

CQ NRL Bid



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Executive Summary

Background

This report presents an Economic Impact Assessment (EIA) of CQ NRL Bid Company Limited's (CQ NRL Bid) proposal to establish a Rockhampton-based team in the National Rugby League (NRL) competition. The EIA provides analysis of the economic importance of the project to the Central Queensland (Fitzroy Statistical Division) economy in terms of output, value added, incomes and employment. Economic benefits of additional development spending stimulated by the project and likely qualitative impacts are also considered.

Including feeder areas the support base for a Central Queensland NRL team is estimated at 600,000 spread across regions to the north, south and west of Rockhampton. This represents around 12.7% of Queensland's population.

Economic Impacts of the Proposal

The benefits to the Fitzroy regional economy associated with the construction and operations of the CQ NRL Bid proposal are reported in Table ES1. Benefits reported for the construction phase will accrue over the life of the construction phase of the project – which is expected to be at least two years – while operation impacts reported in Table ES1 are annual impacts.

Construction Impacts

Construction costs in 2010 dollars are estimated at \$227.7 million, and the modelling reports that in the Fitzroy regional economy direct and flow on activity attributable to the construction phase of the project will create 1,005 full time equivalent jobs and generate \$383.5 million in output. That is, the construction phase of the proposal has the potential to deliver considerable stimulus to the local economy.

During the construction phase flow-on benefits primarily accrue to the construction, manufacturing, professional services, transport and rental, hiring and real estate industries. The high proportion of flow-on benefits reported in Table ES1 suggests much of the project-related activity will be undertaken within the region.

Operation Impacts

Operational activity associated with CQ NRL Bid's proposal will deliver an ongoing boost to local employment and economic activity in addition to broadening the Fitzroy region's sporting profile and facilities. During the operational phase the proposal's facilities and activities are estimated to generate annual benefits in the Fitzroy regional economy of \$72.5 million in output, \$39.4 million of value added, \$29.5 million in wages and salaries and 425 full time equivalent jobs sustained.

During the operation phase flow-on benefits primarily accrue to the manufacturing, administrative, professional, rental and wholesale trade industries.

Table ES1: Economic Impact of the CQ NRL Bid Proposal (\$2010)

	Fitzroy Regional Economy			
	Output (\$M)	Value Add (\$)	Income (\$M)	Employment (FTE)
CONSTRUCTION PHASE (over the life of construction phase)				
Direct Impact	\$227.7	\$62.3	\$31.5	452
Flow-On Impact	\$155.8	\$67.5	\$36.4	553
Total	\$383.5	\$129.8	\$67.9	1,005
OPERATION PHASE (per annum)				
Direct Impact	\$48.4	\$28.7	\$23.4	322
Flow-On Impact	\$24.1	\$10.8	\$6.1	103
Total	\$72.5	\$39.4	\$29.5	425

Note: May not add due to rounding

Source: Australian Bureau of Statistics (2010), AECgroup

For illustrative purposes an overview of the expected economic and employment benefits to the Fitzroy regional economy of the CQ NRL Bid proposal operating for five years is reported in Table ES2.

Key points to note are that, compared to construction costs of \$227.7 million, over five years the proposal generates:

- \$745.8 million in output in the Fitzroy regional economy;
- \$326.9 million in value added in the Fitzroy regional economy;
- \$215.5 million in income in the Fitzroy regional economy; and
- 3,129 FTE employment positions in the Fitzroy regional economy.

Table ES2: Economic Impact of CQ NRL Bid Proposal over Five Years (\$2010)

	Fitzroy Regional Economy			
	Output (\$M)	Value Add (\$)	Income (\$M)	Employment (FTE)
CONSTRUCTION PHASE (over the life of construction phase)				
Direct Impact	\$227.7	\$62.3	\$31.5	452
Flow-On Impact	\$155.8	\$67.5	\$36.4	553
Sub-total	\$383.5	\$129.8	\$67.9	1,005
OPERATION PHASE (aggregate benefits over five years)				
Direct Impact	\$241.8	\$143.3	\$117.2	1,611
Flow-On Impact	\$120.5	\$53.8	\$30.4	513
Sub-total	\$362.3	\$197.1	\$147.6	2,124
AGGREGATE IMPACT				
Direct Impact	\$469.5	\$205.6	\$148.7	2,063
Flow-On Impact	\$276.3	\$121.3	\$66.8	1,066
TOTAL	\$745.8	\$326.9	\$215.5	3,129

Note: May not add due to rounding

Source: Australian Bureau of Statistics (2010), AECgroup

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1. Introduction

This report presents an Economic Impact Assessment (EIA) of CQ NRL Bid Company Limited's (CQ NRL Bid) proposal to establish a Rockhampton-based team in the National Rugby League (NRL) competition. The EIA provides analysis of the economic importance of the project to the Central Queensland (Fitzroy Statistical Division) economy in terms of output, value added, incomes and employment. Economic benefits of additional development spending stimulated by the project and likely qualitative impacts are also considered.

1.1 Background

The Rockhampton Region includes Gracemere, Yeppoon, Emu Park and Mount Morgan as well as other smaller towns. Rockhampton, the regional centre, has a diverse economy, with significant industries including manufacturing, transport and construction services. Rockhampton is also a major base for government administration and defence activities. Agriculture is a strong contributor to economic activity in the regions surrounding Rockhampton and contributes to the city's economic strength.

The Rockhampton region is part of the broader Fitzroy Statistical Division which reported a population of 220,714 at 30 June 2009. In the five years to 2009 the Fitzroy region's population growth averaged 2.3% per annum, slightly weaker than Queensland's average growth rate of 2.6% per annum.

Including feeder areas the support base for a Central Queensland NRL team is estimated at 600,000 spread across regions to the north, south and west of Rockhampton. This represents around 12.7% of Queensland's population.

1.2 Proposed Development

CQ NRL Bid's proposal has two key elements:

- Creating a Central Queensland based rugby league team competing in the NRL, including development of a 20,000 seat stadium; and
- Developing the Central Queensland Academy of Sport, Education and Life Skills (The Academy).

Commercial viability of the project will also be enhanced by the 1,000 person conference centre proposed at the stadium and its use for hosting other major outdoor events.

The stadium is planned to be located in the Rockhampton Sports Precinct being designed by the Queensland Government and Rockhampton Regional Council. The Queensland Government and Rockhampton Regional Council own the identified land. The final location for The Academy is yet to be confirmed, but it is envisaged it will be co-located with, or near to, the CQ Bid Leagues Club, which will be in the vicinity of the stadium.

The regional need for The Academy concept was identified in developing the proposal. Detailed community consultation identified the opportunity for CQ NRL Bid to develop strong social and community programs with a focus on youth which would complement a strengthened Central Queensland identity.

Following business and community feedback CQ NRL Bid agreed to develop plans for The Academy, which will deliver innovative programs and contribute to providing a platform for sustainable economic and community development. The Academy will be based in Rockhampton with supporting outreach programs through Central Queensland, and will provide a broad range of development pathways, including:

- Alternative education;
- Training based programs;
- Employment pathways;
- Development in sport;
- Development of skills relating to community, inclusion, health and life skills;

- Services for youth identified as elite in their sport, by providing place based support for them to succeed such as, sport psychology, nutrition and behaviour;
- Pathways for Rugby League juniors to the CQ NRL team; and
- Positive messaging for a healthy and active lifestyle.

The Academy will provide a facility where promising young sports people can acquire elite sport and life skills in a managed program. While the focus will be on NRL candidates it will be available to all promising young sports people. In addition, it will support non-elite sports people by enabling them to participate and contribute to sport at the regional and local levels and encourage continual involvement. This will support and enhance social and community cohesion.

The project's capital cost, including upgrades at the CQ Leagues Club, is estimated at around \$227.7 million.

1.3 Project Methodology

Input-Output (IO) modelling is used to estimate the construction and operations phase impacts of the project in terms of output, value added, employment generated and wages and salaries paid. This approach assumes there are no resource constraints. For example, it is assumed the project will not draw labour from other businesses and there are limitless goods and services to supply the project. IO modelling is useful to identify the unconstrained potential benefits (demand) of a project and provides a clear understanding of the direct and indirect impacts associated with a project. A description of IO modelling and its limitations is provided in Appendix A.

2. Economic Impact Assessment

This section outlines the construction and operation phase impacts of the proposal the Fitzroy economy in terms of the level of activity and benefits the project is estimated to generate.

2.1 Construction Phase Impacts

2.1.1 Capital Expenditure Estimates

The CQ NRL Bid proposal includes development of:

- A purpose built stadium to seat 20,000 people, and capable of hosting major outdoor events;
- A 1,000 person conference centre;
- The Central Queensland Academy of Sport, Education and Life Skills Academy (The Academy), providing development pathways for young people;
- Upgrade of the CQ Leagues Club; and
- Associated infrastructure to support these facilities.

The estimated capital cost to develop these facilities is detailed in Table 2.1.

Table 2.1: Capital Cost Estimates, (\$2010)

Capital Item	Estimated Cost (\$M)
Stadium & Conference Facility	\$182.2
The Academy	\$21.5
Infrastructure & Other Works	\$20.0
CQ Leagues Club Upgrade	\$4.0
Total	\$227.7

Source: CQ NRL Bid, Rawlinsons, Australian Bureau of Statistics, AECgroup

The cost for the stadium and conference facility is based on the \$149 million construction cost of Skilled Park on the Gold Coast in 2005. The cost is escalated using Australian Bureau of Statistics (2011) non-dwelling construction price index and Rawlinsons (2011) regional construction cost indexes.

The Academy's construction cost estimate is sourced from Regional Development Australia's Expression of Interest documentation which was prepared by Regional Development Australia in consultation with the CQ NRL Bid team.

Table 2.2 reports the activity breakdown of capital expenditure which is used as input to the model. Activity is spread across non-residential building construction, heavy and civil engineering construction and professional and financial services. Professional and financial services are estimated at 10% and 5% respectively of total construction costs.

Table 2.2: Allocation of Construction Costs by Activity (\$2009)

Activity	Expenditure (\$M)
Non-residential Building Construction	\$176.5
Heavy and Civil Engineering Construction	\$17.0
Professional Services	\$22.8
Financial Services	\$11.4
Total	\$227.7

Source: CQ NRL Bid, AECgroup

2.1.2 Economic Impacts

Table 2.3 summarises the economic impacts on the Fitzroy regional economy of the construction phase of the CQ NRL Bid proposal including the direct and flow-on benefits. The impacts outlined in Table 2.3 are the aggregate impact of activity, while in reality the impacts are likely to accrue over several years as the project proceeds from the design phase through to commissioning.

The total economic impact of the construction phase to the Fitzroy regional economy is estimated to be:

- Approximately \$383.5 million in output to the regional economy, comprising \$227.7 million directly and \$155.8 million through flow-on activity;
- Approximately \$129.8 million in value added activity, or Gross Regional Product, including \$62.3 million directly and \$67.5 million through flow-on activity;
- Approximately \$67.9 million in wages and salaries, including \$31.5 million directly and \$36.4 million through flow-on activity; and
- Approximately 1,005 full time equivalent (FTE) employment positions, including 452 FTE direct employment positions and 553 FTE flow-on employment positions.

The disaggregation of flow-on impacts by industry shows the construction phase will predominantly support flow-on activity in the construction, manufacturing, professional services, transport and rental, hiring and real estate industries. The high proportion of flow-on benefits suggests that much of the project-related activity will be undertaken within the region.

An additional 1,005 FTE positions in the Fitzroy region, with 514 in the construction industry, represents a significant stimulus to the local economy. There is some risk the project will proceed when there is still significant construction stimulus in the region associated with rebuilding from the 2011 floods. Nonetheless, there may be scope to minimise price and labour supply impacts to maximise local benefits. In fact, there is a likelihood the project will provide continuity of employment at a time when construction could be declining. These jobs could be critical to maintaining the regional employment levels and the pool of skilled construction and other workers.

Table 2.3: CQ NRL Bid Proposal– Construction Phase – Economic Impacts (\$2010M)

Industry	Fitzroy Statistical Division			
	Output (\$M)	Value Add (\$)	Income (\$M)	Employment (FTE)
Direct				
Construction	\$193.5	\$45.3	\$23.8	355
Financial Services	\$11.4	\$7.6	\$2.2	28
Professional Services	\$22.8	\$9.4	\$5.6	69
Total Direct Impact	\$227.7	\$62.3	\$31.5	452
Flow-On				
Agriculture, forestry and fishing	\$1.0	\$0.4	\$0.1	5
Mining	\$2.3	\$0.9	\$0.2	2
Manufacturing	\$26.9	\$8.1	\$4.2	71
Electricity, gas, water and waste services	\$4.9	\$2.7	\$1.2	17
Construction	\$49.1	\$20.6	\$10.6	158
Wholesale trade	\$5.5	\$2.4	\$1.6	26
Retail trade	\$0.6	\$0.3	\$0.3	5
Accommodation and food services	\$1.4	\$0.6	\$0.4	9
Transport, postal and warehousing	\$10.2	\$4.9	\$1.9	30
Information media and telecommunications	\$3.0	\$1.4	\$0.6	7
Financial and insurance services	\$7.5	\$5.1	\$2.5	32
Rental, hiring and real estate services	\$10.1	\$5.0	\$1.6	26
Professional, scientific and technical services	\$18.2	\$7.6	\$4.5	59
Administrative and support services	\$9.1	\$4.5	\$4.2	68
Public administration and safety	\$1.9	\$1.2	\$0.9	14
Education and training	\$0.6	\$0.5	\$0.4	6
Health care and social assistance	\$0.0	\$0.0	\$0.0	0
Arts and recreation services	\$0.3	\$0.1	\$0.1	1
Other services	\$3.1	\$1.2	\$1.0	17
Total Flow-On Impact	\$155.8	\$67.5	\$36.4	553
TOTAL IMPACT	\$383.5	\$129.8	\$67.9	1,005

Note: May not add due to rounding
Source: Australian Bureau of Statistics (2010), AECgroup



2.2 Operational Phase Impacts

2.2.1 Expenditure

The CQ NRL Bid proposal will generate ongoing operational activity and benefits for regional employment and economic activity.

CQ NRL Bid estimates annual expenditure associated with operating the football club at \$25 million. Table 2.4 provides an overview of the clubs expenditure.

Table 2.4: Allocation of Operational Costs to Run the Football Club (\$2010)

Activity	Expenditure (\$M)
Football Department	\$6.5
Administration	\$2.5
Stadium Costs	\$3.5
Corporate Servicing & Merchandising	\$3.0
National Youth Competition (Under 20s)	\$1.5
Development & Recruitment	\$1.5
Marketing	\$3.5
Rental & Leasing Arrangements	\$2.0
Miscellaneous	\$1.0
Total	\$25.0

Note: May not add due to rounding
Source: CQ NRL Bid, AECgroup

AECgroup estimates the convention centre and outdoor stadium has capacity to generate revenue of up to \$1 million dollars per annum. It should be noted that this figure is considered indicative only.

In addition to expenditure associated with operating the Central Queensland football club and stadium, CQ NRL estimates expenditure (matched by revenue) of \$8.5 million per annum to operate The Academy. Given the innovative nature of The Academy AECgroup has not been able to undertake any independent assessment of the validity of this estimate.

People attending home games from outside the Fitzroy region will also contribute to increased economic activity and employment in the Fitzroy region. Based on research previously undertaken by AECgroup for teams in the NRL competition, in regional areas around one-third, or 4,800 spectators (assuming an average home game attendance of 15,000), could be from outside the Fitzroy region. AECgroup's research, based on survey responses from match attendees, estimated average visitor expenditure of \$160 per game, associated with ticketing, travel and accommodation and other spending. Assuming similar outcomes for the CQ NRL rugby league team, updated expenditure data per game using the Queensland consumer price index is reported in Table 2.5.

Table 2.5: Allocation of 'Export Income' Associated with Home Games (\$2010)

Activity	Expenditure (\$M)
Accommodation	\$0.25
Food and Beverage	\$0.33
Goods and Services	\$0.42
Local Transport	\$0.07
Total	\$1.07

Note: May not add due to rounding
Source: Australian Bureau of Statistics (2011b), AECgroup

Assuming 26 rounds per season and 13 home games, this equates to additional expenditure in the Fitzroy region of \$13.6 million per annum. It should be noted that this excludes trial and other games that are also expected to attract visitors to the region.

Table 2.6 reports the activity breakdown of expenditure associated with the operation of the CQ NRL rugby league club and associated activities. These figures are used as input to the economic model.

Table 2.6: Allocation of Operations-Related Economic Activity (\$2010)

Activity	Expenditure (\$M)
Education and training	\$8.5
Sports and recreation	\$26.0
Accommodation	\$3.2
Food and Beverage	\$4.3
Goods and Services	\$5.4
Local Transport	\$0.9
Total	\$48.3

Note: May not add due to rounding
Source: CQ NRL Bid, AECgroup

2.2.2 Economic Impacts

Table 2.7 summarises the economic impact of the additional ongoing operations associated with the CQ NRL Bid proposal, including the direct and flow-on benefits for the Fitzroy economy. The impacts reported are annual benefits.

The total economic impact of the operations phase to the Fitzroy regional economy is estimated to be:

- Approximately \$72.5 million in output to the regional economy, comprising \$48.4 million directly and \$24.1 million through flow-on activity;
- Approximately \$39.4 million in value added activity, or Gross Regional Product, including \$28.7 million directly and \$10.8 million through flow-on activity;
- Approximately \$29.5 million in wages and salaries, including \$23.4 million directly and \$6.1 million through flow-on activity; and
- Approximately 425 full time equivalent (FTE) employment positions, including 322 FTE direct employment positions and 103 FTE flow-on employment positions.

The disaggregation of flow-on impacts by industry reported in Table 2.7 shows that operational impacts predominantly support flow-on activity in the manufacturing, administrative, professional, rental and wholesale trade industries.

It is important to note that employment generated from operations phase activity, unlike construction phase activity, is ongoing and represents a permanent increase in regional employment.

Table 2.7: CQ NRL Bid Proposal– Operations Phase – Economic Impacts (\$2010M)

Industry	Fitzroy Statistical Division			
	Output (\$M)	Value Add (\$)	Income (\$M)	Employment (FTE)
Direct				
Retail trade	\$5.4	\$3.0	\$2.2	45
Accommodation and food services	\$7.5	\$3.3	\$2.4	51
Transport, postal and warehousing	\$0.9	\$0.4	\$0.2	3
Education and training	\$8.5	\$6.5	\$6.0	87
Arts and recreation services	\$26.0	\$15.5	\$12.5	136
Total Direct Impact	\$48.4	\$28.7	\$23.4	322
Flow-On				
Agriculture, forestry and fishing	\$1.3	\$0.6	\$0.1	7
Mining	\$0.2	\$0.1	\$0.0	0
Manufacturing	\$3.2	\$0.8	\$0.5	10
Electricity, gas, water and waste services	\$0.9	\$0.4	\$0.2	2
Construction	\$0.4	\$0.2	\$0.1	1
Wholesale trade	\$1.6	\$0.7	\$0.5	8
Retail trade	\$0.3	\$0.2	\$0.1	2
Accommodation and food services	\$0.5	\$0.2	\$0.2	3
Transport, postal and warehousing	\$1.9	\$0.9	\$0.4	6
Information media and telecommunications	\$1.7	\$0.7	\$0.3	4
Financial and insurance services	\$1.1	\$0.7	\$0.3	5
Rental, hiring and real estate services	\$2.3	\$1.1	\$0.4	6
Professional, scientific and technical services	\$3.0	\$1.3	\$0.8	10
Administrative and support services	\$3.2	\$1.6	\$1.5	23
Public administration and safety	\$0.4	\$0.2	\$0.2	3
Education and training	\$0.3	\$0.3	\$0.2	3
Health care and social assistance	\$0.0	\$0.0	\$0.0	0
Arts and recreation services	\$1.0	\$0.4	\$0.2	4
Other services	\$0.8	\$0.3	\$0.3	5
Total Flow-On Impact	\$24.1	\$10.8	\$6.1	103
TOTAL IMPACT	\$72.5	\$39.4	\$29.5	425

Note: May not add due to rounding
Source: Australian Bureau of Statistics (2010), AECgroup



2.3 Economic Impacts Over a Five Year Period

For illustrative purposes an overview of the expected economic and employment benefits to the Fitzroy regional economy of the CQ NRL Bid proposal operating for five years is reported in Table 2.8.

Key points to note are that, compared to construction costs of \$227.7 million, over five years the proposal generates:

- \$745.8 million in output in the Fitzroy regional economy;
- \$326.9 million in value added in the Fitzroy regional economy;
- \$215.5 million in income in the Fitzroy regional economy; and
- 3,129 FTE employment positions in the Fitzroy regional economy.

Table 2.8: Economic Impact of CQ NRL Bid Proposal over Five Years (\$2010)

	Fitzroy Regional Economy			
	Output (\$M)	Value Add (\$)	Income (\$M)	Employment (FTE)
CONSTRUCTION PHASE (over the life of construction phase)				
Direct Impact	\$227.7	\$62.3	\$31.5	452
Flow-On Impact	\$155.8	\$67.5	\$36.4	553
Sub-total	\$383.5	\$129.8	\$67.9	1,005
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Sub-total	\$362.3	\$197.1	\$147.6	2,124
AGGREGATE IMPACT				
Direct Impact	\$469.5	\$205.6	\$148.7	2,063
Flow-On Impact	\$276.3	\$121.3	\$66.8	1,066
TOTAL	\$745.8	\$326.9	\$215.5	3,129

Note: May not add due to rounding

Source: Australian Bureau of Statistics (2010), AECgroup

2.4 Sporting and Social Impacts

Aside from the construction and operational economic impacts the proposal will deliver to Fitzroy regional economy, it is also expected to generate significant sporting and social benefits.

Developing the CQ NRL Bid proposal has the potential to deliver a broad range of sporting benefits to the region, including:

- Opportunities for athletes, sportspeople and other contributors:
 - Increased opportunities for regional sportspeople to be involved in development and elite training programs;
 - Increase opportunities for sporting exchanges within the region and between regions;
 - Exposure to experiences which have a long-term impact on an individual's (and a team's) development;
 - Access to enhanced technical and development support; and
 - Increased profile associated with the development of sporting, educational and vocational opportunities.
- Opportunities for residents and visitors:
 - The enjoyment of being spectators at national and international sporting events;
 - Access to sporting and entertainment events that would not otherwise take place in the Fitzroy region;

- Exposure to national sporting stars and role models;
- Participation in sports, sports-related, educational and vocational programs; and
- Volunteering and related social opportunities and skills development.
- Contribution to sporting, educational and vocational infrastructure:
 - Ongoing partnerships with other sporting and educational organisations;
 - The strengthening of interest in sporting activity and interest in the Fitzroy region;
 - Opportunities for commercial enterprises which support sporting, educational and vocational activities.

In addition to sporting benefits the CQ NRL Bid proposal has the potential to deliver a broad range of social benefits to local and regional communities, including:

- Participation:
 - The opportunity to engage with other people through an involvement in the proposal's activities;
 - Opportunities to work on sporting and development projects as opposed to the more 'passive' involvement of being a visitor or audience member.
- Social cohesion:
 - Encouraging collaborative working through sporting, educational and other participative projects;
 - Increasing individuals' sense of belonging to the locality and the Region.
- New audiences:
 - The attraction of people to activities for the first time, providing them with new experiences, and increasing their sense of belonging to a local community (in a similar way to major civic or cultural events).
- Training and employment opportunities:
 - Through working on projects associated with the CQ NRL Bid, participants may gain new skills and be placed in contact with future employers.
- The change effected by sports activity:
 - Sporting and participatory activities are known to improve the self-esteem, communication and social skills of those involved.
- Contribution to the Fitzroy region's outlook, through:
 - Encouragement of cross-cultural understanding; and
 - Partnerships with non-sporting organisations including business sponsors and community organisations.

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Appendix A: Economic Impact Methodology

Input-Output Methodology

The economic impact of the proposed CQ NRL Bid on the regional economy is estimated using an Input-Output framework. The multipliers used in this assessment are developed from the transaction tables published by the Australian Bureau of Statistics (2010). All figures are expressed in 2010 Australian dollar terms unless otherwise specified.

Input-Output analysis demonstrates inter-industry relationships in an economy, depicting how the output of one industry is purchased by other industries. This analysis shows the direct and indirect (flow-on) effects of one sector on other sectors and the general economy. As such, Input-Output modelling can be used to demonstrate the economic contribution of a sector on the overall economy and how much the economy relies on this sector. Input-Output analysis yields output, gross value added, wages and salaries, and employment of the sector under investigation.

The economic impacts are estimated as net benefits, calculated as the additional economic impact the operations have on the Fitzroy regional economy. The stimulus from additional economic activity can be traced through the economic system via:

- Direct impacts, which are the first round of effects from direct operational expenditure on goods and services; and
- Flow-on impacts, which comprise the second and subsequent round effects of increased purchases by suppliers in response to increased sales.

Input-Output multipliers can be derived from open (Type I) Input-Output models or closed (Type II) models. Open models show the direct effects of spending in a particular industry as well as the indirect or flow-on (industrial support) effects of additional activities undertaken by industries increasing their activity in response to the direct spending. The economic impact assessment undertaken for this report uses an open model to assess the economic impacts of the project to identify the direct and flow-on industry impacts induced by the initial expenditure.

Closed models re-circulate the labour income earned as a result of the initial spending through other industry and commodity groups to estimate consumption induced effects (or impacts from increased household consumption). Closed models (or Type II impacts) are generally considered to overstate the impacts of an economic shock, and as such has not been used in this assessment.

Explanation of Terms

Output

Output refers to the gross value of goods and services transacted, including the costs of goods and services used in the construction or manufacture of the final product. Output impacts can overstate the economic impacts as they count all goods and services used in one stage of production as an input to later stages of production, hence counting their contribution more than once.

Value Added

Value added refers to the value of output after deducting the cost of goods and services inputs in the production process. Value added defines the true net contribution made to the economy or Gross Regional Product (GRP). The GRP impact is the preferred measure for the economic impact assessment of a project.

Income

The income impact measures the additional amount of wages and salaries paid to employees of the industry under consideration and to other industries benefiting from the project.



Employment

Employment refers to the number of new part-time and full-time jobs created by the economic shock, both directly and indirectly, and is expressed in terms of full time equivalent (FTE) positions.

Limitations of the Input-Output Framework

There are some key limitations that need to be considered when using an Input-Output framework, as detailed below.

- The inputs purchased by each industry are a function only of the level of output of that industry. The input function is generally assumed linear and homogenous of degree one (which implies constant returns to scale and no substitution between inputs);
- Each commodity (or group of commodities) is supplied by a single industry or sector of production. This implies that there is only one method used to produce each commodity and that each sector has only one primary output;
- The total effect of carrying on several types of production is the sum of the separate effects. This rules out external economies and diseconomies and is known simply as the additivity assumption. This generally does not reflect real world operations;
- The system is in equilibrium at given prices. This is unlikely to be the case in an economic system subject to external influences; and
- In the static Input-Output model, there are no capacity constraints so that the supply of each good is perfectly elastic. Each industry can supply whatever quantity is demanded of it and there are no capital restrictions.

Despite these limitations, Input-Output techniques provide a solid approach for taking account of the inter-relationships between the various sectors of the economy in the short-term and hence are an appropriate tool for determining the direct and flow-on economic impacts of a relatively small stimulus or shock in an economy.

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