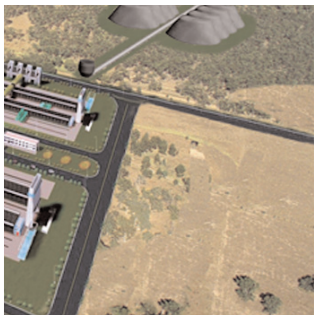
13 Economic Environment





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Summary

The likely direct and indirect economic impact of the construction and operation of the Project was measured on the local (the Rockhampton Region), regional (the Fitzroy Statistical Division) and State (Queensland) levels, by Central Queensland University (CQU) (Appendix K). Overall, the direct and indirect economic impacts of both the construction and operational stages of the Project will be large and positive reflecting the opportunities available to the relevant communities and economies to generate flow-on effects. There will also be further positive impacts on national and international economies.

The direct economic impacts of the construction stage of the Project at the local, regional and state level will be large and positive due to the:

- Level of capital expenditure involved ($1.77 billion (B))[1];
- Number of construction jobs created (an average of 1,200 jobs in Year 1);
- Length of the construction period (four years). Due to labour shortages in the region it is possible that the construction period will be extended to 5 years ; and
- Demand for supplies and services from local businesses.

The direct economic impacts of the operating stage of the Project at the local, regional and state level will be large and positive, due to the:

- Level of annual revenue involved (approximately $798 million (M) per year);
- Level of annual operating expenditure involved ($493 M per year);
- Number of operating jobs created (up to 145 new positions); and
- Payment of taxes, dividends and profits.

The direct impact of the Project will also stimulate a range of flow-on effects in the local, regional and state economies. These have been estimated using Input-Output Analysis to predict the full range of initial, direct, indirect and induced economic impacts from the Project on resource sectors, to provide an assessment of the total economic impacts. In the first (and largest) year of construction, the total impact in the Fitzroy region is expected to be $1,403 M of output, $171 M of income, and an additional 4,256 jobs created. At the state level, the total impacts of the first year of construction are expected to be $1,903 M of output, $377 M of income, and an additional 7,216 jobs created. When the Project is operational, the total impact for the Rockhampton region is expected to be $994 M of output per year, $55 M of income per year, and 1,143 jobs. The total impact on the Fitzroy region is expected to be $1,678 M in output per

[1] Capital expenditure included here for the Power Plant has only been based on steam available from a 1.6 Mtpa Coke Plant. However, the capital expenditure for the Coke Plant has been based on a 3.2 Mtpa Coke Plant.

year, $160 M in income per year, and an additional 2,739 jobs. The total impacts on Queensland are expected to be $1,974 M in output per year, $235 M in income per year and an additional 4,639 jobs.

13.1 Description of Environmental Values

Economic impact assessment is used to identify the impact a project may have on different groups in society. This section of the EIS estimates direct and indirect impact of the Queensland Coke and Power Plant Project (the Project) on local, regional and state economies. The economic impacts of the Project are measured on three levels: the Rockhampton Region (including four local authority areas of Fitzroy, Livingstone, Mount Morgan and Rockhampton); the Fitzroy Statistical Division; and the State of Queensland.

As discussed in Section 1 – Introduction, QCE is a subsidiary of Macarthur Coal Limited who proposes to finance the coke component of the Project using a mix of Project and corporate debt, equity, and surplus cashflow. Financing would be based on securing long term off-take contracts with coke users such as steel mills in Europe, Asia and the Americas. It is expected that Stanwell Corporation Limited would fund the power plant component on balance sheet.

This section described the existing environmental values that may experience an economic impact due to the Project. Many of these values are discussed in detail in Section 12 – Social Environment and Appendix K and reference is made to those sections where appropriate. The economic impacts of the Project have been assessed below for the construction and operational phases of the Coke Plant and Power Plant.

13.1.1 Overview of the Region

Rockhampton is the regional hub of central Queensland, with Gladstone and Emerald also being important centres. Agriculture, mining and tourism are primary export earners for the region, with some processing to provide value adding. Rockhampton is a central hub for service industries, as well as providing important transport and education facilities. Despite the growth in agriculture and mining industries in the region, Rockhampton has not grown as fast in recent decades as other regional centres in Queensland. Since 2004, substantial investment coupled with increases in coal production has generated improvements in employment and economic conditions in the Rockhampton region. Queensland's coal production is predicted to increase significantly over the next decade, and regional Queensland is expected to benefit from substantial increases in regional income, output and employment. With the bulk of Queensland's export coal coming from Central Queensland's Bowen Basin, Rockhampton and the Central Queensland region is well positioned to benefit from this growth.

Whilst rapid growth provides economic opportunities, efficient planning is necessary to ensure that the region's infrastructure and service industry providers are appropriately equipped to facilitate this growth. Economic benefits accrue both directly and indirectly. Direct impacts are realised through employment and purchase of goods and services from local businesses. Indirect benefits result through the flow-on effects of an increase in spending and employment. Rapid industry growth has created a number of

associated adjustment problems for the region, including shortages in the skilled labour market, congestion of rail and port infrastructure, and management of the environmental and social impacts associated with rapid industry growth.

A description of the value of ecosystem services provided by natural or modified ecosystems to be disturbed or removed during development is provided in Section 3 – Land Characteristics and Section 6 – Nature Conservation.

13.1.2 Labour Skills and Utilisation

As discussed in Section 12 - Social Environment, the labour utilisation indicator measures how well the region is utilising the total available workforce hours in the region, and measures the total hours of paid work provided by the population. A low rate reflects lower levels of total income and spending within the region which will constrain local economic growth. In contrast to the national average of 59.4%, the labour utilisation is very high for the Fitzroy region (i.e. Banana, Bauhinia, Calliope, Duaringa, Emerald, Fitzroy, Gladstone, Jericho, Livingstone, Mt Morgan, Peak Downs and Rockhampton) at 62.3% and is ranked 14th out of 64 in Australia. This indicates that there is limited potential to source additional labour.

A significant skill shortage has been identified as an existing issue for the region, largely due to the increase in mining activity in the Bowen Basin. An increase in the labour force across three of the four Local Government Areas (LGAs) has been met with a corresponding decrease in unemployment, consistent with the shortage of skilled labour that presently exists in the region (Section 12 – Social Environment).

At the time of the 2001 Census (Australian Bureau of Statistics (ABS), 2002), intermediate clerical, sales and service workers were the largest group of employed persons in the Fitzroy region (6,857 persons or 17.5% of employed persons). Other occupations with relatively large numbers of employed persons included professionals (5,900 persons or 15.1%), tradespersons and related workers (5,221 persons or 13.3%) and labourers and related workers (4,833 persons or 12.3%). The highest degree of specialisation in the region occurred in the labourers and related workers and tradespersons and related workers occupations. Of persons employed in that region, 12.3% were employed in the labourers and related workers occupation compared with 9.7% for Queensland. The proportion of persons employed in the tradespersons and related workers occupation was 13.3% while the proportion for Queensland was 12.8% (Section 12 – Social Environment).

13.1.3 Income and Household Prosperity Potential

The distribution of weekly income in the Rockhampton region shows a higher than average number of people on very low incomes, especially in the $1-$299 per week groupings. There are also a significant proportion of households in the region with negative or nil income (5.5% compared to the State average of 0.8%) (Section 12 – Social Environment). Household prosperity potential is a forward looking measure that attempts to gauge an area's economic growth potential based on socio-demographic features. The level and type of skills within an economy influences employment and income growth prospects, which

are key determinants of household growth. Poor workforce skills undermine future household growth by limiting potential for earnings growth. The household prosperity potential value for Fitzroy region is 72%, which is below the national average of 100%. The region is ranked 41st out of 64 in Australia.

13.1.4 Knowledge Intensity

As knowledge intensity of economic activity increases, superior economic outcomes at the regional level are generated. To support knowledge intensive industries, there must be an adequate supply of requisite skills and smooth knowledge flows. A region needs access to certain types of skills in order to support the proliferation of high growth and value-adding industries. The number and type of skills available within a region will define a region's capacity to support particular industries and consequently its outlook for economic growth.

The knowledge flow indicator is the proportion of workers identified as global knowledge flow workers out of the entire workforce. These workers have occupational skills associated with information technology, international business and innovation in finance, design, marketing and production. A high indicator signifies a region's connectedness to global flows of knowledge and its innovative capacity. The Fitzroy region is ranked 40th out of 64 in Australia at 6.9%, which is lower than the national average of 12.9%.

The knowledge driven growth potential factor measures the ratio of occupations that use codified systems to process information used to inform decisions to routine workers (low skilled occupations). The higher the ratio, the more secure the employment prospects of the workforce and regional growth. The Fitzroy region has a knowledge driven growth potential value of 0.45 which is lower than the national average of 0.67. The region is ranked 44th out of 64 regions in Australia.

13.1.5 Unemployment

The Rockhampton region registered an unemployment rate of 9.11% in the 2001 Census (ABS, 2002). This was 0.9% higher than the level for Queensland. Rockhampton City, the largest population centre in the region, had a slightly higher rate (9.3%). Livingstone and Gladstone LGAs were also slightly higher than the State level, while Fitzroy and Calliope LGAs were significantly lower at 7.0% and 7.7% respectively.

13.1.6 Housing

A review of the Rockhampton and surrounding LGAs housing and rental markets indicates a tightening market in 2004/2005 not too dissimilar to the rest of Queensland. For the December quarter of 2004, the vacancy rate for all types of residential rental accommodation in Queensland was 2.6% (OESR, 2004). The Rockhampton rental housing market is approaching capacity with an average vacancy rate of approximately 2.2%. Units and flats are slightly higher at 3% while housing is around 2%. The vacancy rate 12 months previous was 3.5% for houses and 6% for units as compared to 2.5% and 7% respectively

24 months previous. At the time of the survey (mid-2005), no rental properties were available in Gracemere and only one in Mount Morgan, indicating housing is already tight in these areas.

The rental market has also experienced moderate growth from March 2003 to March 2005 with the median rent on three bedroom housing increasing from $155 per week to $170 per week in Rockhampton (10% increase) and $170 per week to $185 along the Capricorn Coast (9%). The median rent on four bedroom houses increased from $200 per week to $240 per week (20% increase) in Rockhampton and from $220 to $240 per week along the Capricorn Coast. Whilst significant, these increases are still smaller than the increases experienced in Mackay and Brisbane.

In line with the housing boom across Australia, house prices within the project area have substantially increased from 2000 to 2004. The level of increases ranges from 40% in the Rockhampton and Fitzroy LGAs to 72% in the LGA of Mount Morgan. In Rockhampton and Fitzroy Shires, the single largest annual increase in median sale prices for housing (21% and 14% respectively) occurred in 2004, and house price increases are more modest, suggesting that the demand for housing in Rockhampton may not yet have peaked.

Demographic factors that influence economic impact are discussed further in Section 12 – Social Environment and Appendix K, as are the impact of the Project on the housing market and availability, availability of services, occupational skill groups required and potential skill shortages anticipated, and discussion of the effects of other developments including the failed AMC project. Discussion of land availability for industrial purposes in the project area is found in Section 3 – Land Characteristics.

13.2 Potential Impacts and Mitigation Measures

13.2.1 Background

As detailed in Section 3 - Land Characteristics, the Project is to be constructed on land set aside for industrial development and, although some of this area is currently vegetated, the proposed land use is compatible with the land's zoning. The Project will impose limited constraints on the future use or property values of land in the Stanwell area. The majority of the area proposed for the Project has been cleared for previously proposed industrial development. The area is recognised as representing a major regional opportunity for large scale industry and is considered to be generally consistent with future intentions for development in the area. The Fisherman's Landing wharf development is compatible with the Local Authority and Port Authority development plans for the locality and the Port of Gladstone.

The demand on State and Local Government to provide additional support infrastructure for the development of the Project is outlined in Section 12 - Social Environment and Section 14 - Transport Infrastructure.

13.2.2 Direct Impacts

Construction Phase

The Project will involve a construction cost of approximately $1.77 B with expenditure in four key areas:

- Construction of the Coke Plant;
- Construction of the Power Plant;
- Construction of additional port facilities; and
- Construction of rail loop facilities.

The planned expenditure for the Coke Plant and Power Plant as an approximate in millions of dollars ($ M) is shown in Table 13.1.

Table 13.1 Planned Expenditure for the Coke Plant and Power Plant

Year	Coke Plant ($ M)	Power Plant ($ M)[2]
1	725	99
2	337	66
3	269	0
4	269	0
Total	**1,600**	**165**

The direct impacts of the construction phase on the local, regional and state economies depends on several factors, including the source and location of labour supplies, the extent to which work is subcontracted to local, regional and state businesses, and the proportion of materials and supplies that are sourced from those businesses.

In the project construction phase, only a limited proportion of labour is expected to be sourced locally due to the specialist nature of some construction activities and the restricted pool of available labour in the region. Therefore, a larger proportion of expenditure on labour is expected to flow to households elsewhere in Queensland and interstate, depending from where the labour is sourced. In addition, accommodating construction workers in a village layout will limit the economic impact of those workers on the local economy. There will be some direct stimulus for businesses providing food and cleaning services, but most disposable income will flow back to the area of residence. If the construction period extends beyond two years, then a higher proportion of construction workers are expected to settle in the Rockhampton area, which will generate a greater economic impact.

[2] Power Plant capital expenditure based on a 1.6 Mtpa Coke Plant.

The flow of income from construction will also depend to some extent on the capacity of businesses at the local, regional and State level to win contracts. If the construction activities are disaggregated into a number of smaller contracts, it will facilitate the involvement of smaller firms at the local and regional levels. If the construction contracts are large packages, then it is more likely that only firms at the state or national level will be capable of tendering for the services. It is anticipated that only a small proportion of materials and supplies for construction will be sourced from the local, regional or state level. Most materials for construction are likely to be imported, with much of the balance likely to come from interstate.

The construction stage is anticipated to occur over four years, with Stage 1 flowing into Stage 2. The extended time period of construction is likely to generate much larger local impacts than a shorter, intense period of construction. This is because there is more incentive for outside construction workers to relocate with their families to the area, there is more incentive for supply firms to establish and upgrade facilities in the local region, and local supply firms have a longer period to ramp up production and generate viable business operations.

The direct economic impacts of the construction stage of the Project at the local, regional and state level will be large and positive due to the:

- Level of capital expenditure involved ($1.77 B);
- Number of construction jobs created (an average of 1,200 jobs in Year 1);
- Length of the construction period (four years) Due to labour shortages in the region it is possible that the construction period will be extended to 5 years; and
- Demand for supplies and services from local businesses.

It should be noted that the economic impact assessment of the Power Plant was only based on a 1.6 Mtpa Coke Plant. It is estimated that the capital expenditure for a Power Plant based on a 3.2 Mtpa Coke Plant will be approximately twice the capital presented in Table 13.1 for the Power Plant. Therefore, it is expected that the economic benefits will be approximately twice those presented in this study.

Operational Phase

Total annual operating expense of the Project is expected to be $493 M. The greatest expense will be the purchase of coal for input into the coke process, with transport, labour services and manufacturing supplies being other key expenses. The total annual expenditure on labour services is expected to be $14 M, most of which will flow to the local region and the remaining expenditure is expected to flow to businesses within the region and state. There will also be additional income flows for taxes, profits and dividends, which will tend to accrue at the State and national levels.

While there will only be a limited number of jobs directly related to the operation of the Coke Plant and Power Plant, average salary levels will be high. The level of income and expenditure for both the Coke Plant and Power Plant will directly impact on economic activity at local, regional, state, national and

international levels. The direct economic impacts of the operating stage of the Project at the local, regional and state level will be large and positive, due to the:

- Level of annual revenue involved (approximately $798 M per year);
- Level of annual operating expenditure involved ($493 M per year);
- Number of operating jobs created (up to 145 new positions); and
- Payment of taxes, dividends and profits.

13.2.3 Regional Economic Impact Analysis

In general, economic impact analysis allows two key groups of predictions to be made about development activities in a particular region or area:

- The direct economic stimulus provided by the development (i.e. the amount of inputs, including labour, purchased from the local or regional economy); and
- The indirect economic stimulus provided by the development (i.e. the size and structure of the downstream effects in the local or regional economy).

Impacts were examined for the construction and operation stages of the Project, from a local (Rockhampton region), regional (Fitzroy Statistical Division) and state (Queensland) perspective. The proposed Coke Plant and Power Plant have been treated as separate developments in the analysis.

Input-Output Analysis

The direct impact of the Project will also stimulate a range of flow-on effects in the local, regional and state economies. These have been estimated using Input-Output Analysis to predict the full range of initial, direct, indirect and induced economic impacts from the Project on resource sectors, to provide an assessment of the total economic impacts. There are 11 sectors of the economy considered in the analysis:

- Agriculture, forestry and fishing;
- Coal, gas and oil mining;
- Other mining;
- Manufacturing;
- Electricity, gas and water;
- Building and construction;
- Finance;

- Transport and communication;
- Entertainment, recreation, community services and other services;
- Government administration, defence and education;
- Trade, accommodation and restaurants; and
- Households, other final demands and exports.

The primary input sectors are household (e.g. wages and salaries), other value-added, and imports. Input coefficients for the development of the Project were provided by the proponents or obtained as national coefficients from the ABS (2004).

The analysis of economic impact using Input-Output method has some limitations, which are outlined in Appendix K. These include the following:

- It is often difficult to get good quality primary data about initial impacts;
- A consistent relationship is assumed to exist between broad sectors, even though they might vary at the micro level; and
- The Input-Output tables are based on older macro-economic data, and may not accurately reflect new structural change in the economy.

Each of these limitations is applicable in this assessment, which means that the estimated model result should be treated with caution. The model predictions provide order-of-magnitude type estimates rather than definitive predictions about the impacts of the Project.

Construction Phase

Coke Plant

The total construction cost of the Coke Plant is estimated at $1.6 B, based on a 3.2 Mtpa Coke Plant. The period of construction is four years. All expenditure data provided represent inputs directly to the building and construction industry. An average construction year for the Coke Plant will involve a labour force of approximately 1,000 persons providing an estimated $135.2 M in wages and salaries. The skill requirements of workers are discussed in Section 12 – Social Environment and Appendix K. The apportionment of construction costs for the Coke Plant over time and across regions is presented in Table 13.2.

Power Plant

The total construction cost for the Power Plant was estimated at $165 M, with an expenditure of $99 M in the first year and $66 M in the second year, based on the steam available from the 1.6 Mtpa Coke Plant. The period of construction was taken as approximately 27 months. The average construction year will

involve a labor force of approximately 217 persons. All expenditure data provided represent inputs directly to the building and construction industry. The apportionment of construction costs over time for the Power Plant is presented in Table 13.3. The combined direct stimulus in 2004 dollars of the construction of the Coke Plant and Power Plant are summarised in Table 13.4.

Table 13.2 Apportionment of Construction Costs over Time for the Coke Plant

Year	Millions of Dollars ($ M)	Percentage of Total Expenditure (%)
1	725	45
2	337	21
3	269	17
4	269	17
Total	**1,600**	**100**

Table 13.3 Apportionment of Construction Costs over Time for the Power Plant

Year	Millions of Dollars ($ M)	Percentage of Total Expenditure (%)
1	99	60
2	66	40
3	0	0
4	0	0
Total	**165**	**100**

Table 13.4 Apportionment of Construction Costs over Time for Both Plants

Year	Millions of Dollars ($ M)	Percentage of Total Expenditure (%)
1	825	47.7
2	403	22.8
3	269	15.2
4	269	15.2
Total	**1,766**	**100**

Operational Phase

The value of coke was estimated using average producer prices over the past few years and projections and estimates provided by the proponents. In the case of electricity production, the nominal value of electricity to the State grid from Stanwell Power Station (SPS) at plant head was estimated at the average cost of the National Electricity Market in 2004. The annual value of output of the Project at full capacity was calculated as $747 M for the Coke Plant and $50 M for the Power Plant. The number of employees associated with the operating stage at full capacity is expected to be 122 for the Coke Plant and 23 for the Power Plant. The total cost of salaries and wages associated with each development was estimated using

an average wage, including all on-costs, of $120,000 per employee. Wages and salaries are estimated to be $15 M per year for the Coke Plant and $2.4 M per year for the Power Plant.

13.2.4 Predicted Regional Flow-on Effects

The detail of the economic impact of the construction and operational phases of the Project is provided in Appendix K and summarised below.

Construction Phase – Coke and Power Plants

Output Effects

Each dollar invested in the construction of the Coke Plant and Power Plant can be expected to produce a direct effect of $0.30 on the output of other intermediate sectors for industries in Fitzroy region and Queensland. The total (initial, direct, indirect and induced) impact of each dollar invested is expected to be $1.70 in the Fitzroy region and $2.31 in Queensland, resulting in additional $0.70 in output of industries in the Fitzroy region and $1.31 in additional output in Queensland.

Income Effects

Each dollar invested in the construction of the Coke Plant and Power Plant in the first year would initially increase household income in the Fitzroy region and Queensland through payments to the construction workforce of $0.06 and $0.17 respectively. For each dollar change in household income of construction employees, there will occur at the Fitzroy region and Queensland a change of $2.50 and $1.68 respectively (direct and indirect only) and $3.27 and $2.70 respectively (direct, indirect and induced effects).

Employment Effects

Each $10 M invested in the construction stage of the Coke Plant and Power Plant would directly result in employment of 15 persons in each of the Fitzroy region and Queensland in both the initial and direct impact stages, 10 and 44 persons through indirect industrial support in the Fitzroy region and Queensland respectively, and 13 and 44 persons from the induced effect in the Fitzroy region and Queensland respectively. This gives a total possible employment effect of 52 persons in the Fitzroy region and 88 persons in Queensland for each $10 M spent on construction.

Operational Phase – Coke Plant

Output Effects

Each dollar of output from the Coke Plant (the initial effect) can be expected to produce a direct effect of $0.10 on the output of industries in the Rockhampton region, $0.58 on industries in the Fitzroy Statistical Division and $0.59 in Queensland. The total (initial, direct, indirect and induced) impacts of each dollar of output from the Coke Plant is expected to be $1.21 at the Rockhampton level, $2.11 at the Fitzroy

Statistical Division level and $2.49 on industries at the state level. Therefore, each dollar of output can be expected to result in an additional $0.21 in output of industries in the Rockhampton region, $1.11 on industries in Fitzroy Statistical Division and $1.49 on industries in Queensland.

Income Effects

Each dollar of output from the Coke Plant would initially increase household income in the Rockhampton region through payments to employees of $0.016, a direct impact on supplier employees of $0.018 indirectly through industrial support linkages locally by $0.01, with an induced effect of $0.02, for a total effect of $0.07.

Each dollar of output from the Coke Plant would directly increase household income in Fitzroy Statistical Division through first round initial payments to employees of $0.016, first round direct payments of $0.08, indirectly through industrial support linkages by $0.06, with an induced effect of $0.04, for a total effect of $0.20. Each dollar of the output of the Coke Plant would directly increase household income in Queensland through initial payments to employees of $0.016, direct round payments to supplier employees of $0.09, and indirectly through industrial support linkages locally by $0.08, with an induced effect of $0.11, for a total effect of $0.30.

Employment Effects

Each additional $10 M of output from the Coke Plant would result in the initial employment of 1.7 persons, direct employment by suppliers of 4 persons in the Rockhampton region, 3 persons through indirect industrial support, and 5 persons from the induced effect, for a total possible employment of 13 persons. At the Fitzroy Statistical Division level, each additional $10 M of output from the Coke Plant would generate initial employment of 1.7 persons, direct employment by suppliers of 9 persons in Fitzroy Statistical Division, 12.5 persons through indirect industrial support, and 11 persons from the induced effect, giving a total of 35 persons. In Queensland, each additional $10 M of output from the Coke Plant would generate initial employment of 1.7 persons, result in the direct employment by suppliers of 10 persons, 19 persons through indirect industrial support, and 28 persons from the induced effect, for a total possible employment of 59 persons.

Operational Phase - Power Plant

Output Effects

Each dollar of output from the Power Plant can be expected to produce an indirect effect of $0.11 on the output of other industries in the Rockhampton region, $0.40 on industries in the Fitzroy Statistical Division and $0.48 on industries in Queensland. The total (initial, direct, indirect and induced) impacts of each dollar of output from the Power Plant is expected to be $1.76 at the Rockhampton region level, $2.08 at the Fitzroy Statistical Division level and $2.36 for industries in Queensland, resulting in additional $0.76 in output of industries in the Rockhampton region, $1.08 on industries in the Fitzroy Statistical Division and $1.36 on industries in Queensland.

Income Effects

Each dollar of output from the Power Plant would directly increase household income in the Rockhampton region through payments to employees of $0.05, payments to direct supplier employees of $0.03 and indirectly through industrial support linkages locally by $0.02, with an induced effect of $0.04, for a total effect of $0.14. Each dollar of output from the Power Plant would directly increase household income in Fitzroy Statistical Division through payments to employees of $0.05, payments to direct supplier employees of $003.and indirectly through industrial support linkages locally by $0.07, with an induced effect of $0.04, for a total effect of $0.18. For each dollar of output of the Power Plant, household income in Queensland through payments to employees of $0.05, payments to direct supplier employees of $0.03, indirectly through industrial support linkages locally by $0.08, with an induced effect of $0.10, for a total effect of $0.26.

Employment Effects

Each additional $10 M of output from the Power Plant would result in the initial employment of 3.9 persons, direct employment of 6.6 persons in the Rockhampton Region, 5.7 persons through indirect industrial support, and 11 persons from the induced effect, giving a total possible employment of 27 persons. At the Fitzroy Statistical Division level, each additional $10 M of output from the Power Plant would result in the initial employment of 3.9 persons, direct employment of 6.6 persons, 11 persons through indirect industrial support, and 10 persons from the induced effect for a total 31 persons. In Queensland, each additional $10 M of output from the Power Plant would result in the initial employment of 3.9 persons, direct employment of 6.6 persons, 15 persons through indirect industrial support, and 24 persons from the induced effect, giving a total possible employment of 50 persons.

13.2.5 Cumulative Impact

This section provides an estimation of the cumulative impact of the Coke Plant and Power Plant together on the local, regional and state economies. The analysis of the economic impact of the Project on local, regional and state economies is likely to overestimate the income and employment effects due to the nature of the Project and data used (Appendix K).

Construction Phase

The effect of the construction stage on the regional and state economy is summarised below with full details in Appendix K. Results have been estimated for 30%, 40% and 50% of construction workers living in the region, and 80% of workers living within Queensland.

Output Effects

The peak construction spending will be in Year 1. The direct impact of investment can be expected to be $251 M on industries in the Fitzroy region if only 30% of the workforce is living and spending in that area. The total (direct, indirect and induced) impact of the construction of the new developments is expected to be $1,403 M in the Fitzroy region resulting in additional $579 M in output of industries in

that region. At the Queensland level, under the assumption that about 80% of the workers will be living and spending in Queensland, a total output effect of $1,903 M is expected, thus bringing $1,079 M in additional output to Queensland.

In Year 2, the total impact on construction activities is expected to be $685 M in the Fitzroy region and $930 M in Queensland, resulting in additional $282 M in output of industries in the Fitzroy region and $527 M in Queensland. In Year 3, the total impact on construction activities are expected to be $653 M in the Fitzroy region and $959 M in Queensland, resulting in an additional $568 M and $874 M output respectively. The effect of the construction stage in Year 4 is similar to Year 3.

Income Effects

If the regional income coefficients are used for calculating the income multipliers, then the construction stage of the proposed projects would directly increase household income in the Fitzroy region and Queensland in Year 1 through payments to the construction workforce of $48 M and indirectly through industrial support linkages locally by $31 M to Fitzroy and $47 M to Queensland with an induced effect of $40 M and $142 M respectively, for a total effect of $171 M and $377 M respectively.

In Year 2, the total (direct, indirect and induced) impact of investment in new developments is expected to be $84 M in the Fitzroy region and $185 M in Queensland, resulting in additional $58 M in output of industries in the Fitzroy region and $116 M in Queensland. In Years 3 to 4 the total (direct, indirect and induced) impact of investment in new developments is expected to be $54 M in the Fitzroy region and $114 M in Queensland (additional $39 M in output of industries in the Fitzroy region and $75 M in Queensland) (Appendix K).

Employment Effects

The construction stage of the Project (following an initial average stimulus of 1,215 extra persons employed for construction) would directly result in employment of 1,225 persons in the Fitzroy region, 781 persons through indirect industrial support, and 1,035 persons from the induced effect, giving a total possible employment of 4,256 persons. The effect on employment in Queensland will be higher, with an induced effect of 3,592 people to give total additional employment of 7,216 persons.

The effect on employment in Year 2 of the construction stage will be lower than in Year 1 due to reduction in the construction activity. The changes are expected to be an induced effect of 509 people for a total of 2,705 persons in the Fitzroy region and an induced effect of 1,761 people for a total of 4,152 persons in Queensland.

The effect on employment in Year 3 of the construction stage will be lower than in Year 2 due to the completion of the construction of the Power Plant. The total effects are expected to be an induced effect of 328 people giving the total of 2,050 persons in the Fitzroy region and an induced effect of 1,091 people with a total of 2,947 persons in Queensland (Appendix K).

Operational Phase

Whilst, the economic impact of the construction phase is non-permanent in nature, the economic impact of the operational phase is permanent. In the Rockhampton region the total (direct, indirect and induced) impacts of the coke plant operation on industry output, household income and employment is expected to be $906 M, $48 M and 1,007 jobs respectively. At the Fitzroy Statistical Division level, these effects become larger with industry output, household income and employment to be $1,574 M, $150 M and 2,582 jobs respectively. The impacts are increased at the state level with industry output, household income and employment to be $1,856 M, $222 M and 4,389 jobs respectively. The operation of the Power Plant at full capacity is expected to increase output, income and employment in the Rockhampton region by $88 M, $7 M, and 136 jobs respectively.

The combined impacts of both plants at full operation are expected to increase output, income and employment in the Rockhampton region by $994 M, $55 M, and 1,143 jobs respectively. At the Fitzroy Statistical Division level, the impact will be an increase in output, income and employment by $1,678 M, $160 M, and 2,739 jobs respectively. In Queensland an increase in output, income and employment by $1,974 M, $235 M, and 4,639 jobs respectively is likely (Appendix K).

13.2.6 Monitoring

Monitoring of the economic impact of the Project will be undertaken during the construction phase and also during operation. Monitoring will include an economic analysis (similar in scope to that carried out for this EIS) to be undertaken during the construction period and a further analysis to be conducted between two and five years after the commencement of operations. These analyses will facilitate auditing of the economic situation and impact of the Project, and will allow measures to be implemented should adverse impact be identified.

13.2.7 Economic 'Ripple' Effects

The distribution of the 'ripple' effects in the local, regional or state economy is dependent on the extent to which local firms have the capability and capacity to provide goods and services, and the extent to which opportunities exist for the new development to facilitate further service and industrial development in the region.

Capability and Capacity of Local Firms

The Central Queensland region has a strong and diversified economy, as shown by employment levels in key sectors relevant to the Project (Appendix K). Proportionally, there is more labour involved within key construction sectors in the local and regional area than there is within the state. This suggests that there is the capability within the region to satisfy a proportion of the construction and operating requirements.

The capacity of businesses within the region to satisfy construction and operating demands is dependent to some extent on other economic factors. A major boom in the coal industry has occurred since mid-2004, with a number of coal mines ramping up production since that period. There has been substantial

mining project construction in the region. There have also been flow-on impacts in the transport sector, with additional construction occurring in rail and port facilities and substantial development in the housing sector. The capacity of regional businesses to engage with the Project will depend on several factors, including their managerial capabilities, their competitive position and business model and the timing of construction and service demands from other industries within the region. However, the level and diversity of growth in the area means that it will become easier to develop new businesses in the region. Extending the construction period for the Coke Plant over two stages will make it more attractive for service and construction businesses to establish in the regional area.

Opportunities for Further Development

It is likely that infrastructure will be developed to allow additional businesses to locate in the region. The Fitzroy Industry and Infrastructure Study (FIIS), driven and funded by the Queensland Government, Rockhampton City Council; Fitzroy and Livingstone Shire Councils, Rockhampton Regional Development Limited and the Stanwell Corporation (Department of State Development, Trade and Innovation (DSDTI), 2005), has identified two major corridors in which future development opportunities are most likely to occur:

- The 'Stanwell-Gracemere Industrial Corridor', which is focused on a mix of large scale, energy intensive industries, light and medium manufacturing enterprises, and stockfeed, stock-waste, meat and meat by-products processing; and

- The 'Fitzroy Agricultural Corridor' (FAC) between the McKenzie-Dawson River junction and the lands around the Eden Bann Weir which will be focused on intensive animal husbandry (predominantly cattle) and associated feed cropping, with some opportunistic irrigated horticulture.

The Industry corridor will be an attractive location to major investment projects due to the reliable supply of low cost energy from the SPS, access to strategic transport routes and availability of appropriately sized and zoned parcels of land. While the industrial park between Gracemere and Stanwell remains a long-term goal, there are other areas available (principally at Gracemere and North Rockhampton) for industrial development. Many of the drivers for further development will come from the growth in the mining sector.

In recognition of a need for regional co-operation that warranted a long term strategic approach towards planning for the ecological and economic sustainability of the region, a regional planning approach termed 'Central Queensland A New Millenium' (CQANM) was formed in 1999, represented a collaborative planning process to develop a framework (Regional Growth Management Framework - RGMF). The RGMF (2002) recognises the Gracemere-Stanwell corridor as an area expected to experience significant investment for industrial activity. It is identified in the RGMF that expansion in this area, together with support from elsewhere in the region, will further the role of Central Queensland as one of the State's and nation's prime economic generators. The attraction of large-scale industry projects such as the Queensland Coke and Power Plant Project to the Stanwell-Gracemere corridor is consistent with the RGMF.

13.2.8 Labour Market Shortages

An analysis of the Project workforce requirements relative to the existing labour market has been provided in Section 12 – Social Environment for both the construction and operating stages. The results show that the construction stage of the Project will require a modest proportion of the local force, while the operating stage will take a small proportion of the available workforce. In the short-term, it is likely that construction of the Project will exacerbate skill shortages in the region because of the existing developments in the mining sector and associated transport services, and the strong growth in residential building. If it is assumed that all skilled workers will be sourced from the local area, the Project would be likely to drain available skills away from existing businesses, and make labour more expensive in the local region. However there are opportunities to mitigate against the risk for example, by training and up-skilling the large pool of unemployed people in the region.

The areas where the largest proportion of the available workforce in the Rockhampton Statistical Division would be needed for construction are tradespersons and related workers (15% of the available workforce) and labourers and related workers (11% of the available workforce). As stated above, the area also experiences unemployment rate above the state average so there is strong potential for the development to help move people into full-time employment. The creation of additional jobs in the labouring and semi-skilled trades areas will create further economic opportunities in the medium to long-term by providing a ready labour supply that may be employed in other regional projects.

To limit these potential impacts, it will be important, at the regional level, to engage in training programs to develop skill sets in the regional area, and attract workers with appropriate skills to move into the region. A relationship will be developed between the Project proponents, local and state governments, and the labour training and supply sector so that training and importation of labour proceeds smoothly and efficiently. Further use of existing apprenticeship, worker training and support services for disadvantaged groups will be considered to ensure that a range of people within the region further develop skills and move towards full-time employment.

The proponents will also work with these agencies and educational institutions to develop ways to plan, organise and deliver training to assist the Project in accessing a skilled local workforce. It is expected that the Department of Employment, Training and Industrial Relations, Central Queensland Institute of TAFE, and local job network agencies will be key players in this process, in conjunction with site supervisors from the principal construction contractors for the Project. This approach has been successfully employed for other major Central Queensland projects, such as the SPS, and has ensured that workers from the local labour pool are equipped with the necessary skills to meet project needs.

The proponents will seek to ensure that construction contractors carry out construction in accordance with the "State Government Building and Construction Contracts - Structured Training Policy" (Department of Employment and Training, 2002a) where practical. This policy requires that a minimum of 10% of the total labour hours be undertaken by apprentices, trainees or cadets, or used for the up-skilling of existing employees. The approved training is designed to assist these workers to obtain nationally-recognised building and construction competency or qualification.

13.2.9 Other Major Projects in the Region

Major projects in Fitzroy Statistical Division being undertaken or planned as at 30 April 2004, in accordance with the Department of State Development and Innovation's publication "Projects Queensland, 2003-04" (Appendix K) include Comalco Alumina Refinery (Calliope Shire), Stanwell Energy Park (Fitzroy Shire), Cracow Gold Project (Banana Shire), Grasstree Colliery Project (Peak Downs Shire), Great Barrier Reef International Resort (Livingstone Shire) and Bauhinia Rail Project (Bauhinia Shire) (OESR, 2005).

As well as these major projects listed in Appendix K, there has been substantial activity in the coal, transport and agricultural sectors as a consequence of improved export demands, increased production and better seasonal conditions. Impacts of this increased economic activity have rippled through the local, regional and state economy. Many of the smaller mining communities such as Blackwater, Emerald and Moranbah are experiencing increased employment, housing shortages and high rental markets as a consequence. With this background of increased economic activity in the region, the impact of the Project are expected to be very visible in terms of impacts on local labour markets, impacts on housing markets, and increased economic activity from local businesses.

13.2.10 Conclusion

The direct and indirect economic impacts of both the construction and operational stages of the Coke Plant and Power Plant will be large and positive at the local, regional and state level. There will also be further positive impacts on national and international economies.

In the first (and largest) year of construction, the total impacts in the Fitzroy region are expected to be $1,403 M of output, $171 M of income, and an additional 4,256 jobs. At the state level, the total impacts of the first year of construction are expected to be $1,903 M of output, $377 M of income, and an additional 7,216 jobs.

When the projects are operational, the total impacts expected for the Rockhampton region are expected to be $994 M of output, $55 M of income, and 1,143 jobs. The total impacts on the Fitzroy region are expected to be $1,678 M in output, $160 M in income, and an additional 2,739 jobs. The total impacts on Queensland are expected to be $1,974 M in output, $235 M in incomes and an additional 4,639 jobs.

The results provide some indication about the likely impacts on the local, regional and state economy of the Project. In each case, the aggregate impacts are large, reflecting the opportunities available to the relevant communities and economies to generate flow-on effects.