

## MEDIA RELEASE

26 May 2012

### Development of Metgasco's natural gas plan to provide economic opportunity for the Northern Rivers community

The release today of the *Economic Impact of Proposed Natural Gas Operations in Northern Rivers* by Metgasco highlights the potential economic benefit to the local community generated by the development of a local gas industry.

Mr Peter Henderson, Managing Director and Chief Executive Officer of Metgasco Ltd, said today the development of a Metgasco proposed gas business in the Northern Rivers region could create significant employment opportunities and strengthen the economic sustainability of energy dependent local businesses.

The *Economic Impact of Proposed Natural Gas Operations in Northern Rivers*, prepared by Lawrence Consulting, states that the potential economic benefit to the regional economy from a fully developed Metgasco business model will result in the creation of the following for the region:

- \$1.4 billion of direct expenditure over 20 years;
- \$2.1 billion of total expenditure over 20 years;
- 400 full time equivalent (FTE) direct construction jobs;
- 270 FTE direct operations jobs;
- 1,000 FTE total construction jobs; and
- 950 FTE total operations jobs.

"The effects of these newly created local jobs and the significant expenditure will flow through to all parts of the Northern Rivers community. The new jobs created will mean that these people will buy more food, fuel, furniture and electronic goods from local businesses. The whole community will benefit from the growth of our operations," Mr Henderson said.

Mr Ray Brown, the Mayor of the Western Downs Regional Council, Queensland (which includes the town of Tara) recently said:

"the burgeoning (natural gas) industry had already halted the drift away from rural areas and created more jobs than the region could handle."<sup>1</sup>

"Training and education plans will need to be put in place, preferably with local institutions, to ensure that opportunities are provided for local youth in particular. Metgasco will also explore means of subcontracting operational work to landholders as a means to optimise costs and further distribute the industry's benefit locally," Mr Henderson said

<sup>1</sup> AFR 8 March 2012, page 12

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“The NSW Government released last year the Regional Action Plan 2021, which is a essentially a road map to create 475,000 more jobs in NSW over the next 10 years. Metgasco believes that the development of a local gas industry in the Northern Rivers region will assist the NSW Government’s aim of growing the state’s economy through the creation of direct and indirect regionally-based jobs and by reducing the energy costs of local businesses,”

“This positive economic impact will be achieved with adherence to a strong regulatory regime which complements existing industry standards, ensuring that safe environmental practices are maintained.” Mr Henderson said.

The author of *Economic Impact of Proposed Natural Gas Operations in Northern Rivers*, Mr Reuben Lawrence, believes that the benefits to the local, regional and national economy from these planned operations will be widespread.

“The results of this study demonstrate that incomes and expenditures from Metgasco’s proposed Northern Rivers natural gas operations are likely to be widely distributed across multiple regions and states of Australia, generating significant flow-on effects. Expenditure from Metgasco’s natural gas business will have indirect impacts on the business environment in many areas, and will generate substantial levels of economic activity in the Northern Rivers.” Mr Lawrence said.

ENDS

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### **Background**

Metgasco Limited (“Metgasco” or “the Company”) and its predecessors have been operating for 10 years and was listed on the ASX (ASX Code:MEL) on 24 December 2004. Headquartered in Sydney and with a regional office in Casino, Metgasco is exploring and developing gas resources in the Clarence Moreton basin in Northern NSW. Metgasco is solely focussed on developing energy resources in NSW, where it has invested over \$80 million in gas exploration over the past 10 years.

Metgasco holds exploration licences issued by the NSW government which require the company to conduct seismic surveys and to drill exploration wells in order to assess the commercial potential for the development of the state’s natural gas resources in the Northern Rivers region.

Metgasco has discovered large coal seam gas and conventional gas resources and is in the process of developing and commercialising these resources as well as continuing current exploration efforts.

Metgasco Ltd commissioned Economic Consultants, Lawrence Consulting (<http://www.lawrenceconsulting.com.au/>) to determine the total direct and indirect economic benefit to the local, regional, state and Australian economies of Metgasco’s proposed natural gas (made up of coal seam and conventional gas) operations in the Northern Rivers.

The economic assessment has been based on historical and projected operational and capital expenditure data provided by Metgasco and this report summarises the multiplier and consumption effected that are generated by this direct stimulus.

### **Definitions**

- Direct Effect = wages for direct employment of workforce (ie Metgasco employees) and expenditure on business services in local and regional economies.
- Indirect Effect = net effect of subsequent rounds of economic activity in the business supply chain (multiplier effect)
- Total Expenditure = direct and indirect expenditure
- Construction jobs = jobs that service the capital requirement that are project specific and conclude at the end of the building works.
- Total Construction jobs = direct and indirect construction jobs
- Operations jobs = jobs that service the ongoing day-to-day operation and maintenance of gas field development and conclude at the end of life of the gas field.
- Total Operations jobs = direct and indirect operations jobs.



# Economic Impact of Proposed Natural Gas Operations in Northern Rivers NSW

Prepared for Metgasco Limited

May 2012

**METGASCO**

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## EXECUTIVE SUMMARY

Lawrence Consulting was commissioned by Metgasco Limited (Metgasco) to determine the total direct and indirect economic benefit to the local, regional, state and Australian economies of proposed coal seam gas and conventional gas (natural gas) operations in the Northern Rivers region of New South Wales.

Metgasco is a listed Australian gas exploration company with interests in three Clarence Moreton Basin permits in which significant gas resources have been discovered. Whilst still in exploration phase, Metgasco is seeking to move to the development / commercialisation phase, of which a number of options are being considered.

**Table E1: Proposed Metgasco Natural Gas Projects, Northern Rivers**

Project	Construction Phase	Operation Phase
Richmond Dairies	2012-13	2013-22
Richmond Valley Power Station	2013	2014-29
Gas Field to Supply Power Station	2013	2014-29
Other Local Projects	2013-15	2016-30
Gas Sales Growing to 90PJ	2015-16	2017-37
Total estimated workforce (FTEs)	1,000	310

Metgasco provided projections of both operational expenditure (opex) and capital expenditure (capex) for the projects currently under consideration as detailed above (note: the 90 PJ growth forecasts represent a high case scenario for Metgasco which will increase production to the maximum volume over time). This data – which was also separated into region of purchase and was based on the most reliable market assumptions regarding future energy demand in both domestic and international markets – suggests that natural gas operations in the Northern Rivers of New South Wales are expected to contribute an estimated \$8.3 billion in direct spending to the Australian economy over the next twenty years, comprised of the following:

- \$4.3 billion in initial capital expenditure, with an estimated annual direct workforce of 1,000 fulltime employees (FTEs); and
- \$4.0 billion in operational expenditure (i.e. supply chain purchases and employee salaries) and ongoing capex, generating a direct operating workforce of approximately 310 FTEs.

Impacts flowing from the potential natural gas developments occur through direct, indirect and final consumption effects. There are two key types of direct impacts:

- Wages for direct employment of workforce
- Expenditure on business services in local and regional economies

The net effect of subsequent rounds of economic activity in the business supply chain can be categorised as indirect effects, whilst the increased employment generated through resources sector activity and business purchases generates a number of final consumption effects.

Input-output (I-O) modelling was used to identify and estimate the scale and geographical scope of the direct, indirect and consumption-induced impacts from the proposed natural gas operations in the Northern Rivers region at a number of distinct levels:

- Local (specifically, the Richmond Valley and Lismore local government areas (LGAs))
- Regional (i.e. Northern Rivers)
- State (the whole area of New South Wales)
- Australia



The total economic impact (direct and indirect) from the proposed natural gas operations in the Northern Rivers to the Australian economy over the project timeframe of 20 years is forecast to amount to:

- Over \$9 billion in output/turnover during the construction phase and \$11 billion during the operational phase with a total output of more than \$20 billion;
- Almost \$9 billion in total value added (i.e. contribution to gross national product), which translates to an estimated annual increase to GNP of 0.07% per annum during the construction phase and 0.02% during the operation phase;
- Up to \$5 billion in total income (wages and salaries) over the next twenty years; and
- Approximately 7,000 full-time equivalent jobs per annum during the construction phase and more than 2,500 permanent FTEs during the operating phase.

The results also demonstrate that incomes and expenditures from the proposed Northern Rivers natural gas operations are likely to be widely distributed across multiple regions and states of Australia generating significant flow-on effects. Expenditure from the natural gas industry will have indirect impacts on the business environment in many areas, and will generate substantial levels of production in the Richmond Valley and Lismore LGAs and the Northern Rivers region in particular.

**Table E2: Summary of Economic Impacts of Northern Rivers Natural Gas Projects**

	Richmond Valley	Lismore	Northern Rivers	New South Wales	Australia
<b>Cumulative Impact</b>					
Output (\$ million)	1,617	420	2,053	5,591	20,506
Income (\$ million)	263	70	335	1,292	4,730
Value added (\$ million)	569	144	719	2,231	8,526
<b>Estimated Annual Impact</b>					
Construction phase:					
Output (\$ million)	156	49	206	548	2,366
Income (\$ million)	21	7	28	114	525
Employment (fte persons)	778	251	1,040	2,021	6,982
Value added (\$ million)	41	13	55	187	916
% increase in GRP	5.12	0.55	0.50	0.04	0.07
Operating phase:					
Output (\$ million)	50	11	61	170	552
Income (\$ million)	9	2	11	42	132
Employment (fte persons)	820	121	946	1,354	2,515
Value added (\$ million)	20	5	25	74	243
% increase in GRP	2.49	0.18	0.22	0.02	0.02

Note: All figures in 2012 dollars



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# INTRODUCTION

## Overview

Lawrence Consulting was commissioned by Metgasco Limited (Metgasco) to determine the total direct and indirect economic benefit to the local, regional, state and Australian economies of proposed coal seam gas and conventional gas (natural gas) operations in the Northern Rivers region of New South Wales. The economic assessment has been based on historical and projected operational and capital expenditure data provided by Metgasco and this report summarises the multiplier and consumption effects that are generated by this direct stimulus.

While the resources sector makes a significant contribution to the New South Wales and Australian economies, information about the impacts of the sector on local and regional economies within New South Wales is limited. Impacts on regional and metropolitan areas of New South Wales occur through direct, indirect and final consumption effects. There are two key types of direct impacts:

- Wages for direct employment of workforce
- Expenditure on business services in local and regional economies

Business expenditure generates both upstream and downstream ripple effects through the business supply chain as local businesses purchase goods and services from other businesses, often through several links in the supply chain. The net effect of subsequent rounds of economic activity in the business supply chain can be categorised as indirect effects. The increased employment that is generated through the direct effects (direct workforce employment) and the indirect effects (business supply chain) generates a number of final consumption effects to support the increased population base.

The focus of this report is to identify the geographical spread of impacts (direct, indirect and consumption-induced) from the proposed natural gas operations in the Northern Rivers region at a number of distinct geographic scales:

- Local (specifically, the Richmond Valley and Lismore local government areas (LGAs))
- Regional (i.e. Northern Rivers)
- State (the whole area of New South Wales)
- Australia

## Proposed Natural Gas Operations

Metgasco Limited is a listed Australian gas exploration company with offices in Casino and Sydney. All key operating functions are conducted from the Casino office, including:

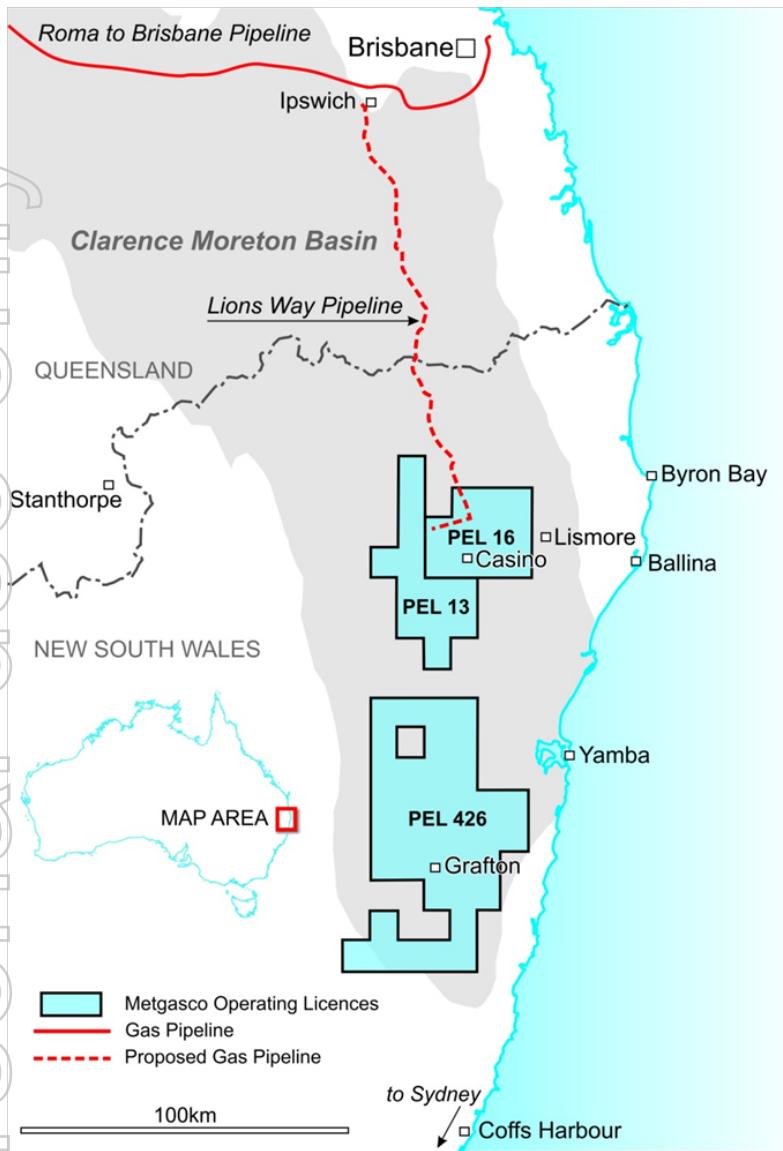
- Exploration
- Field operations
- Health, safety and environmental management
- Purchasing/procurement

Metgasco has exploration interests in three Clarence Moreton Basin permits in which significant gas resources have been discovered. Whilst still in exploration phase, Metgasco is seeking to move to the development / commercialisation phase, of which a number of options are being considered, including:

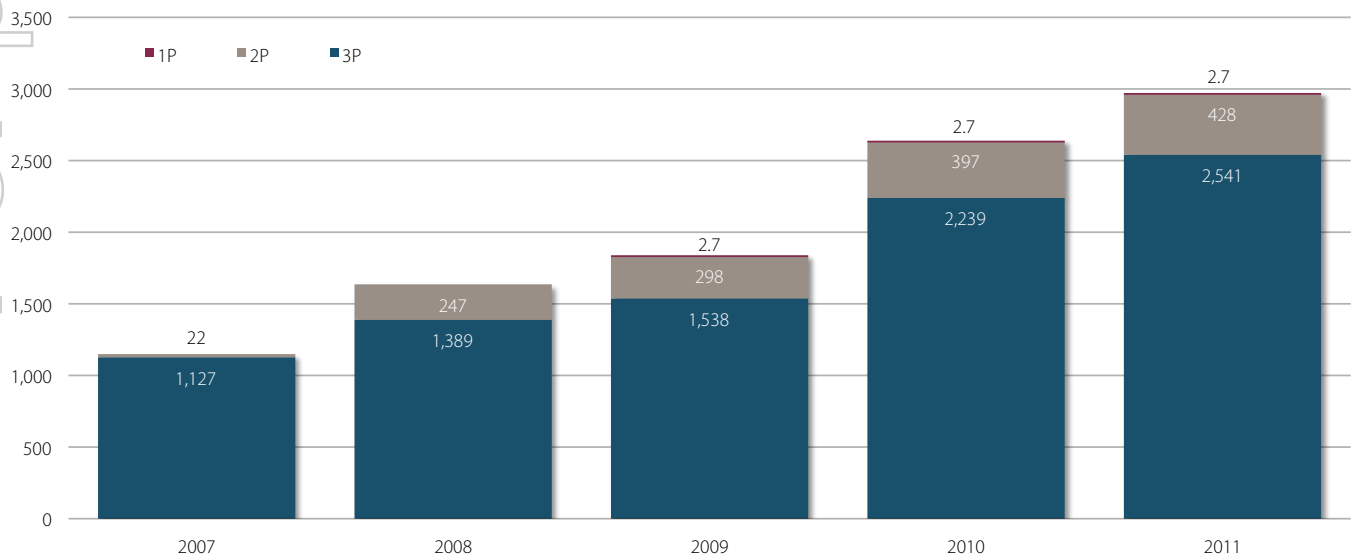
- Local Domestic gas – Gas Sales to Richmond Dairies and other businesses
- Gas Fired Electricity – Richmond Valley Power Station
- Mini LNG (Liquid Natural Gas) and Compressed CSG (CNG)
- Gas for LNG Export
- Gas Sales to Industrial Customers in QLD and NSW (entering into a Gas Sales Agreement (GSA))



### Metgasco Operating Licenses



Metgaco Gas Reserves  
Clarence Moreton Basin (PJ)







This economic impact assessment has been undertaken for the proposed Metgasco projects outlined in the following table. The total impacts over both construction and operational phases for each project have been estimated, along with average annual impacts, for each of the dissemination regions nominated above, specifically, Richmond Valley and Lismore LGAs, the Northern Rivers, New South Wales and Australia.

**Table 1: Proposed Metgasco Natural Gas Projects, Northern Rivers**

<b>Project</b>	<b>Construction Phase</b>	<b>Operation Phase</b>
Richmond Dairies	2012-13	2013-22
Richmond Valley Power Station	2013	2014-29
Gas Field to Supply Power Station	2013	2014-29
Other Local Projects	2013-15	2016-30
Gas Sales Growing to 90 PJ	2015-16	2017-37
Total estimated workforce (FTEs)	1,000	310

Note: The 90 PJ growth forecasts represent a high case scenario for Metgasco, which will increase production to the maximum volume over time.

This report provides an assessment of the wider economic impacts of these proposed projects/natural gas development in the Northern Rivers region of New South Wales. The following sections of the report summarise the expected national, state, regional and local impacts of the development as estimated by the IO modelling.



# METHODOLOGY

## Data Collection

In order to accurately assess the impacts of natural gas operations in the Northern Rivers region of New South Wales, the proponent, Metgasco, was asked to disclose details of expenditure on goods and services as well as employee salaries by place of residence both annually and in total from 1 July 2009. The data was supplied by Australian postcodes where the salary was paid (residence of the worker or contractor) and where the business expenditures were made.

The postcode spend data were then aggregated using geographical concordance files from the Australian Bureau of Statistics and the economic impacts (direct, indirect and consumption impacts) of the resources sector were analysed at several geographic levels:

- Local (specifically, the Richmond Valley and Lismore LGAs)
- Regional (i.e. Northern Rivers)
- State (the whole area of New South Wales)
- Australia

The historical data provided by the proponent allowed the identification of industry supply chain expenditure patterns, which were used as benchmarks for projected spending and also informed the economic modelling process. The sectors of the economy that were impacted through the analysis are outlined in the following table.

**Table 2: Northern Rivers Natural Gas Economic Input Assessment, Industry Sectors Affected**

• Oil and Gas Extraction	• Road Transport
• Heavy and Civil Engineering Construction	• Postal and Courier Pick-up and Delivery Service
• Aquaculture	• Telecommunication Services
• Agriculture, Forestry and Fishing Support Services	• Rental and Hiring Services (except Real Estate)
• Non Metallic Mineral Mining	• Ownership of Dwellings
• Exploration and Mining Support Services	• Non-Residential Property Operators and Real Estate Services
• Printing (including the reproduction of recorded media)	• Professional, Scientific and Technical Services
• Electricity Transmission, Distribution, On Selling and Electricity Market Operation	• Building Cleaning, Pest Control, Administrative and Other Support Services
• Other Fabricated Metal Product Manufacturing	• Public Administration and Regulatory Services
• Gas Supply	• Public Order and Safety
• Water Supply, Sewerage and Drainage Services	• Education and Training
• Waste Collection, Treatment and Disposal Services	• Health Care Services
• Construction Services	• Heritage, Creative and Performing Arts
• Wholesale Trade	• Automotive Repair and Maintenance
• Retail Trade	• Other Repair and Maintenance
• Accommodation	• Other Services
• Food and Beverage Services	

The proponent also provided projections of both operational expenditure (opex) and capital expenditure (capex) for the proposed projects currently under consideration as detailed in the previous section. This data, which included potential investment of more than \$8.3 billion over the next 20 years – specifically, approximately \$4.3 billion in the construction phase and a further \$4.0 billion during operations (including ongoing capex spend) – was also separated into region of purchase and was based on the most reliable market assumptions regarding future energy demand in both domestic and international markets.



## Displacements & Leakages

Displacement arises when an economic stimulus such as natural gas operations takes market share from other existing local firms or organisations, or 'displaces' alternative uses of project funds that might otherwise have occurred. Leakages are defined as the proportion of project outputs that flow out of the catchment area, i.e. purchases from outside the region.

In relation to the proposed Metgasco natural gas operations in the Northern Rivers region of New South Wales, for the purpose of this analysis it has been assumed that each separate region analysed are closed economies, i.e. any displacement and leakages are considered marginal. All expenditure related to the stimulus has been assumed to be made within each region – where not otherwise identified – in order to represent the additional economic activity generated by these projects.

## Input-Output Modelling

For this study, input-output (I-O) modelling has been used to estimate the sum of direct, indirect and final consumption of the resources industry on different regions of New South Wales and Australia. I-O 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, indirect and induced economic impact of economic stimuli.

The standard I-O model approach is particularly useful for predicting the impacts of events or projects in an economy, or analysing regional level economies. I-O models can be used to capture only the indirect impacts that occur through other industry sectors (Type I models), or the indirect plus the final consumption effects (Type II models). In this study, the I-O models were based on the ABS models of the Australian and New South Wales economies generated from general equilibrium models.

A concept underlying I-O modelling is that an initial economic shock or stimulus can have multiplier effects through a series of successive spending rounds. The size of the economic multiplier in a local or regional area can be summarised in the following way:

- 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 expenditures in their economy and not 'losing' it to other regions.

To generate predictions, the economic contribution of an industry is applied to the relevant industry sectors of the input-output model of a regional economy. The stimulus from economic activity can be traced through the economy in several different ways:

- The first round effect, or direct effect, are those from the expenditure in purchasing goods and services 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; and
- The consumption-induced effects identify the increase in economic activity generated to service the additional employment (and population) created through the direct and indirect effects.



Predictions from I-O models are summarised in terms of multipliers and changes in four key variables:

### **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.

### **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.

### **Employment**

The employment impact measures the number of jobs created by the stimulus, both directly and indirectly.

### **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.

Key advantages of using input-output models are the fineness of detail available at a disaggregated industry level, the relative ease of application, particularly for sub-regional levels, and the ability to model effects in a timely manner. However, care has to be taken in its application and interpretation of results. Key assumptions that underpin the application of I-O models are:

- Constant prices
- Fixed technology
- Fixed import shares
- Constant labour productivity within sectors
- No constraints on supplies of factor inputs

Type II models involve additional assumptions about fixed relationships between income and consumption patterns. A further issue is that both Type I and Type II models do not account for all forms of potential efficiency interactions between industries with changes. These factors mean that the results of I-O models should generally be treated as the upper bound of estimates, and that care has to be taken in interpreting the results of very large changes in demand or production.

## **Construction of the Regional I-O Models**

For the derivation of the regional I-O tables for the Northern Rivers region and Richmond Valley and Lismore LGAs, a variable interference non-survey technique was applied, involving a formalized non-survey method compilation. This allowed data on direct effects of the resources industry to be inserted at any stage of the compilation procedure. This approach is based primarily on a mechanical procedure (mainly on cross-industry location quotients) for the regionalisation of the national direct requirements matrix (DRM), which is at the core of any I-O table.

In summary, the construction of the local and regional I-O models employed the following steps:

- Adjustment to the latest available national I-O table
- Computation of the regional direct requirement matrix
- Aggregation of regional sectors (if necessary)
- Computation of the complete regional I-O table



All the necessary data for the regionalization procedure were collected from the Australian Bureau of Statistics as well as other reliable sources for secondary data such as regional household expenditure patterns, income and productivity measures. The latest available national I-O tables was 2007-08, which consisted of 111 sectors of economic activity, at the 4-digit level, compiled following the industry-technology assumption, product-by-product, with total flows and valued at basic values in current prices.

For estimating the regional I-O tables, and especially in the interpretation of results, relevant limitations of the I-O approach (static, linear production function, no substitution or scale economy effects, infinite elasticity of supply) were taken into consideration. Once the I-O models were generated, predictions of impact were estimated for each regional area of interest in Queensland using the available data on salary and business expenditure.

The predictions of the I-O models for the Northern Rivers and each LGA were estimated in two separate groups. The first group involved the economic impacts of expenditure on business goods and services (business suppliers), while the second involved economic expenditure of the labour force. The outputs of the models can be classified into First Round and Indirect Effects, representing industry impacts through the business chain, and Final Consumption effects, which represent the economic activity needed to support the increased workforce from Direct, First Round and Indirect Effects.

The data collection and the methodology applied in this study are notable in four key aspects:

- First, the data collected on actual spending by the resources industry allowed an assessment of impacts by spending in the economy in comparison to the more traditional approach of predicting economic impacts from total revenue changes.
- Second, the collection of primary data by local area allowed a much more accurate assessment of the direct impacts by geographic area than had previously been available.
- Third, improved identification and allocation of purchases by region to industry categories as used in the input-output modeling was done to alleviate any possible supply constraint issues. Similarly, household (or consumption) spending was allocated based on different industry expenditure coefficients for each region.
- Fourth, the application of the I-O modelling framework down to the LGA level, when combined with the accuracy of the primary data, meant that relatively accurate models of local impacts from the resources sector could be generated.

The outcomes of the data collection and modelling approach meant that the assessment of direct, indirect and consumption effects could be expected to be more detailed and accurate at the LGA level than could be achieved with standard applications of general equilibrium models.



# ECONOMIC BENEFITS

## National Impact

Forecast expenditure data provided by Metgasco suggests that natural gas operations in the Northern Rivers of New South Wales are expected to contribute an estimated \$8.3 billion in direct spending to the Australian economy over the next twenty years, comprised of the following:

- \$4.3 billion in initial capital expenditure, with an estimated annual direct workforce of 1,000 fulltime employees (FTEs); and
- \$4.0 billion in operational expenditure (i.e. supply chain purchases and employee salaries) and ongoing capex, generating a direct operating workforce of approximately 310 FTEs.

The total economic impacts and estimated annual impacts associated with the proposed Northern Rivers natural gas operations on Australia are summarised in Table 3, with additional impacts for both the construction and operation phases.

**Table 3: Summary of Economic Impacts of Northern Rivers Natural Gas Projects, Australia**

	Construction Phase	Operation Phase	Total
<b>Cumulative Impact</b>			
Output (\$ million)			
A. Richmond Dairies	17	4	21
B-I. Richmond Valley Power Station	62	290	352
B-II. Gas Field to Supply Power Station	93	114	207
C. Other Local Projects	93	350	443
D. Gas Sales Growing to 90PJ	9,200	10,283	19,483
Total	9,464	11,042	20,506
Income (\$ million)			
	2,099	2,630	4,730
Value added (\$ million)			
	3,663	4,862	8,526
<b>Estimated Annual Impact</b>			
Output (\$ million)	2,366	552	-
Income (\$ million)	525	132	-
Employment (fte persons)	6,982	2,515	-
Value added (\$ million)	916	243	-
<b>% contribution/increase to GNP</b>			
	0.07	0.02	-

The I-O modelling conducted for this project has estimated the indirect and consumption effects flowing from the direct stimulus. These impacts have been modelled separately and then aggregated to identify the level of impacts on output, incomes, employment and industry value added. For each key measure, the total impact on the economy is the sum of the direct effects from industry, the indirect effects through the business chain, and the final consumption effects. The total economic impact (direct and indirect) from the proposed natural gas operations in the Northern Rivers to the Australian economy over the project timeframe of 20 years is forecast to amount to:

- Over \$9 billion in output/turnover during the construction phase and \$11 billion during the operational phase with a total output of more than \$20 billion;
- Almost \$9 billion in total value added (i.e. contribution to gross national product), which translates to an estimated annual increase to GNP of 0.07% per annum during the construction phase and 0.02% during the operation phase;



- Up to \$5 billion in total income (wages and salaries) over the next twenty years; and
- Approximately 7,000 full-time equivalent jobs per annum during the construction phase and over 2,500 permanent FTEs during the operating phase.

Estimates of the full contribution to Gross National Product (GNP) require an estimate of the initial contribution of the industry in terms of direct value added – defined as compensation of employees plus gross operating surplus plus other taxes less subsidies on production – plus the value added effects generated through the business chain and consumption effects. A precise measure of direct value added for the resources industry is not available from the data due to difficulty in forecasting gross operating surplus, therefore an estimated value added direct spending on construction, supply chain purchases and employee compensation has instead been adopted.

Disaggregated industry outputs were provided as part of the analysis to demonstrate the impacts on all 111 sectors included in the input-output model; these are provided in Appendix A. The following table and graph identify the broad industry benefits from supply chain purchases and consumption spending associated with the proposed Northern Rivers natural gas operations, in terms of both total output/turnover and annual employment.

**Table 4: Disaggregated Industry Impacts of Northern Rivers Natural Gas Operations, Australia**

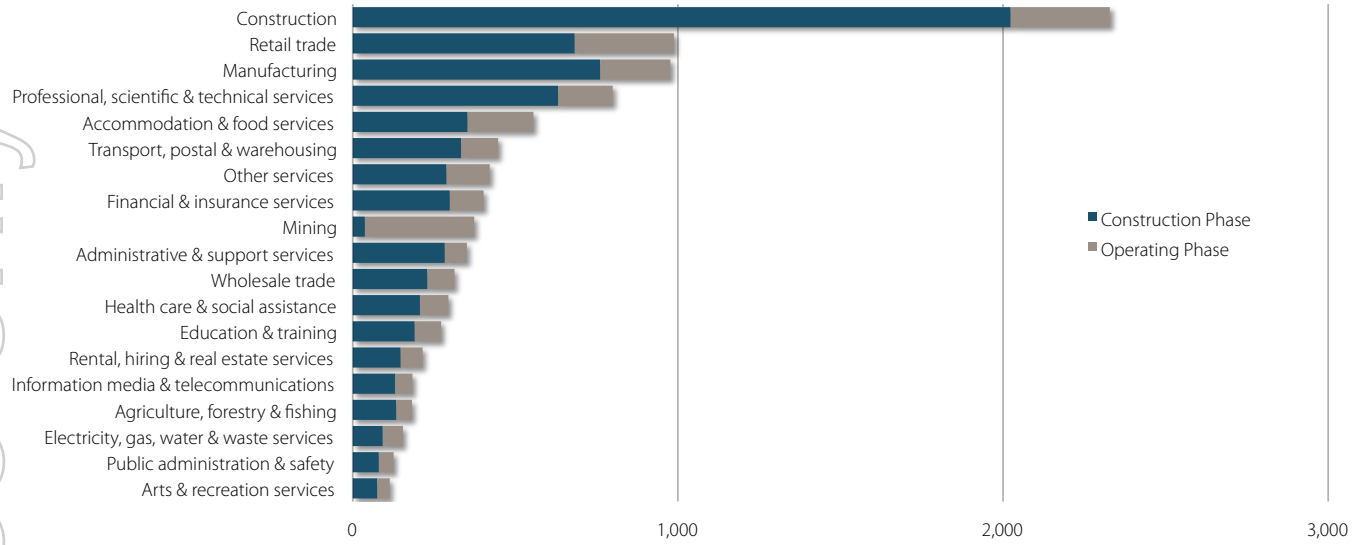
Industry sector	Construction Phase		Operation Phase	
	Total Output (\$ million)	Annual Employment (FTEs)	Total Output (\$ million)	Annual Employment (FTEs)
Agriculture, Forestry and Fishing	126	134	223	48
Mining	120	37	330	336
Manufacturing	1,157	761	1,496	216
Electricity, Gas, Water and Waste Services	164	92	304	62
Construction	3,996	2,023	2,439	305
Wholesale Trade	318	230	516	83
Retail Trade	280	683	518	305
Accommodation and Food Services	189	353	385	202
Transport, Postal and Warehousing	392	333	671	114
Information Media and Telecommunications	231	130	370	54
Financial and Insurance Services	650	299	1,072	104
Rental, Hiring and Real Estate Services	568	148	914	67
Professional, Scientific and Technical Services	567	632	658	168
Administrative and Support Services	266	283	302	68
Public Administration and Safety	49	80	89	46
Education and Training	82	191	145	81
Health Care and Social Assistance	88	207	160	88
Arts and Recreation Services	55	76	99	38
Other Services	166	289	353	133
<b>Total</b>	<b>9,464</b>	<b>6,982</b>	<b>11,042</b>	<b>2,515</b>

The Construction industry will experience the largest increase in employment during the construction phase with additional estimated annual employment of 2,023 FTEs, followed by Manufacturing (761 FTEs), Retail Trade (683 FTEs) and Professional, Scientific and Technical Services (632 FTEs). During the operation phase, the largest sectoral employment gains will be in Mining (336 FTEs), Construction (305 FTEs), Retail Trade (305 FTEs), Manufacturing (216 FTEs) and Accommodation & Food Services (202 FTEs).



### Estimated Annual Employment Impacts by Industry

Northern Rivers Natural Gas Operations, Australia



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## State Impact

Of the estimated \$8.3 billion in direct spending generated by proposed natural gas operations in the Northern Rivers of New South Wales, approximately \$2.6 billion is expected to be spent in New South Wales. The total economic impacts and estimated annual impacts associated with the proposed Northern Rivers natural gas operations on New South Wales are summarised in Table 5, with additional impacts for both the construction and operation phases.

**Table 5: Summary of Economic Impacts of Northern Rivers Natural Gas Projects, New South Wales**

	Construction Phase	Operation Phase	Total
<b>Cumulative Impact</b>			
Output (\$ million)			
A. Richmond Dairies	2	3	5
B-I. Richmond Valley Power Station	20	125	145
B-II. Gas Field to Supply Power Station	12	47	60
C. Other Local Projects	12	118	130
D. Gas Sales Growing to 90PJ	2,147	3,105	5,252
Total	2,193	3,398	5,591
Income (\$ million)	457	835	1,292
Value added (\$ million)	746	1,484	2,231
<b>Estimated Annual Impact</b>			
Output (\$ million)	548	170	-
Income (\$ million)	114	42	-
Employment (fte persons)	2,021	1,354	-
Value added (\$ million)	187	74	-
% contribution/increase to GSP	0.04	0.02	-

The total economic impact (direct and indirect) from the proposed natural gas operations in the Northern Rivers to the economy of New South Wales over the project timeframe of 20 years is forecast to amount to:

- Approximately \$2 billion in output/turnover during the construction phase and over \$3 billion during the operational phase with a total output of more than \$5 billion;
- Over \$2 billion in total value added (i.e. contribution to gross state product), which translates to an estimated annual increase to GSP of 0.04% per annum during the construction phase and 0.02% during the operation phase;
- More than \$1 billion in total income (wages and salaries) over the next twenty years; and
- Approximately 2,000 full-time equivalent jobs per annum during the construction phase and 1,350 permanent FTEs during the operating phase.

Disaggregated industry outputs were provided as part of the analysis to demonstrate the impacts on all 111 sectors included in the input-output model; these are provided in Appendix A. The following table and graph identify the broad industry benefits from supply chain purchases and consumption spending associated with the proposed Northern Rivers natural gas operations, in terms of both total output/turnover and annual employment.



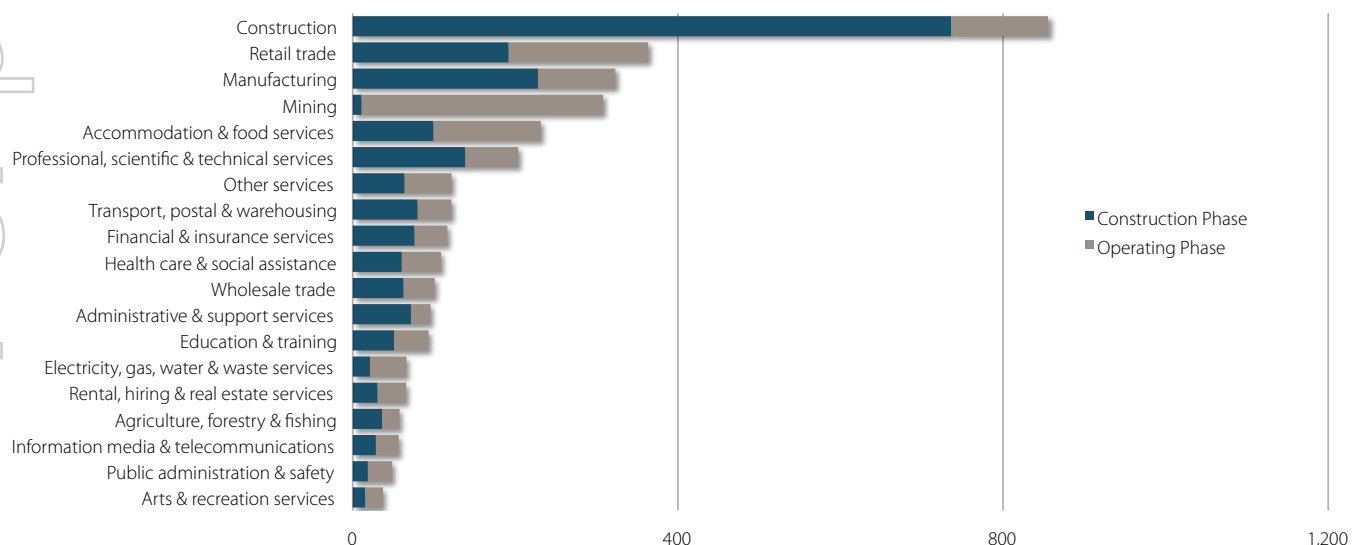
**Table 6: Disaggregated Industry Impacts of Northern Rivers Natural Gas Operations, New South Wales**

Industry sector	Construction Phase		Operation Phase	
	Total Output (\$ million)	Annual Employment (FTEs)	Total Output (\$ million)	Annual Employment (FTEs)
Agriculture, Forestry and Fishing	33	36	100	22
Mining	16	11	56	297
Manufacturing	219	228	426	95
Electricity, Gas, Water and Waste Services	30	21	118	45
Construction	1,168	736	612	119
Wholesale Trade	65	63	178	38
Retail Trade	63	192	224	172
Accommodation and Food Services	43	99	182	132
Transport, Postal and Warehousing	77	80	214	42
Information Media and Telecommunications	46	28	138	28
Financial and Insurance Services	122	76	327	40
Rental, Hiring and Real Estate Services	78	31	245	35
Professional, Scientific and Technical Services	94	138	166	65
Administrative and Support Services	48	72	77	24
Public Administration and Safety	9	19	38	30
Education and Training	18	51	58	43
Health Care and Social Assistance	21	60	70	48
Arts and Recreation Services	10	15	38	22
Other Services	35	64	134	58
<b>Total</b>	<b>2,193</b>	<b>2,021</b>	<b>3,398</b>	<b>1,354</b>

The Construction industry will experience the largest increase in employment during the construction phase with additional estimated annual employment of 736 FTEs, followed by Manufacturing (228 FTEs), Retail Trade (192 FTEs) and Professional, Scientific and Technical Services (138 FTEs). During the operation phase, the largest sectoral employment gains will be in Mining (297 FTEs), Retail Trade (172 FTEs), Accommodation & Food Services (132 FTEs), Construction (119 FTEs) and Manufacturing (95 FTEs).

**Estimated Annual Employment Impacts by Industry**

Northern Rivers Natural Gas Operations, New South Wales





## Regional Impact

Of the estimated \$8.3 billion in direct spending generated by proposed natural gas operations in the Northern Rivers of New South Wales, approximately \$1.4 billion is expected to be spent regionally in the Northern Rivers. The total economic impacts and estimated annual impacts associated with the proposed Northern Rivers natural gas operations on the region are summarised in Table 7, with additional impacts for both the construction and operation phases.

**Table 7: Summary of Economic Impacts of Northern Rivers Natural Gas Projects, Northern Rivers**

	Construction Phase	Operation Phase	Total
<b>Cumulative Impact</b>			
Output (\$ million)			
A. Richmond Dairies	1	1	3
B-I. Richmond Valley Power Station	7	44	52
B-II. Gas Field to Supply Power Station	8	21	29
C. Other Local Projects	8	46	54
D. Gas Sales Growing to 90PJ	801	1,115	1,916
Total	826	1,228	2,053
Income (\$ million)	112	224	335
Value added (\$ million)	222	497	719
<b>Estimated Annual Impact</b>			
Output (\$ million)	206	61	-
Income (\$ million)	28	11	-
Employment (fte persons)	1,040	946	-
Value added (\$ million)	55	25	-
% contribution/increase to GRP	0.50	0.22	-

The total economic impact (direct and indirect) from the proposed natural gas operations in the Northern Rivers to the regional economy over the project timeframe of 20 years is forecast to amount to:

- Approximately \$826 million in output/turnover during the construction phase and over \$1.2 billion during the operational phase with a total output of more than \$2 billion;
- \$719 million in total value added (i.e. contribution to gross regional product), which translates to an estimated annual increase to GRP of 0.2% per annum during the construction phase and 0.2% during the operation phase;
- \$335 million in total income (wages and salaries) over the next twenty years; and
- 1,040 full-time equivalent jobs per annum during the construction phase and 946 permanent FTEs during the operating phase.

Disaggregated industry outputs were provided as part of the analysis to demonstrate the impacts on all 111 sectors included in the input-output model; these are provided in Appendix A. The following table and graph identify the broad industry benefits from supply chain purchases and consumption spending associated with the proposed Northern Rivers natural gas operations, in terms of both total output/turnover and annual employment.



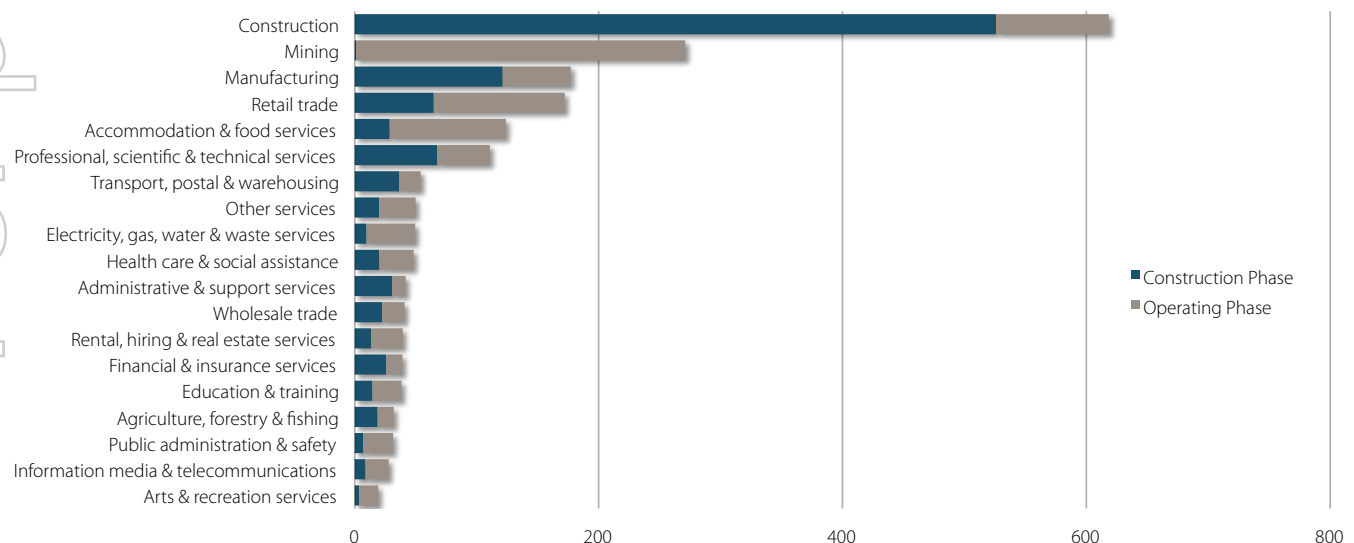
**Table 8: Disaggregated Industry Impacts of Northern Rivers Natural Gas Operations, Northern Rivers**

Industry sector	Construction Phase		Operation Phase	
	Total Output (\$ million)	Annual Employment (FTEs)	Total Output (\$ million)	Annual Employment (FTEs)
Agriculture, Forestry and Fishing	18	19	64	13
Mining	2	1	2	270
Manufacturing	55	121	125	56
Electricity, Gas, Water and Waste Services	4	10	57	40
Construction	618	526	336	92
Wholesale Trade	10	22	42	18
Retail Trade	12	65	95	107
Accommodation and Food Services	6	29	87	95
Transport, Postal and Warehousing	13	36	36	18
Information Media and Telecommunications	4	9	43	19
Financial and Insurance Services	9	26	26	13
Rental, Hiring and Real Estate Services	38	13	142	26
Professional, Scientific and Technical Services	14	68	43	43
Administrative and Support Services	7	31	12	11
Public Administration and Safety	1	7	21	25
Education and Training	3	14	19	24
Health Care and Social Assistance	4	20	27	28
Arts and Recreation Services	1	4	14	16
Other Services	6	20	37	30
<b>Total</b>	<b>826</b>	<b>1,040</b>	<b>1,228</b>	<b>946</b>

The Construction industry will experience the largest increase in employment during the construction phase with additional estimated annual employment of 526 FTEs, followed by Manufacturing (121 FTEs), Professional, Scientific and Technical Services (68 FTEs) and Retail Trade (65 FTEs). During the operation phase, the largest sectoral employment gains will be in Mining (270 FTEs), Retail Trade (107 FTEs), Accommodation & Food Services (95 FTEs), Construction (92 FTEs) and Manufacturing (56 FTEs).

**Estimated Annual Employment Impacts by Industry**

Northern Rivers Natural Gas Operations, Northern Rivers





## Local Impact

### Richmond Valley

Of the estimated \$8.3 billion in direct spending generated by proposed natural gas operations in the Northern Rivers of New South Wales, approximately \$1.1 billion – or the majority of expenditure within the Northern Rivers – is expected to be spent in the Richmond Valley LGA. The total economic impacts and estimated annual impacts associated with the proposed Northern Rivers natural gas operations on the Richmond Valley LGA are summarised in Table 9, with additional impacts for both the construction and operation phases.

**Table 9: Summary of Economic Impacts of Northern Rivers Natural Gas Projects, Richmond Valley LGA**

	Construction Phase	Operation Phase	Total
<b>Cumulative Impact</b>			
Output (\$ million)			
A. Richmond Dairies	1	1	2
B-I. Richmond Valley Power Station	6	36	43
B-II. Gas Field to Supply Power Station	6	18	24
C. Other Local Projects	6	38	44
D. Gas Sales Growing to 90PJ	604	900	1,503
Total	624	993	1,617
Income (\$ million)	83	180	263
Value added (\$ million)	166	403	569
<b>Estimated Annual Impact</b>			
Output (\$ million)	156	50	-
Income (\$ million)	21	9	-
Employment (fte persons)	778	820	-
Value added (\$ million)	41	20	-
% contribution/increase to GSP	5.12	2.49	-

The total economic impact (direct and indirect) from the proposed natural gas operations in the Northern Rivers to the economy of the Richmond Valley LGA over the project timeframe of 20 years is forecast to amount to:

- \$624 million in output/turnover during the construction phase and \$993 million during the operational phase with a total output of approximately \$1.6 billion;
- \$569 million in total value added (i.e. contribution to gross regional product), which translates to an estimated annual increase to GRP of 5.1% per annum during the construction phase and 2.5% during the operation phase;
- \$263 million in total income (wages and salaries) over the next twenty years; and
- 778 full-time equivalent jobs per annum during the construction phase and 820 permanent FTEs during the operating phase.

Disaggregated industry outputs were provided as part of the analysis to demonstrate the impacts on all 111 sectors included in the input-output model; these are provided in Appendix A. The following table and graph identify the broad industry benefits from supply chain purchases and consumption spending associated with the proposed Northern Rivers natural gas operations, in terms of both total output/turnover and annual employment.



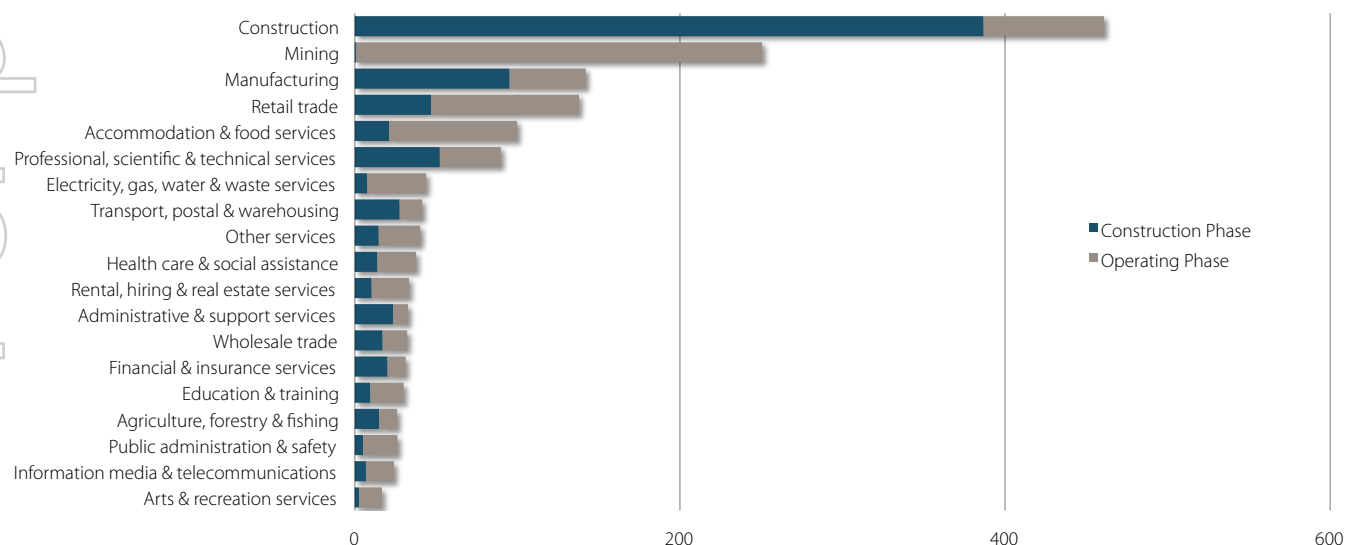
**Table 10: Disaggregated Industry Impacts of Northern Rivers Natural Gas Operations, Richmond Valley LGA**

Industry sector	Construction Phase		Operation Phase	
	Total Output (\$ million)	Annual Employment (FTEs)	Total Output (\$ million)	Annual Employment (FTEs)
Agriculture, Forestry and Fishing	15	15	55	11
Mining	1	1	2	250
Manufacturing	45	95	107	47
Electricity, Gas, Water and Waste Services	3	8	47	36
Construction	469	387	263	74
Wholesale Trade	8	17	35	15
Retail Trade	8	47	76	91
Accommodation and Food Services	4	21	71	79
Transport, Postal and Warehousing	10	28	30	14
Information Media and Telecommunications	2	7	34	17
Financial and Insurance Services	7	20	20	11
Rental, Hiring and Real Estate Services	28	10	115	23
Professional, Scientific and Technical Services	10	52	34	38
Administrative and Support Services	5	24	9	9
Public Administration and Safety	1	5	18	21
Education and Training	1	10	14	21
Health Care and Social Assistance	3	14	21	24
Arts and Recreation Services	1	3	12	14
Other Services	4	15	29	26
<b>Total</b>	<b>624</b>	<b>778</b>	<b>993</b>	<b>820</b>

The Construction industry will experience the largest increase in employment during the construction phase with additional estimated annual employment of 387 FTEs, followed by Manufacturing (95 FTEs), Professional, Scientific and Technical Services (52 FTEs) and Retail Trade (47 FTEs). During the operation phase, the largest sectoral employment gains will be in Mining (250 FTEs), Retail Trade (91 FTEs), Accommodation & Food Services (79 FTEs), Construction (74 FTEs) and Manufacturing (47 FTEs).

**Estimated Annual Employment Impacts by Industry**

Northern Rivers Natural Gas Operations, Richmond Valley





## Lismore

Of the estimated \$8.3 billion in direct spending generated by proposed natural gas operations in the Northern Rivers of New South Wales, approximately \$282 million is expected to be spent in the Lismore LGA. The total economic impacts and estimated annual impacts associated with the proposed Northern Rivers natural gas operations on the Lismore LGA are summarised in Table 11, with additional impacts for both the construction and operation phases.

**Table 11: Summary of Economic Impacts of Northern Rivers Natural Gas Projects, Lismore LGA**

	Construction Phase	Operation Phase	Total
<b>Cumulative Impact</b>			
Output (\$ million)			
A. Richmond Dairies	0	0	0
B-I. Richmond Valley Power Station	1	7	9
B-II. Gas Field to Supply Power Station	1	4	5
C. Other Local Projects	1	8	9
D. Gas Sales Growing to 90PJ	190	207	397
Total	194	226	420
Income (\$ million)	28	42	70
Value added (\$ million)	54	90	144
<b>Estimated Annual Impact</b>			
Output (\$ million)	49	11	-
Income (\$ million)	7	2	-
Employment (fte persons)	251	121	-
Value added (\$ million)	13	5	-
% contribution/increase to GSP	0.55	0.18	-

The total economic impact (direct and indirect) from the proposed natural gas operations in the Northern Rivers to the economy of the Lismore LGA over the project timeframe of 20 years is forecast to amount to:

- \$194 million in output/turnover during the construction phase and \$226 million during the operational phase with a total output of approximately \$420 million;
- \$144 million in total value added (i.e. contribution to gross regional product), which translates to an estimated annual increase to GRP of 0.6% per annum during the construction phase and 0.2% during the operation phase;
- \$70 million in total income (wages and salaries) over the next twenty years; and
- 251 full-time equivalent jobs per annum during the construction phase and 121 permanent FTEs during the operating phase.

Disaggregated industry outputs were provided as part of the analysis to demonstrate the impacts on all 111 sectors included in the input-output model; these are provided in Appendix A. The following table and graph identify the broad industry benefits from supply chain purchases and consumption spending associated with the proposed Northern Rivers natural gas operations, in terms of both total output/turnover and annual employment.



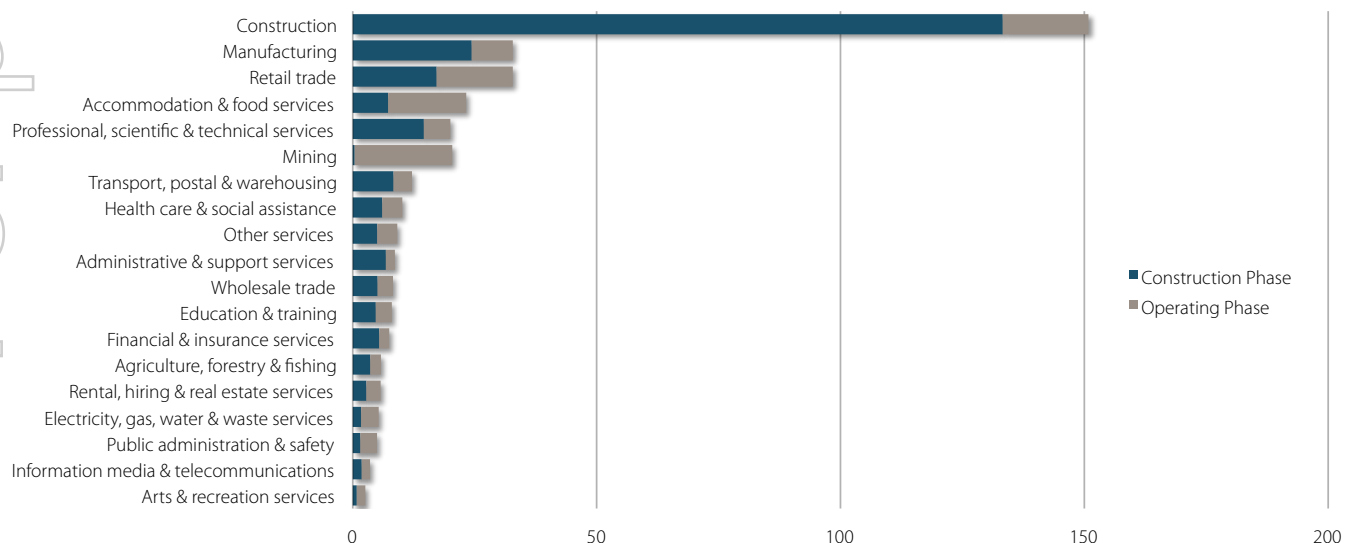
**Table 12: Disaggregated Industry Impacts of Northern Rivers Natural Gas Operations, Lismore LGA**

Industry sector	Construction Phase		Operation Phase	
	Total Output (\$ million)	Annual Employment (FTEs)	Total Output (\$ million)	Annual Employment (FTEs)
Agriculture, Forestry and Fishing	3	4	8	2
Mining	0	0	0	20
Manufacturing	10	24	18	8
Electricity, Gas, Water and Waste Services	1	2	10	4
Construction	144	133	70	18
Wholesale Trade	2	5	7	3
Retail Trade	4	17	18	16
Accommodation and Food Services	2	7	15	16
Transport, Postal and Warehousing	2	8	5	4
Information Media and Telecommunications	2	2	9	2
Financial and Insurance Services	3	5	6	2
Rental, Hiring and Real Estate Services	9	3	25	3
Professional, Scientific and Technical Services	5	15	9	5
Administrative and Support Services	2	7	3	2
Public Administration and Safety	0	2	4	3
Education and Training	1	5	4	3
Health Care and Social Assistance	2	6	6	4
Arts and Recreation Services	0	1	2	2
Other Services	2	5	7	4
<b>Total</b>	<b>194</b>	<b>251</b>	<b>226</b>	<b>121</b>

The Construction industry will experience the largest increase in employment during the construction phase with additional estimated annual employment of 133 FTEs, followed by Manufacturing (24 FTEs), Retail Trade (17 FTEs) and Professional, Scientific and Technical Services (15 FTEs). During the operation phase, the largest sectoral employment gains will be in Mining (20 FTEs), Construction (18 FTEs), Accommodation & Food Services (16 FTEs) and Retail Trade (16 FTEs).

### Estimated Annual Employment Impacts by Industry

Northern Rivers Natural Gas Operations, Lismore







## CONCLUSION

This report contains the outcomes of analysis of the direct and flow-on impacts of proposed natural gas operations in the Northern Rivers of New South Wales through the economy at a national, state, regional and local government authority level. The results of the analysis demonstrate that incomes and expenditures from the proposed Northern Rivers natural gas operations are likely to be widely distributed across multiple regions and states of Australia generating significant flow-on effects.

The analysis identifies that the proposed natural gas development in the Northern Rivers will generate over \$20.5 billion in output across Australia and subsequent value added, or contribution to Gross National Product of more than \$8.5 billion over the next twenty years.

The employment impacts associated with the development will realise an increase of approximately 7,000 full time positions per annum during the construction phase and more than 2,500 permanent jobs during operation. Expenditure from the natural gas industry will have indirect impacts on the business environment in many areas, and will generate substantial levels of production in the Richmond Valley and Lismore LGAs and the Northern Rivers region in particular.

**Table 13: Summary of Economic Impacts of Northern Rivers Natural Gas Projects**

	Richmond Valley	Lismore	Northern Rivers	New South Wales	Australia
<b>Cumulative Impact</b>					
Output (\$ million)	1,617	420	2,053	5,591	20,506
Income (\$ million)	263	70	335	1,292	4,730
Value added (\$ million)	569	144	719	2,231	8,526
<b>Estimated Annual Impact</b>					
Construction phase:					
Output (\$ million)	156	49	206	548	2,366
Income (\$ million)	21	7	28	114	525
Employment (fte persons)	778	251	1,040	2,021	6,982
Value added (\$ million)	41	13	55	187	916
% increase in GRP	5.12	0.55	0.50	0.04	0.07
Operating phase:					
Output (\$ million)	50	11	61	170	552
Income (\$ million)	9	2	11	42	132
Employment (fte persons)	820	121	946	1,354	2,515
Value added (\$ million)	20	5	25	74	243
% increase in GRP	2.49	0.18	0.22	0.02	0.02

Note: All figures in 2012 dollars

# APPENDIX A: DISAGGREGATED INDUSTRY IMPACTS

## Australia

**Table A1: Disaggregated Industry Impacts of Northern Rivers Natural Gas Operations – Australia**

Industry sector	Construction Phase		Operation Phase	
	Total Output (\$ million)	Annual Employment (FTEs)	Total Output (\$ million)	Annual Employment (FTEs)
Sheep, Grains, Beef and Dairy Cattle	49	60	86	21
Poultry and Other Livestock	13	10	24	4
Other Agriculture	38	45	69	16
Aquaculture	3	2	5	1
Forestry and Logging	9	5	10	1
Fishing, hunting and trapping	4	4	7	1
Agriculture, Forestry and Fishing Support Services	11	9	22	3
Coal mining	18	4	52	2
Oil and gas extraction	38	5	76	312
Iron Ore Mining	17	6	25	2
Non Ferrous Metal Ore Mining	17	5	21	1
Non Metallic Mineral Mining	25	15	21	2
Exploration and Mining Support Services	6	3	135	16
Meat and Meat product Manufacturing	51	32	97	12
Processed Seafood Manufacturing	3	1	5	0
Dairy Product Manufacturing	30	12	51	4
Fruit and Vegetable Product Manufacturing	13	7	22	3
Oils and Fats Manufacturing	5	1	8	0
Grain Mill and Cereal Product Manufacturing	12	4	20	1
Bakery Product Manufacturing	17	37	29	15
Sugar and Confectionery Manufacturing	18	10	34	4
Other Food Product Manufacturing	23	9	43	4
Soft Drinks, Cordials and Syrup Manufacturing	15	5	24	2
Beer Manufacturing	9	2	14	1
Wine, Spirits and Tobacco	10	5	16	2
Textile Manufacturing	2	1	3	0
Tanned Leather, Dressed Fur and Leather Product Manufacturing	1	0	1	0
Textile Product Manufacturing	7	10	10	3
Knitted Product Manufacturing	1	1	1	0
Clothing Manufacturing	8	11	14	5
Footwear Manufacturing	1	1	1	0
Sawmill Product Manufacturing	17	12	15	2
Other Wood Product Manufacturing	31	36	30	7
Pulp, Paper and Paperboard Manufacturing	6	5	9	1
Paper Stationery and Other Converted Paper Product Manufacturing	25	17	31	5
Printing (including the reproduction of recorded media)	30	44	45	19
Petroleum and Coal Product Manufacturing	95	8	180	3
Human Pharmaceutical and Medicinal Product Manufacturing	8	5	13	2
Veterinary Pharmaceutical and Medicinal Product Manufacturing	1	0	1	0

**Table A1: Disaggregated Industry Impacts of Northern Rivers Natural Gas Operations – Australia**

Industry sector	Construction Phase		Operation Phase	
	Total Output (\$ million)	Annual Employment (FTEs)	Total Output (\$ million)	Annual Employment (FTEs)
Basic Chemical Manufacturing	65	13	73	3
Cleaning Compounds and Toiletry Preparation Manufacturing	8	4	12	1
Polymer Product Manufacturing	69	66	67	14
Natural Rubber Product Manufacturing	2	1	3	0
Glass and Glass Product Manufacturing	6	8	7	2
Ceramic Product Manufacturing	8	7	8	1
Cement, Lime and Ready-Mixed Concrete Manufacturing	71	22	45	3
Plaster and Concrete Product Manufacturing	35	17	24	2
Other Non-Metallic Mineral Product Manufacturing	12	19	9	3
Iron and Steel Manufacturing	100	66	102	13
Basic Non-Ferrous Metal Manufacturing	31	6	36	1
Forged Iron and Steel Product Manufacturing	3	0	4	0
Structural Metal Product Manufacturing	108	53	94	9
Metal Containers and Other Sheet Metal Product manufacturing	13	9	15	2
Other Fabricated Metal Product manufacturing	35	36	55	13
Motor Vehicles and Parts; Other Transport Equipment manufacturing	43	43	65	18
Ships and Boat Manufacturing	3	2	5	1
Railway Rolling Stock Manufacturing	6	3	10	1
Aircraft Manufacturing	5	2	9	1
Professional, Scientific, Computer and Electronic Equipment Manufacturing	17	25	24	7
Electrical Equipment Manufacturing	26	20	25	4
Domestic Appliance Manufacturing	5	4	8	1
Specialised and other Machinery and Equipment Manufacturing	24	21	53	9
Furniture Manufacturing	14	29	19	8
Other Manufactured Products	7	9	9	2
Electricity Generation	42	8	72	3
Electricity Transmission, Distribution, On Selling and Electricity Market Operation	46	18	88	8
Gas Supply	8	6	31	6
Water Supply, Sewerage and Drainage Services	41	19	60	6
Waste Collection, Treatment and Disposal Services	26	41	53	41
Residential Building Construction	79	52	69	9
Non-Residential Building Construction	43	16	44	3
Heavy and Civil Engineering Construction	3,071	1,008	1,579	95
Construction Services	804	947	747	198
Wholesale Trade	318	230	516	83
Retail Trade	280	683	518	305
Accommodation	28	46	90	73
Food and Beverage Services	161	307	295	130
Road Transport	137	153	203	47
Rail Transport	22	15	84	12

**Table A1: Disaggregated Industry Impacts of Northern Rivers Natural Gas Operations – Australia**

Industry sector	Construction Phase		Operation Phase	
	Total Output (\$ million)	Annual Employment (FTEs)	Total Output (\$ million)	Annual Employment (FTEs)
Water, Pipeline and Other Transport	14	14	29	6
Air and Space Transport	39	18	63	6
Postal and Courier Pick-up and Delivery Service	32	55	57	20
Transport Support services and storage	148	78	236	24
Publishing (except Internet and Music Publishing)	43	29	69	11
Motion Picture and Sound Recording	13	10	21	4
Broadcasting (except Internet)	26	15	38	5
Internet Publishing and Broadcasting and Services Providers, Websearch Portals and Data Processing Services				
Telecommunication Services	129	62	210	28
Library and Other Information Services	1	1	1	0
Finance	278	142	518	55
Insurance and Superannuation Funds	163	70	257	24
Auxiliary Finance and Insurance Services	209	87	296	25
Rental and Hiring Services (except Real Estate)	78	42	184	36
Ownership of Dwellings	297	1	436	0
Non-Residential Property Operators and Real Estate Services	193	104	294	31
Professional, Scientific and Technical Services	523	590	599	154
Computer Systems Design and Related Services	44	42	60	14
Building Cleaning, Pest Control, Administrative and Other Support Services	266	283	302	68
Public Administration and Regulatory Services	32	46	56	22
Defence	0	0	0	0
Public Order and Safety	17	35	33	24
Education and Training	82	191	145	81
Health Care Services	63	141	112	61
Residential Care and Social Assistance Services	26	65	47	27
Heritage, Creative and Performing Arts	11	18	24	15
Sports and Recreation	29	45	51	18
Gambling	15	13	23	5
Automotive Repair and Maintenance	69	99	134	40
Other Repair and Maintenance	35	60	115	42
Personal Services	26	82	46	32
Other Services	35	48	58	18
<b>Total</b>	<b>9,464</b>	<b>6,982</b>	<b>11,042</b>	<b>2,515</b>

## New South Wales

**Table A2: Disaggregated Industry Impacts of Northern Rivers Natural Gas Operations – New South Wales**

Industry sector	Construction Phase		Operation Phase	
	Total Output (\$ million)	Annual Employment (FTEs)	Total Output (\$ million)	Annual Employment (FTEs)
Sheep, Grains, Beef and Dairy Cattle	14	17	38	10
Poultry and Other Livestock	5	3	13	2
Other Agriculture	9	11	31	7
Aquaculture	0	0	1	0
Forestry and Logging	2	1	2	0
Fishing, hunting and trapping	1	1	3	1
Agriculture, Forestry and Fishing Support Services	2	2	11	1
Coal mining	3	1	15	1
Oil and gas extraction	4	2	10	291
Iron Ore Mining	2	4	4	1
Non Ferrous Metal Ore Mining	1	1	3	0
Non Metallic Mineral Mining	5	3	4	1
Exploration and Mining Support Services	0	0	20	3
Meat and Meat product Manufacturing	20	11	55	6
Processed Seafood Manufacturing	0	0	1	0
Dairy Product Manufacturing	8	3	22	2
Fruit and Vegetable Product Manufacturing	3	2	8	1
Oils and Fats Manufacturing	1	0	2	0
Grain Mill and Cereal Product Manufacturing	3	1	8	1
Bakery Product Manufacturing	3	8	11	7
Sugar and Confectionery Manufacturing	5	3	16	2
Other Food Product Manufacturing	8	4	22	2
Soft Drinks, Cordials and Syrup Manufacturing	3	1	8	1
Beer Manufacturing	1	1	3	0
Wine, Spirits and Tobacco	1	1	4	1
Textile Manufacturing	0	0	1	0
Tanned Leather, Dressed Fur and Leather Product Manufacturing	0	0	0	0
Textile Product Manufacturing	1	3	3	1
Knitted Product Manufacturing	0	0	0	0
Clothing Manufacturing	2	3	5	2
Footwear Manufacturing	0	0	0	0
Sawmill Product Manufacturing	3	2	4	1
Other Wood Product Manufacturing	6	9	7	2
Pulp, Paper and Paperboard Manufacturing	1	1	2	0
Paper Stationery and Other Converted Paper Product Manufacturing	5	9	9	3
Printing (including the reproduction of recorded media)	6	12	15	11
Petroleum and Coal Product Manufacturing	16	1	43	0
Human Pharmaceutical and Medicinal Product Manufacturing	2	1	4	1
Veterinary Pharmaceutical and Medicinal Product Manufacturing	0	0	0	0
Basic Chemical Manufacturing	11	5	16	1
Cleaning Compounds and Toiletry Preparation Manufacturing	2	1	4	0

**Table A2: Disaggregated Industry Impacts of Northern Rivers Natural Gas Operations – New South Wales**

Industry sector	Construction Phase		Operation Phase	
	Total Output (\$ million)	Annual Employment (FTEs)	Total Output (\$ million)	Annual Employment (FTEs)
Polymer Product Manufacturing	12	31	15	7
Natural Rubber Product Manufacturing	0	0	1	0
Glass and Glass Product Manufacturing	1	1	2	0
Ceramic Product Manufacturing	2	2	2	1
Cement, Lime and Ready-Mixed Concrete Manufacturing	13	7	7	1
Plaster and Concrete Product Manufacturing	6	4	4	1
Other Non-Metallic Mineral Product Manufacturing	2	5	2	1
Iron and Steel Manufacturing	16	20	20	4
Basic Non-Ferrous Metal Manufacturing	4	1	7	0
Forged Iron and Steel Product Manufacturing	0	0	1	0
Structural Metal Product Manufacturing	20	16	18	2
Metal Containers and Other Sheet Metal Product manufacturing	2	3	3	1
Other Fabricated Metal Product manufacturing	7	7	21	7
Motor Vehicles and Parts; Other Transport Equipment manufacturing	3	12	9	10
Ships and Boat Manufacturing	0	1	1	1
Railway Rolling Stock Manufacturing	1	1	3	0
Aircraft Manufacturing	1	1	3	0
Professional, Scientific, Computer and Electronic Equipment Manufacturing	3	10	7	3
Electrical Equipment Manufacturing	4	6	5	1
Domestic Appliance Manufacturing	1	1	3	0
Specialised and other Machinery and Equipment Manufacturing	4	7	15	3
Furniture Manufacturing	3	7	5	3
Other Manufactured Products	1	2	3	1
Electricity Generation	6	1	17	1
Electricity Transmission, Distribution, On Selling and Electricity Market Operation	9	4	31	3
Gas Supply	1	1	13	3
Water Supply, Sewerage and Drainage Services	8	3	20	2
Waste Collection, Treatment and Disposal Services	5	12	37	36
Residential Building Construction	16	17	16	3
Non-Residential Building Construction	8	5	10	1
Heavy and Civil Engineering Construction	996	520	363	38
Construction Services	148	194	223	77
Wholesale Trade	65	63	178	38
Retail Trade	63	192	224	172
Accommodation	6	13	58	63
Food and Beverage Services	38	86	124	68
Road Transport	29	37	70	18
Rail Transport	5	5	31	5
Water, Pipeline and Other Transport	2	3	8	2
Air and Space Transport	8	4	21	2
Postal and Courier Pick-up and Delivery Service	6	8	19	6

**Table A2: Disaggregated Industry Impacts of Northern Rivers Natural Gas Operations – New South Wales**

Industry sector	Construction Phase		Operation Phase	
	Total Output (\$ million)	Annual Employment (FTEs)	Total Output (\$ million)	Annual Employment (FTEs)
Transport Support services and storage	26	23	65	8
Publishing (except Internet and Music Publishing)	9	8	24	6
Motion Picture and Sound Recording	2	2	6	2
Broadcasting (except Internet)	5	3	12	2
Internet Publishing and Broadcasting and Services Providers, Websearch Portals and Data Processing Services	4	2	10	1
Telecommunication Services	26	13	85	16
Library and Other Information Services	0	0	0	0
Finance	52	31	162	20
Insurance and Superannuation Funds	36	23	89	11
Auxiliary Finance and Insurance Services	34	22	76	9
Rental and Hiring Services (except Real Estate)	15	11	90	27
Ownership of Dwellings	30	1	76	0
Non-Residential Property Operators and Real Estate Services	33	19	78	8
Professional, Scientific and Technical Services	87	130	150	59
Computer Systems Design and Related Services	7	9	15	6
Building Cleaning, Pest Control, Administrative and Other Support Services	48	72	77	24
Public Administration and Regulatory Services	6	11	23	13
Defence	0	0	0	0
Public Order and Safety	3	7	15	17
Education and Training	18	51	58	43
Health Care Services	15	40	48	34
Residential Care and Social Assistance Services	7	20	22	15
Heritage, Creative and Performing Arts	2	3	12	11
Sports and Recreation	6	10	20	9
Gambling	2	3	5	2
Automotive Repair and Maintenance	15	21	51	17
Other Repair and Maintenance	6	11	42	17
Personal Services	6	19	18	15
Other Services	8	13	22	9
<b>Total</b>	<b>2,193</b>	<b>2,021</b>	<b>3,398</b>	<b>1,354</b>

## Northern Rivers

**Table A3: Disaggregated Industry Impacts of Northern Rivers Natural Gas Operations – Northern Rivers**

Industry sector	Construction Phase		Operation Phase	
	Total Output (\$ million)	Annual Employment (FTEs)	Total Output (\$ million)	Annual Employment (FTEs)
Sheep, Grains, Beef and Dairy Cattle	7	10	22	6
Poultry and Other Livestock	3	2	8	1
Other Agriculture	5	5	21	5
Aquaculture	0	0	0	0
Forestry and Logging	1	0	1	0
Fishing, hunting and trapping	0	0	2	0
Agriculture, Forestry and Fishing Support Services	1	1	9	1
Coal mining	0	0	0	270
Oil and gas extraction	0	0	1	0
Iron Ore Mining	0	0	0	0
Non Ferrous Metal Ore Mining	0	0	0	0
Non Metallic Mineral Mining	1	1	1	0
Exploration and Mining Support Services	0	0	0	0
Meat and Meat product Manufacturing	13	7	38	4
Processed Seafood Manufacturing	0	0	0	0
Dairy Product Manufacturing	5	2	14	1
Fruit and Vegetable Product Manufacturing	1	1	3	1
Oils and Fats Manufacturing	0	0	0	0
Grain Mill and Cereal Product Manufacturing	0	0	0	0
Bakery Product Manufacturing	0	2	3	4
Sugar and Confectionery Manufacturing	3	2	12	1
Other Food Product Manufacturing	4	2	12	1
Soft Drinks, Cordials and Syrup Manufacturing	0	0	0	0
Beer Manufacturing	0	0	0	0
Wine, Spirits and Tobacco	0	0	0	0
Textile Manufacturing	0	0	0	0
Tanned Leather, Dressed Fur and Leather Product Manufacturing	0	0	0	0
Textile Product Manufacturing	0	1	1	1
Knitted Product Manufacturing	0	0	0	0
Clothing Manufacturing	0	1	1	1
Footwear Manufacturing	0	0	0	0
Sawmill Product Manufacturing	1	1	1	0
Other Wood Product Manufacturing	1	4	1	1
Pulp, Paper and Paperboard Manufacturing	0	0	0	0
Paper Stationery and Other Converted Paper Product Manufacturing	1	7	2	2
Printing (including the reproduction of recorded media)	1	7	4	9
Petroleum and Coal Product Manufacturing	0	0	0	0
Human Pharmaceutical and Medicinal Product Manufacturing	0	0	0	0
Veterinary Pharmaceutical and Medicinal Product Manufacturing	0	0	0	0
Basic Chemical Manufacturing	2	2	3	1
Cleaning Compounds and Toiletry Preparation Manufacturing	0	0	0	0



**Table A3: Disaggregated Industry Impacts of Northern Rivers Natural Gas Operations – Northern Rivers**

Industry sector	Construction Phase		Operation Phase	
	Total Output (\$ million)	Annual Employment (FTEs)	Total Output (\$ million)	Annual Employment (FTEs)
Polymer Product Manufacturing	2	23	2	5
Natural Rubber Product Manufacturing	0	0	0	0
Glass and Glass Product Manufacturing	0	0	0	0
Ceramic Product Manufacturing	0	1	0	0
Cement, Lime and Ready-Mixed Concrete Manufacturing	4	3	2	0
Plaster and Concrete Product Manufacturing	2	2	1	0
Other Non-Metallic Mineral Product Manufacturing	1	3	0	0
Iron and Steel Manufacturing	3	12	2	1
Basic Non-Ferrous Metal Manufacturing	0	0	1	0
Forged Iron and Steel Product Manufacturing	0	0	0	0
Structural Metal Product Manufacturing	6	8	3	1
Metal Containers and Other Sheet Metal Product manufacturing	0	1	0	0
Other Fabricated Metal Product manufacturing	1	4	11	5
Motor Vehicles and Parts; Other Transport Equipment manufacturing	0	7	1	7
Ships and Boat Manufacturing	0	0	0	0
Railway Rolling Stock Manufacturing	0	1	0	0
Aircraft Manufacturing	0	0	0	0
Professional, Scientific, Computer and Electronic Equipment Manufacturing	0	7	0	2
Electrical Equipment Manufacturing	0	2	0	0
Domestic Appliance Manufacturing	0	0	0	0
Specialised and other Machinery and Equipment Manufacturing	1	4	1	1
Furniture Manufacturing	0	3	1	2
Other Manufactured Products	0	1	1	1
Electricity Generation	0	0	0	0
Electricity Transmission, Distribution, On Selling and Electricity Market Operation	1	1	8	2
Gas Supply	0	0	10	2
Water Supply, Sewerage and Drainage Services	1	1	5	1
Waste Collection, Treatment and Disposal Services	1	7	34	35
Residential Building Construction	4	9	3	1
Non-Residential Building Construction	2	3	1	1
Heavy and Civil Engineering Construction	568	408	205	29
Construction Services	45	106	127	61
Wholesale Trade	10	22	42	18
Retail Trade	12	65	95	107
Accommodation	1	3	46	58
Food and Beverage Services	6	25	41	37
Road Transport	8	15	23	9
Rail Transport	0	1	1	1
Water, Pipeline and Other Transport	0	1	1	1
Air and Space Transport	0	1	1	0
Postal and Courier Pick-up and Delivery Service	1	2	5	2

**Table A3: Disaggregated Industry Impacts of Northern Rivers Natural Gas Operations – Northern Rivers**

Industry sector	Construction Phase		Operation Phase	
	Total Output (\$ million)	Annual Employment (FTEs)	Total Output (\$ million)	Annual Employment (FTEs)
Transport Support services and storage	3	17	5	5
Publishing (except Internet and Music Publishing)	1	2	4	3
Motion Picture and Sound Recording	0	1	1	1
Broadcasting (except Internet)	0	1	2	1
Internet Publishing and Broadcasting and Services Providers, Websearch Portals and Data Processing Services	0	1	1	1
Telecommunication Services	3	4	35	13
Library and Other Information Services	0	0	0	0
Finance	5	10	18	7
Insurance and Superannuation Funds	2	6	4	3
Auxiliary Finance and Insurance Services	3	10	4	3
Rental and Hiring Services (except Real Estate)	3	5	56	23
Ownership of Dwellings	30	1	76	0
Non-Residential Property Operators and Real Estate Services	5	8	10	3
Professional, Scientific and Technical Services	14	64	41	40
Computer Systems Design and Related Services	0	4	1	4
Building Cleaning, Pest Control, Administrative and Other Support Services	7	31	12	11
Public Administration and Regulatory Services	1	4	12	10
Defence	0	0	0	0
Public Order and Safety	0	2	9	15
Education and Training	3	14	19	24
Health Care Services	3	12	17	20
Residential Care and Social Assistance Services	2	8	10	8
Heritage, Creative and Performing Arts	0	1	8	10
Sports and Recreation	1	3	6	5
Gambling	0	0	1	1
Automotive Repair and Maintenance	3	7	17	8
Other Repair and Maintenance	1	4	9	9
Personal Services	1	5	5	8
Other Services	1	4	6	4
<b>Total</b>	<b>826</b>	<b>1,040</b>	<b>1,228</b>	<b>946</b>

## Richmond Valley

**Table A4: Disaggregated Industry Impacts of Northern Rivers Natural Gas Operations – Richmond Valley**

Industry sector	Construction Phase		Operation Phase	
	Total Output (\$ million)	Annual Employment (FTEs)	Total Output (\$ million)	Annual Employment (FTEs)
Sheep, Grains, Beef and Dairy Cattle	7	8	21	5
Poultry and Other Livestock	3	2	8	1
Other Agriculture	3	4	17	4
Aquaculture	0	0	0	0
Forestry and Logging	0	0	1	0
Fishing, hunting and trapping	0	0	2	0
Agriculture, Forestry and Fishing Support Services	1	1	7	1
Coal mining	0	0	0	0
Oil and gas extraction	0	0	1	250
Iron Ore Mining	0	0	0	0
Non Ferrous Metal Ore Mining	0	0	0	0
Non Metallic Mineral Mining	1	1	1	0
Exploration and Mining Support Services	0	0	0	0
Meat and Meat product Manufacturing	13	7	36	4
Processed Seafood Manufacturing	0	0	0	0
Dairy Product Manufacturing	3	1	11	1
Fruit and Vegetable Product Manufacturing	1	1	2	1
Oils and Fats Manufacturing	0	0	0	0
Grain Mill and Cereal Product Manufacturing	0	0	0	0
Bakery Product Manufacturing	0	2	3	4
Sugar and Confectionery Manufacturing	3	1	11	1
Other Food Product Manufacturing	3	2	10	1
Soft Drinks, Cordials and Syrup Manufacturing	0	0	0	0
Beer Manufacturing	0	0	0	0
Wine, Spirits and Tobacco	0	0	0	0
Textile Manufacturing	0	0	0	0
Tanned Leather, Dressed Fur and Leather Product Manufacturing	0	0	0	0
Textile Product Manufacturing	0	1	1	0
Knitted Product Manufacturing	0	0	0	0
Clothing Manufacturing	0	1	1	1
Footwear Manufacturing	0	0	0	0
Sawmill Product Manufacturing	1	1	1	0
Other Wood Product Manufacturing	1	3	1	1
Pulp, Paper and Paperboard Manufacturing	0	0	0	0
Paper Stationery and Other Converted Paper Product Manufacturing	1	5	1	2
Printing (including the reproduction of recorded media)	0	6	3	8
Petroleum and Coal Product Manufacturing	0	0	0	0
Human Pharmaceutical and Medicinal Product Manufacturing	0	0	0	0
Veterinary Pharmaceutical and Medicinal Product Manufacturing	0	0	0	0
Basic Chemical Manufacturing	2	1	2	0
Cleaning Compounds and Toiletry Preparation Manufacturing	0	0	0	0

**Table A4: Disaggregated Industry Impacts of Northern Rivers Natural Gas Operations – Richmond Valley**

Industry sector	Construction Phase		Operation Phase	
	Total Output (\$ million)	Annual Employment (FTEs)	Total Output (\$ million)	Annual Employment (FTEs)
Polymer Product Manufacturing	1	20	2	5
Natural Rubber Product Manufacturing	0	0	0	0
Glass and Glass Product Manufacturing	0	0	0	0
Ceramic Product Manufacturing	0	1	0	0
Cement, Lime and Ready-Mixed Concrete Manufacturing	3	2	2	0
Plaster and Concrete Product Manufacturing	1	1	1	0
Other Non-Metallic Mineral Product Manufacturing	0	2	0	0
Iron and Steel Manufacturing	2	9	1	1
Basic Non-Ferrous Metal Manufacturing	0	0	1	0
Forged Iron and Steel Product Manufacturing	0	0	0	0
Structural Metal Product Manufacturing	4	6	2	1
Metal Containers and Other Sheet Metal Product manufacturing	0	0	0	0
Other Fabricated Metal Product manufacturing	1	3	9	4
Motor Vehicles and Parts; Other Transport Equipment manufacturing	0	7	1	7
Ships and Boat Manufacturing	0	0	0	0
Railway Rolling Stock Manufacturing	0	1	0	0
Aircraft Manufacturing	0	0	0	0
Professional, Scientific, Computer and Electronic Equipment Manufacturing	0	6	0	2
Electrical Equipment Manufacturing	0	0	0	0
Domestic Appliance Manufacturing	0	0	0	0
Specialised and other Machinery and Equipment Manufacturing	0	4	1	1
Furniture Manufacturing	0	2	1	1
Other Manufactured Products	0	1	1	0
Electricity Generation	0	0	0	0
Electricity Transmission, Distribution, On Selling and Electricity Market Operation	1	1	6	1
Gas Supply	0	0	8	2
Water Supply, Sewerage and Drainage Services	1	1	4	1
Waste Collection, Treatment and Disposal Services	1	6	28	32
Residential Building Construction	3	7	2	1
Non-Residential Building Construction	1	3	1	1
Heavy and Civil Engineering Construction	432	296	156	21
Construction Services	33	81	104	51
Wholesale Trade	8	17	35	15
Retail Trade	8	47	76	91
Accommodation	0	3	38	48
Food and Beverage Services	4	19	33	31
Road Transport	7	12	20	7
Rail Transport	0	1	1	0
Water, Pipeline and Other Transport	0	1	1	0
Air and Space Transport	0	0	0	0
Postal and Courier Pick-up and Delivery Service	1	1	4	2

**Table A4: Disaggregated Industry Impacts of Northern Rivers Natural Gas Operations – Richmond Valley**

Industry sector	Construction Phase		Operation Phase	
	Total Output (\$ million)	Annual Employment (FTEs)	Total Output (\$ million)	Annual Employment (FTEs)
Transport Support services and storage	3	13	4	4
Publishing (except Internet and Music Publishing)	0	2	3	3
Motion Picture and Sound Recording	0	1	1	1
Broadcasting (except Internet)	0	1	1	1
Internet Publishing and Broadcasting and Services Providers, Websearch Portals and Data Processing Services	0	1	1	1
Telecommunication Services	2	3	29	11
Library and Other Information Services	0	0	0	0
Finance	3	7	14	6
Insurance and Superannuation Funds	1	5	3	3
Auxiliary Finance and Insurance Services	2	8	3	3
Rental and Hiring Services (except Real Estate)	2	4	46	21
Ownership of Dwellings	22	1	62	0
Non-Residential Property Operators and Real Estate Services	4	6	8	2
Professional, Scientific and Technical Services	9	50	33	34
Computer Systems Design and Related Services	0	3	1	3
Building Cleaning, Pest Control, Administrative and Other Support Services	5	24	9	9
Public Administration and Regulatory Services	1	3	10	8
Defence	0	0	0	0
Public Order and Safety	0	2	8	13
Education and Training	1	10	14	21
Health Care Services	1	8	13	17
Residential Care and Social Assistance Services	1	6	8	7
Heritage, Creative and Performing Arts	0	0	6	9
Sports and Recreation	1	2	5	4
Gambling	0	0	1	1
Automotive Repair and Maintenance	2	5	13	7
Other Repair and Maintenance	1	3	8	8
Personal Services	0	4	4	7
Other Services	1	3	4	4
<b>Total</b>	<b>624</b>	<b>778</b>	<b>993</b>	<b>820</b>

## Lismore

**Table A5: Disaggregated Industry Impacts of Northern Rivers Natural Gas Operations – Lismore**

Industry sector	Construction Phase		Operation Phase	
	Total Output (\$ million)	Annual Employment (FTEs)	Total Output (\$ million)	Annual Employment (FTEs)
Sheep, Grains, Beef and Dairy Cattle	1	1	1	1
Poultry and Other Livestock	0	0	0	0
Other Agriculture	2	2	5	1
Aquaculture	0	0	0	0
Forestry and Logging	0	0	0	0
Fishing, hunting and trapping	0	0	0	0
Agriculture, Forestry and Fishing Support Services	0	0	1	0
Coal mining	0	0	0	0
Oil and gas extraction	0	0	0	20
Iron Ore Mining	0	0	0	0
Non Ferrous Metal Ore Mining	0	0	0	0
Non Metallic Mineral Mining	0	0	0	0
Exploration and Mining Support Services	0	0	0	0
Meat and Meat product Manufacturing	1	0	2	0
Processed Seafood Manufacturing	0	0	0	0
Dairy Product Manufacturing	1	0	3	0
Fruit and Vegetable Product Manufacturing	0	0	1	0
Oils and Fats Manufacturing	0	0	0	0
Grain Mill and Cereal Product Manufacturing	0	0	0	0
Bakery Product Manufacturing	0	1	1	1
Sugar and Confectionery Manufacturing	0	0	1	0
Other Food Product Manufacturing	1	0	2	0
Soft Drinks, Cordials and Syrup Manufacturing	0	0	0	0
Beer Manufacturing	0	0	0	0
Wine, Spirits and Tobacco	0	0	0	0
Textile Manufacturing	0	0	0	0
Tanned Leather, Dressed Fur and Leather Product Manufacturing	0	0	0	0
Textile Product Manufacturing	0	0	0	0
Knitted Product Manufacturing	0	0	0	0
Clothing Manufacturing	0	0	0	0
Footwear Manufacturing	0	0	0	0
Sawmill Product Manufacturing	0	0	0	0
Other Wood Product Manufacturing	0	1	0	0
Pulp, Paper and Paperboard Manufacturing	0	0	0	0
Paper Stationery and Other Converted Paper Product Manufacturing	0	2	0	1
Printing (including the reproduction of recorded media)	0	1	1	1
Petroleum and Coal Product Manufacturing	0	0	0	0
Human Pharmaceutical and Medicinal Product Manufacturing	0	0	0	0
Veterinary Pharmaceutical and Medicinal Product Manufacturing	0	0	0	0
Basic Chemical Manufacturing	0	1	0	0
Cleaning Compounds and Toiletry Preparation Manufacturing	0	0	0	0

**Table A5: Disaggregated Industry Impacts of Northern Rivers Natural Gas Operations – Lismore**

Industry sector	Construction Phase		Operation Phase	
	Total Output (\$ million)	Annual Employment (FTEs)	Total Output (\$ million)	Annual Employment (FTEs)
Polymer Product Manufacturing	1	2	0	0
Natural Rubber Product Manufacturing	0	0	0	0
Glass and Glass Product Manufacturing	0	0	0	0
Ceramic Product Manufacturing	0	0	0	0
Cement, Lime and Ready-Mixed Concrete Manufacturing	1	1	0	0
Plaster and Concrete Product Manufacturing	0	1	0	0
Other Non-Metallic Mineral Product Manufacturing	0	0	0	0
Iron and Steel Manufacturing	1	3	0	0
Basic Non-Ferrous Metal Manufacturing	0	0	0	0
Forged Iron and Steel Product Manufacturing	0	0	0	0
Structural Metal Product Manufacturing	1	1	1	0
Metal Containers and Other Sheet Metal Product manufacturing	0	1	0	0
Other Fabricated Metal Product manufacturing	0	1	2	1
Motor Vehicles and Parts; Other Transport Equipment manufacturing	0	1	0	0
Ships and Boat Manufacturing	0	0	0	0
Railway Rolling Stock Manufacturing	0	0	0	0
Aircraft Manufacturing	0	0	0	0
Professional, Scientific, Computer and Electronic Equipment Manufacturing	0	1	0	0
Electrical Equipment Manufacturing	0	2	0	0
Domestic Appliance Manufacturing	0	0	0	0
Specialised and other Machinery and Equipment Manufacturing	0	1	0	0
Furniture Manufacturing	0	1	0	0
Other Manufactured Products	0	0	0	0
Electricity Generation	0	0	0	0
Electricity Transmission, Distribution, On Selling and Electricity Market Operation	0	0	1	0
Gas Supply	0	0	2	0
Water Supply, Sewerage and Drainage Services	0	0	1	0
Waste Collection, Treatment and Disposal Services	0	1	6	3
Residential Building Construction	1	2	1	0
Non-Residential Building Construction	0	0	0	0
Heavy and Civil Engineering Construction	131	107	47	8
Construction Services	11	24	22	10
Wholesale Trade	2	5	7	3
Retail Trade	4	17	18	16
Accommodation	0	1	8	10
Food and Beverage Services	2	7	8	6
Road Transport	1	3	3	2
Rail Transport	0	0	0	0
Water, Pipeline and Other Transport	0	0	0	0
Air and Space Transport	0	1	0	0
Postal and Courier Pick-up and Delivery Service	0	1	1	1

**Table A5: Disaggregated Industry Impacts of Northern Rivers Natural Gas Operations – Lismore**

Industry sector	Construction Phase		Operation Phase	
	Total Output (\$ million)	Annual Employment (FTEs)	Total Output (\$ million)	Annual Employment (FTEs)
Transport Support services and storage	1	4	1	1
Publishing (except Internet and Music Publishing)	1	1	1	0
Motion Picture and Sound Recording	0	0	0	0
Broadcasting (except Internet)	0	0	0	0
Internet Publishing and Broadcasting and Services Providers, Websearch Portals and Data Processing Services	0	0	0	0
Telecommunication Services	1	1	7	1
Library and Other Information Services	0	0	0	0
Finance	2	2	4	1
Insurance and Superannuation Funds	0	1	1	1
Auxiliary Finance and Insurance Services	1	2	1	0
Rental and Hiring Services (except Real Estate)	1	1	9	2
Ownership of Dwellings	7	0	14	0
Non-Residential Property Operators and Real Estate Services	1	2	2	1
Professional, Scientific and Technical Services	5	14	8	5
Computer Systems Design and Related Services	0	1	0	0
Building Cleaning, Pest Control, Administrative and Other Support Services	2	7	3	2
Public Administration and Regulatory Services	0	1	2	2
Defence	0	0	0	0
Public Order and Safety	0	1	2	2
Education and Training	1	5	4	3
Health Care Services	1	4	4	3
Residential Care and Social Assistance Services	0	2	2	1
Heritage, Creative and Performing Arts	0	0	1	1
Sports and Recreation	0	1	1	1
Gambling	0	0	0	0
Automotive Repair and Maintenance	1	2	3	1
Other Repair and Maintenance	0	1	2	1
Personal Services	0	1	1	1
Other Services	1	1	1	1
<b>Total</b>	<b>194</b>	<b>251</b>	<b>226</b>	<b>121</b>





## APPENDIX B: ECONOMIC IMPACTS BY REGION

### Australia

**Table B1: Economic Impacts of Northern Rivers Natural Gas Operations – Australia**

	Construction Phase	Operation Phase	Total
<b>Output (\$ million)</b>			
Direct	3,016	4,016	7,032
Indirect	3,526	3,404	6,930
Consumption	2,922	3,622	6,545
<b>Total</b>	<b>9,464</b>	<b>11,042</b>	<b>20,506</b>
<b>Income (\$ million)</b>			
Direct	476	836	1,312
Indirect	871	858	1,729
Consumption	752	936	1,689
<b>Total</b>	<b>2,099</b>	<b>2,630</b>	<b>4,730</b>
<b>Annual Employment (fte persons)</b>			
Direct	995	310	-
Indirect	3,162	1,478	-
Consumption	2,825	727	-
<b>Total</b>	<b>6,982</b>	<b>2,515</b>	<b>-</b>
<b>Value added (\$ million)</b>			
Direct	682	1,561	2,243
Indirect	1,507	1,503	3,010
Consumption	1,474	1,799	3,273
<b>Total</b>	<b>3,663</b>	<b>4,862</b>	<b>8,526</b>



## New South Wales

**Table B2: Economic Impacts of Northern Rivers Natural Gas Operations – New South Wales**

	Construction Phase	Operation Phase	Total
<b>Output (\$ million)</b>			
Direct	992	1,606	2,598
Indirect	613	720	1,333
Consumption	588	1,072	1,660
<b>Total</b>	<b>2,193</b>	<b>3,398</b>	<b>5,591</b>
<b>Income (\$ million)</b>			
Direct	144	361	504
Indirect	151	183	334
Consumption	162	291	454
<b>Total</b>	<b>457</b>	<b>835</b>	<b>1,292</b>
<b>Annual Employment (fte persons)</b>			
Direct	519	290	-
Indirect	773	795	-
Consumption	728	268	-
<b>Total</b>	<b>2,021</b>	<b>1,354</b>	<b>-</b>
<b>Value added (\$ million)</b>			
Direct	224	692	916
Indirect	258	316	574
Consumption	264	476	740
<b>Total</b>	<b>746</b>	<b>1,484</b>	<b>2,231</b>



## Northern Rivers

**Table B3: Economic Impacts of Northern Rivers Natural Gas Operations – Northern Rivers**

	Construction Phase	Operation Phase	Total
<b>Output (\$ million)</b>			
Direct	568	831	1,399
Indirect	136	153	290
Consumption	121	243	365
<b>Total</b>	<b>826</b>	<b>1,228</b>	<b>2,053</b>
<b>Income (\$ million)</b>			
Direct	70	162	232
Indirect	25	28	53
Consumption	17	34	50
<b>Total</b>	<b>112</b>	<b>224</b>	<b>335</b>
<b>Annual Employment (fte persons)</b>			
Direct	407	270	-
Indirect	409	586	-
Consumption	224	89	-
<b>Total</b>	<b>1,040</b>	<b>946</b>	<b>-</b>
<b>Value added (\$ million)</b>			
Direct	128	359	487
Indirect	57	65	121
Consumption	37	73	110
<b>Total</b>	<b>222</b>	<b>497</b>	<b>719</b>



## Richmond Valley

**Table B4: Economic Impacts of Northern Rivers Natural Gas Operations – Richmond Valley LGA**

	Construction Phase	Operation Phase	Total
<b>Output (\$ million)</b>			
Direct	432	674	1,106
Indirect	100	120	220
Consumption	92	199	291
<b>Total</b>	<b>624</b>	<b>993</b>	<b>1,617</b>
<b>Income (\$ million)</b>			
Direct	53	132	185
Indirect	18	21	39
Consumption	12	26	38
<b>Total</b>	<b>83</b>	<b>180</b>	<b>263</b>
<b>Annual Employment (fte persons)</b>			
Direct	296	250	-
Indirect	316	498	-
Consumption	166	72	-
<b>Total</b>	<b>778</b>	<b>820</b>	<b>-</b>
<b>Value added (\$ million)</b>			
Direct	98	295	392
Indirect	41	50	92
Consumption	27	58	85
<b>Total</b>	<b>166</b>	<b>403</b>	<b>569</b>



## Lismore

**Table B5: Economic Impacts of Northern Rivers Natural Gas Operations – Lismore LGA**

	Construction Phase	Operation Phase	Total
<b>Output (\$ million)</b>			
Direct	131	151	282
Indirect	35	33	67
Consumption	28	43	71
<b>Total</b>	<b>194</b>	<b>226</b>	<b>420</b>
<b>Income (\$ million)</b>			
Direct	16	29	45
Indirect	7	6	13
Consumption	5	7	12
<b>Total</b>	<b>28</b>	<b>42</b>	<b>70</b>
<b>Annual Employment (fte persons)</b>			
Direct	107	20	-
Indirect	88	84	-
Consumption	56	17	-
<b>Total</b>	<b>251</b>	<b>121</b>	<b>-</b>
<b>Value added (\$ million)</b>			
Direct	30	61	91
Indirect	15	14	29
Consumption	10	15	25
<b>Total</b>	<b>54</b>	<b>90</b>	<b>144</b>

**Table A and B - Metgasco's Direct commitment to Northern Rivers**

		Richmond Valley	Northern Rivers	New South Wales	Australia
<b>Table A : Metgasco's direct economic contribution (\$ million)</b>					
Direct Expenditure by Metgasco during Construction	20 Years	432	568	992	3016
	Per Annum	108	142	248	754
Direct Expenditure by Metgasco during Operations	20 Years	674	831	1606	4016
	Per Annum	34	42	80	201
<b>Total Direct Expenditure</b>	20 Years	<b>1106</b>	<b>1399</b>	<b>2598</b>	<b>7032</b>

		Richmond Valley	Northern Rivers	New South Wales	Australia
<b>Table B: Metgasco direct employment (Full Time Employees)</b>					
Direct Employment generated by Metgasco's activities Construction (project specific) (FTE's)	Per Annum	296	407	519	995
Direct Employment generated by Metgasco's activities Operations (ongoing to 2033) (FTE's)	Per Annum	250	270	290	310

**Table C, D & E - Economic Impact flowing on from Metgasco's Activities**

		Richmond Valley	Northern Rivers	New South Wales	Australia
<b>Table C: Estimated direct/indirect economic impact of Northern rivers CSG Projects (Output) (\$ million)</b>					
Total Economic Impact (Direct/Indirect) Construction	20 Years	624	826	2193	9464
	Per Annum	156	206	548	2366
Total Economic Impact (Direct/Indirect) Operations	20 Years	993	1228	3398	11042
	Per Annum	50	61	170	552
<b>Total Output</b>	20 Years	<b>1617</b>	<b>2053</b>	<b>5591</b>	<b>20506</b>

		Richmond Valley	Northern Rivers	New South Wales	Australia
<b>Table D: Estimated Employment from Economic Impact (FTE's)</b>					
Direct/Indirect Construction (Employment FTE's) Operations (ongoing to 2033)	Per Annum	778	1040	2021	6982
Direct/Indirect Operating (Employment FTE's) Operations (ongoing to 2033)	Per Annum	820	946	1354	2515

		Richmond Valley	Northern Rivers	New South Wales	Australia
<b>Table E: Estimated GRP Impacts</b>					
% Increase in GRP (Function of Value Added during Operations)	Per Annum (%)	2.49%	0.22%	0.02%	0.02%