Economic Impact of Coal Sector on the Mackay Region 2024/25

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Prepared for Greater Whitsunday Alliance

Contents

Introduction

Lawrence Consulting was commissioned by Greater Whitsunday Alliance (GW3) to outline the economic benefit of the coal sector to the Mackay-Isaac-Whitsunday (Mackay) region and subsequently model the impact of the potential loss of direct coal sector jobs and associated supply chain spending. This report provides a detailed summary of the level of direct expenditure into the Mackay regional economy by the coal sector in 2024/25 and the flow-on effects that are generated by that initial stimulus.

The analysis is based on industry employment and spending patterns and benchmarks produced by Lawrence Consulting on behalf of the Queensland Resources Council (QRC) as part of the annual *Economic Impact of the Queensland Resources Sector* study. The modelling is based on several geographic scales – namely, state, region, local government area, state and federal electoral divisions – with specific interest in the impact on the Mackay Isaac Whitsunday SA4 region and the local government areas (LGAs) of Mackay, Isaac and Whitsunday.

The direct impact of coal mining companies has been measured through the provision of expenditure, employment and other information in the following categories:

- Employee salaries and wages (by place of residence) for full-time direct employees and contract workers as well as the number of FTE employees by place of operation;
- Goods and services expenditure by individual supplier, including separate identification of both operational expenditure (opex) data for current projects and capital expenditure (capex) data from projects currently under development;
- Voluntary community contributions by individual organisation;
- Local government payments, including council rates and infrastructure charges; and
- State government payments, including royalties, stamp duty, payroll tax and land tax.

The data was supplied by Australian postcodes where the salary was paid (residence of the direct employee) and where the community contributions and 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 coal sector were analysed at the following geographic levels:

- State (the whole area of Queensland);
- Regional (represented by 13 former Statistical Divisions in Queensland);
- Local (represented by 78 Local Government Areas in Queensland);
- State electoral divisions (represented by 93 SEDs in Queensland); and
- Commonwealth electoral divisions (represented by 30 CEDs in Queensland).

The forecasts of future economic impacts have been based on the following scenarios:

- Economic impact of 10%, 15% and 20% jobs reduction in the Mackay Isaac Whitsunday SA4 region; and
- Correlated reduction in operational spending of coal mining companies in the Mackay region on purchases of goods and services, along with community contributions and local government payments.

Economic Benefits

Direct Impact

Expenditure data indicated that the **coal sector contributed $7.1 billion** in direct spending to the Mackay regional economy in 2024/25, comprising:

- **$1.7 billion in wages and salaries** to approximately **10,593 direct fulltime resident employees**, representing an average salary level across the sector of $163,228 per annum. In addition, there were **1,849 FTE contract workers** employed in the resource sector in Queensland residing in the Mackay region in 2024/25;
- **$5.0 billion in purchases of goods and services from 1,865 local businesses** (including contract payments);
- **$9.7 million in voluntary contributions to 395 community organisations**; and
- **$62.0 million in payments to local government** (including rates, developer contributions and other payments).

The coal sector contributed ***$7.1 billion*** *in direct spending to the Mackay regional economy in 2024/25.*

Compared to 2023/24, the level of direct spending by coal companies in the Mackay region decreased by $1.6 billion, or 18.2%.

The largest proportion of direct expenditure from the coal sector in the Mackay region in 2024/25 was in the Mackay local government area ($4.8 billion), followed by the Isaac ($1.8 billion) and Whitsunday ($515.3 million) LGAs.

Approximately 1,865 local businesses in the Mackay region received payments for goods and services supplied during 2024/25 to coal mining companies. The highest number of businesses was recorded in the Mackay LGA (1,118), followed by Isaac (413) and Whitsunday (334).

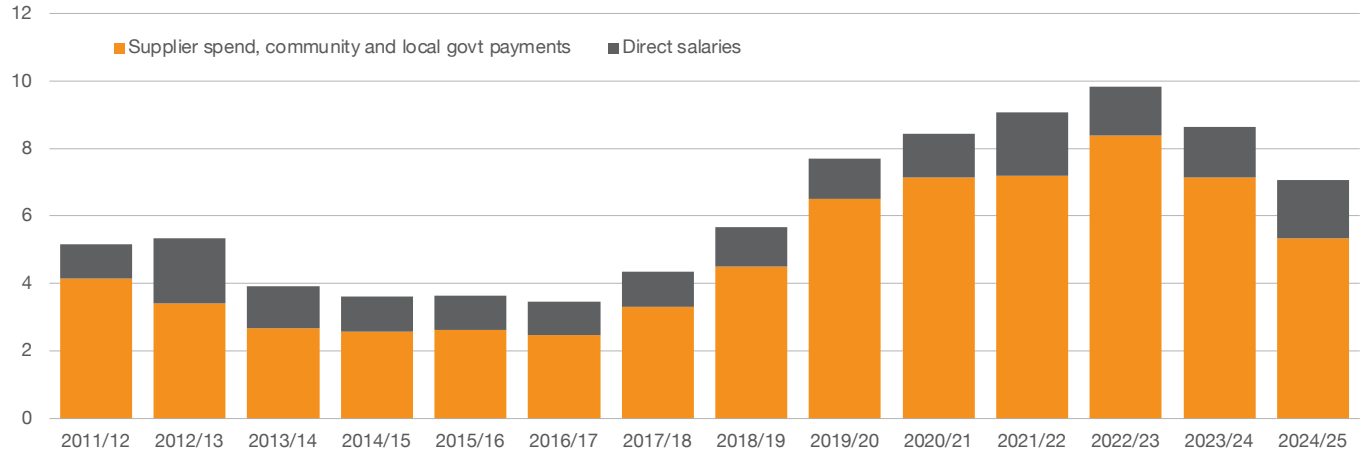
The coal sector directly contributed to 395 separate community groups across the Mackay region in a wide range of areas including health, education, environment and the arts. The Isaac LGA recorded the highest number of community organisations supported (274), followed by Mackay (99) and Whitsunday (22).

Since 2011/12, the Queensland coal sector has generated **$85.8 billion in direct spending** in the Mackay region, comprised of $18.5 billion in wages and salaries and $67.3 billion in business purchases, community contributions and government payments.

Table 1: Direct Impact of Coal Sector on Mackay Region, 2024/25							
Region	**Direct employees (FTEs)**	**Associated salaries ($M)**	**Total workforce (FTEs)**	**Local suppliers (no.)**	**Business purchases, community and govt payments ($M)**	**Total direct spending ($M)**	**Annual % change**
Mackay	5,688	919.2	6,369	1,118	3,834.1	4,753.2	-21.9%
Isaac	3,554	605.5	4,597	413	1,196.7	1,802.2	17.4%
Whitsunday	1,351	204.4	1,475	334	310.9	515.3	-49.9%
Mackay Region	**10,593**	**1,729.1**	**12,442**	**1,865**	**5,341.7**	**7,070.7**	**-18.2%**
Annual % change	11.6%	13.9%	19.0%	0.7%	-25.1%	-18.2%	

Direct Expenditure of Coal Sector

Mackay ($ billion, real)



Indirect Impact

The input-output (I-O) modelling conducted for this project has estimated the indirect (Type I) and consumption-induced (Type II) effects flowing from the business expenditure, community and government contributions of $5.3 billion and the employment expenditure of $1.7 billion. These impacts have been modelled separately and then aggregated to identify the level of impacts on output, incomes, employment and industry value added in the Mackay region. In 2024/25, the $7.1 billion in direct spending by the coal sector in the Mackay region supported additional supply chain and consumption-induced effects of 49,923 fulltime jobs and $15.3 billion in aggregate spending ($6.4 billion in wages and salaries and $8.9 billion in purchases of goods and services).

In 2024/25, the coal sector supported an additional 49,923 fulltime jobs and $8.9 billion in aggregate spending in the Mackay region.

Total Impact

The results of the economic modelling allow forecasts to be made about the total size of impacts from the coal sector on the Mackay regional economy. 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-induced effects. The total economic impact (i.e. direct, indirect and induced, or Type II impact) from the coal sector to the Mackay region in 2024/25 amounted to:

- **$15.9 billion in output/turnover** (or purchases from supplying businesses);
- **$12.5 billion in gross value added** (contribution to gross state product);
- **$8.4 billion in income** (wages and salaries); and
- **62,364 full-time equivalent jobs**.

Estimates of the contribution to Gross Regional Product (GRP) 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 coal sector is not available from the data; an estimated value added of $7.1 billion – equivalent to the sum of input and labour costs, or total direct spending – has instead been adopted.

When business supply and employment effects are considered, the coal sector generated approximately **$12.5 billion in gross value added** ($7.1 million in direct effects, and $5.4 billion in supply chain and consumption effects) in 2024/25 and was responsible for supporting approximately **62,364 jobs** (12,442 in direct and contract employment and 49,923 in additional employment). This means that the coal sector contributed an estimated **48.6% of GRP** (based on an estimate of $25.7 billion) and **59.9% of total employment** in the Mackay region in 2024/25.

The total economic impact of the coal sector on the Mackay Region was estimated at **$12.5 billion** *in gross value added and* **62,364 jobs** *supported in 2024/25.*

Under the more conservative Type I scenario (i.e. excluding consumption-induced effects), direct spending by coal mining companies and flow-on impacts contributed 40.3% to GRP and 37.7% of total regional employment.

Scenario Forecasts

Based on the profile of direct spending and employment impacts of the coal sector on the Mackay region as outlined in the previous section, Lawrence Consulting was directed by GW3 to model the economic impacts of a further decrease in spending based on the following scenarios:

- Impact of 10%, 15% and 20% loss of direct and contract employment in the Mackay region; and
- Further reduction of 10% and 15% in operational spending of coal mining companies in the Mackay region on purchases of goods and services.

These scenarios were identified due to the recent pattern of spending and employment already detailed – notably, a decrease in total and supplier spending in 2024/25, despite an increase in wages and employment – along with the historical trend of employment and wage spending lagging supplier spend, typically by 1-2 years.

The analysis identifies that under a scenario where there is a 10% reduction in coal sector jobs, the impact on the Mackay region (under Type II) is estimated as the following:

- A loss of 1,244 full-time direct and contract jobs and associated wages of approximately $196.0 million;
- Subsequent decrease of 1,160 indirect FTEs, $89.9 million in wages and salaries, and $160.3 million in purchases of goods and services; and
- Total economic loss of an estimated $291.6 million in gross value added (1.1% of GRP) and approximately 2,404 jobs (2.3% of regional employment).

Table 2: Economic Impact of Loss of Direct Coal Jobs on Mackay Region, 2024/25 (Type II)			
Region			**Decrease in coal jobs**
	-10%	**-15%**	**-20%**
Direct Impact			
Direct residing employees (FTEs)	1,059	1,589	2,119
Associated salaries ($M)	172.9	259.4	345.8
Contract employees (FTEs)	185	277	370
Associated salaries ($M)	23.1	34.7	46.2
Total employees (FTEs)	1,244	1,866	2,488
Associated salaries ($M)	196.0	294.0	392.0
Indirect Impact (Type II)			
Indirect full time employees (FTEs)	1,160	1,739	2,319
Supply of goods and services ($M)	160.3	240.5	320.7
Associated salaries ($M)	89.9	134.8	179.7
Value added ($M)	95.5	143.3	191.1
Total Impact			
Output ($M)	356.4	534.5	712.7
Employment (FTEs)	2,404	3,606	4,807
% of total employment	2.3%	3.5%	4.6%
Wages ($M)	285.9	428.8	571.8
Gross value added ($M)	291.6	437.3	583.1
% of GRP	1.1%	1.7%	2.3%
% of total employment (Type I)	1.8%	2.8%	3.7%
% of GRP (Type I)	1.0%	1.6%	2.1%

The economic impact on the Mackay region of a further decrease 10% in supplier spending analysis includes the following:

- A decrease of $503.9 million in purchases of goods and services from local businesses, including $466.4 million in operating expenditure and $37.5 million capital purchases;
- Subsequent decrease of 3,776 indirect FTEs, $544.0 million in wages and salaries, and $716.1 million in secondary purchases of goods and services; and
- Total economic loss of an estimated $945.8 million in gross value added (3.7% of GRP) and approximately 3,776 jobs (3.6% of regional employment).

Table 3: Economic Impact of Decrease in Supplier Spend on Mackay Region, 2024/25 (Type II)

Region	Decrease in supplier spend	
	-10%	-15%
Direct Impact		
Purchases of goods and services – OPEX ($M)	466.4	699.6
Purchases of goods and services – CAPEX ($M)	37.5	56.2
Total Spend	503.9	755.8
Indirect Impact (Type II)		
Indirect full time employees (FTEs)	3,776	5,664
Supply of goods and services ($M)	716.1	1,074.2
Associated salaries ($M)	544.0	816.0
Value added ($M)	441.9	662.9
Total Impact		
Output ($M)	1,220.0	1,830.0
Employment (FTEs)	3,776	5,664
% of total employment	3.6%	5.4%
Wages ($M)	544.0	816.0
Gross value added ($M)	945.8	1,418.7
% of GRP	3.7%	5.5%
% of total employment (Type I)	1.9%	2.9%
% of GRP (Type I)	3.4%	5.0%

Appendix A: Modelling Approach

Input-Output Modelling

For this study, input-output (I-O) modelling has been used to estimate the sum of direct, indirect and consumption-induced effects of the coal sector on different regions of Queensland. 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.

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 consumption-induced effects (Type II models), which have been adopted for the current study. Further, the I-O models used in this study were based on the ABS model of the Australian economy generated from general equilibrium models. Note: Type II models involve assumptions about fixed relationships between income and consumption patterns. 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.

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; and
- 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.

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.

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 activities 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; and
- The consumption-induced effects, which recognise that the level of local production is important in determining regional levels of household consumption, that this in turn will be spent locally to a large extent and therefore influence the level of regional consumption and the level of output of each sector.

These effects can be represented 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 combined number of existing jobs sustained and new jobs generated by the stimulus, both directly and indirectly, although allocation between these forms of employment is not separately identified.

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:

- The inputs purchased by each industry are a function 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;
- The system is in equilibrium at given prices. This would not be 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; and
- The input-output model is an optimisation model that allocates resources between sectors to their most efficient use.

Type II models involve additional assumptions about fixed relationships between income and consumption patterns. 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 Regional I-O Models

For the derivation of the regional I-O tables, a variable interference non-survey technique was applied, involving a formalised non-survey method compilation. This allowed data on direct effects of the companies surveyed to be inserted at any stage of the compilation procedure. This approach is based primarily on the Generation of Regional Input-Output Tables (GRIT) technique, a widely used method of constructing local and regional input-output tables in Australia, America and Europe. The procedure utilises cross-industry location quotients as well as superior data (including expenditure patterns of within the primary company data) for the regionalisation of the national direct requirements matrix (DRM) or at the elements of other final payments and demand, which are 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); and
- Computation of the complete regional I-O table.

All the necessary data for the regionalisation 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 were 2022-23, which consisted of 114 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 using the available data on salary and business expenditure.

The predictions of the I-O models for regional area 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. Each stimulus group was modelled using expenditure coefficients and household consumption patterns applicable for each region, also taking into account the type of industry (e.g. coal mining) and the nature of the expenditure (i.e. operating or capital expenditure).

The outputs of the models can be classified into First Round and Indirect Effects, representing industry impacts through the business chain, and Final Consumption-Induced 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 three key aspects:

- First, the data collected on actual spending by the coal sector 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; and
- Third, the application of the I-O modelling framework down to the LGA, SED and CED levels, when combined with the accuracy of the primary data, meant that relatively accurate models of local impacts from the Queensland coal 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, SED and CED levels than could be achieved with standard applications of general equilibrium models.

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