

22 ECONOMICS

22.1 INTRODUCTION

This chapter provides an assessment of the economic contributions of the Project in comparison with the existing level of agriculture activity continuing at the Project site. This assessment has been undertaken using two approaches:

- comparing the estimated economic contribution of the Wandoan Coal Project with an indicative estimation of the likely economic contribution of continuing the existing agriculture activities, discussed in section 22.5.5
- valuing the agriculture productivity capacity of the MLA areas in scenarios with and without the Project, discussed in section 22.5.6.

This assessment was based in the Supplementary EIS mine plan and schedule. Further detailed information relating to agricultural productivity is available in technical reports STR 22-1-SV1.5 Economic Evaluation for Agricultural under Mining Lease, and STR 22-2-SV1.5 Economic Contribution of Agricultural Grazing Entities in Project Area.

22.2 ASSESSMENT APPROACH

22.3 EXISTING ECONOMIC DEVELOPMENT

22.4 ECONOMIC PROFILE OF PROJECT

22.5 POTENTIAL ECONOMICS BENEFITS

As stated in the EIS, Volume 1, Chapter 22 Economics, section 22.5, 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 and operation phases are expected to be as shown in Tables 22-1 and 22-1 respectively, summarised from Table 22-10 and 22-11 of the EIS, Chapter 22 Economics.

Table 22-1: Average economic contribution during construction

Impact type	Value added/output (\$m)		Employment (Full time equivalents)	
	Lower	Upper	Lower	Upper
REGIONAL (direct, indirect and induced)	10	14	159	212
STATE (direct, indirect and induced)	193	241	884	1,178
NATIONAL (direct, indirect and induced)	63	79	290	385
Total	266	334	1,333	1,775

Source: PB estimates

Table 22-2: Average annual economic contribution during operation

Impact type	Value added/output (\$m)		Employment (Full time equivalents)	
	Lower	Upper	Lower	Upper
REGIONAL (direct, indirect and induced)	13	16	151	202
STATE (direct, indirect and induced)	269	336	1,266	1,704
NATIONAL (direct, indirect and induced)	31	39	142	192
Total	313	391	1,559	2,098

Source: PB estimates

As shown in Tables 22-1 and 22-2, at the regional level, construction of the Project is estimated to contribute between \$10 and \$14 million in economic activity throughout the construction period, while during operation the Project is estimated to contribute between \$13 and \$16 million per annum in economic activity. This is expected to support between 159 and 212 direct and indirect full-time equivalent jobs in the region during construction and between 151 and 202 full-time equivalent jobs during operation annually.

Further to the regional contribution, at the state and national levels, the Project is expected to contribute in total between \$256 and \$320 million to the economy during construction and between \$300 and \$375 million per annum during operation, contributing a significant number of full-time equivalent jobs annually.

Over the whole construction and operational phase of the mine, the Project will contribute a total of between approximately \$9.7 billion and \$12.0 billion to the regional, State and National economies.

22.5.5 ECONOMIC CONTRIBUTION OF GRAZING ENTERPRISES

As was discussed in the EIS Volume 1, Chapter 22 Economics, section 22.3.2, the economy base of the region is currently dominated by the agricultural sector. The anticipated economic contribution of agricultural grazing enterprises is derived from the estimated level of recurring capital expenditure and operational expenditure being undertaken by producers in the region. Technical Report STR 22-2-SV1.5 Economic Contribution of Agricultural Grazing Entities in Project Area has assessed the expected annual economic contribution of the grazing enterprises in the MLA areas, with the results summarised in Table 22-3. The estimates are representative of the total economic contribution of enterprises inclusive of direct, indirect and induced economic activity and employment. It must be noted that these estimates are subject to data limitations and assumptions used to evaluate the economic contribution as documented in the section 1.2.2 of Technical Report STR 22-2-SV1.5 Economic Contribution of Agricultural Grazing Entities in Project Area.

Table 22-3: Potential economic contribution of the grazing enterprises in the MLA areas (per annum)

Impact type	Units	Grazing enterprises recurrent capital contribution		Grazing enterprises Operational contribution	
		Lower	Upper	Lower	Upper
REGIONAL					
Value Added	\$m	0.6	0.8	3	6
Employment	no.	9	11	60	75
QUEENSLAND					
Output	\$m	0.1	0.2	0.4	0.5
Employment	no.	0.9	1.1	3.0	4.0
NATIONAL					
Output	\$m	0.1	0.1	0.4	0.5
Employment	no.	0.4	0.6	2.0	3.0

Impact type	Units	Grazing enterprises recurrent capital contribution		Grazing enterprises Operational contribution	
		Lower	Upper	Lower	Upper
TOTAL					
Output	\$m	0.8	1.1	3.8	7
Employment	no.	10.3	12.7	60	82

Source: PB estimates.

As shown in Table 22-3, at the regional level, grazing enterprises are estimated to contribute between \$3.6 and \$6.8 million per annum in economic activity, resulting directly and indirectly from the recurrent capital and operating expenditure being undertaken. This is expected to support between 69 and 86 direct and indirect full-time equivalent jobs in the region.

Further to the regional contribution, at the state and national levels, the grazing enterprises are expected to contribute in total between \$1 and \$1.3 million in revenues associated with the production of goods and services. This is expected to support between 6 and 9 full-time equivalent jobs.

Therefore, the total economic contribution of the grazing enterprises in the MLA areas (regional, State and national) is estimated at between \$4.6 and \$8.1 million per annum, supporting between 75.3 and 94.7 direct and indirect full-time equivalent jobs respectively.

Over 30 years the agriculture production in the Project area, in the absence of the mine, would contribute a total of between \$138 and \$243 million to the regional, State and national economies.

22.5.6 AGRICULTURAL ASSESSMENT OF MLA AREAS

Agricultural production

The value of agricultural production of the MLA areas has been assessed in relation to beef cattle grazing. Cropping was excluded from this assessment on the basis that the main land use in the MLA areas is grazing. However, it is recognised that some cropping does occur for feedlots and cattle fodder. Details of the methodology of the assessment are contained in the Supplementary EIS, Volume 1, Chapter 9 Geology, Mineral Resources, Overburden and Soils. Further to the details provided in Chapter 9, the Technical Report STR 22-1-SV1.5 Wandoan Coal Project Economic Evaluation for Agriculture Under Mining Lease has assessed the economic productivity of the MLA areas under beef production. The study assesses the value of the economic contribution from agriculture under scenarios with and without the mine. For comparison purposes, the study assesses the scenarios over a 36 year period to allow a period of time for grazing to return to full capacity following the completion of mining. It is important to note that assumptions have been made for several key variables in this study, as detailed in Technical Report STR 22-1-SV1.5 Wandoan Coal Project Economic Evaluation for Agriculture Under Mining Lease.

Carrying capacity

The average base level weight gain of cattle in the MLA areas has been estimated as 0.65 kg/head/day, based on the average of a range of reported performance data (0.45 to 0.75) from trials within the area (Taylor K, pers comm. March 2009). This base level weight gain also correlates with other published data for Central Queensland areas (Cook 2000, Hasker 2000).

Market trends for red meat are difficult to predict. For the purpose of the Supplementary EIS, an assumption about the price per kilogram of beef has been made, based on the average price paid over the last five years for an adult male animal of between 400 to 500 kg (ABARE, 2008), being \$1.75 per kilogram.

Sensitivity analysis for variation in the average weight gain and beef price is contained in Technical Report STR22-1-SV1.5 Wandoan Coal Project Economic Evaluation for Agriculture Under Mining Lease.

Scenario 1 Agricultural production without the mine

Scenario 1 is based on the scenario that the mine does not occur, and grazing continues over the MLA areas for the next 36 years. As presented in Table 22-4, over the next 36 years the MLA areas, without mining development, would be expected to sustainably produce 2,765,735 kg of beef per annum calculated gross profit of just over \$4.8M, which over 36 years equates to 99,566,460 kg of beef at a gross value of just over \$174 million.

Table 22-4: Summary of grazing production of the MLA area without mining

	Units	
Carrying Capacity	(ha/head, annual equivalent)	2.8
Area Assessed	(ha)	32,182
No of Head/Area	(head)	11,657
Weight gain per year	(kg/head/year)	237
Beef production per year	(kg/year)	2,765,735
Beef production over 36 years	(kg/36 years)	99,566,460
Gross profit per year	(\$/year)	\$4,840,037
Gross profit over 36 years	(\$/36 years)	\$174,241,332

Scenario 2 Agricultural production with the mine, without decommissioning

This assessment does not fully account for the progressive rehabilitation and release of land for agricultural production, but is based on static snapshots due to complexity in assessing rehabilitation between the snapshot years. However this assessment provides an indication of the agricultural production potential of the land during mine operations, being that cattle grazing will be undertaken during mining operations. Further information on the agricultural assessment of this carrying capacity is contained in Chapter 9 Geology, Mineral Resources, Overburden and Soils, and Technical Report STR 22-1-SV1.5 Wandoan Coal Project Economic Evaluation for Agricultural under Mining Lease.

Table 22-5 illustrates economic grazing potential over the initial 30 year lease period. In this scenario mining is proposed to continue beyond Year 30 (under a new approval). Areas that are available to be rehabilitated at Year 30, and cattle grazing will take four years to reach full grazing capacity (end Year 34). To assist with uniformity and comparison of the three scenarios, total grazing production has been continued for another 2 years which bring the total assessment period to 36 years.

Table 22-5: Summary of grazing production during mining without decommissioning

Year of operation	Average area per annum available for agriculture (ha)	Average carrying capacity per annum (head/MLA area, annual equivalent)	Average Annual beef production (kg/year)	Number of years	Gross value (\$)
Year 1 to 4	23,224	8,181	1,938,897	4	\$13,572,280
Year 5 to 9	23,244	8,181	1,938,897	5	\$16,965,350
Year 10 to 19	20,172	6,961	1,649,757	10	\$28,870,750
Year 20 to 29	16,905	5923	1,403,751	10 (6*)	\$24,299,899
Year 30 to 34	20,465	6739	1,597,143	5 (1*)	\$12,773,993
Year 34 to 36	20,465	6739	1,597,143	2	\$5,590,002
Year 1 to 36				36	\$102,072,274

* Note – These figures represent the number of years at full production for the area stated during this time period

As shown in Table 22-5, in Scenario 2, with mining continuing beyond Year 30 (under a new approval), the MLA areas are estimated to have a total agricultural economic productivity of approximately \$102 million over the 36 years of assessment, compared to \$174 million without mining (refer Table 22-1). Scenario 2 will result in an estimated reduction in agricultural economic productivity of \$72 million, or a 41% reduction in production throughout the operational period of the mine.

Scenario 3 Agricultural production with the mine, with decommissioning

Scenario 3 proposes mining to cease at Year 30 and a final landform has been prepared to represent how the landscape would be rehabilitated. For the purposes of this assessment the final landform has been assumed

to represent Year 32 with return to full grazing production taking an additional four years, therefore this assessment is based on a 36 year grazing production period.

Again, this assessment does not fully account for the progressive rehabilitation and release of land for agricultural production as discussed in Scenario 2 above. Further information on the agricultural assessment of this carrying capacity is contained in Chapter 9 Geology, Mineral Resources, Overburden and Soils, and Technical Report STR22-1-SV1.5 Wandoan Coal Project Economic Evaluation for Agricultural under Mining Lease.

Table 22-6: Summary of grazing production during mining with decommissioning

Year of operation	Average area per annum (ha)	Average carrying capacity per annum (head/MLA area, annual equivalent)	Annual beef production (kg/year)	Number of years	Gross value (\$)
Year 1 to 4	23,224	8,181	1,938,897	4	\$13,572,280
Year 5 to 9	23,244	8,181	1,938,897	5	\$16,965,350
Year 10 to 19	20,172	6,961	1,649,757	10	\$28,870,750
Year 20 to 31	16,905	5923	1,403,751	12 (8*)	\$29,213,029
Year 32 to 36	32,182	10,428	2,471,436	5 (1*)	\$18,345,951
Year 1 to 36				36	\$106,967,360

* Note – These figures represent the number of years at full production for the area stated during this time period

As shown in Table 22-6, in Scenario 3, with rehabilitation occurring at the conclusion of mining in Year 30, the MLA areas are estimated of having a total agricultural economic productivity of approximately \$107 million over the 36 years of assessment, compared to \$174 million without mining (refer Table 22-1). Scenario 3 will result in an estimated reduction in agricultural economic productivity of \$67 million, or a 39% reduction in production throughout the operational period of the mine.

Post mining carrying capacity

As shown in Table 22-7, the post-mining landscape was assessed as having a sustainable grazing productivity of approximately \$4.3 million per annum, compared to \$4.8 million per annum for the pre-mining landscape (refer Table 22-1). The post Project landform will therefore have a reduced agricultural production capacity of approximately \$500,000 per annum or 11% reduced productivity. For definitions of A, B, C and D Land Type and Land Condition, refer to Chapter 9 Geology, Mineral Resources, Overburden and Soils, section 9.3.9.

Table 22-7: Summary of grazing production of the MLA area after mining is complete

	Units	Rehabilitated gentle slopes	Rehabilitated steeper slopes	Unmined land	Total
Land Type	(A, B, C, D)	B	B	A, B, C, D	
Land Condition	(A, B, C, D)	B	D	B	
Carrying Capacity	(ha/head, annual equivalent)	2.8	10.2	2.9	
Area Assessed	(ha)	7,734	3,404	21,044	32,184
No of Head/Area	(head)	2,775	333	7,320	10,428
Weight gain per year	(kg/head/year)	237	237	237	237
Beef production per year	(kg/year)	657,675	78,921	1,734,840	2,471,436
Gross profit per year	(\$/year)	\$1,150,931	\$138,112	\$3,035,970	\$4,325,013

22.6 OTHER ECONOMIC BENEFITS

22.6.4 BENEFITS IN THE LOCALITY

As discussed in the EIS, Volume 1, Chapter 22 Economics section 22.5.1, at a regional level, during construction the Project will contribute between \$10 and \$14 million, and between 159 and 212 full time equivalent positions in the region (direct, indirect and induced). During operation the Project will contribute between \$13 and \$16 million per annum, and between 151 and 202 full time equivalent positions to the regional economy.

In comparison, as shown in Table 22-3, grazing enterprises in the MLA areas are estimated to currently contribute between \$3.6 and \$6.8 million per annum, and between 69 and 86 full time equivalent positions in the region (direct, indirect and induced) to the regional economy.

22.6.5 IMPLICATIONS FOR BUSINESS AND INDUSTRIES

Following submissions on the EIS, to clarify, as stated in the EIS Volume 1, Chapter 22 Economics, section 22.6.5, the WJV will implement a tendering process for the Project construction and operation supplies and services to encourage participation by local business.

The WJV has also set-up a Business and Employment Register to enable local and regional firms and interested persons to be included on the Project information database, with businesses and individuals already becoming listed since the release of the EIS. This list is also provided to the WJV major contractors so they can request quotes and sub-contract work to local businesses. Part of the WJV tender process for major contractors requires a commitment by them to purchase goods and services locally, where commercially viable.

The above commitments will initially increase demand for goods and services for existing businesses within the Wandoan locality and the wider region. However flow-on benefits for the region include greater private sector investment, an increase in the number and types of businesses, enhanced competition between businesses and greater profitability. All of these benefits are discussed in detail in the EIS Volume 1, Chapter 22 Economics, section 22.6.4.

22.7 CONCLUSIONS

While recognising its historical economic importance to the region, a comparison of the economic implications of mining relative to agriculture has shown that mining in the MLA areas will have significantly higher economic value compared to agriculture.

The development of the Project is expected to provide significant and on-going economic benefits between approximately \$9.7 billion and \$12.0 billion to the regional, State and national economies over the construction and 30 year operational period. Where as, in the absence of the mine, the economic contribution of the existing agriculture enterprises over the next 30 years is between \$138 and \$243 million to the regional, State and national economies.

Agricultural production capability will not be fully reduced under the Project. Grazing activities are proposed to continue during the operational phase of the mine, with an approximately 40% reduction or approximately between \$67 and \$72 million in agricultural productivity across the MLA areas during 36 years of mining operations. Land will be rehabilitated to a cattle grazing post-mining land use, and compared to pre-mining productivity, will only experience about an 11% decrease in productivity or \$500,000 per annum across the MLA areas.

22.8 REFERENCES