22 ECONOMICS

22.1 INTRODUCTION

The purpose of this economic assessment is to identify and provide an indicative estimation of the likely construction and operational economic impacts of the Project's mining and related development activities. In doing so, this assessment estimates the direct, indirect and induced benefits arising from these activities at the regional, state and national levels. This chapter summarises the analysis undertaken in the detailed economics technical report which is presented in TR 22-1-V1.5. Note that figures/documents with numbering ending in V1.5 refer to figures/documents contained in Volume 1, Book 5 of the EIS.

This Chapter should also be read in conjunction with Chapter 6 Project Operations (which summarises the project accommodation facilities); Chapter 8 Land Use (which summarises impacts on good quality agricultural land); and Chapter 21 Social (which provides a summary of the social impact assessment undertaken for the Project).

The assessment takes into account the capital and operational expenditure estimated to be undertaken by the Wandoan Joint Venture (WJV), including expenditure on proposed raw water supply infrastructure (that is, expenditures associated with the raw water pipeline from a preferred source — see Volumes 2, 3 and 4).

The assessment also includes an overview of the estimated revenue flow to Government arising from the Project; and the income and employment benefits of the Project for individuals, businesses and industries, as well as future development prospects in the region arising from the Project.

22.2 ASSESSMENT APPROACH

This economic impact assessment includes the following key elements:

- a review of the existing economic environment of the study area, including:
  - economic base and activity in the region
  - population growth and the labour market
  - income, earnings, and cost of housing and
  - dwelling characteristics, vacancy and tenure types
- application of Input-Output (I-O) analysis to measure the direct and indirect economic impacts of the Project during the construction and operational phases of the project
- a qualitative discussion of the economic significance and benefits of the Project for local and regional economic development.

The review of the existing economic environment was based on statistical data compiled for Queensland local government areas and the 2006 ABS Census survey results. It is noted that, on 15 March 2008, the Shires of Murilla, Chinchilla, Wambo, Tara and Taroom (Division 2 — Wandoan) were amalgamated to form the Dalby Regional Council. The remainder of the Taroom Shire was absorbed into Banana Shire Council. Consequently, the reference to Taroom (which included Wandoan), Murilla, Chinchilla and Banana Shires in

this chapter is based on the local government boundaries as they were prior to 15 March 2008. This has not limited the results of the analysis as the shire data still provides the most recent overview of the historical environment where the Project will be located, from which the impacts of the Project can be estimated.

22.3 EXISTING ECONOMIC DEVELOPMENT

This Section provides an overview of the existing economic environment of the area in which the Project is located. The purpose of this description is to provide a basis to understand the conditions impacting on the region's economic environment, from which the effects of the Project can be anticipated.

22.3.1 STUDY AREA

For the purpose of assessing the existing economic environment, the description of the existing economic environment focuses on the regions of the Wandoan locality, using data from the former Taroom, Chinchilla, Murilla and Banana Shires (the study area). These localities have been chosen on the basis of the location of the Project, as shown in Figure 1-1-V1-3.

The combined data of the study area provides an understanding of the wider community demographics and values. It is understood that potential impacts may extend to other local government areas (LGAs) and adjacent communities over the life of the Project.

22.3.2 INDUSTRY AND EMPLOYMENT STRUCTURE OF TAROOM AND BANANA

The economic base of the study area is dominated by the agricultural sector. As shown in Table 22-1, the largest number of businesses in the Taroom region was classified as agricultural, forestry and fishery (75%), followed by construction (5.2%), and property and business services (4%). Chinchilla, by contrast, mainly comprised of agriculture, forestry and fishing (50.8%), retail trade (10.3%) and property and business services (10%). However, it should be noted that Chinchilla includes some level of mining employment that is not captured in the ABS Census, with Wilkie Creek mine operating in this locality. Similarly, Murilla comprised mainly of agriculture, forestry and fishing (57.6%), construction (7.6%), and retail trade (7.1%). The Banana region, also mainly comprised of agriculture, forestry and fishery enterprises (58.6%), followed by property and business services (8.1%), and retail trade (7.5%).

In this context, it should be noted that the Shires of Murilla and Banana have a small number of mining businesses in the Project area. That is, Murilla has six mining businesses, while Banana has nine.

Table 22-1: Number of businesses by industry and shire

Industry	Taroom (Count)	Taroom (%)	Chinchilla (Count)	Chinchilla (%)	Murilla (Count)	Murilla (%)	Banana (Count)	Banana (%)
Agriculture, forestry and fishing	558	75.0%	501	50.8%	318	57.6%	1,149	58.6%
Mining/ mining services	0	0.0%	0	0.0%	6	1.1%	9	0.5%
Manufacturing	9	1.2%	33	3.3%	9	1.6%	42	2.1%
Electricity, gas and water supply	0	0.0%	0	0.0%	0	0.0%	9	0.5%
Construction	39	5.2%	84	8.5%	42	7.6%	135	6.9%
Wholesale trade	6	0.8%	21	2.1%	21	3.8%	33	1.7%
Retail trade	27	3.6%	102	10.3%	39	7.1%	147	7.5%
Accommodation, cafes and restaurants	12	1.6%	9	0.9%	21	3.8%	51	2.6%
Transport and storage	24	3.2%	30	3.0%	24	4.3%	72	3.7%
Communication services	12	1.6%	9	0.9%	9	1.6%	18	0.9%
Finance and insurance	12	1.6%	36	3.6%	15	2.7%	57	2.9%
Property and business services	30	4.0%	99	10.0%	30	5.4%	159	8.1%
Education	0	0.0%	0	0.0%	0	0.0%	3	0.2%
Health and community services	3	0.4%	30	3.0%	12	2.2%	39	2.0%
Cultural and recreational services	6	0.8%	15	1.5%	6	1.1%	12	0.6%
Personal and other services	6	0.8%	18	1.8%	0	0.0%	27	1.4%
Total	**744**	**100.0 %**	**987**	**100.0%**	**552**	**100.0 %**	**1,962**	**100.0%**

Source: ABS 2008

The above composition of businesses is reflected in industry employment for the study area (see Table 22-2 below). In the 2006 Census, the top three industries of employment for former Taroom Shire were sheep, beef cattle and grain farming (51.7%), followed by local government administration (5.5%), school and education (4.9%). For Chinchilla, the top three industries of employment were sheep, beef cattle and grain farming (14.8%), school education (6.1%) and heavy and civil engineering (4.0%). For Murilla, the top three industries of employment were sheep, beef cattle and grain farming (30.4%), school education (6.1%) and local government administration (5.7%).

This trend, however, is not reflected in the top two industries of employment for Banana, where the number of enterprises is disproportionate to the relative level of industry employment (see Table 22-2). That is, according to the 2006 Census, the most common

industries of employment for Banana were coal mining (14.3%), followed by sheep, beef cattle and grain farming (14%). This suggests that the (nine) mining businesses recorded in Banana (see Table 22-1) contribute significantly to the level of industry employment (see Table 22-2), despite their relatively fewer numbers.

Table 22-2: Top five industries of employment

Employment type	Locality (Shire)	% aged 15 years and over	Australia (Count)	% aged 15 years and over
Taroom (Shire)				
Sheep, Beef Cattle and Grain Farming	691	51.7%	133,275	1.5%
Local Government Administration	72	5.4%	128,838	1.4%
School Education	65	4.9%	414,214	4.5%
Hospitals	31	2.3%	303,923	3.3%
Road Freight Transport	24	1.8%	162,448	1.8%
Chinchilla (Shire)				
Sheep, Beef Cattle and Grain Farming	416	14.8%	133,275	1.5%
School Education	171	6.1%	414,214	4.5%
Heavy and Civil Engineering Construction	112	4.0%	53,350	0.6%
Supermarket and Grocery Stores	100	3.6%	218,821	2.4%
Residential Building Construction	73	2.6%	163,300	1.8%
Murilla (Shire)				
Sheep, Beef Cattle and Grain Farming	386	30.4%	133,275	1.5%
School Education	78	6.1%	414,214	4.5%
Local Government Administration	72	5.7%	128,838	1.4%
Hospitals	33	2.6%	303,923	3.3%
Fuel Retailing	27	2.1%	32,421	0.4%
Banana (Shire)				
Coal Mining	984	14.3%	26,891	0.3%
Sheep, Beef Cattle and Grain Farming	962	14.0%	133,275	1.5%
School Education	347	5.0%	414,214	4.5%
Meat and Meat Product Manufacturing	290	4.2%	43,124	0.5%
Local Government Administration	170	2.5%	128,838	1.4%

Source: ABS 2006 Census, QuickStats: Chinchilla (S) Murilla (S) Banana(S) Taroom (S)

It can be seen from Table 22-2 that while agriculture remains the dominant form of industry activity in the Taroom area, the wider region potentially provides a skill base in coal mining capable of meeting the future needs of the Project. This is especially the case in the former Banana Shire where coal mining employment currently comprises a significant proportion of its current workforce.

22.3.3 INDUSTRY AND EMPLOYMENT STRUCTURE OF WANDOAN

In reviewing the characteristics of the Wandoan locality more specifically, it is observed that the mining industry currently makes up a small proportion of employment (see Table 22-3). Based on the 2006 census data, employment in the mining industry accounted for 3% of total employment in the area. The main employment activity in the area was agriculture, accounting for 46% of total employment. Thus, as noted above, it is evident that agricultural activity supports local employment and income. This is followed by education and training (8%) and public administration and safety (7%).

It can also be seen from Table 22-3 that the industry employment in Wandoan is marginally different from the state and national average. Studies suggest that the supply of local labour is likely to adjust more rapidly when the skill composition of potential labour matches the skill requirements of demand in the market. Therefore, it would be expected that the Project would, in time, become a catalyst for developing a greater coal mining skill base from within the study area. This skill base is expected to be highly specialised in nature and tend to be initially contracted with existing market participants or suppliers that may be outside of the region's current labour market skill mix.

In other words, while it may not be immediately evident that the local labour market will benefit from the initial expansion of mining activities in the study area, the ability of the current workforce to adapt through further education and training in mining is expected to grow with the operation of the Project.

Table 22-3: Industry employment shares

Industry	Wandoan (Count)	Wandoan (Shire) (%)	Queensland (%)	Australia (%)
Agriculture, forestry and fishing	184	46%	3%	3%
Mining/mining services	11	3%	2%	1%
Manufacturing	24	6%	10%	10%
Electricity, gas, water and waste services	6	2%	1%	1%
Construction	12	3%	9%	8%
Wholesale trade	10	3%	4%	4%
Retail trade	25	6%	12%	11%
Accommodation and food services	12	3%	7%	6%
Transport, postal and warehousing	15	4%	5%	5%
Information media and telecommunications	0	0%	1%	2%
Financial and insurance services	0	0%	3%	4%
Rental, hiring and real estate services	0	0%	2%	2%
Professional, scientific and technical services	7	2%	6%	7%
Administrative and support	5	1%	3%	3%

Industry	Wandoan (Count)	Wandoan (Shire) (%)	Queensland (%)	Australia (%)
services				
Public administration and safety	29	7%	7%	7%
Education and training	33	8%	8%	8%
Health care and social assistance	13	3%	10%	11%
Arts and recreation services	0	0%	1%	1%
Other services	3	1%	4%	4%
Inadequately described/Not stated	8	2%	3%	3%
Total	**397**	**100%**	**100%**	**100%**

Source: ABS 2006, Census of Population and, Cat. No. 2068.0 – 2006 Census Tables

22.3.4 CURRENT AND FUTURE POPULATION GROWTH

Population growth is an important driver of economic growth creating opportunities for employment and supporting local businesses and commerce. Population in the former Taroom Shire, however, declined from 2001 to 2006. This decline was also observed in the Banana Shire. Data published by the Office of Economic and Statistical Research (OESR) (2008a, 2008b) indicates that the total resident population in the Taroom region is expected to decline over the period 2006 to 2026, averaging -2.2% over the forecast period.

By contrast, total resident population in the Chinchilla, Murilla, and Banana region is expected to rise over the same period, averaging 1.6%, 0.6% and 0.02% respectively. This compares to a population growth projection of 9.1% for Queensland over the same period (see Table 22-4).

Table 22-4: Population projections

Year	2001	2006	2011	2016	2021	2026
Taroom (S)						
Count	2,684	2,561	2,507	2,457	2,420	2,397
% change	—	-4.58%	-2.11%	-1.99%	-1.51%	-0.95%
Chinchilla (S)						
Count	6,046	6,224	6,340	6,424	6,475	6,544
% change	—	2.94%	1.86%	1.32%	0.79%	1.07%
Murilla (S)						
Count	2,720	2,735	2,764	2,779	2,791	2,803
% change	—	0.55%	1.06%	0.54%	0.43%	0.43%
Banana (S)						
Count	14,488	14,415	14,450	14,475	14,492	14,503
% change	—	-0.50%	0.20%	0.20%	0.10%	0.10%

Year	2001	2006	2011	2016	2021	2026
QLD (S)						
Count	3,628,946	4,041,368	4,428,138	4,823,408	5,211,995	5,583,956
% change	—	11.40%	9.60%	8.90%	8.10%	7.10%

Source: OESR 2008a

22.3.5 LABOUR FORCE AND UNEMPLOYMENT

The labour force characteristics of Wandoan Township, Wandoan district, the former Taroom, Chinchilla, Murilla and Banana Shires and Queensland are illustrated in Table 22-5 below. The 2006 Census data indicates that there are a higher proportion of full-time workers in Wandoan (urban centre locality) and the former Taroom, Chinchilla, Murilla and Taroom Shires compared to Queensland, suggesting that commerce and industry activity in these localities are above the state average. There is, however, a smaller percentage of part-time employment for the Wandoan region compared to Queensland overall.

Table 22-5: Labour force (population aged 15 years and over)

	Wandoan (Locality)	Wandoan (Shire)	Taroom (Shire)	Chinchilla (Shire)	Murilla (Shire)	Banana (Shire)	QLD (State)
Total labour force	**190**	**407**	**1,357**	**2,915**	**1,301**	**7,057**	**1,915,949**
Employed full-time	127	299	1,000	1,886	855	4,876	1,180,892
Employed part-time	45	79	272	772	321	1,523	530,504
Employed away from work	3	7	25	81	35	257	63,507
Employed hours not stated	6	12	39	71	58	235	50,096
Unemployed	9	10	21	105	32	166	90,950
Not in the labour force	97	160	429	1,462	660	2,454	971,831

Source: ABS 2006 Census

Table 22-6: Percentage of labour force, by type

	Wandoan (Locality)	Wandoan (Shire)	Taroom (Shire)	Chinchilla (Shire)	Murilla (Shire)	Banana (Shire)	QLD State
Total labour force							
Employed full-time	66.8%	73.5%	73.7%	64.7%	65.7%	69.1%	61.6%
Employed part-time	23.7%	19.4%	20.1%	26.5%	24.7%	21.6%	27.7%

	Wandoan (Locality)	Wandoan (Shire)	Taroom (Shire)	Chinchilla (Shire)	Murilla (Shire)	Banana (Shire)	QLD State
Employed away from work	1.6%	1.7%	1.8%	2.8%	2.7%	3.6%	3.3%
Employed hours not stated	3.2%	2.9%	2.9%	2.4%	4.5%	3.3%	2.6%
Unemployed	4.7%	2.5%	1.5%	3.6%	2.5%	2.4%	4.7%

Source: PB calculations based on ABS 2006 Census

Table 22-6 also shows unemployment as a proportion of the total labour force. While unemployment for Wandoan is equivalent to that of Queensland (i.e. 4.7%), the Wandoan locality (i.e. 2.5%) is below the state level (i.e. 4.7%). A similar trend applies for Taroom, Chinchilla, Murilla and Banana, where there is a smaller proportion of unemployed compared to the Queensland state.

22.3.6 INCOME, EARNINGS, AND COSTS OF HOUSING

According to ABS Census data, the median individual income was lowest in Murilla ($392 per week); followed by Chinchilla ($409 per week); Wandoan ($409 per week); Taroom ($442 per week); and Banana ($528 per week). With the exception of Murilla, the median family incomes for Wandoan were below that of Taroom, Banana and Chinchilla. The median family income for Wandoan was $976 per week, compared to $957 per week in Murilla, $1,017 per week for Taroom Shire, $1,058 per week for Chinchilla and $1,321 per week for Banana.

In 2006, the average number of persons per households in Wandoan, Taroom and Murilla was 2.4, compared to 2.5 for Chinchilla and 2.6 for Banana.

This was accompanied by median housing loan repayments of $474 per week for Wandoan, $542 per week for Taroom, $704 per week for Murilla, $1,000 per week for Banana, and $1,017 per week for Banana. Therefore, the Wandoan locality had the lowest median housing loan repayment, whilst Banana had the highest.

The ABS Census provides information on rental prices from 2006 that shows the median rent paid per week within the region is low when compared to the state (e.g. median of $41 per week in Wandoan and $85 per week in Taroom and $25 per week in Murilla Shire). These low rental figures within the region may indicate regional trends whereby rented properties are provided at reduced rates or as part of a salary package for those who work and manage agricultural properties for the owners. However, research undertaken on rental properties available during October 2008 showed that advertised rents for a 3 bedroom house in Wandoan ranged from $190 to $450 per week; and a 2 bedroom duplex at Miles was advertised at $200 per week.

In this context, it should be noted that median weekly rents recorded in the 2006 Census appears to be very low compared to current market trends.

According to the Australian Property Monitors (2008), the median price of a house in Wandoan was $197,000 (six months to February 2008). This compared to a median house priced of $305,000 for rural Queensland over the same period.

Chapter 21 Social provides further details in relation to potential localised impacts on land availability, housing and accommodation.

22.3.7 DWELLING CHARACTERISTICS, VACANCY AND TENURE TYPE

The dwelling, vacancy and tenure characteristics of Wandoan (S), Taroom (S), Chinchilla (S), Murilla (S), Banana (S) and Queensland are illustrated in Table 22-7 below. Based on the 2006 Census, the data indicates that Wandoan has the highest vacancy rate (30%), followed by Taroom (27%), Murilla (18%), Chinchilla (16%), Banana (13%) and Queensland (9%). Thus these vacancy rates suggest that the Wandoan locality would have a greater capacity to provide (at least initially) for increased housing demand resulting from the Project.

However, this should not be interpreted as Wandoan having the longer term capacity to absorb the construction and operation accommodation requirements generated by the Project (see next section).

The ABS census data also indicates that across the regions observed, full ownership is the dominant form of tenure type. With the exception of Queensland as a whole, rental accommodation is the second most common form of tenure type, followed by tenure types being purchased.

Table 22-7: Dwelling characteristics, vacancy rate and tenure type (2006 Census)

	Dwelling characteristics			Tenure type				
	Total dwellings	Dwelling occupancy	Vacancy rate (%)	Fully owned	Being purchased	Rented	Other tenure type	Not stated
Wandoan (S)								
Count	426	299	30%	136	56	91	4	13
(%)	—	—	—	46%	19%	30%	1%	4%
Taroom (S)								
Count	1,297	949	27%	465	170	262	18	32
(%)	—	—	—	49%	18%	28%	2%	3%
Chinchilla (S)								
Count	2,770	2,338	16%	981	576	632	31	119
(%)	—	—	—	42%	25%	27%	1%	5%
Murilla (S)								
Count	1,328	1,092	18%	486	219	299	20	68
(%)	—	—	—	45%	20%	27%	2%	6%
Banana (S)								
Count	5,874	5,129	13%	1,721	1,363	1,613	69	362
(%)	—	—	—	34%	27%	31%	1%	7%
QLD (S)								
Count	1,660,750	1,508,522	9%	458,468	473,248	452,596	14,830	109,379
(%)	—	—	—	30%	31%	30%	1%	7%

Source: Australian Bureau of Statistics Census 2006

In summary, on the basis of ABS Census and other relevant data, it would appear the study area provides a strong economic foundation to cater for the Project's construction and on-going development. There is also notable scope for the Project to provide benefits to the socio-economic performance of the region. Chapter 21 Social provides further details on potential localised impacts and mitigation measures related to land availability, housing and accommodation.

22.4 ECONOMIC PROFILE OF PROJECT

Data supplied by the WJV used to estimate the impact of the Project during the construction phase is presented in Table 22-8 below. This data is separated in terms of expected expenditure at the regional, state and national levels. Key construction costs include coal handling and preparation plant (CHPP), mine infrastructure (roads, power, water) and other infrastructure (such as the proposed raw water pipeline).

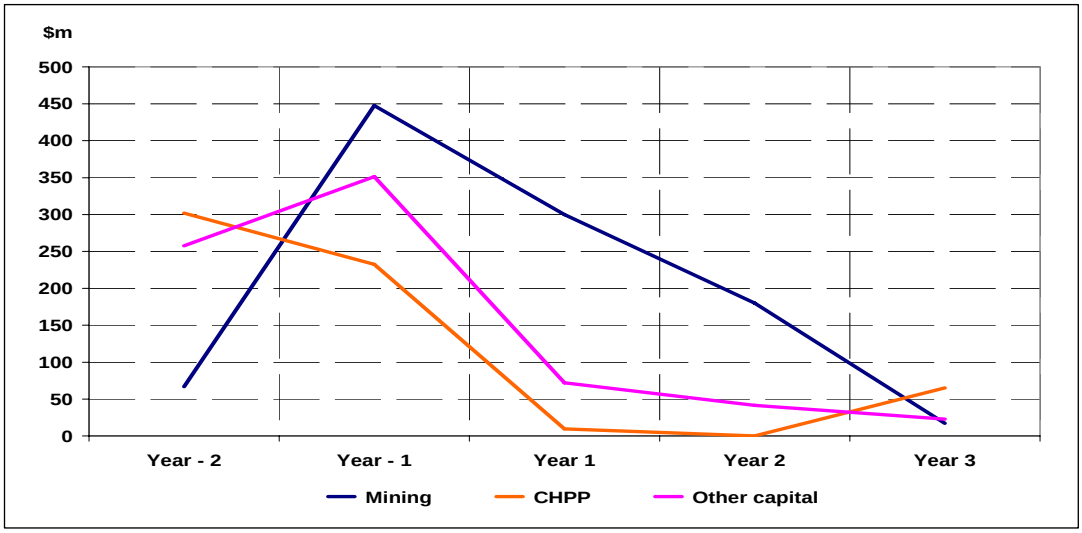
Total construction is estimated to cost $2.9 billion (2008/09 dollars), with the majority of expenditure, as a proportion of total expenditure, taking place in construction Year -2 and Year -1. However, as shown in Figure 22-1 (below), capital expenditure is expected to peak in Year -1, with 44% of total capital expenditure being expended at this time.

For this assessment, it is estimated that around 8% of construction expenditure would be expended at the regional level, 49% at the state level, and 18% nationally. The remaining 25% is expected to be expended internationally. All expenditure made overseas is 'leakage' and therefore assumed to have no income or employment impact on the Australian economy.

Table 22-8: Summary of forecast construction expenditures for Wandoan Coal Project (real-adjusted)

	Year – 2	Year – 1	Year 1	Year 2	Year 3	Total
Construction phase						
Expenditure profile	**26%**	**44%**	**16%**	**9%**	**4%**	**100%**
Regional ($m)						
Mining	7	44	30	18	2	100
CHPP	30	23	1	0	6	60
Other capital	25	35	7	4	2	74
State ($m)						
Mining	45	304	204	122	12	687
CHPP	205	158	7	0	44	414
Other capital	175	239	49	28	16	506
Rest of Australia ($m)						
Mining	15	99	67	40	4	225
CHPP	67	52	2	0	14	135
Other capital	57	78	16	9	5	166
Total ($m)	**773**	**1,273**	**471**	**273**	**130**	**2,921**

Note: Figures may not sum precisely due to rounding. Source: XCQ



Source: XCQ

Figure 22-1: Forecast capital expenditure profile

22.4.1 OPERATIONAL PHASE DATA AND ASSUMPTIONS

The operational data used to estimate the impact of the Project are presented in Table 22-9 below. As shown in Table 22-10, total operational expenditure is expected to cost $15.6 billion over the projected operating period (2008/09 dollars). The estimates exclude overseas expenditure, rail and port transport costs, coal research levy charges, Queensland Government royalties, and carbon taxes (if implemented). Annual expenditure, as a percentage of total operational expenditure, remains relatively constant at 4% per annum over the period – that is, $578 million per annum.

For this assessment, it is estimated that approximately 9% of operational expenditure will be the regional level, 80% at the state level, 6% at the national level and 5% at the overseas level. The notably higher share at the state level during the operational phase is wholly consistent with expectations that the Project will tend to benefit the State more than other areas due to the extraction of the resource from the mine-gate to the export gate for overseas export and consumption.

Table 22-9: Operational expenditures for Project (real adjusted)

	Average per annum	Total operational expenditure
Operational Phase		
Average expenditure profile	**4%**	**100%**
Regional ($m)		
Mining	23	608
CHPP	9	233
Other capital	5	145
State ($m)		
Mining	300	8,102
CHPP	115	3,111

	Average per annum	Total operational expenditure
Other capital	72	1,933
National ($m)		
Mining	34	911
CHPP	13	350
Other capital	8	217
Total Operating Costs ($m)	**578**	**15,610**

Note: Figures may not sum precisely due to rounding.

Source: XCQ

22.5 POTENTIAL ECONOMICS BENEFITS

This section presents the economic benefits that are estimated to arise from the construction and operation of the Project. The impact analyses incorporate the construction and operational profiles of the Project as discussed in the preceding section. This assessment estimates the direct, indirect and induced benefits arising from Project activities at the regional level, state and the rest of Australia.

22.5.1 BENEFITS DURING CONSTRUCTION PHASE

Based on the WJV's projected capital expenditure, the likely flow-on economic benefits arising from the Project's expenditures during the construction period are estimated in the following sections. Based on the project capital expenditure proportions outlined in the previous section, the Project's economic benefits are summarised in Table 22-10.

Table 22-10: Average annual impact during construction

Impact type	Value Added/Output ($m)		Employment (Full Time Equivalents)	
	Lower	Upper	Lower	Upper
REGIONAL				
Direct impact	6	8	100	134
Indirect impact	3	4	33	44
Induced impact	1	2	26	34
Total	10	14	159	212
STATE				
Direct impact	49	61	241	321
Indirect impact	46	57	161	214
Induced impact	98	123	482	643
Total	193	241	884	1,178
NATIONAL				
Direct impact	16	20	79	105

Impact type	Value Added/Output ($m)		Employment (Full Time Equivalents)	
	Lower	Upper	Lower	Upper
Indirect impact	15	19	53	70
Induced impact	32	40	158	210
Total	63	79	290	385

Note: Figures may not sum precisely due to rounding.

Source: PB estimates

Direct flow-on impacts

Direct flow-on impacts are the value of goods and services (including numbers employed) necessary to establish the mine, including construction activities directly supporting the construction of the mine. Examples of the type of businesses likely to be affected include construction trade services, landscaping, or civil engineering contractors and suppliers located in the study area.

In summary, the initial impact during construction is expected to provide the following direct flow-on benefits:

- **Regional**: on average, the direct flow-on affect is expected to contribute between $6 million and $8 million per annum in revenues associated with goods and services produced. This is expected to support between 100 and 134 jobs per annum.
- **State:** on average, the direct flow-on affect is expected to contribute between $49 million and $61 million per annum in revenues associated with goods and services produced. This is expected to support approximately 241 and 321 jobs per annum.
- **National:** on average, the direct flow-on affect is expected to contribute between $16 million and $20 million per annum in revenues associated with goods and services produced. This is expected to support between 79 and 105 jobs per annum.

Indirect flow-on impacts

Indirect flow-on on impacts would occur because inputs would need to be purchased from many other sectors to support the direct flow-on impacts associated with constructing the mine. The indirect flow-on impacts may include machinery, appliances and equipment, as well as communication services.

In summary, the initial impact during construction is expected to provide the following indirect flow-on benefits:

- **Regional:** on average, the indirect flow-on affect is expected to contribute between $3 million and $4 million per annum in revenues associated with goods and services produced. This is expected to support between 33 and 44 jobs per annum.
- **State***:* on average, the indirect flow-on affect is expected to contribute between $46 million and $57 million per annum in revenues associated with goods and services produced. This is expected to support approximately 161 and 214 jobs per annum.

- **National:** on average, the indirect flow-on affect is expected to contribute between $15 million and $19 million per annum in revenues associated with goods and services produced. This is expected to support between 53 and 70 jobs per annum.

Induced flow-on impacts

Induced flow-on on impacts would occur due to increased spending of wage and salary earners on items such as accommodation, cafes, restaurants, and retail trade.

In summary, the initial spend during construction is expected to provide the following induced flow-on affects:

- **Regional**: on average, the induced flow-on affect is expected to contribute between $1 million and $3 million per annum in revenues associated with goods and services produced. This is expected to support between 26 and 34 jobs per annum
- **State**: on average, the induced flow-on affect is expected to contribute between $98 million and $123 million per annum in revenues associated with goods and services produced. This is expected to support approximately 682 and 643 jobs per annum
- **National**: on average, the induced flow-on affect is expected to contribute between $32 million and $40 million per annum in revenues associated with goods and services produced. This is expected to support between 158 and 210 jobs per annum.

Total flow-on impacts

The total flow-on benefits (direct, indirect, induced) resulting from the initial expenditure undertaken during the construction is presented below:

- **Regional**: on average, the total flow-on affect is expected to contribute between $10 million and $14 million per annum in revenues associated with goods and services produced. This is expected to support between 159 and 212 jobs per annum.
- **State**: on average, the total flow-on affect is expected to contribute between $193 million and $241 million per annum in revenues associated with goods and services produced. This is expected to support approximately 884 and 1,178 jobs per annum.
- **National**: on average, the total flow-on affect is expected to contribute between $63 million and $79 million per annum in revenues associated with goods and services produced. This is expected to support between 290 and 385 jobs per annum.

The largest economic benefits during constriction are expected to occur at the State level, on the assumption that a significant proportion of the expenditure will be made across the State (e.g. mine equipment fabrication, building materials, other infrastructure). Figures 22-2 and 22-3 summarise the total value added/output and employment impacts during construction.

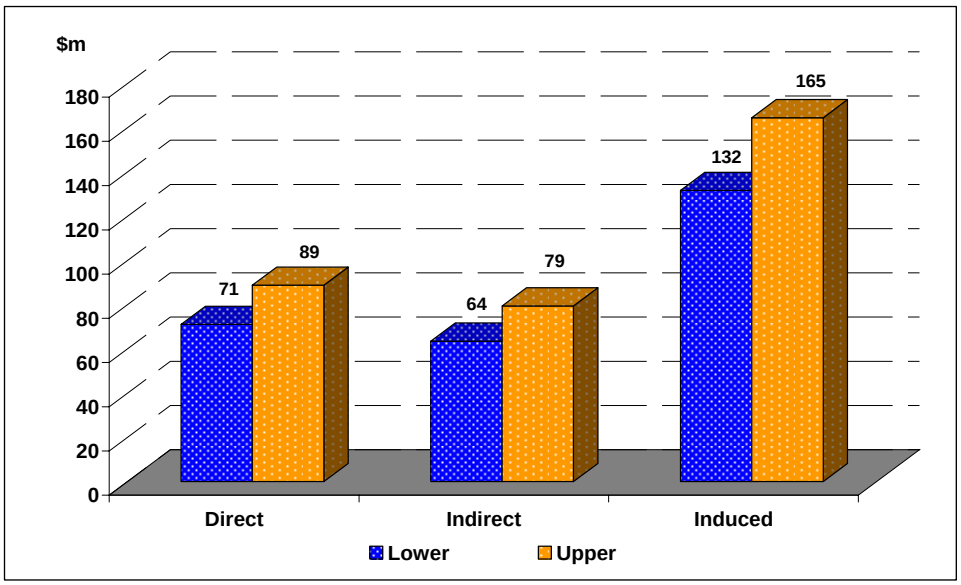


Figure 22-2: Value added or output impacts during construction

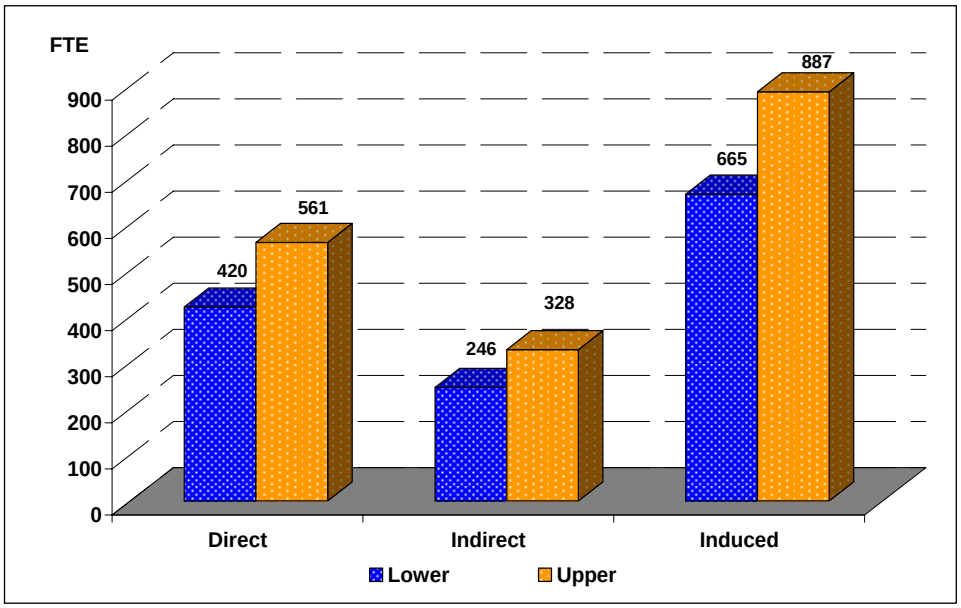


Figure 22-3: Full time equivalent jobs during construction

22.5.2 BENEFITS DURING OPERATIONAL PHASE

As with the construction phase of the Project, the magnitude of impacts arising from the operating phase of the Project are dependent on the extent to which expenditures occur in the region and elsewhere in Australia. Based on the WJV's estimated operational expenditure for the operating period, the economic benefits arising over the operation of the Project are estimated in the following sections. The Project's operational economic benefits are summarised in Table 22-11.

Table 22-11: Average annual impact during operation

Impact type	Value Added / Output ($m)		Employment (Full Time Equivalents)	
	Lower	Upper	Lower	Upper
REGIONAL				
Direct impact	6	7	78	104
Indirect impact	3	4	33	44
Induced impact	4	5	41	54
Total	13	16	151	202
STATE				
Direct impact	76	95	292	389
Indirect impact	61	76	243	341
Induced impact	132	165	730	974
Total	269	336	1,266	1,704
NATIONAL				
Direct impact	9	11	33	44
Indirect impact	7	9	27	38
Induced impact	15	19	82	110
Total	31	39	142	192

Note: Figures may not sum precisely due to rounding.
Source: PB estimates.

Direct flow-on impacts

The direct flow-on affects during operation are the operational activities directly supporting the operation of the mine's production. Examples of the type of businesses likely to benefit from the Project's expenditures include engineering contractors and suppliers, and trade services.

In summary, the initial impact during operations is expected to provide the following direct flow-on benefits:

- **Regional**: on average, the direct flow-on affect is expected to contribute between $6 million and $7 million per annum in revenues associated with goods and services produced. This is expected to support between 78 and 104 jobs per annum
- **State**: on average, the direct flow-on affect is expected to contribute between $76 million and $95 million per annum in revenues associated with goods and services produced. This is expected to support approximately 292 and 389 jobs per annum
- **National**: on average, the direct flow-on affect is expected to contribute between $9 million and $11 million per annum in revenues associated with goods and services produced. This is expected to support between 33 and 44 jobs per annum.

Indirect flow-on impacts

Indirect flow-on on impacts would occur because inputs would need to be purchased from many other sectors to support the direct flow-on impacts associated with operating the mine. The indirect flow-on impacts may include machinery, appliances and equipment, as well as the supply of water, gas and electricity.

In summary, the initial impact during operations is expected to provide the following indirect flow-on benefits:

- **Regional**: on average, the indirect flow-on affect is expected to contribute between $3 million and $4 million per annum in revenues associated with goods and services produced. This is expected to support between 33 and 44 jobs per annum
- **State**: on average, the indirect flow-on affect is expected to contribute between $61 million and $76 million per annum in revenues associated with goods and services produced. This is expected to support approximately 243 and 341 jobs per annum
- **National**: on average, the indirect flow-on affect is expected to contribute between $7 million and $9 million per annum in revenues associated with goods and services produced. This is expected to support between 27 and 38 jobs per annum.

Induced flow-on impacts

Like the construction phases, induced flow-on on impacts would occur due to increased spending of wage and salary earners at the operational phases of the Project. Examples of businesses and industries most likely to be affected include finance, property and business services, accommodation, cafes, restaurants, and retail trade.

In summary, the initial spend during operations is expected to provide the following induced flow-on benefits:

- **Regional**: on average, the induced flow-on affect is expected to contribute between $4 million and $5 million per annum in revenues associated with goods and services produced. This is expected to support between 41 and 54 jobs per annum
- **State**: on average, the induced flow-on affect is expected to contribute between $132 million and $165 million per annum in revenues associated with goods and services produced. This is expected to support approximately 730 and 974 jobs per annum
- **National**: on average, the induced flow-on affect is expected to contribute between $15 million and $19 million per annum in revenues associated with goods and services produced. This is expected to support between 82 and 110 jobs per annum.

22.5.3 TOTAL FLOW-ON BENEFITS

The total flow-on benefits (direct, indirect, induced) resulting from the initial expenditure undertaken during operations is presented below:

- **Regional**: on average, the total flow-on affect is expected to contribute between $13 million and $16 million per annum in revenues associated with goods and services produced. This is expected to support between 152 and 202 jobs per annum
- **State**: on average, the total flow-on affect is expected to contribute between $269 million and $336 million per annum in revenues associated with goods and

services produced. This is expected to support approximately 1,266 and 1,704 jobs per annum

- **National**: on average, the total flow-on affect is expected to contribute between $31 million and $39 million per annum in revenues associated with goods and services produced. This is expected to support between 142 and 192 jobs per annum.

As with the construction phase, the largest economic benefit is expected to occur at the State level, again as a consequence maintenance/fabrication work likely to occur outside the region but within the State. Figures 22-4 and 22-5 summarise the total value added/output and employment impacts during operation in terms of direct, indirect, and induced impacts across all geographies examined.

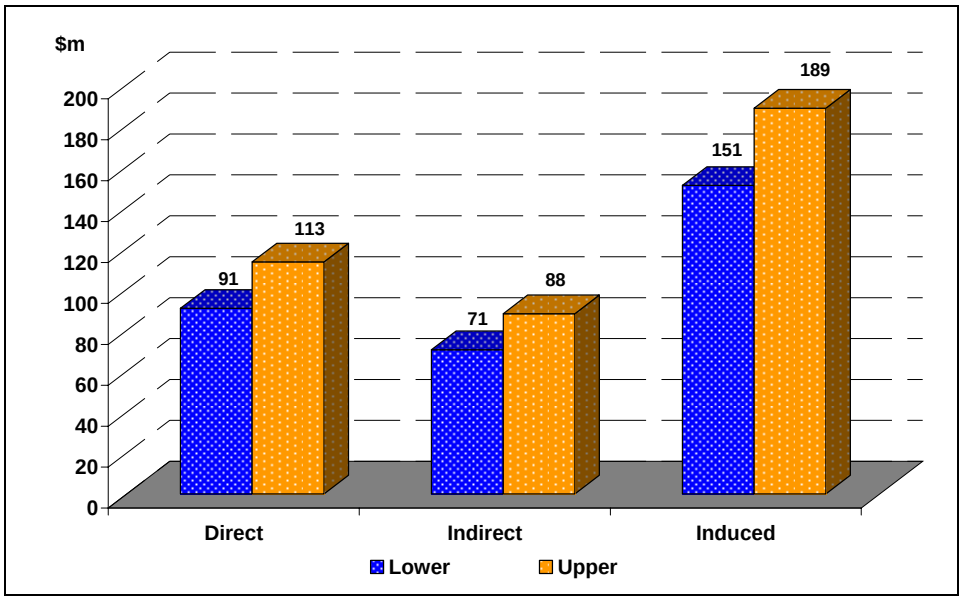


Figure 22-4: Value added or output impacts during operation

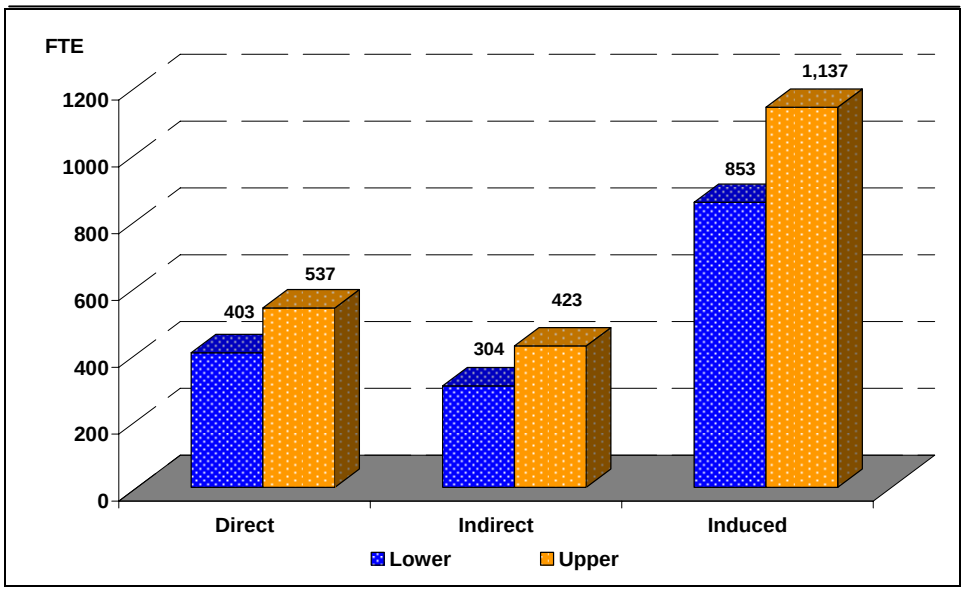


Figure 22-5: Full time equivalent impacts during operation

22.5.4 POSSIBLE CONSTRAINTS

Several supply-side opportunities and constraints of the region are likely to affect the degree to which the estimated economic impacts above can be realised. These include the supply of labour and the capacity of regional businesses to service new demand for goods and services, together with availability of local housing and other physical and social infrastructure and amenities required.

Whilst the economic profile of the region suggests that there is some capacity for existing businesses and industries to initially support the growth of the Project, it is expected that there will be insufficient labour supply to support the Project over its entirety. Accordingly, it is expected that the shortfall in labour supply will be imported from the wider state, as well as nationally. At the same time, it is likely that existing and new business will be required to be developed in order to provide services (e.g. mining maintenance services) for the mine and the increased number of people residing within the region.

There may be opportunity to review the extent of capital equipment required to be imported into the region (including overseas imports) over the life of the Project. However, this depends on the specialist nature of such equipment and the economies of scale required to establish a local/regional/national supplier.

Consequently, although the Project would provide opportunities for regional labour and business supply, it is likely that the attraction of skilled workers and new business entrepreneurs would be required. In part, the level of attraction would rely on the capacity of the education and training system to up-skill workers, and accompanying opportunities presented to entrepreneurs and business managers to invest in new businesses ventures across the region.

22.6 OTHER ECONOMIC BENEFITS

The previous section highlighted the economic benefits which are estimated to arise from the direct expenditure by the WJV during Project construction and operations.

This section briefly outlines the benefits arising from the Project in terms of Project induced flows to Government revenues, the development of the locality and a high level identification of key businesses and industries likely to be beneficiaries of the Project investment.

22.6.1 ROYALTY PAYMENTS FROM COAL PRODUCTION

The expected average production of 22 million tonnes of product coal per annum over the operating period of the Project is expected to provide significant royalty payments to the Queensland Government. In Queensland, coal royalties are assessed according to a two tier coal royalty system which results in an increasing variable rate of royalty once the price of coal exceeds $100 per tonne per quarter. Specifically, coal companies pay 7% of value up to A$100 per tonne and 10 per cent of the value thereafter. For example, a price of A$100 per tonne attracts a rate of 7% of coal value, A$150 per tonne attracts 8% and A$200 per tonne attracts 8.5%.

On this basis, and subject to exchange rate variations and coal price variations over the life of the mine, it is estimated that approximately $3.7 billion in royalty payments would be made to the Queensland Government over the 30 year operation of the Project. On an annual basis, the average royalty payment is expected to contribute approximately $135 million per annum (or 3.7% of total royalty payments). However, the payment is expected to peak in year 4, contributing $167 million (or 4.7% of total royal payments), assuming the price of coal and royalty rates remain the same over this period.

22.6.2 OTHER PAYMENTS

In addition to the royalty contributions outlined above, the use of land for the Project is expected to contribute to local government rates. Specifically, Dalby Regional Council charges different rates for use of its land. The Project would be categorised as 'Coal Mining >200 people'.

The local government rate contributions are expected to assist in the funding of a wide range of services to the benefit of the local community, including the management and maintenance of critical social and economic infrastructure such as local roads, libraries, sporting grounds and swimming pools, parks and playgrounds, community halls, and street lighting, as well as providing services such as waste collection, information and economic development.

22.6.3 RAIL AND PORT CHARGES

Major infrastructure enabling the operation and growth of the coal industry includes transport (rail and ports). Queensland coal is transported through a series of supply chains, including five dedicated rail networks linking coal mines to major coal export terminals.

In this context, the WJV has advised that approximately $500 million per annum could be expected to be paid in rail and port charges over the 30 year operation of the Project.

22.6.4 BENEFITS IN THE LOCALITY

The investment in the construction and operation of the Project by the WJV is expected to generate significant economic benefits to the region in the form of increased economic activity and employment. These benefits (as measured in the preceding Section), would in turn lead to a steady increase in the region's population and subsequent demand for goods and services. Figure 22-6 summarises the economic implications of the Project for future development and change in the locality.

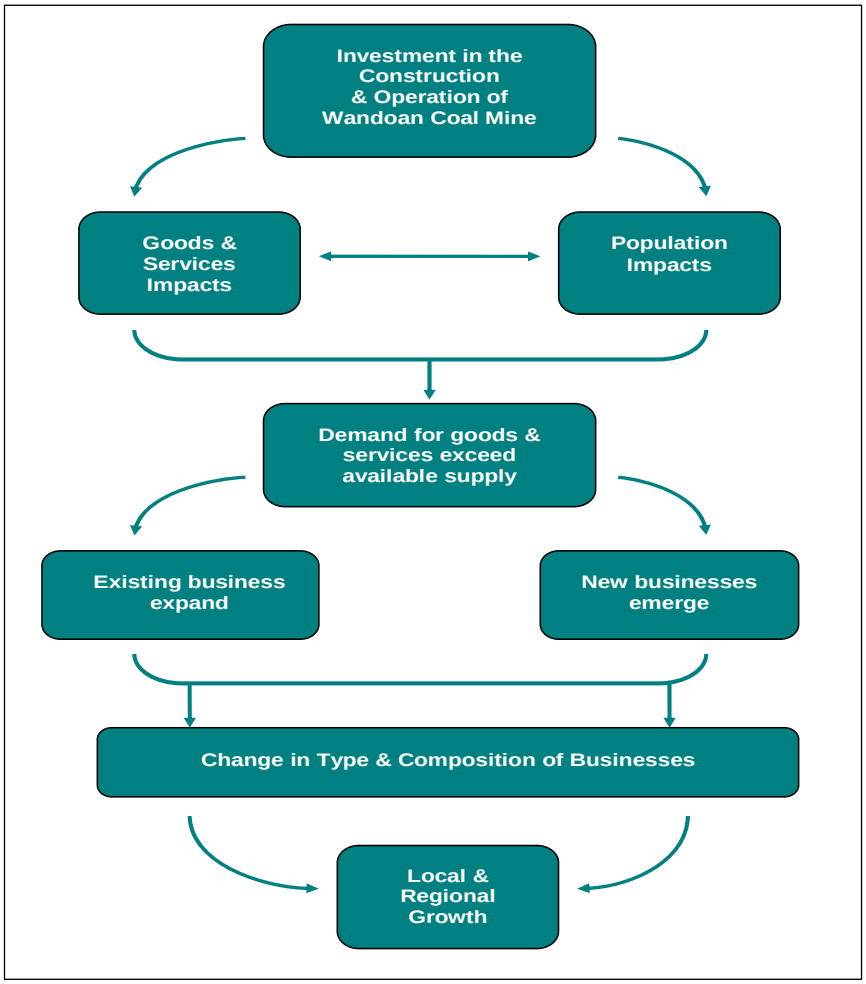


Figure 22-6: Implications of the Project for development in the locality

As shown in Figure 22-6, the increase in demand for goods and services afforded by the Project is likely to improve sales turnover for existing businesses within the Wandoan locality and the wider region more generally. However, the ability of existing business to meet increased demand is likely to exceed available supply as the market expands. New opportunities for entrepreneurs would therefore emerge to directly support coal production, and indirectly through supporting activities.

Inward investment into the region is therefore expected to result as new businesses are established to meet growing demand. As a result of this growth, businesses would most likely respond by changing the type and composition of their business type to better meet consumer choices and preferences. Taken together, these effects and resulting change would lead to local and regional growth, as businesses and industries adjust to cater for the Project and associated needs.

In summary, the increase demand for goods and services would facilitate the development of the locality in terms of encouraging:

- greater private sector investment in the Wandoan locality and region more generally as new and emerging businesses seek to supply the increase in demand for goods and services resulting from the Project

- an increase in the number and type of businesses across new and existing development areas, reflecting increased demand for goods and services
- competition across new and existing development areas, reflecting growth in business activities, business expansion and new start-ups
- greater profitability across new and existing development areas, reflecting increased commerce and demand for goods and services.

It should be noted that a likely consequence of this economic growth will be higher property values and rents for local and regional businesses, reflecting growth in the demand for real property as a result of the rising population, income and business activity. The negative impacts in terms of increased rents should be offset, however, by the higher local employment and incomes.

22.6.5 IMPLICATIONS FOR BUSINESSES AND INDUSTRIES

The Project is expected to change the underlying economic base and industrial structure of the Wandoan locality by developing businesses and industries that directly and indirectly support the construction and operation of coal mining activities. The key driver of this underlying change relates to the increase in demand for goods and services and population growth resulting from increased employment opportunities.

At a high level, the types of businesses expected to benefit directly, based on the OESR's (2004) Input-Output industry classification, are:

- for construction: additional economic activity and employment in:
  - non-residential building construction
  - non-building construction and
  - construction trade services.
- for operation: additional economic activity and employment in coal mining activities.

The types of businesses most likely to be affected indirectly for both construction and operation of the coal mine are:

- additional economic activity and employment in:
  - electricity supply, gas and water
  - residential building construction
  - accommodation, cafes, and restaurants
  - wholesale and retail trade
  - machinery, appliances and equipment
  - road transport
  - rail and pipeline transport
  - services to transport
  - communication services
  - finance, property and business services
  - residential property operators
  - education services
  - health and community services

- cultural and recreational services.

As the existing economic environment in the Wandoan locality is mainly agricultural orientated, there is a possibility that the existing workforce and industrial activities in the wider region shifts towards coal mining activities. While the change in industry orientation is highly likely to be offset by mining associated activities, to address the potential impacts and the constraints identified in section 22.5.4, as part of a range of measures outlined within Chapter 21 Social, the WJV has committed to:

- develop, in cooperation with relevant government agencies, a local employment and training policy, particularly in relation to provision of apprenticeships/ traineeships for local youth and the school-based training through partnerships with local schools and training institutions
- a skills audit will be undertaken by the WJV within the local communities to provide an understanding of the range of skills and experience available locally and to determine where training opportunities could be directed. This may be carried out in conjunction with relevant government departments, such as the Department of Education, Training and the Arts
- implement a tendering process for Project construction and operation supplies and services to encourage participation by local business
- develop a Business and Employment Register to enable local and regional firms and interested persons to be included on a Project information database
- encourage the development of business and service provider support networks.

These initiatives will be monitored through the proposed Social Involvement Plan (refer Chapter 21 Social).

Also, under the Queensland Government Sustainable Resource Communities Policy (September 2008), the Queensland Government has indicated that it will be strengthening its coordination role in resource communities that may be undergoing rapid development by assisting in Social Impact Plan negotiations and implementation. In particular, the Policy provides that the Queensland Government will foster partnerships with local government, industry and local communities by establishing a Partnership Group within local government, establishing local Leadership Groups to focus on regional planning issues and key projects that will address cumulative or regional issues arising from resource development and undertaken research into best practice. The WJV fully supports the proposed initiatives, which are consistent with the Social Impact Assessment undertaken for the Project. In addition to the already established Community Reference Group, the WJV will support the establishment of any forum in the region that seeks to negotiate local Social Impact Plans or deals with local or regional issues arising from resource development.

22.7 CONCLUSION

The development of the Project is expected to provide significant and on-going economic benefits to the region, State and nation. Specifically, the total flow-on benefits (direct, indirect, induced) resulting from the initial expenditure undertaken during the construction is estimated to be:

- **Regional**: on average, the total flow-on affect is expected to contribute between $10 million and $14 million per annum in revenues associated with goods and services produced. This is expected to support between 159 and 212 jobs per annum.
- **State**: on average, the total flow-on affect is expected to contribute between $193 million and $241 million per annum in revenues associated with goods and services produced. This is expected to support approximately 884 and 1,178 jobs per annum.
- **National**: on average, the total flow-on affect is expected to contribute between $63 million and $79 million per annum in revenues associated with goods and services produced. This is expected to support between 290 and 385 jobs per annum.

During operations, the total flow-on economic benefits (direct, indirect, and induced) are estimated to be:

- **Regional**: on average, the total flow-on affect is expected to contribute between $13 million and $16 million per annum in revenues associated with goods and services produced. This is expected to support between 151 and 202 jobs per annum.
- **State**: on average, the total flow-on affect is expected to contribute between $269 million and $336 million per annum in revenues associated with goods and services produced. This is expected to support approximately 1,266 and 1,704 jobs per annum.
- **National**: on average, the total flow-on affect is expected to contribute between $31 million and $39 million per annum in revenues associated with goods and services produced. This is expected to support between 142 and 192 jobs per annum.

The Project is also likely to provide:

- approximately $3.7 billion in royalty payments over the 30 year operation of the mine
- annual rate contributions to Dalby Regional Council
- approximately $500 million per year in rail and port charges
- greater private sector investment in the Wandoan locality and region more generally as new and emerging businesses seek to supply the increase in demand for goods and services resulting from the Project
- an increase in the number and type of businesses across new and existing development areas, reflecting increased demand for goods and services
- competition across new and existing development areas, reflecting growth in business activities, business expansion and new start-ups
- greater profitability across new and existing development areas, reflecting increased commerce and demand for goods and services.

Overall, the net change in industrial orientation resulting from the investment in the Project is expected to increase the level of economic activity for regional, state and national economies. This in turn is expected to lead to improved prosperity as incomes, employment and demand for goods and services increases during the life of the Project.

22.8 REFERENCES

Australian Bureau of Statistics (2008a), *National Regional Profile, Taroom (S), Chinchilla (S), Murilla (S) and Banana (S), 2002 to 2006*, 1379.0.55.001, Australian Government.

Australian Bureau of Statistics (2006), *2006 Quickstats: Wandoan (L), Wandoan (S), Taroom (S), Chinchilla (S), Murilla (S) and Banana (S), Queensland, Australia*, Australian Government.

Australian Bureau of Statistics (2002), *Australian Year Book 2002*, Australian Government.

Australian Bureau of Statistics (1995), *Information Paper Australian National Accounts – Introduction to Input-Output Multipliers*, Cat No. 5246.0, Australian Government.

Australian Property Monitors (2008), Wandoan Median House Price, accessed on 1 October 2008 at http://www.apm.com.au/

Office of the Government Statistician (2008), *Local Government Area Profile: The Taroom (S) Region*, *The Banana (S) Region, The Murilla (S) Region and the Chinchilla (S) Region* September 2008.

OESR (2005), Queensland Regional Profiles 2004 – Darling Downs Statistical Division, Office of Economic and Statistical Research, Queensland Government.

OESR (2004), *Queensland Regional Input-Output Tables*, Queensland Government.

West, G.R. (1999), *Notes on some common misconceptions in input-output impact methodology*, Department of Economics, The University of Queensland.