

**Economic and Social Impacts
of the Coppabella Mine
on the Nebo Shire
and the Mackay Region**

PART II: Economic Impacts Study
(Draft Final Report)
REVISED

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PART II: Economic Impacts Assessment

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1.0 INTRODUCTION

The key issue of interest is to identify the economic impacts of the Coppabella Coal Mine on the local economy. This is primarily the townships of Nebo and Coppabella within the Nebo Shire. It is expected that the mine will contribute both directly and indirectly to the economic impact. Direct impacts will come through employing people in the Shire, and purchasing goods and services from local businesses. Indirect impacts will occur through the flow on effects of increased spending and employment.

The issue of economic impacts on the local area is a very separate one to an assessment of the economic viability of the mining project. That question is addressed through the State Government approvals process for major new developments in Queensland. The approvals process ensures that major projects that are commercially viable do not impose spillover costs on other parts of the community that are not accounted for. Agreement is often reached with the project proponent about how spillover effects might be limited and where the responsibility for those effects might lie.

Identification of the local economic effects of a major project is important because there is no guarantee that a major project will have a large effect on a small community. There are a number of reasons for this. Some are specific to a project, and include factors such as scale, labour force requirements and purchasing needs and patterns. Some are specific to the community, and include the ability to supply goods and services, and the opportunities for capturing consumer spending. Some project operators may have specialised needs which mean that most goods and services are sourced from outside a local area. Larger communities have more potential than smaller ones to provide business services and capture consumer spending.

The variety of project specific and community specific factors mean that the economic impacts on communities will be different for each project. This is why a case study approach is required to identify what the circumstances of each particular situation are. A case study can help regional communities to identify areas of spending leakages and potential for increasing economic activity. Communities, regions and government areas are effectively competing for resources and population in the same way that businesses compete for business opportunities and customers. Helping communities and regions to identify where economic activity can be increased will make them more competitive and attractive for businesses and population.

To explore these issues, this report is structured as follows. In the next section, an overview of how economic impacts occur and how they might be assessed is presented. In Section 3.0, a community economic analysis is provided for the Nebo Shire, while in Section 4.0 the amount of direct expenditure from the Coppabella Coal mine into the Nebo Shire is estimated. The economic impacts of this expenditure are assessed in Section 5, and the results of an input – output study are presented in Section 6. The potential for the Nebo Shire business community to capture a greater share of mine spending is assessed in Section 7.0 and Conclusions are drawn in Section 8.0.

2.0 HOW DO ECONOMIC IMPACTS OCCUR?

Major projects or significant changes in an area can be expected to have some impacts¹ on the local or regional areas where they occur. While many impacts of a project may be beneficial, some may adversely impact on an area. For this reason, it is commonplace to summarise and evaluate the net impacts of a project on a region in some form of an impact assessment process. Typically, impacts are classed into three major groups and evaluated separately. Those groups are economic, social and environmental. For example, an Environmental Impact Assessment (EIA) is now a standard requirement for most major projects. It is possible, and sometimes desirable, to evaluate other impacts separately. Examples of other summaries that might be possible include impact assessments of health impacts, energy requirements or greenhouse gas emissions.

An Environmental Impact Assessment will normally include some overview of economic and social impacts of a major project. However, those impacts are not normally covered as rigorously in an EIA as the environmental impacts. This is because economic and social impacts tend to be positive ones, and because the responsibility for those factors usually lies with government and other groups rather than the project proponent. The result is that something is known about the economic impact of a project in terms of its total spending, there is usually little information available about the net impacts of major projects on regions and local areas.

The impacts of a project on a local or regional area can be summarised in the following way. The key concepts of interest (Jensen & West 2002) are:

- The extent to which project operators purchase inputs from the local or regional economy. Examples of inputs include wages for labour supplied from the local or regional area, and purchases of goods and services. The more that a project operator sources from the local or regional economy, the more money that is directly injected into the economy.
- The extent to which money spent in a local or regional economy is retained within that economy. If there is not much opportunity for people receiving income to spend it on goods and services in their local or regional area, then not as much money will be kept in the local or regional area. Larger and more diverse regional economies tend to be better at keeping expenditure in their economy and not ‘losing’ it to other regions.

The first concept can be thought of as the amount of direct injection of money into the local or regional economy that can be sourced from a particular project. The second concept can be thought of as the extent to which that initial injection is multiplied through the economy by secondary expenditure. Initial expenditure flows become revenue and income to the people and firms providing labour, goods and services to the project operator. Those people and firms can then spend that revenue and income, creating secondary economic impacts. In this way, an initial injection of expenditure can be multiplied into a larger economic effect on a region.

¹ Impact is a term that could also be explained by words such as *effect, result, incidence, consequence* and *contribution* (Jensen & West 2002).

The multiplier effect is limited, because at each round of expenditure some money is lost to pay for goods and services that come from outside the region. As well, some money will be allocated to pay for taxes, and for savings purposes. Only a proportion of money that is spent in a region becomes available for expenditure in that region in a subsequent expenditure round.

The multiplier effect of an initial injection of expenditure into a regional economy is depicted in Figure 2.1. This shows the impacts of expenditure when the regional economy can capture 40% of each round of expenditure for subsequent spending. In each round, 60% of expenditure goes out of the region, or is diverted for other purposes such as taxation or savings. After six rounds, the economic impact of the initial injection of expenditure falls close to zero, and the net secondary effect of the \$1 injection of funds is \$0.66. The total economic impact can be assessed as a multiple of 1.66 times the initial injection of money. In regional economies that do not attract much secondary expenditure, multipliers can be expected to be low, while in regional economies that do not have much “leakage” of expenditure, multipliers will be much higher.

A simplistic approach to estimating the total economic impacts of expenditure into a regional economy can therefore be generated by estimating

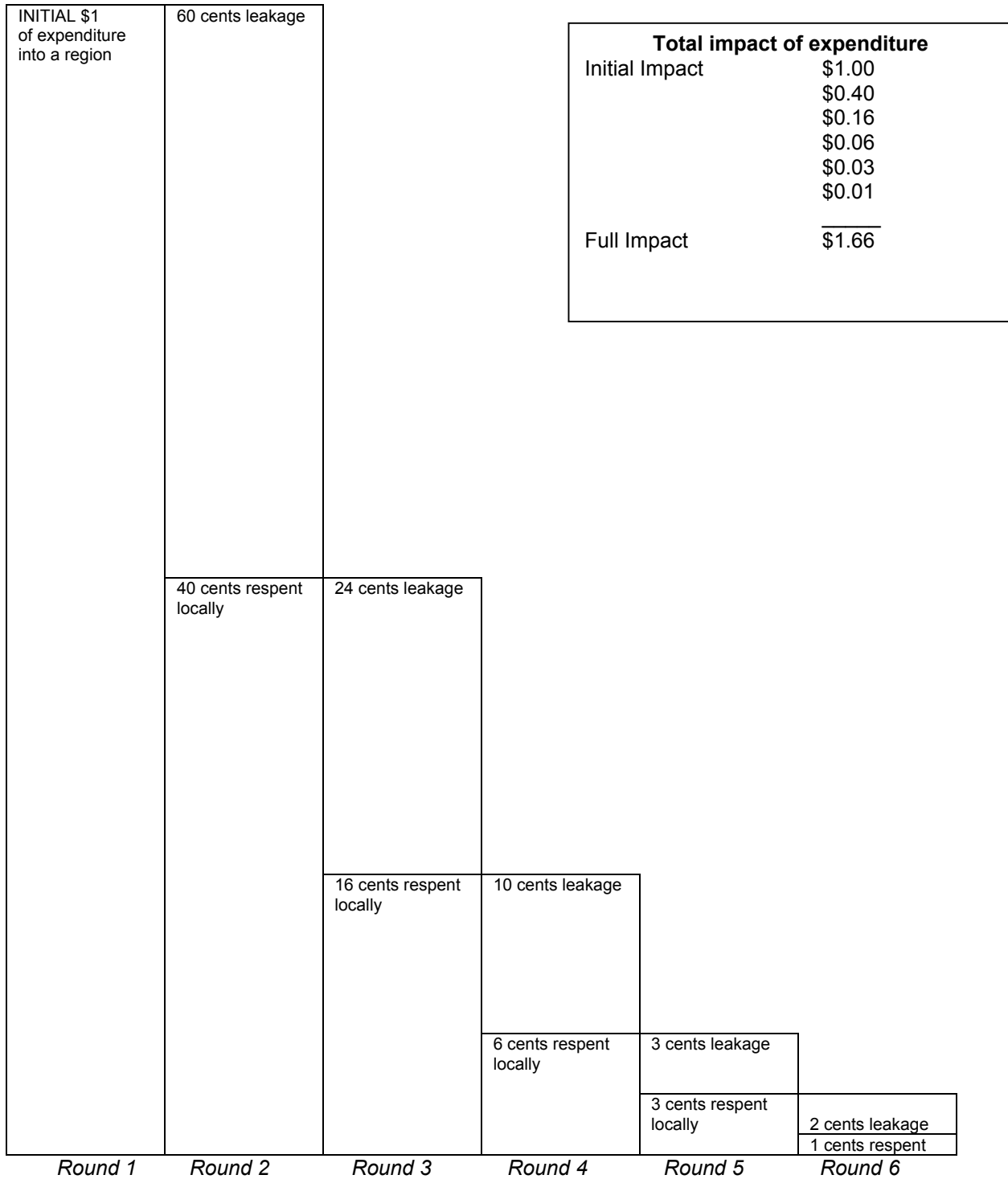
- (a) the size of the direct impacts (the amount of expenditure injected) and
- (b) the multiplier effect.

This approach is demonstrated in Sections 4.0 and 5.0 of this report.

While this approach is useful for demonstration purposes, it is not the most accurate way of estimating economic impacts. For that purpose, mathematical models termed input-output models are used. These model a regional economy in terms of a number of sectors, and allow for differential impacts between sectors, depending on the extent to which sectors supply inputs to each other. Input-output models have been developed for regions of the Queensland economy. Because the models are complex to build and operate, separate models are not available at a Shire level. However, estimates about economic impacts at a Shire level can be made from an input-output model.

The input-output approach is demonstrated in Section 6.0 of this report.

Figure 2.1 How expenditure is multiplied in an economy (not fully to scale)
 (Adapted from Jensen & West 2002).



2.1 Estimating the multiplier in the simplistic approach

The multiplier effect can be estimated by the application of what are known as Keynesian multipliers. This relates the increase in economic activity from an initial spending injection to both the propensity of spenders to shop locally, and the proportion of expenditure that becomes income to local residents (Jensen and West 2002). A simple formulation of the Keynesian income multiplier is as follows (where k stands for the multiplier):

$$k = 1/(1 - MPC_L \times PSY)$$

Where:

MPC_L is the marginal (or average) propensity to consume locally, or the proportion of income (or income change) which is spent locally,

and

PSY is the proportion of local consumption expenditures that eventually becomes local income, i.e. local salaries and wages, profits and interest payments. It is an expression of the proportion of each dollar spent locally which ends up in the pockets of the local community rather than paying for imported goods and services (Jensen and West 2002, pp.13-16).

Jensen and West (2002) suggest that for small communities (less than 5000 people), the MPC_L will range from 0.2 – 0.4. For larger communities, the MPC_L will be more like 0.6 - 0.7. For the Nebo community, which has less than 1,000 people, the MPC_L is likely to be 0.2 or lower, while for the Mackay region, the MPC_L may be more like 0.7.

The PSY can be expected to range between 0.25 and 0.75. Higher proportions are expected in service industries where labour is a high proportion of total costs. Lower proportions are expected where most of the business turnover reflects goods and services purchased in from outside a local area. In small communities the PSY can often take the value of about 0.4 – 0.5.

The range of values for an income multiplier can be demonstrated by using the low, medium and high values for the MPC_L and PSY (Jensen & West 2002, pp. 13-16).

Taking the highest values in the range:

$$k = 1/(1 - 0.8 \times 0.75) = 2.5$$

Taking the middle-range values:

$$k = 1/(1 - 0.5 \times 0.25) = 1.33$$

Taking the lowest values in the range:

$$k = 1/(1 - 0.2 \times 0.25) = 1.05$$

These examples demonstrate the range of values that a multiplier might take. The examples show that if \$1 of additional income is added to a regional economy, the resulting indirect or flow-on impact on incomes can be expected to range from \$1.50 down to \$0.05. Jensen and West (2002) suggest that the multipliers for small regions would be approximately 1.15 to 1.2.

These exercises demonstrate that the flow-on effects of spending in small communities tends to be limited. This is because:

- (a) it is difficult for small communities to capture a high proportion of spending, and
- (b) a large proportion of business inputs (goods and services) have to be sourced from outside the small community.

An example of a multiplier is presented in ACIL Consulting (2002a), where they suggest that for every dollar of salary in the mining industry, about 56 cents is spent in the regional community. The estimate was made by looking at Australian Bureau of Statistics (ABS) household expenditure information from 1993/94, and excluding payments for tax, superannuation, housing, and half of recreation and miscellaneous services.

Table 2.1 Average Weekly Household Expenditure in Queensland

	Gross income quintile					Average
	Lowest 20%	Second quintile	Third quintile	Fourth quintile	Highest 20%	
AVERAGE WEEKLY HOUSEHOLD EXPENDITURE (\$)						
Upper boundary of income quintile group (\$)	293	495	773	1,252
Broad expenditure group						
Goods and services						
Current housing costs	55.32	72.03	98.69	129.23	130.09	96.99
Domestic fuel and power	9.80	11.66	12.35	15.13	16.01	12.99
Food and non-alcoholic beverages	63.96	93.65	108.06	146.71	172.34	116.88
Alcoholic beverages	7.38	11.15	19.71	22.01	34.74	18.96
Tobacco products	6.36	10.55	10.39	13.87	11.39	10.52
Clothing and footwear	10.77	17.57	19.18	32.16	49.87	25.89
Household furnishings and equipment	24.74	26.12	32.89	54.97	64.67	40.65
Household services and operation	27.10	33.84	36.36	51.42	55.58	40.85
Medical care and health expenses	18.04	20.85	24.74	36.52	49.63	29.93
Transport	41.07	69.54	111.17	141.02	175.23	107.46
Recreation	38.29	61.30	72.74	89.61	144.37	81.18
Personal care	5.79	8.00	10.57	14.31	21.46	12.01
Miscellaneous goods and services	26.92	34.55	47.76	64.84	99.73	54.69
Total goods and services expenditure	335.55	470.82	604.62	811.81	1,025.12	648.99
Selected other payments						
Income tax	1.75	14.62	83.11	182.46	430.76	142.12
Mortgage repayments-principal	5.04	7.46	21.89	42.77	44.49	24.29
Superannuation and life insurance	3.30	4.09	11.51	20.65	55.90	19.04

This approach can be updated using more recent ABS data, and focusing on the income range appropriate for employees in the mining industry. The relevant data is reported in Table 2.1. Using this data for the upper income quintile, income tax, superannuation and mortgage repayments are estimated to be 34.1% of total expenditure and are leakages to the regional area. Housing costs are a further 8.4%, and can be apportioned between regional spending (in the case of rental income) and leakages (in the case of interest payments on housing loans). In a simple exercise, a 50:50 split may be adopted. If half of recreation and miscellaneous services are also categorised as leakages, the proportion of each dollar of income that is lost to

a region is approximately 50%. This provides a baseline estimate of the MPC_L for the Mackay region.

2.2 Previous work on input-output studies

Input-output models have been used in previous studies to provide estimates about the economic impact of mining activities in Queensland. An example comes from ACIL Consulting (2002a) where the impacts of the operation of the Hail Creek mine in the Nebo Shire are modelled for the Queensland economy. The Hail Creek mine is 35 kilometres north-west of Nebo, and is projected to produce 5.5 M tonnes of coal per annum with a workforce of approximately 200 people.

A multi-regional impact model (MRIP) was used to assess the benefits of Hail Creek as a new project (ACIL Consulting 2002a). The model assessed the projected impacts of the project over 10 regional areas of Queensland and across 32 industry sectors. In summary, the results predicted that the impact of the operations phase of the mine would generate:

- *gross output effects per annum of between \$474 and \$630 million,*
- *net additions to State product of \$219 to \$303 million,*
- *job creation of between 2,549 to 3,687 positions, and*
- *net regional income growth of \$93 to \$130 million (ACIL Consulting 2002a p.18)*

The proportion of the impact that was projected for the Mackay statistical region ranged from 0.55 for job creation to .7 for net regional income growth. When the projected increase in State product is averaged across the projected increase in jobs, the annual distribution per job is \$83,700. This implies that all or most of the benefits of new production flow to Queenslanders. It is possible that there are substantial leakages out of Queensland in the form of dividends to shareholders, interest payments to financiers, and input payments to suppliers. ACIL Consulting (2002b) indicates that approximately 50% of annual investment expenditure in the mining industry is retained within Queensland and 50% flows outside the state. The size of the leakage should be smaller for operational spending from mines, but may still be substantial.

More conservative estimates of the impacts of mining from input-output studies are reported in ACIL Consulting 2002b, drawing on the work of Mangan (2002). This work was focused more specifically on the impacts of investment in mining rather than the operational phase. The authors report that mining-related investment projects annually inject into the Queensland economy

- *Over \$1150 million in additional output*
- *\$260 million in additional incomes to workers and shareholders*
- *\$550 million in value added*
- *over 2500 new jobs and the support of over 3700 existing jobs (ACIL Consulting 2002b p. 23).*

These results confirm that new mining activities in Queensland can be expected to generate significant impacts in terms of employment, additional output, additional incomes, and the creation of new value-added activities. For every \$1 million of additional mine output, there are approximately 2.2 new jobs created, and an additional 3.2 jobs supported. Seventy percent of that job creation is expected to occur in the region where the mining activities take place.

3.0 COMMUNITY ECONOMIC ANALYSIS FOR THE NEBO SHIRE

In the previous section, it was described how injections of spending into a local economy can create subsequent rounds of spending activity through a multiplier effect. The size of the multiplier effect is largely determined by the extent to which local consumption is captured in the local economy, and the proportion of business inputs that can be sourced from the local economy. To provide some background on these issues, a description of the local economy is useful. This helps to identify key relationships within a local economy and to generate information about the likely range of the multiplier effects. In this section, a brief community economic analysis is provided for the Nebo Shire.

The Nebo Shire comprises 10,009 km², of which the majority is used for low-intensity beef grazing purposes. There are three small towns in the Shire, being Nebo, Glenden and Coppabella. Nebo is the administrative hub of the Shire, with the townships of Coppabella and Glenden established to support the mining industry. Coppabella was established in 1971 by Queensland Rail to house employees working in rail operations associated with transporting coal from a number of mines. Glenden was built as the residential base for the Newlands Mine which is mostly located outside the Shire boundaries.

Based on the 2001 Census, the Shire's population was 2,529 with 54% of residents in urban centres and 46% the rural balance. This represents an increase of 67 people (2.7%) since 1996 and a decrease of 105 people (4.0%) since 1991 (ABS 2001). Mining commenced at Coppabella in July 1998, thus any relevant impacts of the operation would be expected to be reflected in the 2001 Census data. The statistics mask population shifts within the Shire where decreases at Glenden have been effectively offset by increases at Nebo and Coppabella.

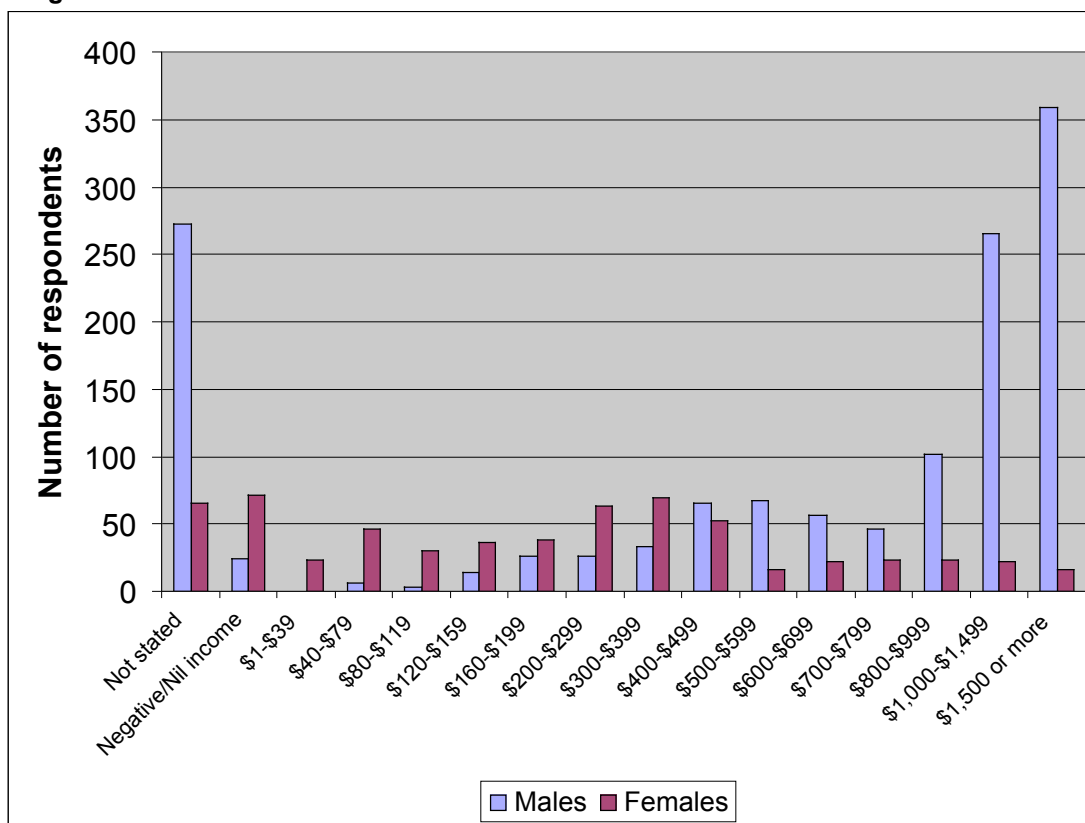
In 2001, there were 260 family couples with children (which comprised 55% of all families in occupied private dwellings, 176 couple families without children (38%), 29 one parent families (6.2%), and 4 other families (0.85%). There were 43 people (2.4% of persons) in occupied private dwellings in group households and 127 people (7.0%) in lone person households.

Population projections for the period 1996 – 2021 (Department of Local Government and Planning 2001) indicate a continuing population decline for Nebo Shire. However in a regional context, Mackay City, Mirani and Sarina Shires are expected to have population increases. Some of the decline in the Nebo Shire is likely to come from the Glenden township, as mine restructures and other trends means not as high a proportion of the workforce is located in the adjacent township. This means that it is not necessarily the case that the population of the Nebo and Coppabella townships will decline.

At the time of the 1996 Census, the overall unemployment rate of the Shire was 3.2%, compared with 9.7% for Queensland. The Shire had 0.1% of Queensland's employed persons and 0.0% of Queensland's unemployed persons. The participation rate was 74.6%, which is higher than that recorded for Queensland (63.2%) (ABS data cited in OESR 2001, p. 9). It is likely that the unemployment rate is low because proximity to Mackay and the lack of cheap housing means that job-seekers tend to move to larger centres. However, it does indicate that employment rates within the Nebo Shire are strong.

In 2001, the Shire’s median weekly income was \$700 – 799. Due to differences in methodologies and other factors, the figures from 1996 and 1991 are not directly comparable. It is worth noting that the median income in these years was \$500 – 599, and \$300 – 399 respectively. This suggests that there has been a substantial rise in Shire incomes as mining activities have developed. Some care has to be taken with using median or average income figures because they may hide large imbalances in the distribution of income. This issue is explored in Figure 3.1 where the distribution of weekly income is depicted for males and females in the Shire.

Figure 3.1 Distribution of income within the Nebo Shire.

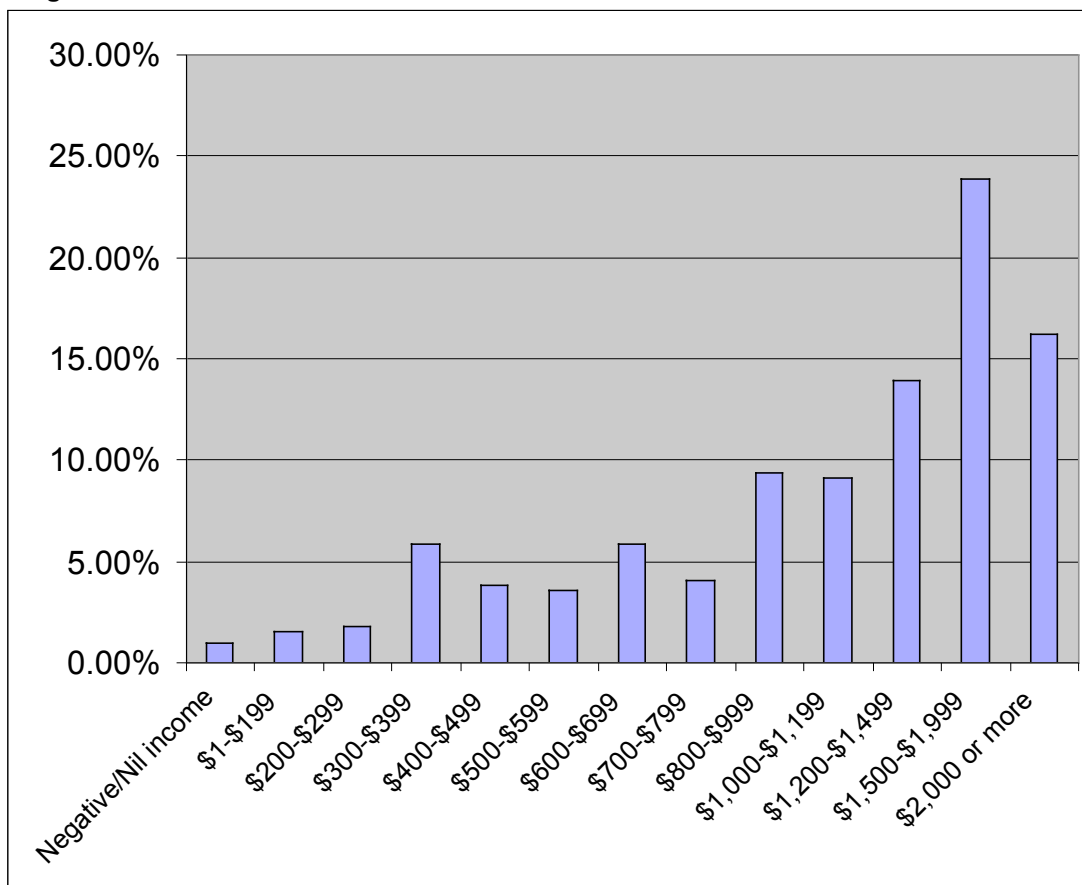


Source: ABS Census data 2001

The results show that 33% of people in the Shire, (presumably in the mining industry), who are earning more than \$1000 per week, and a further 6.3% are earning \$800 - \$1000 per week. There is a substantial group earning negative or very low incomes (13% earn \$200/week or less), and an intermediate group (11%) earning between \$300 and \$500. Women in the Shire earn significantly less than men.

Income is important in predicting economic activity and as an indicator of local welfare. Income provides one indication of the standard of living, as well as a measure of the ability to spend (Jensen and West 2002). The income statistics by family drawn from the 2001 census data (excluding non-responses and partial responses) is shown in Figure 3.2. This demonstrates that 27.4% of families have less than \$800/week income, 32.5% have between \$800/week and \$1500/week income, and 40.1% have more than \$1500/week income.

Figure 3.2 Income of families in the Nebo Shire



Source: ABS Census data 2001.

In the context of the ABS' Social Economic Index, Nebo Shire was 992, where the nominal average index value for determining socio-economic disadvantaged areas is 1000 (ABS 1996, in Department of Local Government and Planning 2002). While the region is expected to realise population growth over the next 20 years, the Nebo Shire is expected to experience population decline over the period.

The issues facing the inland towns and rural areas are likely to be significantly different. The decline in population, particularly in the working age group, may lead to difficulties in maintaining existing service levels and a decline in local economic opportunities. (Department of Local Government and Planning 2002, p. 3).

The gross value of agricultural and mining production in the Shire in 2001 was \$26.930 Million and \$297.088 Million respectively (ABS data reported in CRC for CZE&WM 2003). There are limited amounts of irrigated land (813 ha) and land used for cropping (1,931 ha), presumably used to support beef fattening operations. The income from coal mining is based on the Coppabella Mine and the South Walker Creek mine, which produced approximately 3.5 million tons and 3 million tons respectively in 2000-1 (CRC for CZE&WM 2003).

Employment by industry in the Nebo Shire is reported in Table 3.1.

Table 3.1 Employment by industry in the Nebo Shire

Industry name	Number Employed				Annual % change
	1986	1991	1996	2001	
Agric, Forestry	135	165	161	196	3.01
Mining	373	468	524	544	3.06
Manufacturing	7	21	33	37	28.57
Electricity, Gas, Water	0	0	7	7	0.00
Construction	51	43	193	92	5.36
Wholesale Trade(a)	11	63	12	54	26.06
Retail Trade			37	54	0.00
Accommodation, cafes & restaurants (b)			82	89	0.00
Transport and Storage	111	107	108	116	0.30
Communication Services	5	12	3	6	1.33
Finance and Insurance (c)	9	25	10	7	-1.48
Property and Business Services			42	68	0.00
Public Administration, Defence	30	39	33	31	0.22
Education (d)			49	51	0.00
Health and Community Services	11	69	24	21	6.06
Cultural and Recreational Services (e)	11	52	6	6	-3.03
Personal and Other Services			9	14	0.00
Non classifiable & Not stated	17		41	27	3.92
Total	771	1064	1374	1420	5.61

Source: ABS Population Census data. Notes to the Table involve different classifications used in 1986 and 1991: (a) for 1986 and 1991 includes Retail Trade (b) for 1986 and 1991 not reported separately (c) For 1986 and 1991 includes Property and Business Services (d) for 1986 and 1991 not reported separately (e) For 1986 and 1991 includes Personal and Other services.

The employment data demonstrates that employment in the Nebo Shire has almost doubled between 1986 and 2001. Most growth has occurred in Agriculture and Mining areas (approximately 3% per annum), but there has also been significant increases in Manufacturing, Wholesale Trade, and Construction. There have been slight declines in Cultural and Recreational Services, and Finance and Insurance.

As well, there have been shifts in the structure of employment within the Shire, as is demonstrated in Table 3.2. This demonstrates that employment in mining and agriculture has become a smaller component of employment in the Shire over the 15 years between 1986 and 2001. This suggests that there are increased flow-on effects from these industries as other businesses have developed to provide goods and services into the agriculture and mining sectors.

In determining the economic impact of the Coppabella Mine on the Nebo Shire, it is likely that only the businesses in the Nebo and Coppabella townships will be impacted. There is not expected to be little if any interaction with businesses in Glenden. A list of key businesses in the Nebo and Coppabella townships is presented in Table 3.3.

Schaffer (1989) categorised communities into eight groups according to the range and number of retail outlets. The smallest group is 'hamlets', which tend to have a fuel station and a food outlet, while the largest group is a metropolitan area which tends to have 500 or more retail establishments across a wide range of categories. The list of businesses suggests that Nebo can be categorised in terms of shopping facilities in the second lowest group as a 'minimum convenience centre'. The lack of a chemist shop or medical services, as well as the absence

of dedicated shoe, garden, building, furniture or appliance outlets means that the centre could not be regarded as having full convenience services.

Table 3.2 Structural change in employment between 1986 and 2001

Employment Structure, Growth and Structural Change, 1986 - 2001					
Industry name	Structure of Employment (%)				Change between 1986 and 2001 %
	1986 %	1991 %	1996 %	2001 %	
Agric, Forestry	17.51	15.51	11.72	13.80	-3.71%
Mining	48.38	43.98	38.14	38.31	-10.07%
Manufacturing	0.91	1.97	2.40	2.61	1.70%
Electricity, Gas, Water	0.00	0.00	0.51	0.49	0.49%
Construction	6.61	4.04	14.05	6.48	-0.14%
Wholesale Trade(a)	1.43	5.92	0.87	3.80	2.38%
Retail Trade	0.00	0.00	2.69	3.80	3.80%
Accommodation, cafes & restaurants (b)	0.00	0.00	5.97	6.27	6.27%
Transport and Storage	14.40	10.06	7.86	8.17	-6.23%
Communication Services	0.65	1.13	0.22	0.42	-0.23%
Finance and Insurance (c)	1.17	2.35	0.73	0.49	-0.67%
Property and Business Services	0.00	0.00	3.06	4.79	4.79%
Public Administration, Defence	3.89	3.67	2.40	2.18	-1.71%
Education (d)	0.00	0.00	3.57	3.59	3.59%
Health and Community Services	1.43	6.48	1.75	1.48	0.05%
Cultural and Recreational Services (e)	1.43	4.89	0.44	0.42	-1.00%
Personal and Other Services	0.00	0.00	0.66	0.99	0.99%
Non classifiable & Not stated	2.20	0.00	2.98	1.90	-0.30%
Total	97.80	100.00	100.00	100.00	2.20%

Source: ABS Population Census data. Notes to the Table involve different classifications used in 1986 and 1991: (a) for 1986 and 1991 includes Retail Trade (b) for 1986 and 1991 not reported separately (c) For 1986 and 1991 includes Property and Business Services (d) for 1986 and 1991 not reported separately (e) For 1986 and 1991 includes Personal and Other services.

This analysis suggests that while there is a substantial group within the Nebo Shire that have high income levels, the Shire will not capture a high proportion of consumer spending. As well, the majority of business inputs would be expected to be sourced from outside the Shire, which will also reduce the flow-on effects of spending within the Shire. The proximity of Nebo to Mackay means that it is feasible for many business and domestic requirements to be sourced directly from Mackay.

Table 3.3 Businesses in the Nebo Township and surrounds

B & S Bus Hire Pty Ltd
Bowen Mechanical
Coppabella Store/Post Office
Greg McLean Electrical
MAC Centre
Mobil Service Centre
Nebo Electrical & Refrigeration
Nebo Hotel
Nebo Mechanical & Repairs
Nebo Sawmill
Nebo Motel
Nebo Post Office
Nebo Store
Queensland Railway Institute Coppabella
Retreat Hotel
Scullies Bulk haulage
Shell Junction Café
Stayawhile Caravan Park

4.0 THE DIRECT EXPENDITURE IMPACTS OF THE COPPABELLA COAL MINE

There are approximately 330 – 340 people employed at the Coppabella Coal Mine by Australian Premium Coals or one of the contractors (Leighton, Roche and Sedgman). The direct operating costs of the mine are approximately \$230 Million, with a further \$18 Million spent annually on capital, and \$2 Million spent on exploration.

The most important component of mine expenditure in terms of regional economic impact is the expenditure on wages. An approximate indication of the total wages expenditure can be gained from the following exercise:

Average hourly rate (\$60/hr) x the average shift length (11 hours) x number of shifts per year (allowing holidays) (182) = \$120,120 annual income per miner.

\$120,120 per miner x 335 workers (average size of workforce) = \$40.24 Million.

However, shift length and rotation patterns vary across the contractors, and not all people employed at the mine site are necessarily full-time or on miner's rates. Therefore a slightly different method has been employed to estimate total expenditure by category. This adjusted actual mine operating expenses to generate an estimate of the total expenses within the region.

The annual payments to the contractors were adjusted downwards to allow for head office expenses and a return on capital. For head office expenses, 5% was allowed for each contracting firm. For the return on capital, 7% was allowed for Roche and Leighton, while 10% was allowed for Sedgman (because of the higher capital investment in the washplant). The remaining expenditure was distributed between categories by a simple formula, and expenditure of Australian Premium Coals at the minesite was added. The operating costs of the mine that are relevant to the region can therefore be summarised as follows:

Table 4.1 Operating expenses of mine site relevant to region.

Expenditure category	Annual expenditure (\$ Million)
Labour	41.39
Parts, tyres, repairs	39.05
Fuel	14.16
Electricity	3.00
Explosives	10.62
Fixed costs (administration, overheads, marketing, leases etc)	44.42
Railway and Port	42.00
Total expenditure from mine site	192.64

There are a further \$18 million per annum in royalty charges which have not been included within these figures, and \$20 million per annum in development costs (capital and exploration) which have not be included. Following this approach, the average income per miner is \$123,552 per annum (assuming an average total workforce of 335 people on the minesite).

To identify what the direct impacts of this expenditure has been on the Nebo Shire, two separate exercises have been performed. The first was a survey of the employees at the minesite. This helped to determine the number of employees who had their main place of residence within the Nebo Shire, and whose earnings could be counted as contributing to Shire income. As well, it helped to identify the average expenditure of non-Shire residents within the Shire when they were there on shift rosters.

The second exercise was an analysis of non-labour expenditure within the local and regional communities by Australian Premium Coals. This provided some estimates of the rate and pattern of expenditure within the Nebo Shire and Mackay regions which could then be extrapolated across the contractor operations as well. Here, each of those exercises is reported in turn.

4.1 Survey of miners

A brief survey (see Appendix A) of 10 questions was developed to be given to miners at the Coppabella mine site. The survey was easy to complete, and most questions could be answered with a tick in the appropriate box. The survey was administered in January and February 2003. Miners were approached while they were on a break during one of their shifts and asked to complete the form. One hundred and thirty-four surveys were successfully completed and returned, which represents approximately 40% of the workforce.

The location of respondents (after non-responses are omitted) is shown in Table 4.1.1 below. This demonstrates that the workforce is sourced from a wide variety of locations.

Table 4.1.1 Location of main residence of sample of mine workers

Town where main residence is located	Number of responses	Town where main residence is located	Number of responses
Bowen	2	Kenilworth	1
Brisbane	3	Kyogle	1
Bucasia	2	Mackay	48
Calen	1	Mirani	1
Campwin Beach	1	Moranbah	27
Charters Towers	3	Nebo	9
Clermont	1	Nebo/Mackay	1
Collinsville	3	Nundle NSW	1
Coppabella	5	Perth WA	1
Dingo Beach	1	Rockhampton	2
Dysart	1	Sarina	6
Glenden	1	Townsville	1
Grasstree Beach	1	Tully	1
Homehill	1	Walkerston	2
Ilbilbie	1	Yeppoon	1

When the location information is condensed into regions, the following pattern emerged (Table 4.1.2). Of the respondents, 14.5 indicated that they were based in the Nebo region (1 response was split with Mackay); while 99.5 responses indicated that they were based in Mackay or elsewhere in the Mackay statistical division. From this information, it can be estimated that across the full workforce of 335 miners and other staff, 37 will be based in the Nebo Shire, 122 in the Mackay area, and 128 elsewhere in the Mackay region. Using the total

wages estimate of \$41.39 Million, the wages income can also be estimated (Table 4.1.2). This shows that \$4.51 Million in wages flows to households in the Nebo Shire (including employees living at Coppabella), \$15.09 Million to households in the Mackay area, and \$15.87 Million to households in the rest of the Mackay statistical region.

Table 4.1.2 Location of mine workers by region

Area	Number of respondents	% of respondents	Expected number over full workforce	Total income from wages (\$ Million)
Nebo	14.5	10.90%	37	4.51
Mackay	48.5	36.47%	122	15.09
Other Mackay region	51.0	38.35%	128	15.87
rest of Qld	16.0	12.03%	40	4.98
Interstate	3.0	2.26%	8	0.93

In the survey of miners, there were also questions about expenditure patterns within the Nebo Shire. This allowed estimates to be made about the amount of spending generated by employees at the Coppabella Mine within the Nebo Shire. Miners were asked to estimate their weekly or shift pattern expenditure on items like fuel, food and accommodation within the Nebo Shire. Miners who were based in the Nebo Shire have been excluded from this analysis, so that the information just captured the additional spending in the Shire of miners who were not based there.

Results from the survey relating to expenditure are summarised in Table 4.1.3. This shows that the average mine employee who is not a resident of the Nebo Shire spends an average of \$119.87 in the Shire each week. This estimate is then extrapolated across 48 working weeks per annum to generate average annual expenditures, and across an estimated 298 non-Nebo Shire employees to generate total expenditure within the Shire. It is estimated that those employees spend a total amount of \$1.715 Million within the Nebo Shire, or approximately 4.66% of their income. The key expenditure groups are accommodation and food, alcohol and fuel.

Table 4.1.3 Expenditure in the Nebo Shire by Coppabella employees from outside the Shire

Category	Average weekly expenditure (\$)	Average annual expenditure (\$)	Total estimated annual expenditure (\$ Million)
Accommodation	37.29	1789.84	0.533
Food	18.30	878.51	0.262
Alcohol	32.35	1552.74	0.463
Fuel	21.05	1010.23	0.301
Car	3.38	162.42	0.048
Entertainment	5.41	259.67	0.077
Other	2.09	100.32	0.030
Total	119.87	5753.74	1.715

4.2 Analysis of non-labour expenditure

In addition to wages, another important way that money from the Coppabella mine enters the regional economy is through spending on business services. There are two main pathways for this to happen. The first is where firms at Coppabella Mine contract out some service or supply arrangements. For example, firms might be contracted to supply cleaning services or

machinery parts. The second pathway is where local or regional businesses supply goods or services on an ad hoc basis to the Coppabella Mine.

The proportion of contract expenditure from the minesite in the Nebo Shire was estimated at 0.25% of non-labour costs at the minesite or approximately \$282,000 per annum. Contracts were typically for services such as cleaning and accommodation. The proportion of contract expenditure in the wider Mackay region has not been assessed, although it could be expected to be much higher. The main reasons why there is low level of contracted expenditure in the Nebo Shire is there are fewer businesses in the Nebo Shire which could be involved in contracted services and business supplies, and because it is feasible to supply the services directly from Mackay.

To gain an estimate of the rates of miscellaneous direct expenditure on small businesses in the region, data was collected from Australian Premium Coals on expenditure patterns between 1998 and September 2002. From this information, annual expenditure rates were estimated for non-wage expenditure by Australian Premium Coals on businesses in the Nebo Shire, the Mackay city area, and the rest of the Mackay statistical region (Table 4.2.1). These rates have then been extrapolated across the total expenditure from the minesite (excluding wages and rail & port charges). This net amount of total expenditure was estimated at \$111.25 million per annum (Table 4.1).

Table 4.2.1 Estimated annual miscellaneous expenditure on small businesses

	Percentage of non-wage expenditure by APC (%)	Estimated annual non-wage expenditure across minesite (\$ Million)
Nebo Shire	0.54	0.595
Mackay area	10.60	11.687
Rest of Mackay region	0.30	0.331

4.3 Summary of direct spending flows into the region

The analysis provided above allows some assessment of the direct expenditure flows into the local and regional community to be made. This is summarised in the table below.

Expenditure in the Mackay and Rest of Mackay region by non-local miners has been set at zero because those impacts are more correctly classified as secondary economic impacts. The results show that the Coppabella Mine is injecting a minimum of \$7.102 million into the local economy for the Nebo Shire each year. There would be additional injections from new works and one-off projects.

Table 4.3.1 Summary of direct spending flows into region from Coppabella Mine

	Nebo Shire (\$ Million)	Mackay Area (\$ Million)	Rest of Mackay region (\$ Million)
Direct wage expenditure	4.51	15.09	15.87
Expenditure from miners not living in area	1.715	0	0
Contracted services and supplies from businesses	0.282	Not assessed	Not assessed
Miscellaneous services and supplies from businesses	0.595	11.687	0.331
Total	7.102	26.777 (excluding contracted services)	16.201 (excluding contracted services)

5.0 THE FLOW-ON EFFECTS FROM EXPENDITURE AT THE COPPABELLA COAL MINE

5.1 Introduction

The direct annual expenditure in the Nebo Shire that can be attributed to the Coppabella mine operations is approximately \$7.1 million. This expenditure can be expected to create some flow-on effects in terms of increased economic activity. As explained in Section 2.0, those flow-on effects are limited by the propensity of people receiving income to spend that money outside of the Nebo Shire, and by the proportion of business inputs that need to be sourced from outside of the Shire. The higher that each of these factors is, the lower will be the flow-on effects of the additional spending in the Shire.

In this section, some evidence is provided about the size of those different leakage factors.

5.2 Demographic data of Nebo Shire and Mackay region residents

To gain information about expenditure patterns and provide some estimates about multiplier effects, data has been collected by surveying residents of the Nebo Shire and Mackay region by telephone. Sixty-three households were surveyed in the Nebo Shire, and 124 households were surveyed in the wider Mackay area in March 2003. (See Appendices B and C for copies of the surveys.)

Households from the Nebo Shire were selected at random using the Telstra White Pages. Only households with the Nebo (or Coppabella) address were used, so that residents from Glenden were excluded. The survey included residents from the Nebo township and rural properties in the Shire. Households from the Mackay region were also selected from the Telstra White Pages. Households from a number of regions were used to cover the population in the coastal strip around Mackay from south of Proserpine to south of Nebo.

Some summary statistics about the groups sampled are provided in the tables below. The age groups of respondents are summarised in Table 5.2.1, indicating that the Nebo population tends to be slightly older than the Mackay population.

Table 5.2.1 Age groups of survey respondents

Age Group	% responses	
	Mackay	Nebo
Under 20 years	2.4	0
20 - 30 years	12.2	9.5
31 - 45 years	40.3	38.1
46 - 65 years	30.6	38.1
Over 65 years	10.5	11.1
No answer	4	3.2
	100	100

The length of residence of respondents in their area is reported in Table 5.2.2. The results demonstrate that both areas have very stable populations with low levels of turnover.

Table 5.2.2 Length of residence in area

Duration	% responses	
	Mackay	Nebo
Less than 2 years	3.2	1.6
2 - 5 years	9.7	6.3
5 - 10 years	14.5	14.3
10 - 20 years	14.5	27
Over 20 years	56.5	49.2
No answer	1.6	1.6
	100	100

The household size reported by respondents from the different areas is reported in Table 5.2.3. Both populations had an average household size of 3.3 persons/household.

Table 5.2.3 Household size

People in household	% responses	
	Mackay	Nebo
1 person	12.9	9.5
2 people	27.4	36.2
3 people	16.9	19
4 people	21.1	16.2
5 people	12.1	11.1
6 people	4.8	1.6
7 people	1.6	3.2
8 people	0	1.6
No answer	3.2	1.6
	100	100

The proportion of households with children living at home is reported in Table 5.2.4. There is little difference between the areas, except for a slightly higher proportion of no-children households in the Nebo Shire.

Table 5.2.4 Children living at home

Children	% responses	
	Mackay	Nebo
1 child	16.9	19
2 children	19.4	14.3
3 children	12.1	7.9
4 children	4	1.6
5 children	0.8	3.2
6 children	0	1.6
No answer / None	46.8	52.4
	100	100

Household income is reported in Table 5.2.5. There is no difference between the areas in terms of low income households. However, the Nebo area tends to have a higher proportion of high income households and a lower proportion of middle income households than does the Mackay region.

Table 5.2.5 Household Income

Income	% responses	
	Mackay	Nebo
Less than \$40,000	42.7	42.9
\$40,000 - \$80,000	41.2	34.9
Over \$80,000	14.5	20.6
No answer	1.6	1.6
	100	100

Occupational details for the respondents from the two areas are summarised in Table 5.2.6. The results show the high proportion of people in the Nebo area involved in agriculture compared to the Mackay area. Statistical tests for the Mackay region revealed that people who worked in *Mining, Finance and Management* sectors had significantly higher incomes than average, while people in *Building and Transport, Retired* or *Student* categories had significantly lower incomes. Statistical tests for the Nebo region revealed that Retired people had significantly lower incomes than average. (People involved in Mining in the Nebo area did not identify as having significantly higher incomes).

Table 5.2.6 Occupation of respondents

Occupation	% responses	
	Mackay	Nebo
Agriculture and Fishing	8.1	58.7
Mining	11.3	11.1
Health, Teaching & Government	12.9	7.9
Finance & Management	4	3.2
Building & Transport	10.5	1.6
Engineering, Electrical & Auto	6.5	1.6
Retail	8.9	0
Cleaning & Maintenance	3.2	1.6
Self-employed	1.6	1.6
Retired	16.1	9.5
Student	2.4	0
Other	8.9	1.6
No answer	5.6	1.6
	100	100

5.3 Expenditure patterns of residents in the Nebo area

Information about expenditure patterns was gathered to identify the proportion of disposable income that was being retained in the Nebo area. Residents of the Nebo area were asked about the frequency of their shopping visits to both Nebo and Mackay. The results, shown in Table 5.3.1 demonstrate that almost all Nebo residents are making regular shopping visits to Mackay. It also appears that up to one-third of residents in the Nebo area may not be shopping in the Nebo township.

Table 5.3.1 Frequency of shopping visits to Nebo and Mackay

Frequency	%Responses	
	Nebo	Mackay
Everyday	17.5	0
More than once a week	19.1	4.8
Once a week	9.5	20.6
Once a fortnight	6.3	46
Once a month	14.3	25.4
Can't say	11.1	0
Other	22.2	3.2
Total	100	100

More specific data was gained by asking respondents what proportion of their purchases in different categories were spent in Nebo, Mackay or elsewhere. The data are reported in Tables 5.3.2, 5.3.3 and 5.3.4. The results demonstrate that no expenditure in Nebo was reported by respondents in the categories of *Clothing and Footwear*, *House and Garden*, or *Medical Care*, and very low rates of expenditure were reported in most other categories. In contrast, very high rates of expenditure were recorded in Mackay, apart from *Recreation and Holidays* and *Education* categories. There were only low rates of expenditure recorded for expenditure elsewhere, apart from *Recreation and Holidays*, and *Purchase of Motor Vehicles*.

Table 5.3.2 Spending of Nebo residents in Nebo

Category	% of responses in expenditure group				
	0-24	25-49	50-74	75-87	88-100
Food, Groceries & Alcohol	92.1	1.6	3.2	0	3.2
Clothing & Footwear	100	0	0	0	0
Furniture & Appliances	98.4	0	0	0	1.6
House & Garden	100	0	0	0	0
Hair, Beauty & Personal	88.9	0	3.2	0	7.9
Recreation & Holidays	98.4	0	1.6	0	0
Motor Vehicle Purchases	98.4	1.6	0	0	0
Motor Vehicle Repairs	92.1	1.6	6.3	0	0
Medical care & Health	100	0	0	0	0
Education	84.1	1.6	4.8	0	9.5

Table 5.3.3 Spending of Nebo residents in Mackay

Category	% of responses in expenditure group				
	0-24	25-49	50-74	75-87	88-100
Food, Groceries & Alcohol	6.3	0	7.9	11.1	74.6
Clothing & Footwear	1.6	0	4.8	3.2	90.5
Furniture & Appliances	6.3	0	3.2	0	90.5
House & Garden	1.6	0	3.2	1.6	93.7
Hair, Beauty & Personal	15.9	0	9.5	0	74.6
Recreation & Holidays	27	7.9	11.1	7.9	42.9
Motor Vehicle Purchases	11.1	4.8	4.8	1.6	77.8
Motor Vehicle Repairs	6.3	1.6	7.9	0	84.1
Medical care & Health	6.3	0	3.2	0	90.5
Education	58.7	4.8	1.6	0	34.9

Table 5.3.4 Spending of Nebo residents elsewhere

Category	% of responses in expenditure group				
	0-24	25-49	50-74	75-87	88-100
Food, Groceries & Alcohol	92.1	4.8	0	1.6	1.6
Clothing & Footwear	93.7	3.2	1.6	1.6	0
Furniture & Appliances	96.8	0	1.6	1.6	0
House & Garden	96.8	1.6	1.6	0	0
Hair, Beauty & Personal	88.9	3.2	3.2	0	4.8
Recreation & Holidays	60.3	4.8	14.3	1.6	19
Motor Vehicle Purchases	79.4	1.6	6.3	3.2	9.5
Motor Vehicle Repairs	95.2	0	1.6	0	3.2
Medical care & Health	90.5	0	3.2	3.2	3.2
Education	84.1	1.6	0	1.6	12.7

The data has been summarised to estimate rates of expenditure in the different areas by category. The results are shown in Table 5.3.5, and demonstrated graphically in Figure 5.3.1. The data demonstrates that approximately 5.1% of discretionary consumption expenditure from Nebo residents is being retained within Nebo, 86.9% is being spent in the Mackay area, and 8.1% is being spent elsewhere.

Table 5.3.5 Summary of spending by Nebo residents

Category	Nebo	Mackay	Elsewhere	Total
	% of expenditure			
Food, Groceries & Alcohol	11.1	84.8	4.2	100.1
Clothing & Footwear	0.0	90.8	9.1	99.9
Furniture & Appliances	1.1	87.8	8.1	97.0
House & Garden	0.0	91.6	7.4	98.9
Hair, Beauty & Personal	14.7	77.9	7.1	99.8
Recreation & Holidays	1.1	59.8	39.2	100.1
Motor Vehicle Purchases	0.5	80.5	20.8	101.8
Motor Vehicle Repairs	10.0	85.3	4.9	100.2
Medical care & Health	0.0	87.8	13.0	100.8
Education	17.5	42.6	18.9	79.0
Total Expenditure	5.1	86.9	8.1	100.1

Note 1: Education not completed by many respondents because of lack of relevance to them.

Note 2: Columns do not total 100% because of average values to indicate mid-points of ranges.

The expenditure results for the Nebo area can be used to generate estimates of the Marginal Propensity to Consume locally (MPC_L). Average household expenditure for Queensland is drawn from the ABS data (Table 5.3.6), and the proportion of expenditure in the Nebo Shire for each category is estimated. One-half of current housing costs are apportioned to the Nebo Shire, as this reflects the proportion of housing that is rented in the Shire (0.67) less an allowance for rental payments flowing to non-Shire residents. A proportion of 0.5 is estimated for household services, and a proportion of 0.3 is estimated for transport. Other estimates are drawn from the survey data. Results indicate that approximately 17% of total household expenditure occurs within the Shire. The proportion is expected to be lower for high income earners (because of higher tax and superannuation rates), and higher for the low income earners.

The results indicate that a proportion of 0.15 can be used to represent the Marginal Propensity to Consume locally (MPC_L).

Figure 5.3.1 Summary of spending by Nebo residents

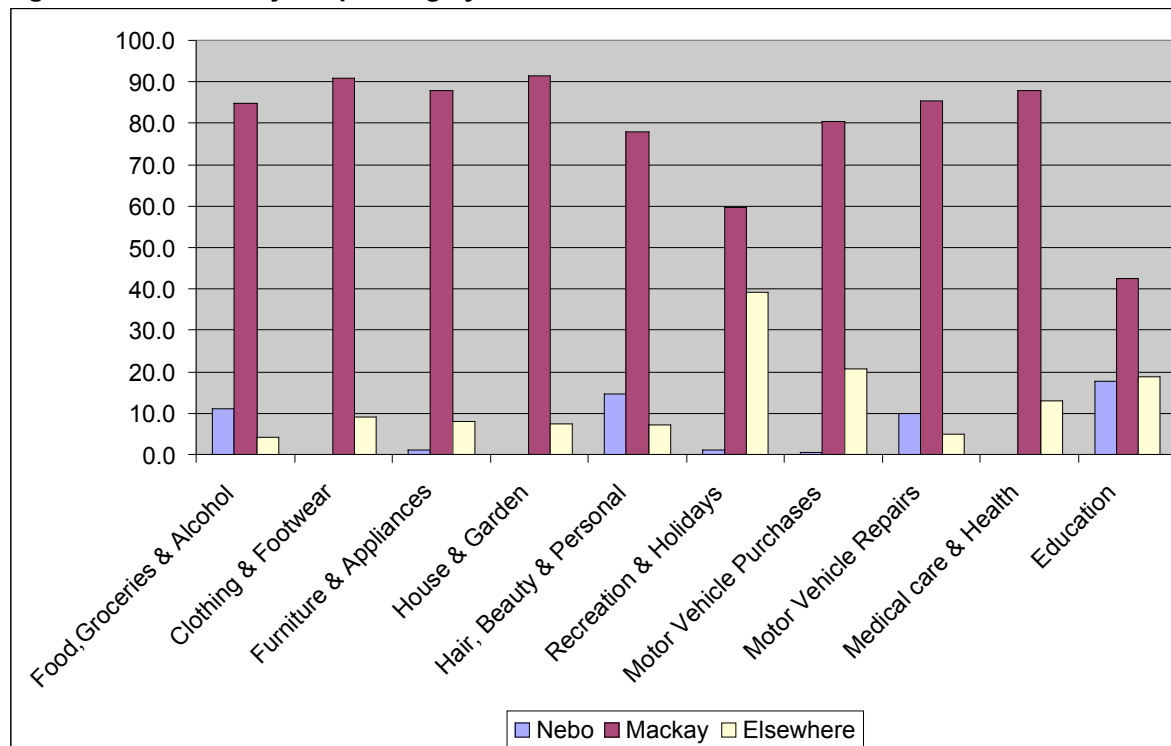


Table 5.3.6 Estimates of total household expenditure in the Nebo Shire

Broad expenditure group	Average expenses (\$) from ABS 1998-99 survey data	Percentage of total household expenses	Estimated proportion of category spent in Nebo Shire	Estimated proportion of expenditure in Nebo Shire
Current housing costs (selected dwelling)	96.99	11.6	0.500	0.058
Domestic fuel and power	12.99	1.6	0.000	0.000
Food and non-alcoholic beverages	116.88	14.0	0.111	0.016
Alcoholic beverages	18.96	2.3	0.111	0.003
Tobacco products	10.52	1.3	0.111	0.001
Clothing and footwear	25.89	3.1	0.000	0.000
Household furnishings and equipment	40.65	4.9	0.000	0.000
Household services and operation	40.85	4.9	0.500	0.024
Medical care and health expenses	29.93	3.6	0.000	0.000
Transport	107.46	12.9	0.300	0.039
Recreation	81.18	9.7	0.011	0.001
Personal care	12.01	1.4	0.147	0.002
Miscellaneous goods and services	54.69	6.6	0.100	0.007
Total goods and services expenditure	648.99	77.8		0.150
Selected other payments				
Income tax	142.12	17.0	0.000	0.000
Mortgage repayments-principal (selected dwelling)	24.29	2.9	0.000	0.000
Superannuation and life insurance	19.04	2.3	0.000	0.000
Total expenditure	834.44			
Proportion of expenditure in Nebo Shire				0.150

Source: ABS Cat. No. 6540.0 1998-99 Household Expenditure and Characteristics, by Household Income Quintile Group(a) - Queensland - 1998-99, and CQU survey data.

5.4 Expenditure patterns of residents in the Mackay area

Information about expenditure patterns in the Mackay region was gathered to provide an estimate of the proportion of spending that was being retained in the region. Residents of the Mackay area were asked about the frequency of their shopping visits to Mackay. The results, shown in Table 5.4.1, demonstrate that 77% of respondents shop at least weekly.

Table 5.4.1 Frequency of shopping visits by residents in Mackay area

Frequency	% Responses
Everyday	2.4
More than once a week	31.5
Once a week	43.5
Once a fortnight	12.9
Once a month	8.1
Can't say	0.8
Other	0.8
Total	100

The expenditure of Mackay area residents is summarised in Table 5.4.2. This shows high levels of local and regional expenditure exist, *except for Recreation and Holidays, Motor Vehicle Purchases, and Education.*

Table 5.4.2 Spending of Mackay area residents in Mackay

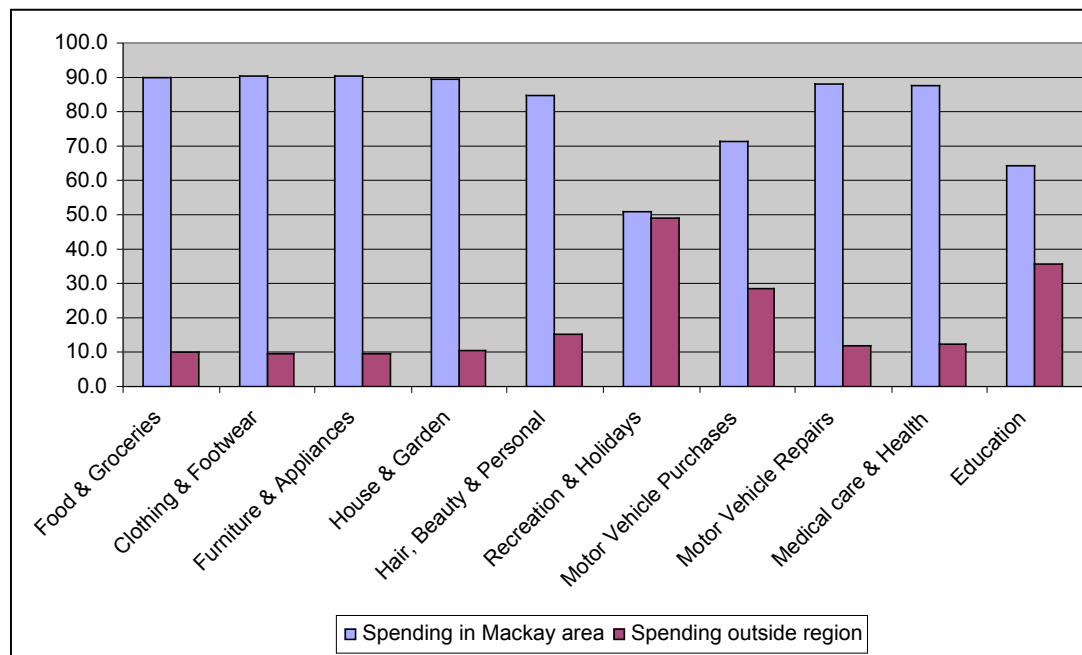
Category	0-24%	25-49%	50-74%	75-87%	88-100%
Food & Groceries	1.6	0.8	4.8	4.8	87.9
Clothing & Footwear	0	1.6	5.6	4	88.7
Furniture & Appliances	1.6	1.6	2.4	3.2	91.1
House & Garden	3.2	0	4	2.4	90.3
Hair, Beauty & Personal	8.9	0.8	1.6	2.4	85.5
Recreation & Holidays	38.7	6.5	18.5	1.6	33.1
Motor Vehicle Purchases	21	0.8	10.5	0.8	65.3
Motor Vehicle Repairs	4.8	0.8	1.6	2.4	89.5
Medical Care & Health	2.4	1.6	4.8	4	85.5
Education	26.6	2.4	4.8	2.4	58.9

The spending information has been summarised to generate estimates of the proportion spent in Mackay on each category (Table 5.4.3). The overall proportion estimated for expenditure (assuming equivalent spending across categories) is 87.8%. This implies that 12.2% of disposable income is spent outside the region.

Table 5.4.3 Summary of expenditure estimates in Mackay

Category	% expenditure
Food & Groceries	90.0
Clothing & Footwear	90.7
Furniture & Appliances	90.5
House & Garden	89.7
Hair, Beauty & Personal	84.7
Recreation & Holidays	50.9
Motor Vehicle Purchases	71.4
Motor Vehicle Repairs	87.9
Medical care & Health	87.5
Education	64.4
Total Expenditure	87.8

Figure 5.4.1 Summary of spending by Mackay area residents



The expenditure results for the Mackay area can be used to generate estimate of the Marginal Propensity to Consume regionally (MPC_R). Average household expenditure for Queensland is drawn from the ABS data (Table 5.4.4), and the proportion of expenditure in the Mackay area for each category is estimated.

All domestic fuel and energy costs, 80% of current housing costs and 80% of miscellaneous costs are apportioned to the Mackay area. Transport expenditure in the area is estimated at 90% to allow for fuel and maintenance on top of vehicle purchase costs. Other estimates are drawn from the survey data. Results indicate that approximately 64.4% of total household expenditure occurs within the Mackay area. The proportion is expected to be lower for high income earners (because of higher tax and superannuation rates), and lower for the low income earners. The results indicate that a proportion of 0.644 can be used to represent the Marginal Propensity to Consume regionally (MPC_R).

Table 5.4.4 Estimates of total household expenditure in the Nebo Shire

Broad expenditure group	Average expenses (\$) from ABS 1998-99 survey data	Percentage of total household expenses	Estimated proportion of category spent in Mackay area	Estimated proportion of expenditure in the Mackay area
Current housing costs (selected dwelling)	96.99	11.6	0.800	0.093
Domestic fuel and power	12.99	1.6	1.000	0.016
Food and non-alcoholic beverages	116.88	14.0	0.900	0.126
Alcoholic beverages	18.96	2.3	0.900	0.020
Tobacco products	10.52	1.3	0.900	0.011
Clothing and footwear	25.89	3.1	0.907	0.028
Household furnishings and equipment	40.65	4.9	0.905	0.044
Household services and operation	40.85	4.9	0.897	0.044
Medical care and health expenses	29.93	3.6	0.875	0.031
Transport	107.46	12.9	0.900	0.116
Recreation	81.18	9.7	0.509	0.001
Personal care	12.01	1.4	0.847	0.012
Miscellaneous goods and services	54.69	6.6	0.800	0.052
Total goods and services expenditure	648.99	77.8		0.644
Selected other payments				
Income tax	142.12	17.0	0.000	0.000
Mortgage repayments-principal (selected dwelling)	24.29	2.9	0.000	0.000
Superannuation and life insurance	19.04	2.3	0.000	0.000
Total expenditure	834.44			0.644
Proportion of expenditure in Mackay Area				0.644

Source: ABS Cat. No. 6540.0 1998-99 Household Expenditure and Characteristics, by Household Income Quintile Group(a) - Queensland - 1998-99, and CQU survey data.

5.5 Summary of spending by businesses in Nebo

In order to fully identify the multiplier impacts of increased spending in the Nebo region, it is necessary to identify the proportion of local consumption expenditure that becomes local income. In other words, this means identifying the proportion of business expenses that are sourced locally (e.g. for labour or supplies), compared to being supplied from outside the region. To identify this proportion, a number of businesses in Nebo were asked about where they sourced their business inputs.

A total of 18 businesses from Nebo and Coppabella were surveyed in March 2003, using personal interviews. The larger businesses that were likely to employ labour were selected for the interviews. A copy of the survey used is attached as an appendix.

The average number of people working in businesses in Nebo is reported in Table 5.5.1. The bulk of employees were associated with accommodation and food service businesses.

Table 5.5.1 Number of people working in Nebo businesses

Category	Average number
Owners	1.20
Full-time employees	3.44
Part-time employees	1.28
Casual employees	4.11

Businesses were asked to identify how the numbers of staff employed changed over the last two and five years. For the past two years, two businesses reported a decline, ten businesses indicated an increase, and two businesses reported a decline in one category offset by an increase in another one. Between the past five years and two years, very little change in staff numbers was reported. The average increase in employment numbers over the past two years by category is reported in Table 5.5.2. This represents a 32% increase in average staff numbers over the relevant period.

Table 5.5.2 Average change in staff employment over past 2 years

Staff changes	Average number
Increase in FT staff from 2 years ago	1.17
Increase in PT staff from 2 years ago	0.83
Increase in Casual staff from 2 years ago	0.82

Business respondents were asked to identify the proportion of their expenditure by broad groupings. A summary of results is reported below in Table 5.5.3. These show that approximately 23.5% of business expenses may become income to other businesses or households in the Nebo Shire. This is made up of wages and local supplies purchased by businesses in Nebo.

Table 5.5.3 Percentage of business expenses by category

Expenditure item	% of business expense
Wages	21.8
Supplies from Nebo	1.7
Supplies from Mackay	34.6
Supplies from other Qld	20.4
Rest of Business Expenses	22.0

Another question in the survey asked businesses if the opening of the coal mines had affected their business. Out of the 18 businesses surveyed, 16 (89%) indicated that it had. Responses are summarised in the table below.

Table 5.5.4 Impact of coal mines on businesses

Responses
Yes - more mines more work ; lost some big runs to the competition; increased competition undercutting Dramatically; wouldn't be there without mines 99.9% of business
No affect on rural business
Yes from Coppabella Mine, 80% from Coppabella
Totally dependent on mines for work; have huge impact
Yes - very close to here; Donga Camp support the business
Yes increased amount of work we do; no increased profitability due to increased purchase of equipment to allow for growth
Employment from 2 mines
Yes - service the support industry itself - subcontractors - not from the mines
Yes it has - because allowed accommodation - so been good for her
To a certain degree - Hail Creek benefit then Goonyella Riverside, South Walker bit of work in 1997 changed ways - plant equipment small gear diversified into graders
Yes no 80 man camp if not for mines; hope to go to 160 after Easter 2003 more plans to come as a hotel resort set up golf course, tennis court - to be used also as a resort areas camping caravans.
Extremely - from little pub to very busy pub. A lot of business from Coppabella. Long term contractors live in Nebo, and money is spent in community
Yes, not to point expected it would; expected more in motel
Yes increase the amount of work more activity than 5 years ago - if not for coal mines would be nothing
Most work in winter is the mine
Yes service the coal mines with accommodation

Business operators were then asked which mines supplied most of their business. Coppabella was nominated first by eight businesses (50% of those gaining business from the mines), Hail Creek 3 times, South Walker 2 times, and North Goonyella and Burton were nominated once each. The conclusion to be drawn is that the Coppabella Mine is the most important one in terms of supporting businesses in Nebo.

Table 5.5.5 Mines providing most custom for businesses

Responses
Coppabella Mines
Coppabella / Moorvale
None for Rural Business
Coppabella
South Walker Creek mine
Coppabella
Hail Creek; Newlands
North Goonyella; Burton
Burton
Hail Creek
Hail Creek until production; then have own contractors, South Walker earlier on 2 years ago
Coppabella 90% of Coppabella Accommodation
Coppabella APC encourage companies to use Nebo (rather than Mackay) makes big difference to little town
Difficult to say – all use as needed
South Walker major - Coppabella small amount
None
Coppabella; South Walker mine
Coppabella then Hail Creek; then South Walker

In the final question of the survey, businesses were asked about what action could be taken to help support businesses in Nebo and Coppabella. The responses are summarised below. The

main responses are to locate more contractors and workers in Nebo and Coppabella, to increase spending and give more contracts to the local businesses, and to pay accounts more quickly.

Table 5.5.6 Actions that would be beneficial for businesses

Responses
Using us in the local area not going to Mackay
Closer liaison with information about shutdown work and new contract work to allow forward planning for accommodation e.g. BHP puts out a schedule 180 months in advance of their needs
Not for rural business
No
Pay quicker 14 days of invoice - external workers of their system to pay up within 14 days
Mines would like their men there but most at Nebo - Moranbah. Because of Council not prepared to open area up
Buy and use local (Closer mines do not use us at all)
Using qualified refrigeration/airconditioning people - mines letting electricians do your trade
Allow us to tender for supply contracts in area - tends to be a close shop; inability to find staff - no accommodation; lack of infrastructure (sewerage); can't compete with labour for mines.
Put some workers there in dongas - more than 10 mins from Nebo - too far for them
All [mines] could help if want to - [we] have water cart but [mines] use big company. If not clicked into the right group - no work available
Accommodation - make more rooms available could fill them no problems
Keep encouraging different contractors to live in Nebo
Spend money here - township here as Glenden so miners and work do not go to other centres
Give local (smaller) operators a chance to get work - beneficial to this area
Need support from Mining Companies
Pay accounts sooner - monthly rather than 90 days.
Any extensions will help business

5.6 Discussion and conclusions

The main focus of the material presented in this chapter has been to identify what the indirect impacts of spending from the Coppabella mine are on the Nebo Shire. A simple formulation of the Keynesian income multiplier was described in section 5.2 as follows (where k stands for the multiplier):

$$k = 1/(1 - MPC_L \times PSY)$$

Where:

MPC_L is the marginal (or average) propensity to consume locally, or the proportion of income (or income change) which is spent locally,

and

PSY is the proportion of local consumption expenditures that eventually becomes local income, i.e. local salaries and wages, profits and interest payments. It is an expression of the proportion of each dollar spent locally which ends up in the pockets of the local community rather than paying for imported goods and services (Jensen & West 2002, pp. 13-16).

In Section 5.3, the MPC_L for residents in the Nebo area was identified as 0.15. This was heavily influenced by a high proportion of rental income which was assumed to flow to local residents. The propensity to consume locally on more discretionary items was much lower.

In Section 5.5, the PSY for businesses in the Nebo and Coppabella townships was estimated at 0.235. This is heavily influenced by a high proportion of expenditure on labour, which was assumed to be drawn totally from local residents.

Substitution of those rates allows the multiplier to be calculated as follows:

$$k = 1/(1 - 0.15 \times 0.235)$$

$$k = 1.0366$$

This means that for every dollar of additional income or expenditure being introduced to Nebo, the additional income that is created is 3.66 cents. The smallness of the multiplier effect is particularly affected by the low propensity of people in the Nebo area to purchase goods and services in Nebo and Coppabella. As wages are approximately 22% of business expenses, the additional expenditure that is created for every dollar that is spent is approximately 16.6 cents.

Using these rates, the total economic impact of the Coppabella Mine can be summarised as follows. Total additional spending in the Shire is estimated at \$8.284 Million, with \$5.35 Million flowing to Shire residents as increased income.

Table 5.6.1 Total economic impact of the Coppabella Mine on the Nebo Shire

	Total Economic Impact (\$ Million)	Net addition to incomes (\$ Million)
Direct wage expenditure	4.51	4.51
Expenditure from miners not living in area	1.715	0.385
Contracted services and supplies from businesses	0.282	0.062
Miscellaneous services and supplies from businesses	0.595	0.131
Indirect impacts	1.182	0.260
Total	8.284	5.35

6.0 ECONOMIC IMPACT ANALYSIS USING INPUT-OUTPUT ANALYSIS *(This section supplied by AECgroup)*

6.1 Introduction

Activities and operations such as the Coppabella Mine generate economic benefits for the local and regional economy through expenditure associated with the activity that would otherwise not have occurred. This section outlines an input-output analysis that was used to determine the economic impact of the Coppabella Mine on the Mackay statistical division (Mackay region) and on Nebo Shire.

6.2 Approach

Net expenditure due to the mine is allocated across the relevant industry sectors and applied to the input-output model of the regional economy. This analysis utilised the Mackay regional input-output table GSO (1990) to identify the expected impact on the Mackay region as well as Nebo Shire² with West (1993) used to manipulate the data within the Mackay regional table.

The stimulus from additional economic activity³ can be traced through the economic system in several different ways:

- The first round effect, or direct effect, are those from the mine's expenditure in purchasing goods from other industries.
- The second round effects are those from the supplying industries increasing their purchases to meet the additional demand. The second and subsequent rounds of purchasing are termed the indirect effects.

These effects can be represented by multipliers. There are commonly four different types of multipliers; output, income, employment and value added, which can be calculated in aggregate for the whole economy or on an industry by industry basis.

6.2.1 Output

The output impact measures the increase in gross sales throughout the whole economy by summing all the individual transactions resulting, directly and indirectly, from the economic stimulus. The output impact is also useful in providing an indication of the degree of

² There is no Nebo Shire input-output table so the analysis has utilised the Mackay region input-output table as a proxy for Nebo Shire. This assumes that the relationships/transactions between industry sectors in Nebo Shire is the same as those for the Mackay Region.

³ Consumption impacts have not been included in this analysis as they are generally expected to overestimate the actual impact.

structural dependence between sectors of the economy. The output impacts, are however, regarded as overstating the impact on the economy as they count all goods and services used in one stage of production as an input to later stages of production, hence counting their contribution more than once.

6.2.2 Income

The income impact measures the additional amount of wages and salaries paid to employees of the industry under consideration and to other industries benefiting from the stimulus to the economy.

6.2.3 Employment

The employment impact measures the number of jobs created by the stimulus, both directly and indirectly. It should be noted that the short-term response to increased demand may be for employers to ask existing staff to work overtime. As a consequence, lower employment than the level indicated by the economic impact of the stimulus will result. This short-term scenario is particularly true where the demand stimulus is seen as temporary or where there is spare capacity in the economy (i.e. unemployment). This is not the case with the Coppabella Mine as it is a long-term operation.

6.2.4 Value Added

The value added or Gross Regional Product (GRP) impact measures only the net activity at each stage of production. GRP is defined as the addition of consumption, investment and government expenditure, plus exports of goods and services, minus imports of goods and services for a region. The GRP impacts are the preferred measure for the assessment and contribution of a stimulus to the economy.

6.3 Limitations

Limitations or qualifiers that should be raised when using input-output analysis include:

- The inputs purchased by each industry are a function only of the level of output of that industry. The input function is generally assumed linear and homogenous of degree one (which implies constant returns to scale and no substitution between inputs).
- Each commodity (or group of commodities) is supplied by a single industry or sector of production. This implies that there is only one method used to produce each commodity and that each sector has only a single primary output.
- The total effect of carrying on several types of production is the sum of the separate effects. This rules out external economies and diseconomies and is known simply as the additivity assumption. This generally does not reflect real world operations.

- The system is in equilibrium at given prices. This is obviously not the case in an economic system subject to external influences.
- In the static input-output model, there are no capacity constraints so that the supply of each good is perfectly elastic. Each industry can supply whatever quantity is demanded of it and there are no capital restrictions. This assumption would come into play depending upon the magnitude of the changes in quantities demanded, brought about through changes in taxation levels.

Input-output techniques provide a solid approach for taking account of the inter-relationships between the various sectors of the economy in the short-term and hence are an appropriate tool for determining the direct and indirect economic impact of the Coppabella Mine.

6.4 Data Used

The operating and capital expenditures used in the input-output modelling for the Mackay Region and Nebo Shire are outlined in Table 6.4.1.

Table 6.4.1. Annual Operating and Capital Expenditure in Mackay region and Nebo Shire of the Coppabella Mine (\$M)

Description	Mackay Region	Nebo Shire
Operating Expenditure		
Labour	\$35.5	\$4.5
Parts, tyres, repairs	\$39.1	\$0.3
Fuel	\$14.2	\$0.1
Electricity	\$3.0	\$0.0
Explosives	\$10.6	\$0.1
Fixed costs	\$44.4	\$0.4
Railway and Port ^(a)	\$42.0	\$0.0
Capital Expenditure		
Capital Works	\$18.0	\$0.5
Exploration	\$2.0	\$0.1
Total	\$208.7	\$6.0

^(a) There would be some railway charges that would occur within Nebo Shire (labour and lodging expenses of Rail personnel) however the proportion attributable to the Coppabella Mine is likely to be very small given that there are a number of other mines in the region and has been assumed to approximate zero. Source: CQU, 2003.

Survey work undertaken by staff at the Central Queensland University (CQU) identified the expenditure patterns of workers that live outside of Nebo Shire when they are in Nebo Shire on shift work (Table 6.4.2).

Table 6.4.2 Annual Expenditure of Shiftwork Miners who live outside of the Study Area expenditure within Mackay and Nebo Shires (\$M)

Description	Mackay Region ^(a)	Nebo Shire ^(b)
Accommodation	\$0.085	\$0.53
Food	\$0.042	\$0.26
Alcohol ^(c)	\$0.074	\$0.46
<i>Beer and Malt</i>	\$0.037	\$0.23
<i>Wine and Spirits</i>	\$0.037	\$0.23
Fuel	\$0.048	\$0.30
Car	\$0.008	\$0.05
Entertainment	\$0.012	\$0.08
Other	\$0.005	\$0.03
Total	\$0.27	\$1.71

^(a) These figures include only those miners who live outside the Mackay region who work as shift workers at the Coppabella Mine. The expenditure of miners that live within the Mackay region is captured by the labour component of the input-output model.

^(b) These figures include only those miners who live outside Nebo Shire who work as shift workers at the Coppabella Mine. The expenditure of miners that live within Nebo Shire is captured by the labour component of the input-output model.

^(c) Expenditure on alcohol was split between the beer and malt and the wine and spirits sectors.

The sectors of the input-output model that were used for this analysis include:

- Agriculture
- Mining
- Manufacturing
- Electricity, Gas and Water Supply
- Construction
- Trade
- Transport
- Communication, Finance, Property and Business Services
- Government Administration and Defence and
- Community, Recreation and Personal Services.

6.5 Economic Impacts

The expenditure figures detailed in Tables 6.4.1 and 6.4.2 were allocated to the appropriate industrial sectors of the 32 sector input-output table. The resulting allocations of the total direct expenditure within the Mackay region due to the Coppabella Mine is estimated at \$209.0 million with \$7.7 million of that spent within Nebo Shire (Table 6.5.1).

Table 6.5.1 Annual Allocation of Net Expenditure to Industrial Sectors (\$M)

No	Industrial Sector	Mackay	Nebo Shire
1	Agriculture	\$0.00	\$0.00
2	Mining	\$81.90	\$4.93
3	Manufacturing	\$10.70	\$0.60
4	Electricity, Gas and Water Supply	\$3.00	\$0.02
5	Construction	\$18.00	\$0.54
6	Trade	\$53.40	\$1.52
7	Transport	\$42.00	\$0.00
8	Communication, Finance, Property and Business Services	\$0.00	\$0.00
9	Government Administration and Defence	\$0.00	\$0.00
10	Community, Recreation and Personal Services	\$0.00	\$0.11
Total		\$209.00	\$7.73

Source: AECeconomics.

6.5.1 Aggregate Economic Impact

Applying the above expenditure amounts as final demand shocks to the input-output table results in direct and indirect economic impacts as detailed in Tables 6.5.1.1 and 6.5.1.2 for Nebo Shire and the Mackay region respectively.

Table 6.5.1.1 Estimated Economic Impacts of Coppabella Mine on Nebo Shire

	Output (\$ M 2000-01)	Income (\$ M 2000-01)	Employment (FTE persons)	Value added (\$ M 2000-01)
Direct	\$7.7	\$4.5	36	\$4.7
Indirect	\$3.0	\$0.6	26	\$1.3
Total	\$10.7	\$5.1	62	\$6.0

FTE = Full-time-equivalent employment positions. Source: AECeconomics.

The economic impacts associated with the Coppabella Mine on Nebo Shire include:

- An increase in estimated direct output of \$7.7 million, and additional flow on increases in output of \$3.0 million through other industries
- An increase in estimated direct income (wages and salaries) of \$4.5 million, with an additional \$600,000 in income through flow on effects in other industries
- A sustained increase of 36 direct full-time equivalent employees, with an estimated additional 26 jobs gained indirectly through other industries and
- An estimated increase in GSP of \$4.9 million from direct effects, with a further flow on impact of \$1.3 million through other industries.

Table 6.5.1.2 Estimated Economic Impacts of Coppabella Mine on Mackay Region

	Output (\$ M 2000-01)	Income (\$ M 2000-01)	Employment (FTE persons)	Value added (\$ M 2000-01)
Direct	\$209.0	\$35.5	283	\$129.3
Indirect	\$80.6	\$20.3	500	\$39.9
Total	\$289.6	\$55.8	783	\$169.2

FTE = Full-time-equivalent employment positions. Source: AECeconomics.

The economic impacts associated with the Coppabella Mine on the Mackay region include:

- An increase in estimated direct output of \$209.0 million, and additional flow on increases in output of \$80.6 million through other industries or approximately 4.6% of Mackay's total output
- An increase in estimated direct income (wages and salaries) of \$35.5 million, with an additional \$20.3 million in income through flow on effects in other industries, which approximates 3.6% of Mackay's wages and salaries
- A sustained increase of 283 direct full-time equivalent employees, with an estimated additional 500 jobs gained indirectly through other industries, which approximates 1.6% of Mackay's employment and
- An estimated increase in GSP of \$129.3 million from direct effects, with a further flow on impact of \$39.9 million through other industries, which approximates 5.0% of Mackay's total value added production.

6.5.2 Economic Impact by Sector

The economic impact was aggregated for all industries in the previous section. This section examines the economic impact of the Coppabella mine when aggregated to the 10 major industry sectors in Tables 6.5.2.1 and 6.5.2.2 for Nebo Shire and the Mackay region respectively.

The key industries to be impacted by the Coppabella Mine in Nebo Shire include the:

- Mining sector with 58.1% of total value added and 54.7% of income and
- Trade sector with 38.6% of employment and 23.9% of income.

The key industries to be impacted by the Coppabella Mine in the Mackay region include the:

- Mining sector with 35.7% of value added production\ and 30% of output
- Trade sector with 30.9% of employment and 25.3% of income
- Transport sector 22.9% of income and 19.0% of value added production and
- Communication, finance, property and business services sector⁴ with 17.1% of employment.

⁴ Has a relatively large flow on employment component.