Rio Tinto Alcan

Appendix 17-A

Economic Modelling

Rio Tinto Alcan

Environmental Impact Statement

for

South of the Embley Project

March 2013

Economic Modelling Report

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1 Economic Modelling

In order to assess the economic impacts of the Project, SGS Economics and Planning prepared and applied a purpose-built input-output model to assess the likely economic impacts arising from the construction and operation of the Project.

The impact assessment examines how a particular project, business or industry (in this case, the Project) affects an economy through all of the backward and forward expenditure linkages between all industries in the economy (i.e. the inter-industry flows). It takes the initial effect of a project, business or industry stimulus (the Project construction and operation), known as the 'economic stimulus', and traces all of the 'multiplier' or 'flow-on' effects – 'production' and 'consumption' induced effects - in the local, regional, State and national economies.

Production induced effects relate to how local 'upstream' industries (i.e. suppliers to the Project's construction and operation) benefit from the increased demand for their goods and services as a result of gaining supply contracts (awarded by RTA in the case of Project), and increases in their own local purchasing, enabling them to service these supply contracts.

C*onsumption induced* effects relate to the increased spending of wage and salary earners (RTA's employees and contractors at the Project and employees of suppliers to the Project) on items such as food, clothing, personal services, housing, etc. and how local supplier purchases change in order to meet these induced purchases.

The final result is an overall picture of the total economic contribution of the Project's construction and operation on the local, FNQ, Queensland and Australian economies. These estimated economic impacts are documented in **Section 4** below. Please note that all impacts identified have been expressed in current (2012) prices. The exact nature of these impacts, their definition and how they are quantified is explained below.

Economic Impacts Defined – Output, Value Added and Employment

The Project's initial economic effect and its flow-on (or multiplier) effects (refer to detailed explanation below) are expressed in terms of the **'output'**, **'value added'** and **'employment'** impacts of the Project on the local economy as well as the FNQ, Queensland and Australian economies.

The construction processes required to establish the Project are also considered and their estimated economic impacts quantified.

Impacts to the 'local economy' take into account the study area as well as the Cook Shire Local Government Area. Given the nature of the statistical boundaries in the study region, the Cook Shire was included in the input-output modelling to ensure the most accurate multipliers for the local area. It is important to note, however, that the majority of the impacts are assumed to be localised in the Weipa area.

While these measures describe how the initial effects of the construction and operation of the Project are manifested in the local and broader economies in different ways, they are not cumulative or additive. Each type of economic impact considered is described as follows:

- **Output** refers to the value of the total sales of goods and services produced in the local/FNQ/Queensland/Australian economy by the construction and operation of the Project, factoring in a number of inputs, including imports. The direct contribution or total output 'to the local economy' is the direct output of the proposed Project which is located in the local area. However, it does not imply an amount that is entirely absorbed in the local economy. The total amount of direct output is made up of various components including gross operating surplus of which some would likely leave the study area.

  Another component is expenditure on various inputs that are sourced from outside of the study area. This, similarly, applies to the analysis of the FNQ and Queensland economies.

- **Value Added (factor incomes)** is the equivalent of net output and refers to the contribution of the construction and operation of the Project to the value of all goods and services produced in the local/FNQ/Queensland/Australian economy less taxes, imports and inter-industry supplies of non-labour inputs. Value added is the majority component of a region's Gross Regional Product, the only difference being it does not include taxes (less subsidies). Put simply, value added is the increase in the value of a good at each stage of the production process. Value added is therefore, the difference between the value of final goods produced minus the cost of buying in raw materials and intermediate goods from outside the economy in question. In terms of the Project, the 'value added' is the sales price (value of output) minus the cost of raw materials, chemicals, other non-labour inputs and imports used in the production process. It is purely the value added component of the products measured and not the total sale value being recounted as the product moves from industry to industry.

- **Employment** refers to the number of full time equivalent (FTE) jobs supported in the local/FNQ/Queensland/Australian economy by the construction of the Project and its operation. 'Employees' are people directly employed by RTA on the Project. 'Contractors' are people employed on the Project through a contracting company. 'Flow-on' or 'indirect' jobs are those estimated to be generated elsewhere in the community/region/state/nation by the Project. The impacts reported in the EIS refer only to the impact of the construction and the on-going operation of the SoE Project. At the time of the 50Mdptpa production scenario, there wouldn't be demand for similar Weipa mine-related employment as reserves from North of Embley deplete over time. Accordingly, it is reasonable to attribute the gross employment numbers at 50Mdptpa production to the SoE Project.

Economic Modelling Inputs and Assumptions

As noted above, a purpose-built input-output model was prepared for the Project by SGS Economics and Planning to assess the economic contribution of the construction and operation the Project to the local (Weipa, Aurukun, Napranum, Mapoon and Cook Shire), regional (FNQ SD), Queensland and Australian economies.

The National 111 Industry Input-Output (IO) Table (the "IO table") published by the Australian Bureau of Statistics (ABS), was aggregated to 20 industries for the purpose of this assessment. Using information on the local, regional and state employment structure (from the 2006 ABS Census Journey to Work and Labour Force Survey data) and financial data acquired by SGS Economics and Planning directly from RTA for this study, the IO table was then modified for the local, regional and State economies. The result is a purpose-built, or tailored economic model, which was used to undertake the economic assessment of the Project at the local, regional, State and national levels.

The impact assessment examines how the Project would affect the economy through all of the inter-industry flows in that economy (i.e. the linkages between industries). Modelling begins with an evaluation of the construction impacts, using the financial information provided by RTA, against the local, FNQ, Queensland and Australian IO tables, to estimate the contribution (or worth) of the Project's construction to the economies of interest. Once the construction impacts have been determined, the operational impacts are analysed.

For economic modelling purposes, the Project operations have been separated from the broad industry classifications making up the local economy. That is, the 20 industry IO table has been tailored to a 21 industry IO model for the purposes of this assessment. This allows for specific analysis on the output and flow-on effects of Project operations.

It is important to note that the impacts detailed below are separate to the existing RTA Weipa bauxite mining operations at East Weipa and Andoom. Hence, the impacts reported on in this document refer only to the impact of the Project.

The multipliers utilised for this assessment are based on a localised version of a national IO table, with the base information being 2007-08 national IO tables. These are the most recent available national data. An assumption behind IO models is that industry dynamics are static, when in reality an economy will evolve over time.

The economic impact assessment modelling is based on assumptions and the input criteria utilised. The accuracy of the assessment outcomes depends on the validity of the assumptions used. The multipliers are calculated based on sound methodology. However they are estimates of the potential impacts associated with the Project, and do not completely reflect the economy evolving differently as a result of the Project. For example, local industries changing their business operations to better capture the benefits of the impacts. Nonetheless, the results produced by using the multipliers generated by the IO tables provide reliable information regarding the impact under current conditions.

SGS conducted modelling in 2011 based on Project-specific input criteria provided by RTA and the output was reported in the Queensland *South of Embley Project Environmental Impact Statement* (RTA 2011). Since then, the proposed initial production capacity has increased from 15Mdptpa to 22.5Mdptpa. However, the feasibility study for the 22.5Mdptpa initial construction case has yet to be completed and therefore model inputs for this case are not yet available. The modelling of the initial construction has therefore been undertaken using RTA's previous inputs for the 15Mdptpa initial capacity case (including a capital cost of $1,450 million (RTA 2011)) and the latest available national Input-Output tables. It should be noted that construction workforce numbers are not a model input but are in effect reflected in the capital expenditure. Given that the inputs from RTA (2011) were used for the current construction modelling exercise, the construction impacts in terms of output, value-add and employment will necessarily be underestimated. Also note there is some limitation in classifying some data by industries and having an accurate breakdown of the location of expenditure by RTA. Therefore, assumptions have been made about the industry classification of all expenditure items and the geographical location of these costs.

The Extent of Economic Impact – Initial and Multiplier Effects

The three measures of economic impact defined above – output, value added (factor incomes) and employment - may be calculated given the value of the initial stimulus (output) to the economy.

The output generated by a particular process is termed the direct output or direct stimulus to the economy. Applying the appropriate economic 'multiplier' to that output generates the total output produced in the economy by that initial stimulus.

The difference between the total impact of a stimulus to the economy and the initial stimulus itself is called the flow-on impact. This flow-on impact refers to the 'multiplier effect'. As an example, given an initial stimulus of $1 and an associated output multiplier of 1.3, the total output generated by that $1 is $1.30, $0.30 of which is the flow-on impact. Similarly, the value-added and employment impacts are both calculated using appropriate initial multipliers in the economic model.

It is important to note at this point of the analysis that flow-on, and therefore some of the total impact of a stimulus to the economy, will not always be realised immediately. For example, an initial stimulus from the Project in the year 2020 (for example) will generate flow-on effects, of which some may not be realised until the years 2021, 2022 and so on.

1.1 Potential Impacts and Mitigation Measures

1.1.1 Construction Phase Impacts

The initial construction phase of the Project is anticipated to occur over a 30 to 36 month period. A 30 month period was assumed for the modelling. This phase would establish a production capacity of 22.5Mdptpa. Only the initial stage of construction is reported in this assessment, as there is insufficient data to analyse any subsequent construction stages.

Using output, value-added and employment multipliers generated through IO modelling (as described above), the impacts of the construction of the Project on the local (Weipa, Aurukun, Napranum, Mapoon and Cook Shire), FNQ, Queensland and Australian economies over the initial stage of construction has been estimated.

Table 1 provides a detailed breakdown of the initial construction impacts on all the economies of interest using the construction cost estimates.

Note that the figures presented in this table are not cumulative and that each of the smaller economies is a subset of the larger. For example, any impact on the 'local' economy is also included in the 'regional' economy. The difference between the two is a measure of the additional impact generated in the regional economy. This applies to any subset of a particular economy throughout the following sections. Note also that the most recent estimate of the direct construction workforce (an average of 950) has been added to the flow-on employment numbers to generate the total employment impact.

Table 1: Initial Construction Economic Impacts

		Local	FNQ	Queensland	Australia
Output ($ Million)	Direct	$264.0	$527.9	$989.9	$1,319.8
	Flow-on	$167.6	$522.0	$1,633.5	$2,977.4
	Total	**$431.6**	**$1,049.9**	**$2,623.4**	**$4,297.2**
Value-Added ($ Million)	Direct	$73.0	$206.2	$341.8	$461.1
	Flow-on	$55.1	$249.4	$723.3	$1,350.7
	Total	**$128.1**	**$455.6**	**$1,065.1**	**$1,811.8**
Employment (average annual full-time equivalent positions)	Workforce*	950	950	950	950
	Flow-on	632	993	1,712	2,286
	Total	**1,582**	**1,943**	**2,662**	**3,236**

*most recent construction workforce estimate (note previous economic assessment was based on an average of 307 (RTA (2011))

1.1.1.1 Impact on Local Economy

Output

The initial construction would generate a direct contribution of $264.0 million into the local economy (Weipa and Aurukun as well as Cook Shire area) over the construction period. This initial stimulus would result in an indirect contribution of $167.6 million, resulting in a total injection of $431.6 million into the local economy over the construction period.

It is estimated that the local economy was worth approximately $3.5 billion in 2011, with the total contribution to the economy of the initial construction ($431.6 million) worth approximately 12% of the 2011 local economic output.

Value Added

Of the $431.6 million injected into the economy during the construction process, $128.1 million can be attributed to the total value-added component. The direct value-added contribution over the construction period would be $73.0 million. The indirect contribution to the local economy's value-added component would be $55.1 million. The total value-added component would be approximately 23% of the Gross Regional Product estimated for the local economy in 2011 ($550 million).

Employment

The construction phase would induce an average of 632 jobs within the local economy over the period, supported by the indirect effect of the initial output stimulus. Thus, the Project would support an average of 1,582 jobs in the local economy over the construction period. This is significant given that the workforce of the local economy (including Cook Shire) consists of 3,675 jobs according to 2006 ABS Journey to Work data.

1.1.1.2 Impact on Far North Queensland Economy

Output

The construction process for the Project would directly contribute $527.9 million to the FNQ economy over the period. The indirect contribution associated with this stimulus would be $522.0 million, making a total of $1.05 billion of output generated during construction. This is approximately 2.2% of the estimated total output for the whole of the FNQ economy in 2011 ($47 billion).

Value Added

The output generated would in direct terms produce a value-added contribution of $206.2 million and an indirect contribution of $249.4 million. This equates to a total value-added component of $455.6 million over the construction period of the Project. The construction value-added is worth around 3.3% of the estimated $13.9 billion of Gross Regional Product generated in the FNQ economy in 2009.

Employment

In addition to the direct construction workforce, construction would lead to an estimated further 993 jobs being supported in the FNQ economy annually over the period. Thus the construction would support an average of 1,943 jobs in FNQ over the period.

1.1.1.3 Impact on Queensland Economy

Output

The Queensland economy would sustain a direct contribution of $989.9 million during the construction. The indirect contribution associated with this stimulus would be $1.63 billion, making a total injection of $2.62 billion as a result of construction. This equates to around 0.3% of the estimated output generated in the Queensland economy in 2011 ($826.8 billion).

Value Added

There would be $1.07 billion attributable to the value-added component of the $2.62 billion of output, made up of a direct value-added contribution of $341.8 million and an indirect contribution of $723.3 million. The total value-added is around 0.4% of the Gross State Product of Queensland for the financial year ending 2011 ($266.6 billion).

Employment

In addition to the direct construction workforce, construction would lead to an estimated further 1,712 jobs being supported annually in the Queensland economy. Thus the first stage of construction would support an average of 2,662 jobs in Queensland over the initial construction period.

1.1.1.4 Impact on Australian Economy

Output

The construction process for the Project would directly contribute $1.32 billion to the Australian economy. The indirect contribution associated with this stimulus would be $2.98 billion, making a total of $4.30 billion of output generated for the Australian economy by the construction of the Project. This equates to around 0.13% of the total estimated output generated in the Australian economy for 2009 ($4.14 trillion).

Value Added

The output generated would in direct terms produce a value-added contribution of $461.1 million and an indirect contribution of $1.35 billion. This equates to a total value-added component of $1.81 billion for the Australian economy over the construction period, which equates to about 0.1% of the Australian Gross Domestic Product (GDP) for the financial year ending 2011 ($1.4 trillion).

Employment

In addition to the direct construction workforce, construction would lead to an estimated further 2,286 jobs being supported annually in the Australian economy indirectly. Thus an average of 3,236 jobs would be supported in the Australian economy over the construction period.

1.1.2 Operational Impacts

The Project would begin operations at a production capacity of 22.5Mdptpa following the construction period. Upon completion of further construction expansion projects, the Project would reach a maximum production capacity of 50Mdptpa. Operational impacts have been determined for both of these production levels.

Table 2 provides a summary of the operational impacts of the Project for the two production levels of the mine over its life. Again, the figures presented in this table are not cumulative and each of the smaller economies is a subset of the larger.

Table 2: Operational Economic Impacts

		Local	FNQ	Queensland	Australia
22.5 Mdptpa Production Capacity					
Output ($ Millions)	Direct	$675	$675	$675	$675
	Flow-on	$194	$292	$584	$920
	Total	**$869**	**$967**	**$1,259**	**$1,595**
Value-Added ($ Millions)	Direct	$409	$409	$409	$409
	Flow-on	$72	$150	$279	$444
	Total	**$481**	**$559**	**$688**	**$853**
Employment (average annual full time equivalent positions)	Employees	480	480	480	480
	Contractors	72	72	72	72
	Flow-on	615	964	2,008	3,104
	Total	**1,167**	**1,516**	**2,560**	**3,656**
50 Mdptpa Production Capacity					
Output ($ Millions)	Direct	$1,500	$1,500	$1,500	$1,500
	Flow-on	$451	$673	$1,326	$2,020
	Total	**$1,951**	**$2,173**	**$2,826**	**$3,520**
Value-Added ($ Millions)	Direct	$909	$909	$909	$909
	Flow-on	$166	$344	$632	$974
	Total	**$1,075**	**$1,253**	**$1,541**	**$1,883**
Employment (average annual full time equivalent positions)	Employees	1,170	1,170	1,170	1,170
	Contractors	176	176	176	176
	Flow-on	1,409	2,193	4,532	6,788
	Total	**2,755**	**3,539**	**5,878**	**8,134**

1.1.2.1 Impacts on Local Economy

The direct and indirect contribution of the Project to the local economy are summarised below in terms of output, value added and employment.

Output

The Project would have an initial production capacity of 22.5Mdptpa. The output, directly generated by this production would be worth $675 million, whilst the indirect output induced from the local economy would be $194 million. The total value of the initial stage of operations at 22.5Mdptpa would thus be $869 million. The size of the local economy was estimated to be $3.5 billion in 2011, in terms of output.

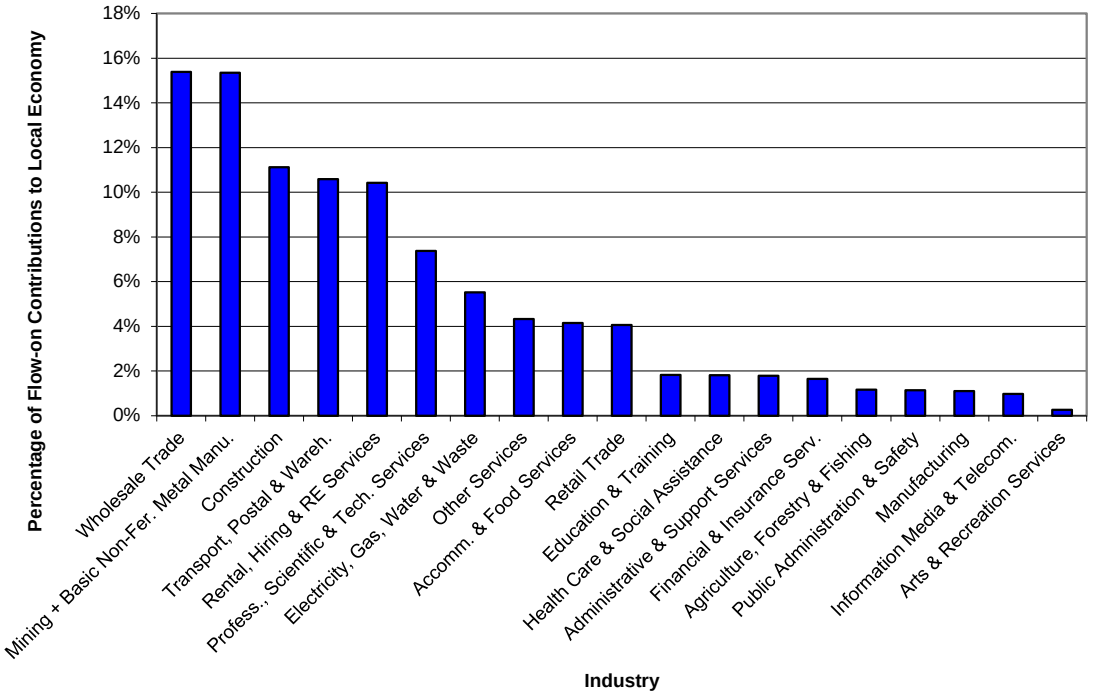
Therefore, the Project at 22.5Mdptpa would be contributing (directly and indirectly) a value worth approximately 25% of the economy's present output. This is significant considering that RTA's existing operations in Weipa account for a significant share of the region's mining operations which is worth an estimated 75% of Weipa's total economic output. At this level of production, the Project would be generating approximately $99 million in taxes and royalties, some of which would be injected back into the local economy.

At ultimate capacity the mine would be operating at 50Mdptpa per year resulting in output worth $1.5 billion annually, which induces an indirect impact of $451 million in the local economy. In total, at 50Mdptpa production levels, the value of the Project to the local economy

would be $1.95 billion, which is around 55% of the current economy's worth. At this level of production, approximately $250 million in royalties and taxes would be paid by the Project.

Figure 1 provides a breakdown of the flows of indirect impacts to the local economy at 22.5Mdptpa. The majority of indirect impacts would be generated in Wholesale Trade (15.4%) followed by the Mining industry (15.3%). Note that a similar distribution of indirect impacts would be seen at the 50Mdptpa production levels.

Figure 1: Percentage of Flow-on Impacts on Local Economic Output (22.5Mdptpa)



Value Added

At production of 22.5Mdptpa, the direct value added component of the Project would be $409 million. The indirect value added induced in the local economy would be $72 million, resulting in a total value-added to the local economy of $481 million annually. This equates to around 87% of the estimated Gross Regional Product generated in the local economy in 2011.

By the time the Project reaches maximum capacity, the direct value added component of the operations would be $909 million. This would induce $166 million of indirect value-added in the local economy for a total value-added at 50Mdptpa of $1.08 billion annually (around twice the estimated Gross Regional Product generated in the local economy for 2011).

Employment

The Project would operate with a strong employee to output ratio and would generate significant employment opportunities, both directly as well as through the indirect impacts to other sectors resulting from the Project.

At 22.5Mdptpa, the Project would employ approximately 480 employees while another 687 jobs (including contractors) across other sectors would be generated in the local economy indirectly, resulting in 1,167 jobs being generated in total, throughout all industries in Weipa and surrounds.

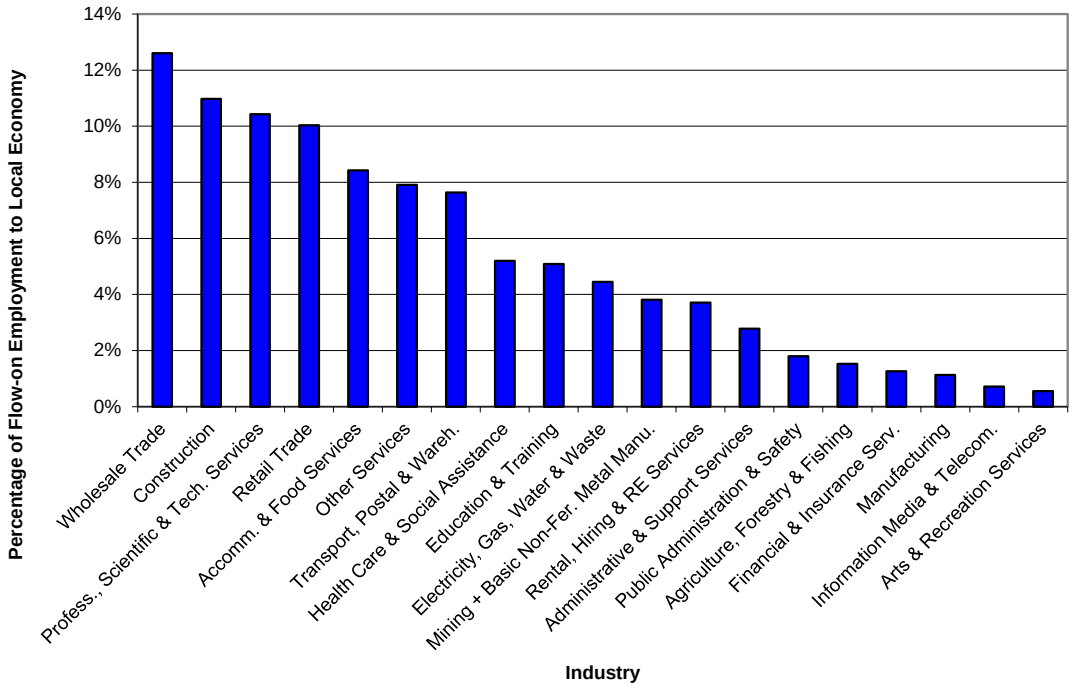
At capacity of 50Mdptpa, there would be about 1,170 RTA employees. There would also be 176 contractors employed by the Project, who are considered an indirect impact given they are inputs to the mining process. Including the 1,409 indirect jobs generated in other industries by

the Project, it is estimated that there would be 2,755 jobs supported in the local economy by the Project at 50Mdptpa.

Figure 2 provides a breakdown of the flows of indirect employment to the local economy at 22.5Mdptpa. The majority of indirect impacts would be generated in Wholesale Trade (13%) followed by Construction (11%). Note that a similar distribution of indirect employment would be seen at the 30 and 50Mdptpa production levels.

The impacts on the FNQ, the Queensland and the Australian economies of the operational period are captured by analysis of the indirect impacts, as the direct output generated would remain the same for all.

Figure 2: Flow-on Employment to Local Economy (22.5Mdptpa)



1.1.2.2 Impacts on the Regional Economy

For the FNQ economy, the direct and in-direct effects of the Project are summarised as follows.

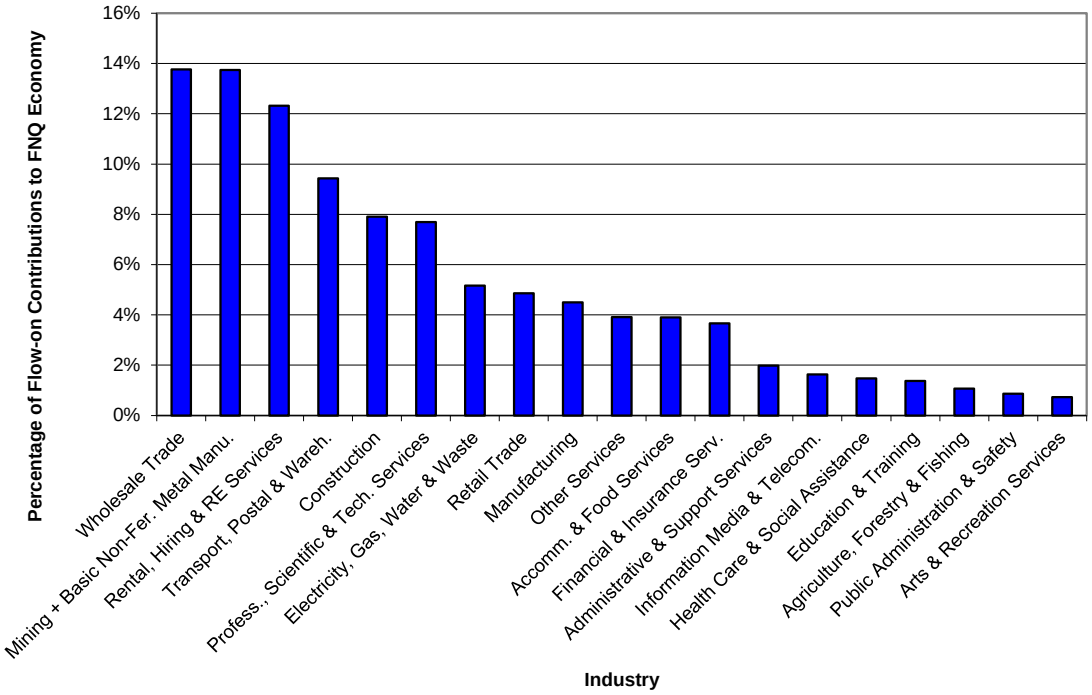
Output

At 22.5Mdptpa, with direct output of $675 million, the output induced (indirect output) from the FNQ economy would be $292 million. The total value of the Project to the FNQ economy would be $967 million. Therefore, the total output generated by the mine at 22.5Mdptpa is worth approximately 2.1% of the regional economy's estimated output for 2011.

At 50Mdptpa there would be $673 million of indirect output induced in the FNQ economy from the direct output of $1.50 billion. This means at capacity, the total value of operations to the regional economy would be $2.17 billion annually, which equates to around 4.6% of the regional economy's current estimated output for 2011.

Figure 3 provides a breakdown of the flows of the indirect impacts to the FNQ economy at 22.5Mdptpa. The majority of indirect impacts would be generated in Wholesale Trade (13.8%) followed by Mining (13.7%). Note that a similar distribution of indirect impacts would be seen at the 50Mdptpa production level.

Figure 3: Flow-on Impacts on FNQ Economic Output by Industry (22.5Mdptpa)



Value Added

At the initial levels of production (22.5Mdptpa), there would be a direct value-added of $409 million generated and an indirect value-added induced of $150 million for the year. This would result in a total value-added to the FNQ economy of $559 million, which equates to around 4.0% of the total estimated Gross Regional Product generated in the regional economy ($13.9 billion) for 2011.

By the time the mine reaches capacity (50Mdptpa), the direct value added component of the operations would reach $909 million, with output also inducing $344 million of indirect value added in the FNQ economy, giving a total of $1.25 billion annually. This equates to around 9.0% of the regional economy's estimated Gross Regional Product for 2011.

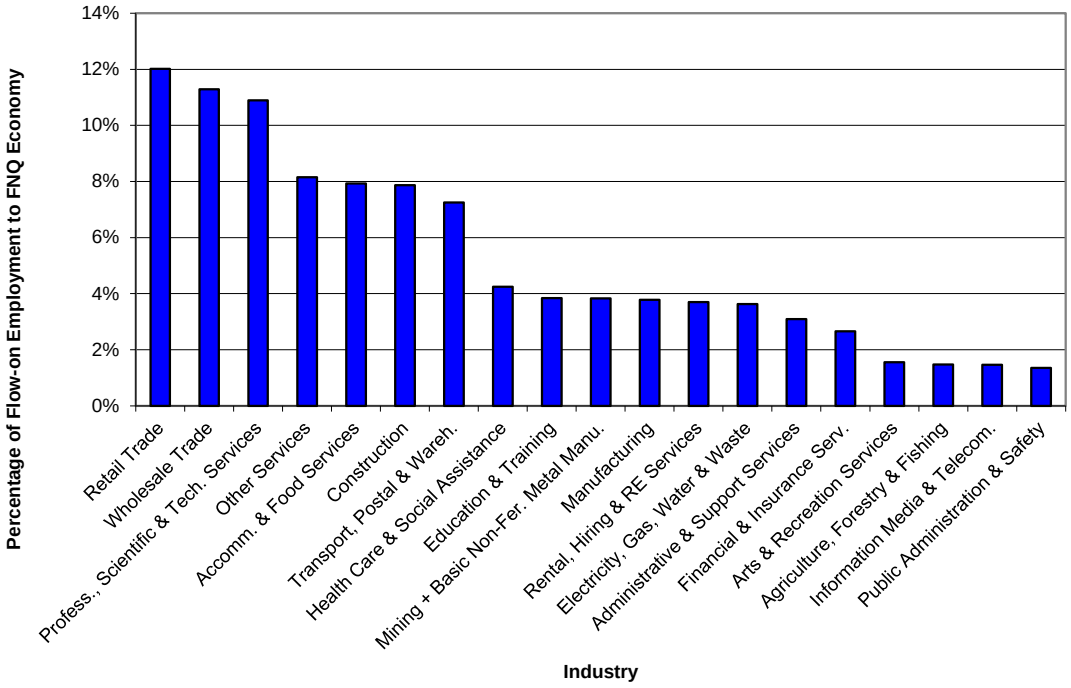
Employment

It is likely, as a result of the direct jobs provided by the Project at 22.5Mdptpa, that a further 1,036 jobs would be generated indirectly across other sectors of the FNQ economy (including contractors) resulting in 1,516 jobs being supported throughout FNQ, inclusive of contractors.

At capacity of 50Mdptpa, 2,193 jobs would be supported by the operations in other industries, in addition to the 176 contractors. With the 1,170 employee jobs provided directly by the Project, this means that a total of 3,539 jobs would be supported in the FNQ economy by the Project at 50Mdptpa.

Figure 4 provides a breakdown of the flows of the indirect employment to the FNQ economy at 22.5Mdptpa. The majority of indirect impacts would be generated in Retail Trade (12%) followed by Wholesale Trade (11%). Note that a similar distribution of indirect employment would be seen at the 50Mdptpa production levels.

Figure 4: Flow-on Employment to FNQ Economy by Industry (22.5Mdptpa)



1.1.2.3 Impacts on the Queensland Economy

For the Queensland economy the direct and indirect effects of the operations of the Project are detailed below.

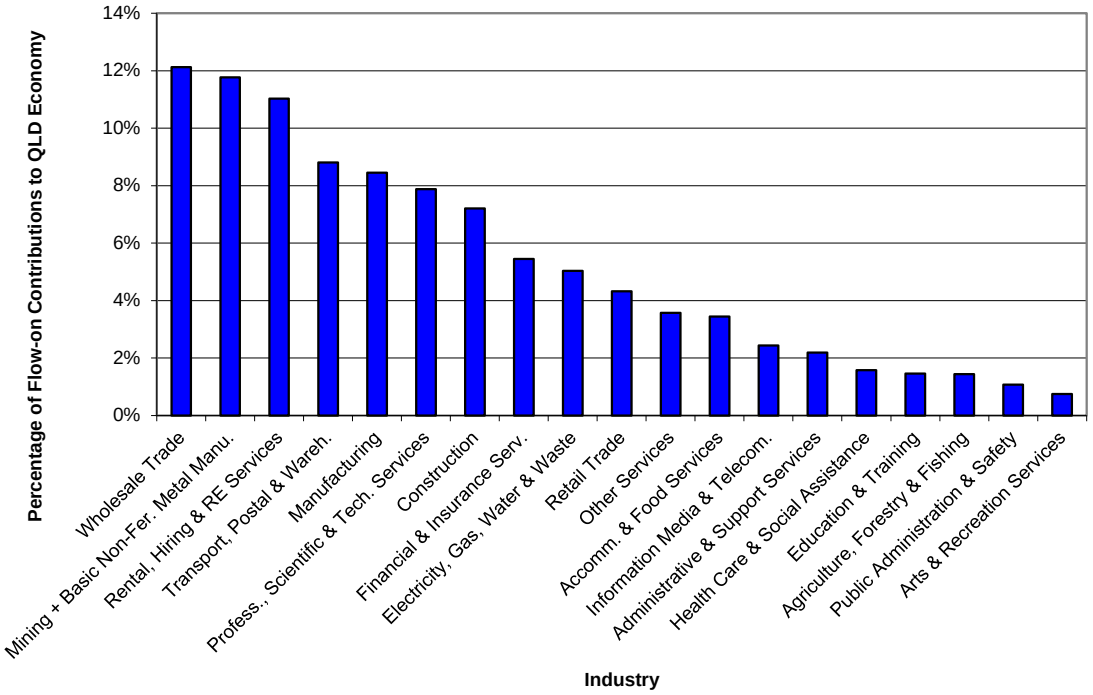
Output

At 22.5Mdptpa, with direct output of $675 million, the indirect output induced from the Queensland economy would be $584 million. Therefore, the total value of the Project to the Queensland economy will be $1.25 billion. In context, the Queensland economy was worth an estimated $826.9 billion annually in output in 2011.

At 50Mdptpa there would be $1.33 billion of indirect output induced in the Queensland economy from direct output of $1.50 billion. This means at capacity of 50Mdptpa, the total value of operations to the Queensland economy would be $2.83 billion annually (0.3% of Queensland's estimated annual output for 2011).

Figure 5 provides a breakdown of the flows of the indirect impacts to the Queensland economy at 22.5Mdptpa. The majority of indirect impacts would be generated in Wholesale Trade (12.1%) followed by Mining (11.8%). Note that a similar distribution of indirect impacts would be seen at the 50Mdptpa production levels.

Figure 5: Flow-on Impacts on Queensland Economic Output (22.5Mdptpa)



Value Added

Given the initial levels of production (22.5Mdptpa), there would be a direct value-added of $409 million and an indirect value-added induced of $279 million each year. This would result in total value-added to the Queensland economy of $688 million. In context, the Queensland Gross State Product for the financial year ending 2011 was $266.6 billion.

By the time the mine reaches capacity (50Mdptpa), the direct value added component of the operations would reach $909 million, with output also inducing $632 million of indirect value added in the Queensland economy, giving a total of $1.54 billion annually (0.6% of Queensland's Gross State Product).

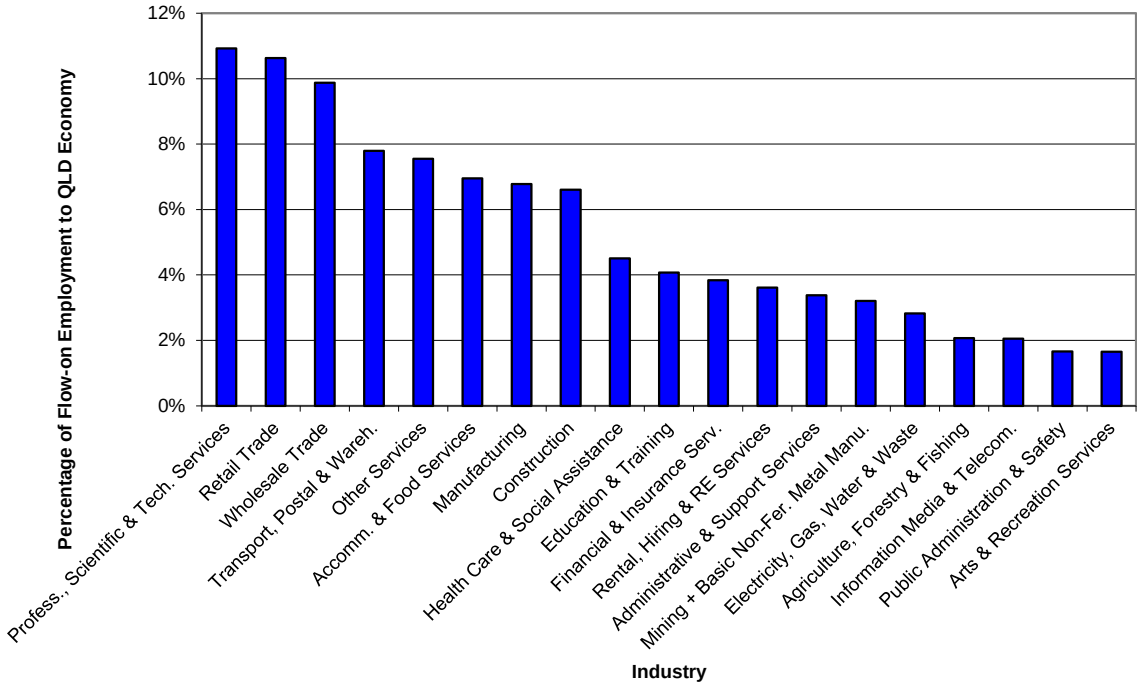
Employment

It is likely, as a result of the direct jobs provided by the Project at 22.5Mdptpa, that a further 2,080 indirect jobs would be generated across other sectors of the Queensland economy (including contractors) resulting in 2,560 jobs being supported throughout Queensland.

At capacity of 50Mdptpa, another 4,532 jobs would be supported indirectly by the Project in other industries, in addition to the 176 contractor jobs provided by the Project. This means that a total of 5,878 jobs would be supported in the Queensland economy by the Project at 50Mdptpa.

Figure 6 provides a breakdown of the flows of the indirect employment to the QLD economy at 22.5Mdptpa. The majority of indirect impacts would be generated in Professional, Scientific & Technical Services (10.9%) followed by Retail Trade (10.6%). Note that a similar distribution of indirect employment would be seen at the 50Mdptpa production level.

Figure 6: Flow-on Employment to Queensland Economy (22.5Mdptpa)



1.1.2.4 Impacts on the National Economy

For the Australian economy, the indirect contribution of the Project can be summarised as follows.

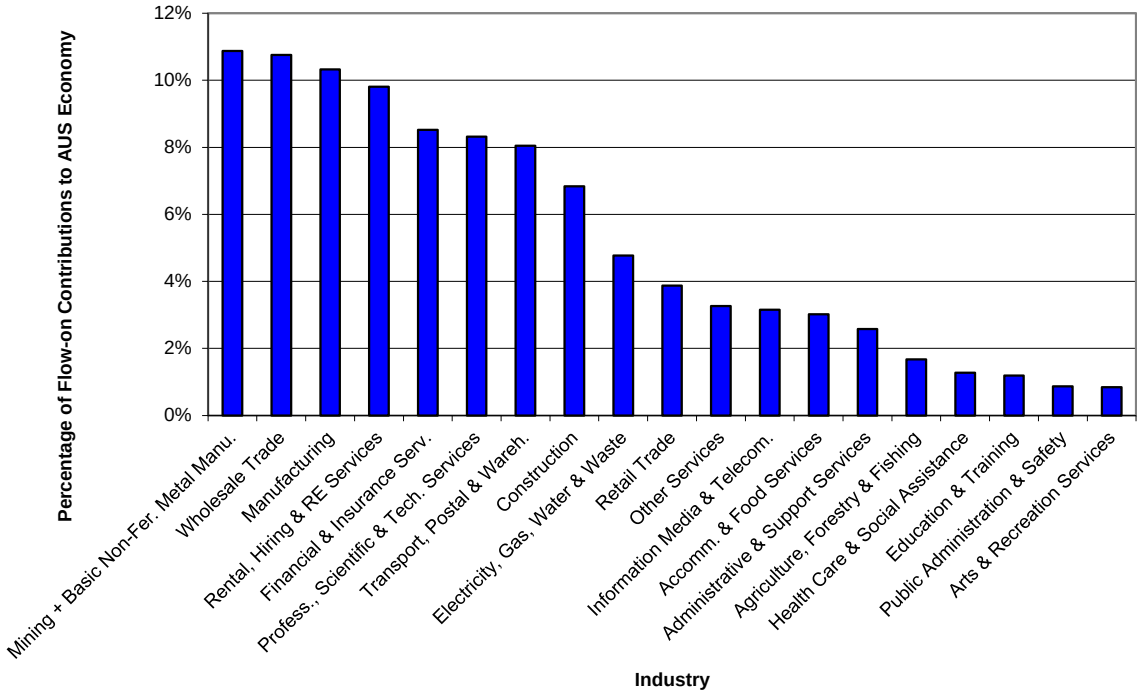
Output

At 22.5Mdptpa, with direct output of $675 million, the output induced (indirect output) from the Australian economy would be $920 million. Therefore, the total value of the Project to the Australian economy would be $1.60 billion. In context, the Australian economy was worth an estimated $4.1 trillion annually in 2011.

At 50Mdptpa there would be $2.02 billion of indirect output induced in the Australian economy from direct output of $1.50 billion. This means at capacity, the total value of operations of the Project to the Australian economy would be $3.52 billion annually (approximately 0.09% of the nation's output in 2011).

Figure 7 provides a breakdown of the flows of the indirect impacts to the Australian economy at 22.5Mdptpa. The majority of indirect impacts would be generated in Mining (10.9%) followed by Wholesale Trade (10.8%). Note that a similar distribution of indirect impacts would be seen at the 50Mdptpa production level.

Figure 7: Flow-on Impacts on Australian Economic Output (22.5Mdptpa)



Value Added

Given the initial levels of production (22.5Mdptpa), there would be a direct value-added of $409 million and an indirect value-added induced of $444 million for the year. This would result in a total value-added to the Australian economy of $853 million. In context, the Australian GDP was $1.4 trillion for the financial year ending 2011.

By the time the mine reaches capacity at 50Mdptpa, the direct value added component of the operations would reach $909 million, with output also inducing $974 million of indirect value added in the Australian economy, giving a total of $1.88 billion annually. This equates to 0.13% of the nation's GDP.

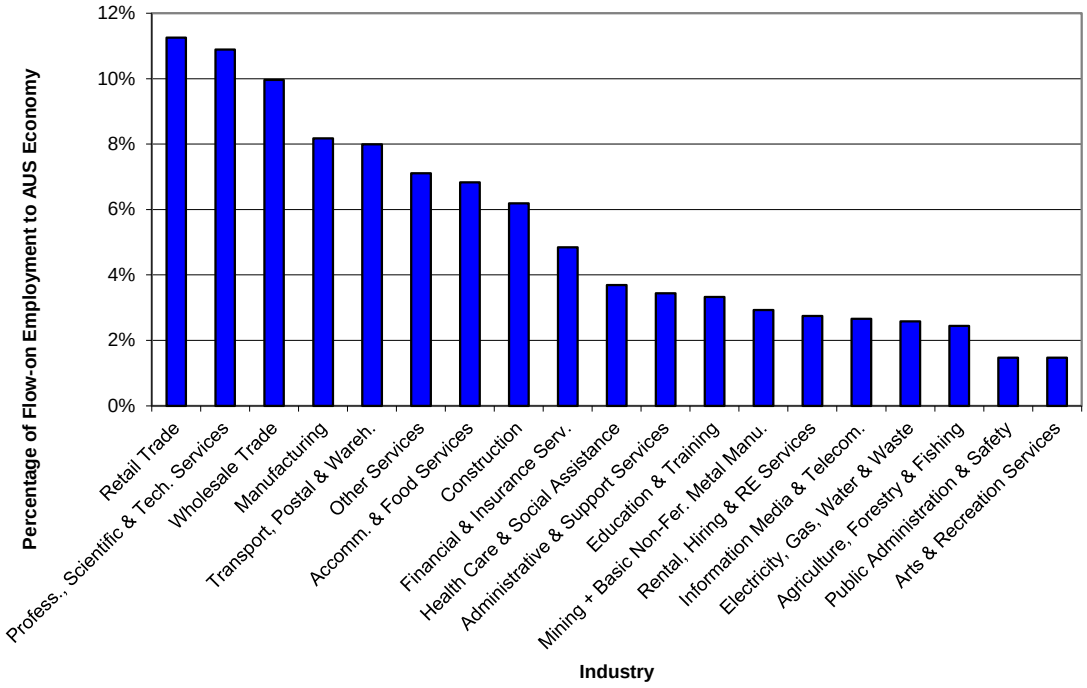
Employment

It is likely, as a result of the direct jobs provided by the Project at 22.5Mdptpa, that a further 3,176 indirect jobs would be generated across other sectors of the Australian economy resulting in 3,656 jobs being supported throughout Australia.

At capacity of 50Mdptpa, another 6,788 jobs would be supported indirectly by the operations in other industries, in addition to the contractor jobs. This means that a total of 8,134 jobs would be supported in the Australian economy by the Project at 50Mdptpa.

Figure 8 provides a breakdown of the flows of the indirect employment to the Australian economy at 22.5Mdptpa. The majority of indirect impacts would be generated in Retail Trade (11.3%) followed by Professional, Scientific & Technical Services (10.9%). Note that a similar distribution of indirect employment would be seen at the 50Mdptpa production level.

Figure 8: Flow-on Employment to Australian Economy (22.5Mdptpa)



1.2 References

RTA (2011). South of Embley Project Environmental Impact Statement. Rio Tinto Alcan.

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