %

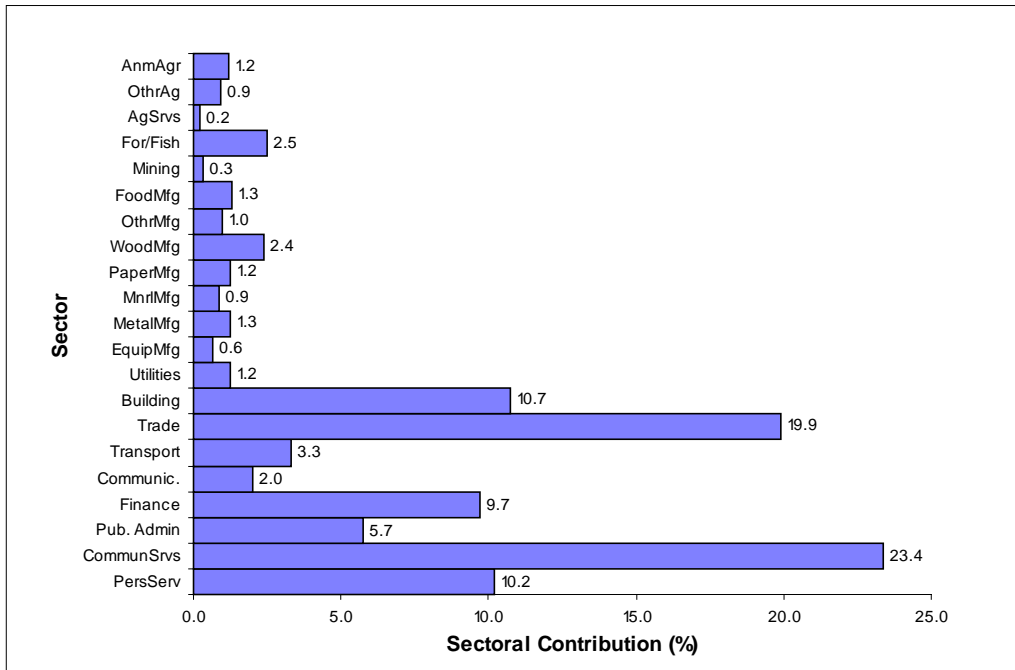


Figure 2-7: Sectoral Contributions to Regional Employment - Eurobodalla LGA - No. of Jobs

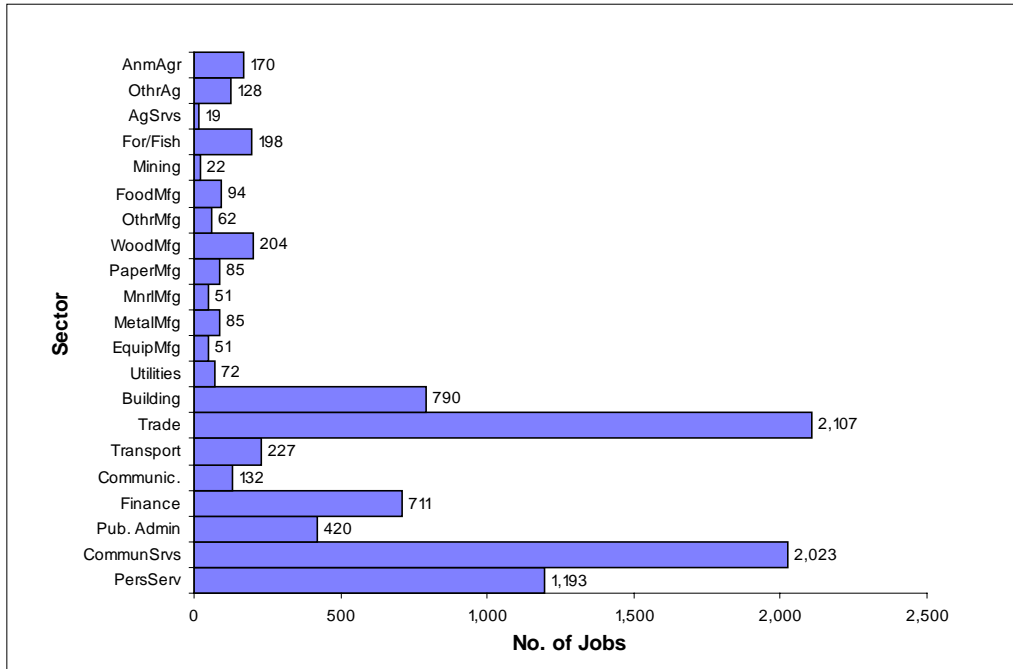


Figure 2-8: Sectoral Contributions to Regional Employment - Eurobodalla LGA - %

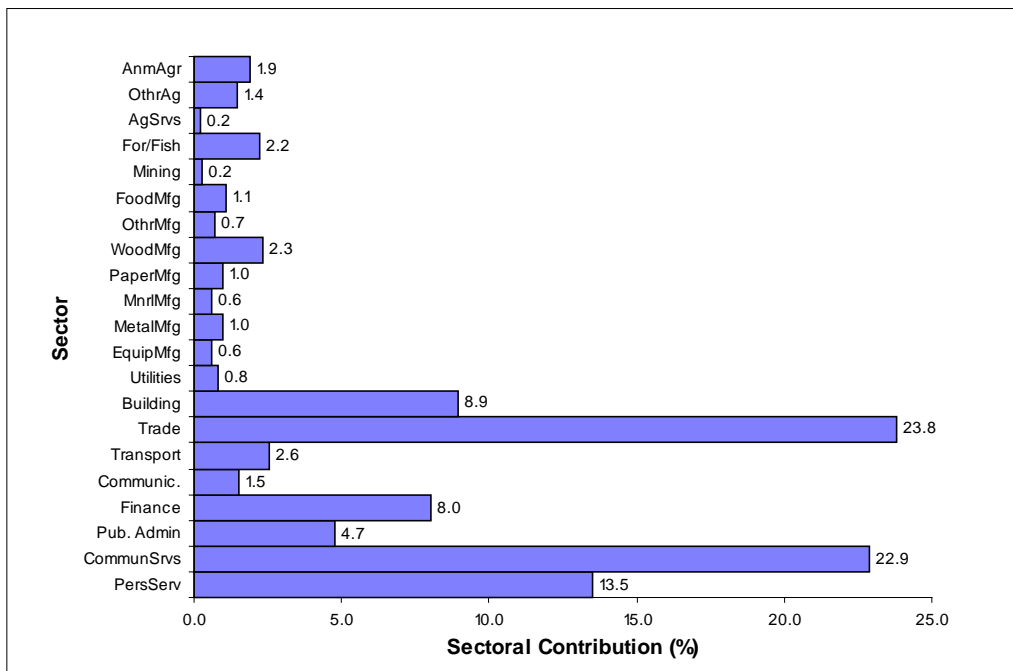


Figure 2-9: Sectoral Contributions to Imports - Eurobodalla LGA - \$'000

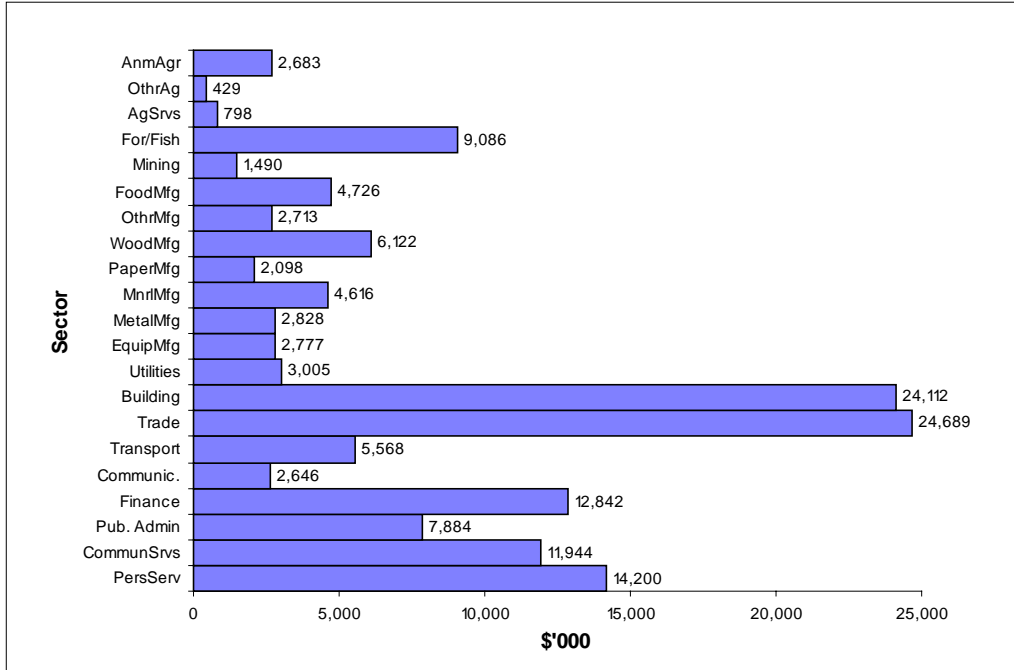


Figure 2-10: Sectoral Contributions to Imports - Eurobodalla LGA - %

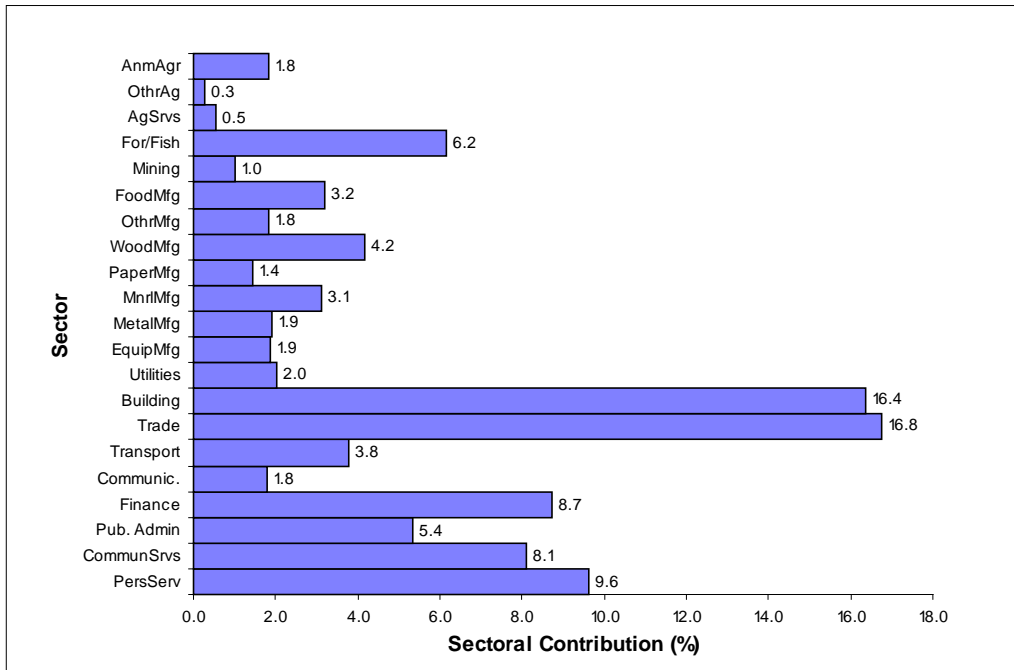




Figure 2-11: Sectoral Contributions to Exports - Eurobodalla LGA - \$'000

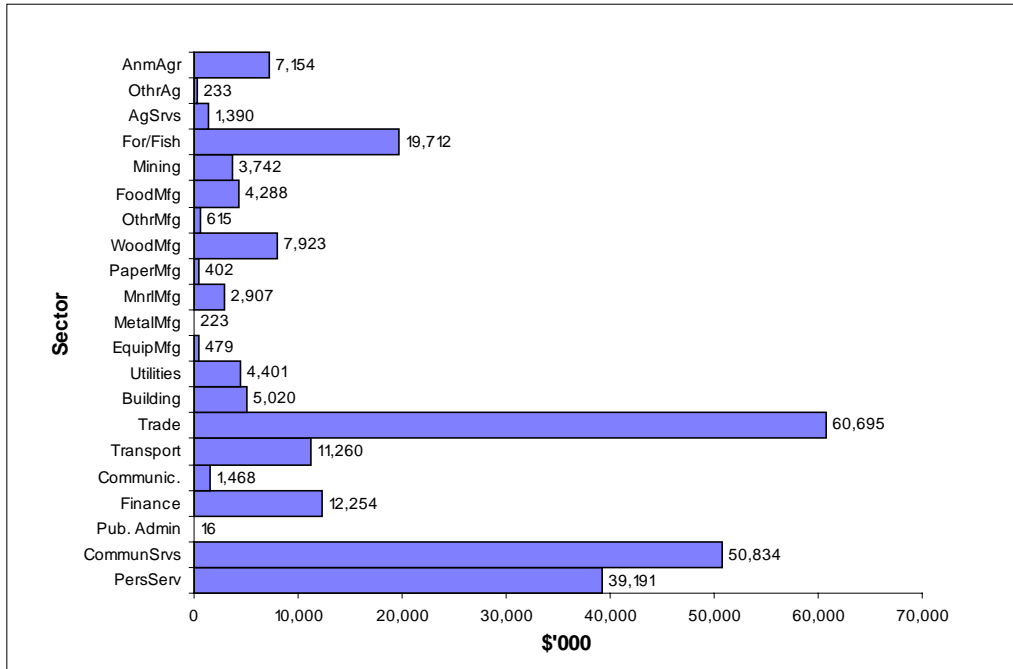
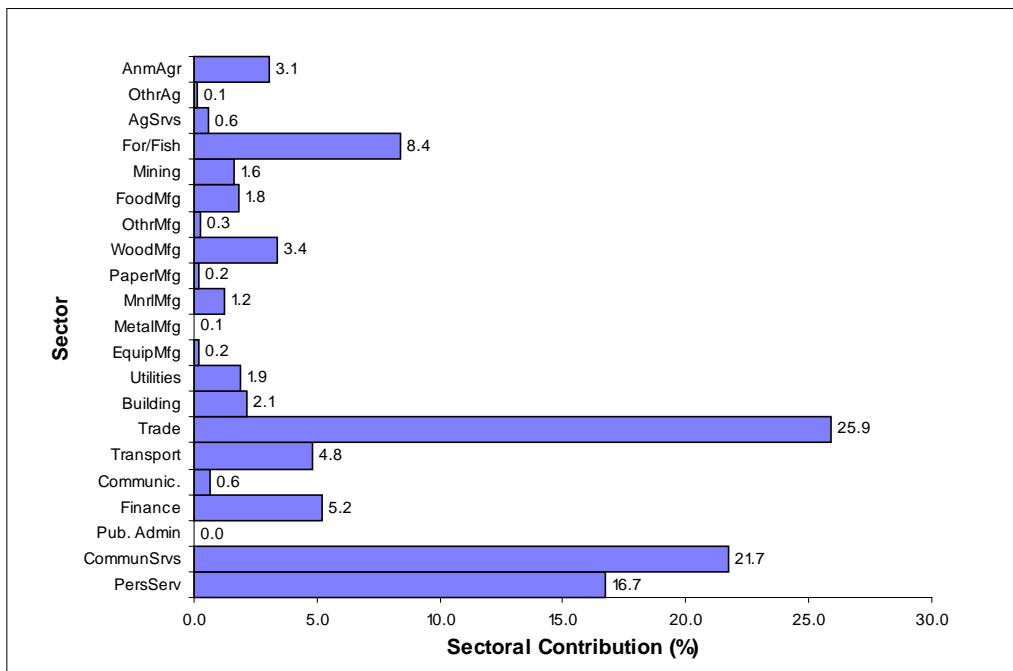


Figure 2-12: Sectoral Contributions to Exports - Eurobodalla LGA - %



### 2.3 Regional Multipliers

The I-O table for the Eurobodalla LGA can be used to generate the gross regional output, gross regional product, household income and employment multipliers, for each sector of the regional economy. These multipliers are presented in Appendix 3. As noted above, a general discussion of the use of multipliers is provided in Appendix 1.

### 3. EXPENDITURE ASSOCIATED WITH MONTAGUE ISLAND MANAGEMENT AND VISITATION

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The initial economic impact or stimulus being investigated in this study is the management of the Montague Island Nature Reserve by the NPWS. This stimulus arises from two sources:

1. expenditure by the NPWS associated with the management of the facility; and
2. expenditure in the Eurobodalla LGA by visitors to the Island.

#### *NPWS Management Expenditure*

Information on NPWS management expenditure was obtained from staff at the NPWS Narooma District Office, and from the Ranger in charge of the Reserve. The information was initially categorised according to the 107 sectors of the Eurobodalla LGA regional transactions table, as shown in Appendix 2. NPWS expenditure was found to fall into 22 of these sectors (see column 1, Table 3.1 below). Following the aggregation of the 107 sectors of the regional transactions table into related groupings of 21 sectors, as described in section 2.1 above, NPWS expenditure was found to fall into 13 of these aggregated sectors (see column 2, Table 3.2).

To calculate the total impacts of NPWS expenditures, a new 'Montague Island Expenditure' sector was added to the aggregated 21 sector regional transactions table to represent the impacting agent which, in this study, is the management of the Reserve. (The 22 sectors used are shown in Appendix 2). This new 22 sector I-O table was then adjusted to avoid double counting of expenditures. This is necessary, as expenditures by the NPWS were originally located in the personal services sector of the original 21 sector table. This sector had to be modified to take account of NPWS expenditures now relocated in the new Montague Island sector.

Following the incorporation of the new Montague Island sector, the table was recalculated, and the impacts of the expenditure associated with the management and recreational use of the Island were estimated. These impacts comprise direct impacts, and flow-ons (indirect effects), for GRO, GRP, household income and employment. Multipliers, (which measure the responses of each of these indicators to the initial output stimulus) were also calculated. The results are discussed in Section 4.

Table 3-1: Allocation of NPWS Expenditure to 107 and 21 Sector Tables

Sectors of 107 Sector Table with NPWS Expenditure	Sectors of Aggregated 21 Sector Table with NPWS Expenditure
Textile products	Other Manufacturing
Paper products	Paper Manufacturing
Fabricated metal products	Metal Mfg
Motor vehicles and parts	Trade
Ships and boats	Equipment Manufacturing
Other manufacturing	Other Manufacturing
Gas	Utilities
Other construction	Construction
Wholesale trade	Trade
Retail trade	Trade
Mechanical repairs	Trade
Other repairs	Trade
Accommodation, cafes and restaurants	Personal Services
Road transport	Transport
Rail, pipeline and other transport	Transport
Water transport	Transport
Services to transport; storage	Transport
Communication services	Communications
Insurance	Finance
Government administration	Public Administration
Entertainment & recreation	Personal Services
Other services	Community Services

*Visitor Expenditure*

Information on visitor information expenditure was obtained from a visitor survey carried out by NPWS tour guides between 19 January and 14 March 1998. The timing of the surveys was designed to account for seasonal variations in visitor type and, to ensure a more representative sample, the survey period included one week of school holidays from 19-23 January and a long weekend from 24-26 January. Surveys were also conducted mid-week and on weekends.

The response rate for the survey was 97.5%, with a total of 81 groups, representing 311 visitors, surveyed during this period. Of these, 77 group questionnaires, representing 266 people, provided useable information. Inclement sea and weather conditions during the survey period restricted the number of tours made to the Island, and prevented more surveys being conducted.

Respondents were asked to provide information about their expenditure in Narooma (as part of the overall expenditure during their trip) on items such as accommodation, meals, motor vehicle costs, shopping, fares and admissions. This information was then converted to an annual figure, based on an estimate of the average annual visitation rate for the Island, as provided by the NPWS

District Office. The average expenditure per person and the percentage spent on each locally purchased item are shown in Table 3-2.

The component of the tour fees paid to the NPWS as part of the Montague Island tour (\$9.73) was omitted from visitor expenditure when assessing the total visitor impacts. This was done to avoid double-counting, because this visitor expenditure accrues to the NPWS as revenue and contributes to NPWS expenditure in the region. Such expenditure therefore is incorporated in general NPWS expenditure for the management of the Island Reserve.

Table 3-2: Average Per Visitor Expenditure in Narooma

Local Purchases	Expenditure per person \$	%
Accommodation	67.11	33%
Meals	31.56	15%
Shopping	28.42	14%
Own Vehicle	20.00	10%
Other	5.15	2%
Montague Fares	36.05	17%
NPWS Guide	9.73	5%
Costs		
Other Fares	8.04	4%
<b>Total</b>	<b>\$206.05</b>	<b>100%</b>

Analysis of the above surveys indicates that, on average, visitors to Montague Island spend in excess of \$200 per person per trip in Narooma. This figure is particularly high when compared to the average visitor expenditure identified in studies by NPWS (1999) and Gillespie (1997). This figure may be explained by the fact that Narooma is a popular holiday destination, and it is likely that many of the respondents were staying in Narooma for an extended period and purchasing goods and services there over that time. The main expenditure item was on accommodation, at 33% of total expenditure, with other important expenditure items including meals (15%), shopping (14%) and fares to the Island (17%).

The average annual visitor expenditure was calculated by multiplying the average expenditure per person for each locally purchased item by the average annual visitation level of 4,300 visitors. A summary of these results is given in Table 3-3 below.

The annual visitor expenditure associated with trips to Montague Island was estimated at \$886,005. Although this study has only considered the expenditure impacts of Montague Island visitors on Narooma, it is likely that there would be further impacts in the broader Eurobodalla LGA economy which could be attributed to local expenditure by visitors to Montague Island.

However, the data on this broader regional expenditure was inconsistent and considered unusable. Thus the figures given in Table 3.3 can be regarded as conservative estimates of expenditure throughout the LGA.

Table 3-3: Annual Average Visitor Expenditure in Narooma

Local Purchases	Annual Expenditure \$
Accommodation	288,561
Meals	135,706
Shopping	122,217
Own Vehicle	86,000
Other	22,140
Montague Fares	155,005
NPWS Guide	41,823
Costs	
Other Fares	34,554
<b>Total</b>	<b>\$886,005</b>

From an I-O analysis perspective, expenditures made within the study region by visitors are considered to be exports in the regional transactions table and therefore, there is no specific visitor expenditure sector (see NPWS (1999) for further information on this).

The local Narooma expenditure data described in Table 3-3 was allocated across the various relevant input-output sectors to determine the sectoral final demands. This was done on a similar basis to that used by NPWS (1999, p. 33-34). This allocation was carried out as follows:

- All of the expenditure on 'Meals' and 'Accommodation' in the region was allocated to the restaurants and accommodation sector within the personal services sector;
- 55% of 'Shopping' expenditure was allocated to imports and not included in the analysis, since most of these products purchased would be imported into the region, this leaves a margin of 45% to local distributors;
- 30% of the expenditure on 'Own Vehicle' costs was allocated to the trade sector, including the purchase of fuel and oil and any running repairs, with the remaining 70% comprising taxes and imports, which do not impact on the local region (NB. bulk fuel and parts are imported into the region for retail sale);
- All expenditure on 'Montague Fares' were allocated to the water transport sector;

- The 'Other' expenditure was allocated on the basis of 20% to the trade sector, 1.25% to water transport, 1.25 % to road transport, 2.5% to communications, 5% to health services, 35% to entertainment and recreation and 35% to sports and gambling;
- 100% of NPWS tour 'Guide Costs' were allocated to Libraries, Museums and Arts; and
- 'Other Fares' were allocated on the basis of 80% to the trade sector and 10% each to the road and water transport sectors.

The values associated with the above allocations are shown in Table 3-4 below. These allocations provide the basis for estimating the total impacts of visitor expenditure, which are presented in Section 4 below.

The individual sectors shown in Table 3-4 were aggregated into the relevant sectors shown in Table 2-1. The road and water transport sectors were aggregated into the transport sector, health services, libraries museums and arts were aggregated into the community services sector, and entertainment and recreation, sports and gambling, restaurants and accommodation are amalgamated into the personal services sector. Trade and communication expenditures remain in their own specified sectors.

Table 3-4: Allocation of Visitor Expenditure to Local Final Demand Sectors

Local Purchases	Trade	Water Trans p.	Road Trans p.	Comm -unic.	Health Srvs.	Entert. & Recr.	Sport & Gamblin g	Libraries, Museums , Arts	Restaur & Accom.	Taxes & Import s	Total \$
Accommodation	-	-	-	-	-	-	-	-	288,56	-	288,56
Meals	-	-	-	-	-	-	-	-	135,70	-	135,70
Shopping	54,998	-	-	-	-	-	-	-	-	67,21	122,21
Own Vehicle	25,800	-	-	-	-	-	-	-	-	60,20	860,00
Other	4,428	277	277	553	1,107	7,749	7,749	-	-	-	22,140
Montague Fares	-	155,0	-	-	-	-	-	-	-	-	155,00
NPWS Guide	-	-	-	-	-	-	-	41,823	-	-	41,823
Other Fares	27,643	3,455	3,455	-	-	-	-	-	-	-	34,554
<b>Total</b>	<b>112,869</b>	<b>158,7</b>	<b>3,732</b>	<b>553</b>	<b>1,107</b>	<b>7,749</b>	<b>7,749</b>	<b>41,823</b>	<b>424,26</b>	<b>127,4</b>	<b>886,00</b>

#### 4. THE ECONOMIC IMPACTS ASSOCIATED WITH THE MANAGEMENT AND VISITOR USE OF MONTAGUE ISLAND NATURE RESERVE

The annual disaggregated and total impacts of the Montague Island Nature Reserve on the Eurobodalla LGA are shown in Table 4.1.

Table 4-1: Regional Economic Impacts of Montague Island Nature Reserve

	Direct Effect (a)	Production Induced Effect (b)	Consumption Induced Effect (c)	Total Flow-on (b+c)	TOTAL EFFECT (a+b+c)
<b>Gross Regional Output \$'000</b>					
NPWS Expenditure	121	17	95	112	233
Visitor Expenditure	717	329	367	696	1413
<b>Total Impact</b>	<b>838</b>	<b>346</b>	<b>461</b>	<b>808</b>	<b>1645</b>
<b>Gross Regional Product \$'000</b>					
NPWS Expenditure	98	9	55	64	162
Visitor Expenditure	312	170	213	383	695
<b>Total Impact</b>	<b>410</b>	<b>179</b>	<b>268</b>	<b>447</b>	<b>857</b>
<b>Income \$'000</b>					
NPWS Expenditure	84	6	31	36	121
Visitor Expenditure	247	102	119	221	468
<b>Total Impact</b>	<b>331</b>	<b>108</b>	<b>149</b>	<b>257</b>	<b>588</b>
<b>Employment (No. of Jobs)</b>					
NPWS Expenditure	5	1	1	2	7
Visitor Expenditure	11	3	5	8	19
<b>Total Impact</b>	<b>17</b>	<b>3</b>	<b>6</b>	<b>9</b>	<b>26</b>

##### *NPWS Expenditure Impacts*

Table 4.1 shows that the annual direct impact on GRO from the \$121,000 spent annually by the NPWS on managing the Island, generates approximately \$17,000 in production induced flow-ons to other sectors in the economy. There is also a further \$95,000 in consumption induced flow-ons, as households employed in the management of Montague Island spend their income on locally supplied goods and services. The combined indirect effect represents an additional \$112,000 in annual contribution to GRO for the regional economy.

The total (direct and indirect) impacts of NPWS expenditure are estimated to contribute \$233,000 to GRO annually. This represents a multiplier of 1.92; ie



for every dollar of output directly expended by the NPWS in the management of Montague Island, another \$0.92 in output is generated elsewhere in the local economy. The direct and indirect impact multipliers in Table 4.2 correspond to the impacts shown in Table 4.1.

The annual GRP generated through the management of the Island was estimated at \$98,000. The production and consumption induced flow-ons generated from this totalled \$64,000, to give a combined regional contribution of \$162,000 annually.

The management of the Reserve generated an estimated \$84,000 directly in household incomes, with an additional \$36,000 being generated through flow-ons, to give a combined total of \$121,000. This income is linked to 5 people directly employed in the management of the Island, with the equivalent of 2 further jobs being generated elsewhere in the region as a result of flow-on effects.

The disaggregated sectoral impacts associated with the management of the Reserve are shown in Appendix 4. The GRO multiplier table (A4.1) shows that NPWS management expenditure is distributed across most of the sectors in the Eurobodalla LGA, although the major output impacts occur mainly in the building, trade, transport, communication and finance sectors. With respect to GRP, income and employment impacts, the building and trade sectors receive the greatest contribution.

### *Visitor Expenditure Impacts*

The direct effect of Montague Island visitor expenditure in Narooma has been calculated as \$717,000 per year in GRO, linked to \$312,000 in GRP, which included \$247,000 in household income payments to the equivalent of 11 local people. The indirect flow-ons associated with this initial expenditure generated an additional \$695,000 in GRO, and \$383,000 in GRP, of which \$221,000 was household income paid to the equivalent of 8 people. The combined direct and indirect impacts of visitor expenditure was calculated to contribute a total impact of \$1.4M to GRO, and \$695,000 to GRP, including household income of \$468,000. Total employment impacts were equivalent to 19 local jobs per year.

The disaggregated sectoral impacts associated with visitor expenditure are presented in Appendix 5, which shows that the major impacts relating to GRO accrued to the trade, transport and personal services sectors. These sectors were also dominant in terms of the final demand impacts associated with GRP and income. However, the transport sector was less significant with respect to employment impacts. The production and consumption induced flow-ons are distributed at varying levels across the rest of the economy for GRO, GRP, household income and regional employment.

### *Total Impacts*

The total expenditure associated with the management of the Island, and expenditure in Narooma by visitors to the Island, generated an estimated \$1.65M in GRO, and \$857,000 in GRP, including \$588,000 in household income. The total employment generated was equivalent to 26 local jobs.

Table 4-2: Direct and Indirect Multipliers for Montague Island

	Direct Effect	Production Induced Effect	Consumption Induced Effects	Total Flow-on	TOTAL	Type IIA Ratio
<b>Gross Regional Output \$'000</b>						
NPWS Expenditure	1.00	0.14	0.78	0.92	1.92	1.92
Visitor Expenditure	1.00	0.46	0.51	0.97	1.97	1.97
<b>Total Impact</b>	<b>1.00</b>	<b>0.41</b>	<b>0.55</b>	<b>0.96</b>	<b>1.96</b>	<b>1.96</b>
<b>Gross Regional Product \$'000</b>						
NPWS Expenditure	0.81	0.07	0.45	0.53	1.34	1.65
Visitor Expenditure	0.44	0.24	0.30	0.53	0.97	2.23
<b>Total Impact</b>	<b>0.49</b>	<b>0.21</b>	<b>0.32</b>	<b>0.53</b>	<b>1.02</b>	<b>2.09</b>
<b>Income \$'000</b>						
NPWS Expenditure	0.70	0.05	0.25	0.30	1.00	1.43
Visitor Expenditure	0.34	0.14	0.17	0.31	0.65	1.90
<b>Total Impact</b>	<b>0.40</b>	<b>0.13</b>	<b>0.18</b>	<b>0.31</b>	<b>0.70</b>	<b>1.78</b>
<b>Employment (No.)</b>						
NPWS Expenditure	0.045	0.001	0.010	0.011	0.057	1.25
Visitor Expenditure	0.016	0.004	0.007	0.011	0.027	1.71
<b>Total Impact</b>	<b>0.020</b>	<b>0.004</b>	<b>0.007</b>	<b>0.011</b>	<b>0.031</b>	<b>1.56</b>

## 5. CONCLUSION

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This report is one of series of studies into the regional economic impacts of NSW protected areas that have been produced by the NPWS. Other reports in the series are listed in Section 7 below.

The study described in this report demonstrates that Montague Island Nature Reserve makes a positive contribution to economic activity in the Eurobodalla LGA. Expenditure by the NPWS on the management of the Island, and expenditure in the local Narooma economy by visitors to the Island, contribute directly and indirectly to gross regional output, gross regional product, household incomes and local employment.

Table 5-1 shows the GRO, GRP and household income impacts per thousand visitors, and employment impacts per 10,000 visitors, for each of areas studied in the above mentioned reports.

Table 5-1: Comparison of Impacts of Regional Expenditure by Visitors to Selected Protected Areas - NPWS studies

	Montague Island	Minnamurra Rainforest Centre	Dorrigo National Park	Gibraltar Range National Park
<b>Annual Visitation</b>	4,300	140,000	160,000	40,000
Gross Regional Output (\$/'000 visits)	328,604	13,614 - 27,386	22,279	29,625
Gross Regional Product (\$/'000 visits)	161,627	6,600 - 13,279	12,742	17,050
Income (\$/'000 visits)	108,837	4,343 - 8,736	8,029	12,425
Employment (No. of Jobs/10,000 visits)	4	4 - 7	3.7	6.0

The regional impacts of local expenditure per 1,000 visitors to Montague Island shown in Table 5-1 are significantly greater than those for the other study areas. The reason for this could be explained by the popularity of Narooma as a holiday destination. It is likely that many of the visitors to the Island would be holiday-makers staying in Narooma for extended periods, thus increasing the average expenditure per person in the local economy. In the case of the other study areas, many of the visitors were likely to be day-trippers from

outside the study region, with expenditure within the study areas in question consequently being rather lower.

Because of the varied nature of the protected areas, and the associated regional economies which have been studied, care needs to be exercised when making direct comparisons of the study results. It should also be noted that the visitor expenditure impacts in each of these studies cannot necessarily be attributed solely to the study site. Variations in the administration of visitor surveys, and in the types of visitors providing the information, mean that it is not always possible to derive visitor expenditure information which relates only to the specific area in question. The visitor information used in the above studies represents the total expenditure in the local economy by people who visit the study site. As part of this total expenditure would, in many cases, be driven by other attractions in the local area, it would be incorrect to attribute all of the local expenditure to the study site, unless specified.

Notwithstanding this, all of the impacts associated with NPWS expenditure in managing Montague Island Nature Reserve can be attributed to the existence of the Reserve itself. Furthermore, the location, and unique experience, offered by the Reserve provide attractions which can assist sectors of the Narooma economy to capture the expenditure associated with visitors staying in the Narooma area.

As is the case with previous NPWS studies, the findings of the Montague Island study have important management and regional development implications. One interesting similarity between the results of each of these studies is that the contribution of visitor expenditure in the region is greater than that generated by management expenditure. This finding may have implications for agencies involved in regional economic development, as it may be possible to provide enhanced economic benefits to a particular region by developing programs which integrate the management and promotion of protected areas into an overall tourism development package. This issue, however, is beyond the scope of the present study.

In addition to the contribution the Nature Reserve makes to regional economic activity, it also possesses a range of economic use and non-use values, and conservation values. The loss of these values can represent a social cost and lead to a decline in community well-being. Managers of the Island will need to ensure that these values are not compromised and that they are considered, where possible, in resource allocation and visitor management decisions. For example, if congestion becomes a problem as a result of the social carrying capacity of the Island being exceeded, individual recreational use values may decline. Should this occur, "...any increase in the contribution of visitors to regional economic activity would be at the expense of the efficient allocation of resources." (Bennett *et al.* 1996, p. 239).

Finally, considering the regional development implications, protected areas like Montague Island Nature Reserve are now being viewed, in many instances, as valuable community assets in terms of encouraging economic activity in rural and regional communities. Other economic impact studies that have been conducted by the NPWS support this view. If rural and regional communities are to take advantage of the opportunities for economic development that protected areas provide, then local governments and businesses will need to be able to supply, not only the services needed by the NPWS for protected area management, but perhaps more importantly, the principle services and facilities that visitors wish to purchase, such as accommodation and other supporting attractions (Bennett *et al.*, 1996).

## 6. GLOSSARY

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**Gross Regional Output** - A term used in input-output analysis, to represent regional sales or revenue representing regional business turnover.

**Gross Regional Product** - A measure of value-added activity which excludes the value of intermediate inputs and imports used in the production processes as the measure of gross regional output. It includes household income and other value added (OVA) estimated in the Input-Output table, and represents the returns to factors of production, including land, labour, capital and management. OVA represents gross operating surplus, net indirect taxes, depreciation and other returns to capital (Powell and Chalmers, 1998).

**Input-Output Analysis** - Is a systematic method that both describes the financial linkages and the network of input supplies and production which connect industries in a regional economy. It is also used to predict the effects of an impacting agent on specific indicators including gross regional output, gross regional product, household income and employment. An impacting agent may be a change to a regional economy as a result of an economic stimulus, or it may be an existing activity within an economy.

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## APPENDIX 1: MULTIPLIERS EXPLAINED

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The following explanation of multipliers has been adapted from NPWS (1999):

*...input-output tables can be manipulated to generate multipliers for each sector of the economy... The multipliers are commonly used as a quick way of estimating the effects of a change in final demand of a sector(s) on the level of activity in the economy overall and in particular sectors. ( NPWS 1999, p17)*

(The multipliers generated for each of the sectors in the Eurobodalla LGA, including the management of Montague Island Nature Reserve, are shown in Appendix 3. The disaggregated, or sectoral multipliers, for the Nature Reserve activities, ie. management and visitation, are shown in Appendices 4 and 5.

*...Multipliers indicate the strength of linkages of one sector with the rest of the economy. The key components that determine this strength are the types of inputs required by the industry and the capacity of the local economy to supply those inputs. As a consequence, it is normal for larger regions (defined as the aggregate level of economic activity) to have higher capacity to supply a greater array of inputs than smaller regions. This leads to higher levels of inter-industry transactions and larger multipliers.*

*These multipliers are calculated on the basis of a number of assumptions which are outlined in ABS (1995, Appendix C). Briefly, these include:*

- *a fixed input structure;*
- *homogeneous products within each sector;*
- *constant returns to scale;*
- *no limits on the supply of capital and labour; and*
- *no constraints (including product market size) on the response of any industry to changes in demand.*

*At the regional level, the most critical assumptions are likely to be those related to constancy of some prices, the homogeneity in the composition of the aggregated sectors and differences in marginal changes to a sector relative to the average, particularly where new plants may embody significantly better technology than that of the industry average or plants that may be retired. In this particular case, it is unlikely that variations in the demand for park visits will lead to changes in the prices for those goods and services provided.*

*The definitions of the various multiplier elements are provided in ABS (1995 Appendix B) and are summarised below.*



- *The initial effect is the initial stimulus used as a base measure, usually \$1 change in output from a given industry.*
- *The first round effect is the amount of output required from all industries of the economy to produce the \$1 of extra output from the given industry.*
- *The industrial support effect is the induced output from the first round effect, ie. the subsequent round effects on all industries that is required to produce the initial extra output in the given industry.*
- *The production induced effect is the sum of the first round and industrial support effects and indicates the amount of output required from all industries in the region to produce the initial \$1 of extra output.*
- *The consumption induced effect results from the spending from additional household income, arising from the extra output, that generates further production from all industries.*
- *The total effect (multiplier) is the sum of the initial, production and consumption induced effects and indicates the total requirement from all industries in the economy to produce the extra \$1 of output.*
- *The Type I ratio is the ratio of the sum of the initial and production induced effects to the initial effect. This represents the effect operating through the flow-ons of demand from one sector to another. In the literature, these are often referred to as Type I multipliers and as Type 1B in ABS (1995).*
- *The Type II ratio is the ratio between the total multiplier and the initial effect. In this case, the consumption induced effects are included as well as the production induced effects. In the literature these are referred to as Type II multipliers, and as Type 2A in ABS (1995). NPWS (1999 p.17-18)*

## **Appendix 1 References**

ABS (1995). *Information Paper, Australian National Accounts: Introduction to Input-Output Multipliers*. Australian Government Publishing Service, Canberra, Catalogue No. 5246.0.

## APPENDIX 2: SECTORS USED IN REGIONAL TRANSACTIONS TABLES

### A2.1: 107 SECTOR TRANSACTIONS TABLE

1. Sheep	37. Paper bags and products	73. Gas
2. Grains	38. Printing; services to printing	74. Water, sewerage and drainage
3. Beef cattle	39. Publishing; recorded media etc	75. Residential building
4. Dairy cattle	40. Petroleum and coal products	76. Other construction
5. Pigs	41. Basic chemicals	77. Wholesale trade
6. Poultry	42. Paints	78. Retail trade
7. Other agriculture	43. Pharmaceuticals etc	79. Mechanical repairs
8. Services to agric., hunting	44. Soap and detergents	80. Other repairs
9. Forestry and logging	45. Cosmetics and toiletries	81. Accom. and restaurants
10. Commercial fishing	46. Other chemical products	82. Road transport
11. Coal; oil and gas	47. Rubber products	83. Rail and other transport
12. Iron ores	48. Plastic products	84. Water transport
13. Non-ferrous metal ores	49. Glass and glass products	85. Air and space transport
14. Other mining	50. Ceramic products	86. Transport srvs, storage
15. Services to mining	51. Cement, lime and concrete slurry	87. Communication services
16. Meat and meat products	52. Plaster; other concrete products	88. Banking
17. Dairy products	53. Non-metallic min. products	89. Non-bank finance
18. Fruit and vegetable products	54. Iron and steel	90. Financial asset investors
19. Oils and fats	55. Basic non-ferrous metals etc	91. Insurance
20. Flour and cereal foods	56. Structural metal products	92. Services to finance etc
21. Bakery products	57. Sheet metal products	93. Ownership of dwellings
22. Confectionery	58. Fabricated metal products	94. Other property services
23. Other food products	59. Motor vehicles and parts etc	95. Scientific research etc
24. Soft drinks, cordials, syrups	60. Ships and boats	96. Legal, accounting services
25. Beer and malt	61. Railway equipment	97. Other business services
26. Wine and spirits	62. Aircraft	98. Public administration
27. Tobacco products	63. Scientific etc. equipment	99. Defence
28. Textile fibres, yarns etc	64. Electronic equipment	100. Education
29. Textile products	65. Household appliances	101. Health services
30. Knitting mill products	66. Other electrical equipment	102. Community care services
31. Clothing	67. Agricultural, mining etc machinery	103. Entertainment/media
32. Footwear	68. Other machinery and equipment	104. Cultural services
33. Leather and leather products	69. Prefabricated buildings	105. Sport, gambling etc
34. Sawmill products	70. Furniture	106. Personal services
35. Other wood products	71. Other manufacturing	107. Other services
36. Pulp, paper and paperboard	72. Electricity	

### A2.2: 22 SECTOR TRANSACTIONS TABLE

1. Animal Ag	9. Paper Mfg	17. Communicat
2. Other Agric.	10. Mineral Mfg	18. Finance
3. AgServices	11. Metal Mfg	19. Pub. Admin..
4. Fores/Fish	12. Equip Mfg	20. Comm. Srvs
5. Mining	13. Utilities	21. Pers. Servs

6. Food Mfg	14. Building	22. Montague
7. Other Mfg	15. Trade	
8. Wood Mfg	16. Transport	

## APPENDIX 3: TOTAL MULTIPLIERS - (22 SECTOR TABLE)

### A3.1: Gross regional output

Sector	Initial	First Round	Production Induced	Total	Consumption Induced	Total	Type I	Type II
Animal Ag	1.000	0.243	0.066	1.310	0.485	1.794	1.310	1.794
Other Agric.	1.000	0.153	0.041	1.194	0.994	2.189	1.194	2.189
AgServices	1.000	0.233	0.055	1.288	0.497	1.785	1.288	1.785
Fores/Fish	1.000	0.224	0.071	1.295	0.353	1.647	1.295	1.647
Mining	1.000	0.307	0.089	1.397	0.306	1.702	1.397	1.702
Food Mfg	1.000	0.315	0.097	1.412	0.437	1.849	1.412	1.849
Other Mfg	1.000	0.160	0.041	1.201	0.626	1.827	1.201	1.827
Wood Mfg	1.000	0.503	0.257	1.760	0.440	2.200	1.760	2.200
Paper Mfg	1.000	0.200	0.055	1.255	0.613	1.869	1.255	1.869
MineralMfg	1.000	0.330	0.113	1.443	0.271	1.714	1.443	1.714
Metal Mfg	1.000	0.196	0.059	1.255	0.597	1.852	1.255	1.852
Equip Mfg	1.000	0.245	0.114	1.358	0.336	1.694	1.358	1.694
Utilities	1.000	0.094	0.021	1.115	0.226	1.340	1.115	1.340
Building	1.000	0.340	0.143	1.483	0.386	1.869	1.483	1.869
Trade	1.000	0.228	0.062	1.291	0.523	1.814	1.291	1.814
Transport	1.000	0.255	0.075	1.330	0.403	1.733	1.330	1.733
Communicat	1.000	0.169	0.045	1.214	0.387	1.601	1.214	1.601
Finance	1.000	0.208	0.054	1.262	0.364	1.626	1.262	1.626
Public Adm	1.000	0.332	0.105	1.437	0.583	2.020	1.437	2.020
Comm. Servs.	1.000	0.156	0.041	1.196	0.719	1.915	1.196	1.915
Pers Servs	1.000	0.295	0.082	1.377	0.546	1.923	1.377	1.923
<b>Montague</b>	<b>1.000</b>	<b>0.108</b>	<b>0.033</b>	<b>1.141</b>	<b>0.782</b>	<b>1.923</b>	<b>1.141</b>	<b>1.923</b>

### A3.2: Gross Regional Product

Sector	Initial	First Round	Production Induced	Total	Consumption Induced	Total	Type I	Type II
Animal Ag	0.020	0.004	0.001	0.025	0.006	0.031	1.251	1.576
Other Agric.	0.050	0.002	0.001	0.052	0.013	0.065	1.054	1.319
AgServices	0.010	0.008	0.001	0.018	0.007	0.025	1.901	2.588
Fores/Fish	0.008	0.003	0.001	0.011	0.005	0.016	1.462	2.083
Mining	0.004	0.003	0.001	0.008	0.004	0.012	2.057	3.044
Food Mfg	0.008	0.005	0.001	0.014	0.006	0.020	1.833	2.590
Other Mfg	0.013	0.002	0.000	0.015	0.008	0.024	1.198	1.845
Wood Mfg	0.007	0.004	0.002	0.014	0.006	0.020	1.944	2.760
Paper Mfg	0.013	0.003	0.001	0.017	0.008	0.025	1.247	1.852
MineralMfg	0.003	0.002	0.001	0.007	0.004	0.010	1.943	2.970
Metal Mfg	0.013	0.002	0.001	0.016	0.008	0.024	1.229	1.846
Equip Mfg	0.007	0.003	0.001	0.011	0.004	0.015	1.499	2.114
Utilities	0.004	0.001	0.000	0.005	0.003	0.008	1.215	1.902
Building	0.007	0.003	0.001	0.011	0.005	0.016	1.613	2.353
Trade	0.017	0.002	0.001	0.020	0.007	0.027	1.181	1.585
Transport	0.008	0.003	0.001	0.011	0.005	0.017	1.471	2.169
Communicat	0.008	0.002	0.000	0.010	0.005	0.015	1.279	1.921
Finance	0.008	0.002	0.001	0.010	0.005	0.015	1.325	1.941
Pub. Admin.	0.012	0.004	0.001	0.017	0.008	0.024	1.411	2.068
Comm. Servs.	0.021	0.002	0.000	0.023	0.010	0.033	1.100	1.550
Pers Servs	0.019	0.003	0.001	0.023	0.007	0.030	1.226	1.613
<b>Montague</b>	<b>0.810</b>	<b>0.055</b>	<b>0.018</b>	<b>0.882</b>	<b>0.453</b>	<b>1.336</b>	<b>1.090</b>	<b>1.650</b>

### APPENDIX 3: TOTAL MULTIPLIERS - (22 SECTOR TABLE) *(continued)*

#### A3.3: Household Income

Sector	Initial	First Round	Production Induced	Total	Consumption Induced	Total	Type I	Type II
Animal Ag	0.330	0.098	0.022	0.450	0.169	0.619	1.364	1.876
Other Agric.	0.854	0.053	0.016	0.923	0.347	1.270	1.081	1.488
AgServices	0.290	0.152	0.019	0.461	0.173	0.635	1.589	2.186
Fores/Fish	0.232	0.073	0.022	0.328	0.123	0.451	1.409	1.939
Mining	0.153	0.102	0.029	0.284	0.107	0.390	1.859	2.558
Food Mfg	0.261	0.110	0.035	0.406	0.152	0.558	1.554	2.139
Other Mfg	0.504	0.063	0.014	0.581	0.218	0.799	1.152	1.585
Wood Mfg	0.209	0.127	0.072	0.408	0.154	0.562	1.951	2.684
Paper Mfg	0.473	0.079	0.018	0.570	0.214	0.784	1.205	1.658
MineralMfg	0.142	0.076	0.033	0.252	0.095	0.346	1.767	2.430
Metal Mfg	0.461	0.074	0.019	0.554	0.208	0.762	1.201	1.653
Equip Mfg	0.207	0.072	0.032	0.312	0.117	0.429	1.506	2.072
Utilities	0.179	0.024	0.006	0.210	0.079	0.288	1.169	1.609
Building	0.228	0.090	0.040	0.358	0.135	0.493	1.572	2.163
Trade	0.393	0.073	0.020	0.485	0.182	0.668	1.235	1.700
Transport	0.268	0.082	0.024	0.374	0.141	0.515	1.395	1.919
Communica t	0.291	0.054	0.014	0.359	0.135	0.494	1.234	1.697
Finance	0.259	0.063	0.017	0.338	0.127	0.466	1.306	1.796
Pub. Admin.	0.389	0.117	0.035	0.541	0.203	0.745	1.391	1.914
Comm. Servs.	0.604	0.051	0.013	0.667	0.251	0.918	1.106	1.522
Pers Servs	0.386	0.095	0.026	0.507	0.191	0.698	1.314	1.807
Montague	0.696	0.037	0.010	0.744	0.253	0.997	1.069	1.432

#### A3.4: Regional Employment

Sector	Initial	First Round	Production Induced	Total	Consumption Induced	Total	Type I	Type II
Animal Ag	0.444	0.142	0.038	0.624	0.277	0.901	1.405	2.030
Other Agric.	0.680	0.083	0.024	0.787	0.569	1.356	1.157	1.994
AgServices	0.364	0.144	0.031	0.539	0.284	0.824	1.480	2.261
Fores/Fish	0.430	0.115	0.039	0.584	0.202	0.786	1.356	1.825
Mining	0.415	0.177	0.052	0.644	0.175	0.819	1.552	1.973
Food Mfg	0.301	0.152	0.055	0.507	0.250	0.757	1.688	2.519
Other Mfg	0.317	0.082	0.024	0.423	0.358	0.781	1.333	2.462
Wood Mfg	0.333	0.213	0.122	0.669	0.252	0.921	2.008	2.762
Paper Mfg	0.469	0.117	0.033	0.618	0.351	0.969	1.320	2.069
MineralMfg	0.354	0.163	0.063	0.579	0.155	0.734	1.638	2.077
Metal Mfg	0.378	0.094	0.031	0.503	0.341	0.844	1.330	2.234
Equip Mfg	0.372	0.111	0.056	0.538	0.192	0.730	1.448	1.965
Utilities	0.725	0.058	0.012	0.795	0.129	0.924	1.097	1.275
Building	0.449	0.157	0.073	0.679	0.221	0.900	1.512	2.004
Trade	0.571	0.138	0.037	0.746	0.299	1.045	1.306	1.830
Transport	0.557	0.149	0.044	0.750	0.231	0.981	1.346	1.760
Communica t	0.671	0.101	0.026	0.798	0.221	1.020	1.190	1.519
Finance	0.650	0.130	0.032	0.813	0.208	1.021	1.249	1.570
Pub. Admin.	0.448	0.187	0.061	0.696	0.334	1.029	1.553	2.298
Comm. Servs.	0.732	0.095	0.024	0.851	0.411	1.262	1.163	1.725
Pers Servs	0.475	0.169	0.047	0.692	0.313	1.004	1.455	2.113
Montague	0.045	0.001	0.000	0.047	0.010	0.057	1.032	1.255

APPENDIX 4: DISAGGREGATED MANAGEMENT IMPACTS - (22 SECTOR TABLE)

**A4.1: Gross Regional Output (\$'000)**

Sector	Final Demand	Production Induced	Consumption Induced	Total	(%)	Flow-on	(%)
Animal Ag	0.000	0.000	0.500	0.500	0.200	0.500	0.400
Other Agric.	0.000	0.010	0.800	0.820	0.300	0.820	0.700
AgServices	0.000	0.000	0.170	0.170	0.100	0.170	0.200
Forest/Fish	0.000	0.020	0.610	0.630	0.300	0.630	0.500
Mining	0.000	0.050	0.090	0.140	0.100	0.140	0.100
Food Mfg	0.000	0.020	3.900	3.930	1.700	3.930	3.600
Other Mfg	0.000	0.910	1.870	2.790	1.100	2.790	2.500
Wood Mfg	0.000	0.140	1.500	1.630	0.700	1.630	1.400
Paper Mfg	0.000	0.160	1.390	1.550	0.600	1.550	1.400
Mineral Mfg	0.000	0.140	0.300	0.450	0.200	0.450	0.300
Metal Mfg	0.000	0.390	0.440	0.830	0.400	0.830	0.700
EquipMfg	0.000	1.050	0.770	1.810	0.700	1.810	1.600
Utilities	0.000	0.220	3.610	3.830	1.700	3.830	3.500
Building	0.000	2.560	0.440	3.000	1.300	3.000	2.700
Trade	0.000	3.560	25.400	28.950	12.500	28.950	26.000
Transport	0.000	2.530	2.670	5.210	2.200	5.210	4.700
Communicat	0.000	1.620	4.200	5.830	2.500	5.830	5.200
Finance	0.000	1.360	24.730	26.060	11.100	26.060	23.300
Pub.Admin	0.000	0.950	2.010	2.960	1.300	2.960	2.600
Comm. Servs.	0.000	0.510	6.590	7.110	3.100	7.110	6.400
Pers. Servs.	0.000	0.900	12.630	13.530	5.800	13.530	12.100
Montague	121.070	0.000	0.000	121.070	2.000	0.000	0.000
<b>TOTAL</b>	<b>121.070</b>	<b>17.120</b>	<b>94.630</b>	<b>232.820</b>	<b>0.000</b>	<b>111.750</b>	<b>100.000</b>
<b>MULTIPLIER</b>	<b>1.000</b>	<b>0.141</b>	<b>0.782</b>	<b>1.923</b>		<b>0.923</b>	

**A4.2: Gross Regional Product (\$'000)**

Sector	Final Demand	Production Induced	Consumption Induced	Total	(%)	Flow-on	(%)
Animal Ag	0.000	0.000	0.230	0.230	0.100	0.230	0.300
Other Agric.	0.000	0.010	0.550	0.560	0.300	0.560	0.900
AgServices	0.000	0.000	0.060	0.060	0.000	0.060	0.100
Forest/Fish	0.000	0.010	0.260	0.270	0.100	0.270	0.400
Mining	0.000	0.040	0.050	0.090	0.100	0.090	0.100
Food Mfg	0.000	0.000	1.180	1.190	0.700	1.190	1.900
Other Mfg	0.000	0.320	0.670	0.990	0.600	0.990	1.400
Wood Mfg	0.000	0.040	0.530	0.570	0.400	0.570	0.800
Paper Mfg	0.000	0.070	0.660	0.720	0.500	0.720	1.200
Mineral Mfg	0.000	0.040	0.130	0.160	0.000	0.160	0.300
Metal Mfg	0.000	0.160	0.180	0.320	0.100	0.320	0.500
EquipMfg	0.000	0.300	0.270	0.590	0.300	0.590	1.000
Utilities	0.000	0.160	2.610	2.790	1.700	2.790	4.400
Building	0.000	1.330	0.200	1.530	0.900	1.530	2.500
Trade	0.000	2.160	14.150	16.320	10.100	16.320	25.700
Transport	0.000	0.920	1.540	2.470	1.500	2.470	4.000
Communicat	0.000	1.090	2.820	3.910	2.400	3.910	6.100
Finance	0.000	0.960	17.130	18.080	11.200	18.080	28.300
Pub.Admin	0.000	0.430	0.910	1.330	0.800	1.330	2.100
Comm. Servs.	0.000	0.340	4.800	5.140	3.200	5.140	8.100
Pers. Servs.	0.000	0.390	5.960	6.370	3.900	6.370	10.000
Montague	98.020	0.000	0.000	98.020	60.600	0.000	0.000
<b>TOTAL</b>	<b>98.020</b>	<b>8.820</b>	<b>54.890</b>	<b>161.720</b>	<b>100.000</b>	<b>63.700</b>	<b>100.000</b>
<b>MULTIPLIER</b>	<b>1.000</b>	<b>0.090</b>	<b>0.560</b>	<b>1.650</b>		<b>0.650</b>	

**APPENDIX 4: DISAGGREGATED MANAGEMENT IMPACTS - (22 SECTOR TABLE)**  
(continued)

**A4.3: Household Income (\$'000)**

Sector	Final Demand	Production Induced	Consumption Induced	Total	(%)	Flow-on	(%)
Animal Ag	0.000	0.000	0.180	0.180	0.100	0.180	0.500
Other Agric.	0.000	0.010	0.690	0.700	0.600	0.700	1.900
AgServices	0.000	0.000	0.050	0.050	0.000	0.050	0.100
Forest/Fish	0.000	0.000	0.150	0.150	0.100	0.150	0.400
Mining	0.000	0.010	0.010	0.010	0.000	0.010	0.000
Food Mfg	0.000	0.000	1.010	1.010	0.800	1.010	2.900
Other Mfg	0.000	0.470	0.730	1.180	0.900	1.180	3.300
Wood Mfg	0.000	0.030	0.280	0.310	0.200	0.310	0.800
Paper Mfg	0.000	0.040	0.670	0.720	0.500	0.720	2.000
Mineral Mfg	0.000	0.010	0.060	0.080	0.000	0.080	0.200
Metal Mfg	0.000	0.220	0.210	0.420	0.400	0.420	1.200
EquipMfg	0.000	0.200	0.200	0.410	0.200	0.410	1.200
Utilities	0.000	0.040	0.630	0.680	0.600	0.680	1.800
Building	0.000	1.120	0.100	1.220	1.100	1.220	3.400
Trade	0.000	1.230	10.590	11.820	9.800	11.820	32.400
Transport	0.000	0.470	0.780	1.260	1.100	1.260	3.500
Communicat	0.000	0.470	1.220	1.700	1.400	1.700	4.700
Finance	0.000	0.510	3.470	3.970	3.400	3.970	11.000
Pub.Admin	0.000	0.370	0.790	1.160	1.000	1.160	3.200
Comm. Servs.	0.000	0.280	3.940	4.230	3.400	4.230	11.700
Pers. Servs.	0.000	0.270	4.890	5.160	4.300	5.160	14.300
Montague	84.260	0.000	0.000	84.260	9.800	0.000	0.000
<b>TOTAL</b>	<b>84.260</b>	<b>5.770</b>	<b>30.640</b>	<b>120.680</b>	<b>0.000</b>	<b>36.410</b>	<b>100.000</b>
<b>MULTIPLIER</b>	<b>1.000</b>	<b>0.069</b>	<b>0.364</b>	<b>1.432</b>		<b>0.432</b>	

**A4.4: Regional Employment (No. of Jobs)**

Sector	Final Demand	Production Induced	Consumption Induced	Total	(%)	Flow-on	(%)
Animal Ag	0.000	0.000	0.020	0.020	0.200	0.020	1.300
Other Agric.	0.000	0.000	0.030	0.040	0.500	0.040	2.600
AgServices	0.000	0.000	0.000	0.000	0.000	0.000	0.100
Forest/Fish	0.000	0.000	0.000	0.000	0.100	0.000	0.300
Mining	0.000	0.000	0.000	0.000	0.000	0.000	0.000
Food Mfg	0.000	0.000	0.020	0.020	0.400	0.020	2.200
Other Mfg	0.000	0.010	0.010	0.030	0.400	0.030	2.100
Wood Mfg	0.000	0.000	0.010	0.010	0.100	0.010	0.700
Paper Mfg	0.000	0.000	0.020	0.020	0.300	0.020	1.500
Mineral Mfg	0.000	0.000	0.000	0.000	0.000	0.000	0.000
Metal Mfg	0.000	0.000	0.000	0.010	0.100	0.010	0.800
EquipMfg	0.000	0.010	0.000	0.010	0.200	0.010	1.000
Utilities	0.000	0.000	0.010	0.010	0.300	0.010	1.200
Building	0.000	0.030	0.000	0.030	0.500	0.030	2.500
Trade	0.000	0.050	0.490	0.550	7.900	0.550	38.800
Transport	0.000	0.010	0.020	0.030	0.500	0.030	2.400
Communicat	0.000	0.010	0.030	0.050	0.700	0.050	3.300
Finance	0.000	0.010	0.100	0.100	1.600	0.100	8.300
Pub.Admin	0.000	0.010	0.020	0.030	0.500	0.030	2.500
Comm. Servs.	0.000	0.010	0.150	0.160	2.100	0.160	10.200
Pers. Servs.	0.000	0.010	0.250	0.250	3.600	0.250	17.800
Montague	5.460	0.000	0.000	5.460	9.700	0.000	0.000
<b>TOTAL</b>	<b>5.460</b>	<b>0.170</b>	<b>1.220</b>	<b>6.860</b>	<b>0.000</b>	<b>1.390</b>	<b>100.000</b>
<b>MULTIPLIER</b>	<b>1.000</b>	<b>0.032</b>	<b>0.224</b>	<b>1.255</b>		<b>0.255</b>	

## APPENDIX 5: DISAGGREGATED VISITOR EXPENDITURE IMPACTS - (22 SECTOR TABLE)

### A5.1: Gross Regional Output (\$'000)

Sector	Final Demand	Production Induced	Consumption Induced	Total	(%)	Flow-on	(%)
Animal Ag	0.000	1.990	1.960	3.940	0.200	3.940	0.600
Other Agric.	0.000	3.970	3.110	7.090	0.500	7.090	1.000
AgServices	0.000	0.270	0.650	0.920	0.100	0.920	0.100
Forest/Fish	0.000	11.840	2.360	14.200	1.100	14.200	2.000
Mining	0.000	0.440	0.340	0.780	0.000	0.780	0.100
Food Mfg	0.000	14.090	15.150	29.260	2.200	29.260	4.200
Other Mfg	0.000	4.190	7.220	11.420	0.800	11.420	1.700
Wood Mfg	0.000	3.900	5.810	9.720	0.700	9.720	1.400
Paper Mfg	0.000	8.180	5.390	13.580	0.900	13.580	2.000
Mineral Mfg	0.000	2.270	1.190	3.460	0.200	3.460	0.400
Metal Mfg	0.000	4.270	1.680	5.950	0.500	5.950	0.900
EquipMfg	0.000	8.160	2.960	11.100	0.700	11.100	1.600
Utilities	0.000	15.470	13.990	29.460	2.100	29.460	4.300
Building	0.000	2.960	1.710	4.660	0.300	4.660	0.600
Trade	112.870	25.080	98.460	47.450	6.800	123.530	17.700
Transport	162.470	82.760	10.360	45.180	8.000	93.130	13.300
Communicat	0.550	17.260	16.290	34.100	2.400	33.550	4.800
Finance	0.000	87.990	95.820	183.830	13.000	183.830	26.300
Pub.Admin	0.000	2.560	7.810	10.370	0.700	10.370	1.500
Comm. Servs.	1.110	22.700	25.570	49.380	3.500	48.280	6.900
Pers. Servs.	439.770	8.560	48.980	36.020	5.300	57.540	8.300
Montague	0.000	0.000	0.000	0.000	0.000	0.000	0.000
<b>TOTAL</b>	<b>716.760</b>	<b>328.920</b>	<b>366.830</b>	<b>1412.100</b>	<b>0.000</b>	<b>695.750</b>	<b>100.000</b>
<b>MULTIPLIER</b>	<b>1.000</b>	<b>0.459</b>	<b>0.512</b>	<b>1.971</b>		<b>0.971</b>	

### A5.2: Gross Regional Product (\$'000)

Sector	Final Demand	Production Induced	Consumption Induced	Total	(%)	Flow-on	(%)
Animal Ag	0.000	0.920	0.880	1.800	0.200	1.800	0.500
Other Agric.	0.000	2.720	2.140	4.850	0.700	4.850	1.300
AgServices	0.000	0.100	0.240	0.340	0.000	0.340	0.100
Forest/Fish	0.000	4.850	1.020	5.860	0.900	5.860	1.500
Mining	0.000	0.280	0.210	0.490	0.100	0.490	0.100
Food Mfg	0.000	3.870	4.530	8.410	1.200	8.410	2.300
Other Mfg	0.000	1.390	2.570	3.980	0.400	3.980	0.900
Wood Mfg	0.000	1.290	2.040	3.310	0.500	3.310	0.900
Paper Mfg	0.000	3.850	2.540	6.380	0.900	6.380	1.700
Mineral Mfg	0.000	1.020	0.470	1.510	0.200	1.510	0.300
Metal Mfg	0.000	1.670	0.700	2.380	0.300	2.380	0.700
EquipMfg	0.000	2.470	1.090	3.580	0.500	3.580	0.900
Utilities	0.000	11.210	10.130	21.350	3.100	21.350	5.500
Building	0.000	1.520	0.770	2.290	0.300	2.290	0.600
Trade	61.490	14.380	54.870	130.720	18.900	69.230	18.100
Transport	37.460	35.650	5.970	79.080	11.300	41.640	10.800
Communicat	0.370	11.580	10.930	22.880	3.300	22.510	5.900
Finance	0.000	52.200	66.360	118.530	17.000	118.530	30.900
Pub.Admin	0.000	1.150	3.520	4.670	0.700	4.670	1.200
Comm. Servs.	0.800	14.380	18.630	33.820	5.000	33.020	8.500
Pers. Servs.	212.210	3.890	23.150	239.250	34.400	27.040	7.100
Montague	0.000	0.000	0.000	0.000	0.000	0.000	0.000
<b>TOTAL</b>	<b>312.320</b>	<b>170.400</b>	<b>212.770</b>	<b>695.490</b>	<b>100.000</b>	<b>383.170</b>	<b>100.000</b>
<b>MULTIPLIER</b>	<b>1.000</b>	<b>0.546</b>	<b>0.681</b>	<b>2.227</b>		<b>1.227</b>	



**APPENDIX 5: DISAGGREGATED VISITOR EXPENDITURE IMPACTS - (22 SECTOR TABLE) (continued)**

**A5.3: Household Income (\$'000)**

Sector	Final Demand	Production Induced	Consumption Induced	Total	(%)	Flow-on	(%)
Animal Ag	0.000	0.820	0.710	1.530	0.300	1.530	0.700
Other Agric.	0.000	3.400	2.670	6.060	1.300	6.060	2.700
AgServices	0.000	0.080	0.190	0.270	0.100	0.270	0.100
Forest/Fish	0.000	2.580	0.550	3.130	0.600	3.130	1.400
Mining	0.000	0.040	0.030	0.090	0.000	0.090	0.000
Food Mfg	0.000	3.620	3.920	7.540	1.600	7.540	3.500
Other Mfg	0.000	2.120	2.800	4.920	0.900	4.920	2.300
Wood Mfg	0.000	0.820	1.100	1.930	0.400	1.930	0.800
Paper Mfg	0.000	3.960	2.580	6.540	1.400	6.540	2.900
Mineral Mfg	0.000	0.440	0.200	0.660	0.100	0.660	0.300
Metal Mfg	0.000	2.320	0.830	3.170	0.700	3.170	1.400
EquipMfg	0.000	1.680	0.760	2.440	0.500	2.440	1.100
Utilities	0.000	2.780	2.480	5.250	1.100	5.250	2.300
Building	0.000	1.230	0.400	1.640	0.400	1.640	0.700
Trade	49.840	9.310	41.040	16.770	11.500	50.360	22.700
Transport	19.270	15.470	3.030	37.770	8.100	18.500	8.400
Communicat	0.160	5.020	4.740	9.930	2.100	9.770	4.400
Finance	0.000	31.640	13.420	45.070	9.700	45.070	20.400
Pub.Admin	0.000	1.000	3.060	4.060	0.900	4.060	1.800
Comm. Servs.	0.650	10.990	15.310	26.950	5.700	26.300	12.000
Pers. Servs.	176.830	2.920	18.950	10.740	2.500	21.860	9.800
Montague	0.000	0.000	0.000	0.000	0.000	0.000	0.000
<b>TOTAL</b>	<b>246.750</b>	<b>102.270</b>	<b>118.780</b>	<b>467.810</b>	<b>0.000</b>	<b>221.060</b>	<b>100.000</b>
<b>MULTIPLIER</b>	<b>1.000</b>	<b>0.414</b>	<b>0.481</b>	<b>1.896</b>		<b>0.896</b>	

**A5.4: Regional Employment (No. of Jobs)**

Sector	Final Demand	Production Induced	Consumption Induced	Total	(%)	Flow-on	(%)
Animal Ag	0.000	0.120	0.070	0.180	0.900	0.180	2.300
Other Agric.	0.000	0.180	0.140	0.330	1.700	0.330	4.100
AgServices	0.000	0.000	0.010	0.010	0.000	0.010	0.100
Forest/Fish	0.000	0.080	0.010	0.100	0.500	0.100	1.300
Mining	0.000	0.000	0.000	0.000	0.000	0.000	0.000
Food Mfg	0.000	0.120	0.100	0.220	1.200	0.220	2.900
Other Mfg	0.000	0.040	0.070	0.130	0.600	0.130	1.600
Wood Mfg	0.000	0.030	0.040	0.070	0.400	0.070	0.900
Paper Mfg	0.000	0.110	0.070	0.190	0.900	0.190	2.400
Mineral Mfg	0.000	0.010	0.000	0.020	0.000	0.020	0.200
Metal Mfg	0.000	0.060	0.030	0.080	0.500	0.080	1.000
EquipMfg	0.000	0.040	0.010	0.070	0.300	0.070	1.000
Utilities	0.000	0.060	0.060	0.130	0.600	0.130	1.600
Building	0.000	0.030	0.010	0.050	0.300	0.050	0.600
Trade	2.490	0.350	1.920	0.580	4.800	2.260	28.400
Transport	0.300	0.360	0.090	0.750	3.900	0.450	5.800
Communicat	0.000	0.140	0.130	0.270	1.400	0.270	3.400
Finance	0.000	0.970	0.400	1.380	7.200	1.380	17.300
Pub.Admin	0.000	0.030	0.090	0.120	0.600	0.120	1.500
Comm. Servs.	0.020	0.320	0.520	0.860	4.400	0.840	10.400
Pers. Servs.	8.370	0.140	0.920	0.500	9.200	1.050	13.200
Montague	0.000	0.000	0.000	0.000	0.000	0.000	0.000
<b>TOTAL</b>	<b>11.170</b>	<b>3.210</b>	<b>4.740</b>	<b>19.120</b>	<b>0.000</b>	<b>7.950</b>	<b>100.000</b>
<b>MULTIPLIER</b>	<b>1.000</b>	<b>0.288</b>	<b>0.424</b>	<b>1.711</b>		<b>0.71</b>	