24 ECONOMIC ASSESSMENT

24.1 ECONOMIC MODELLING

24.1.1 GOVERNMENT REVENUE ESTIMATES

Issue:

Clarification was requested on the estimated revenues to be received by the South Australian Government as a result of the proposed expansion. In particular, further information was sought on the quantification of GST revenues (Horizontal Fiscal Equalisation (HFE) impacts), royalties and council taxes. Clarification of taxation revenue impacts was also requested.

Submissions: 1 and 2

Response:

Detailed discussions have been held with the South Australian Department of Treasury and Finance (DTF) in relation to potential Horizontal Fiscal Equalisation (HFE) impacts. Data has been provided to DTF to allow it to quantify the effect.

As noted in Section 21.4.4 of the Draft EIS, the MMRF-Green model used to assess the economic benefits of the proposed expansion does not estimate how GST revenue would be redistributed among the states and territories because this redistribution is determined by the Commonwealth Grants Commission through a complex process designed to equalise the capacity of each jurisdiction to provide an average level of services to all Australians.

The MMRF-Green model produces estimates of Australian Government taxes on income (personal and company), GST collections, federal excise tax, state payroll tax and other local taxes. The model does not project revenue collections by local government councils.

The government revenues reported in Table 21.8 of the Draft EIS, repeated in the Supplementary EIS as Table 24.1, include payroll, other local taxes and royalties but exclude GST revenue collected in South Australia and the Northern Territory. An economic sensitivity analysis has also been performed for the project, with outcomes provided in Section 1.4 and Appendix A6 of the Supplementary EIS.

Table 24.1 Key findings of the economic assessment[1]

Economic measure	Outcomes under the expansion scenario (Year 0–30)
GDP (NPV)	$18.7 billion
GSP South Australia (NPV)	$45.7 billion
GSP Northern Territory (NPV)	$936 million
GRP (NPV)	
Northern SD	$22.6 billion
Adelaide SD	$24.2 billion
Consumption/economic welfare (NPV)	
Australia	$21.8 billion
South Australia	$19.8 billion
Northern Territory	$1.1 billion
Full-time-equivalent employment – Year 0–30 (average absolute and percentage change over BAU-case)	
Australia	230 (0%)
South Australia	13,100 (5.2%)
Northern SD	7,000 (19.0%)
Adelaide SD	6,600 (1.2%)
Northern Territory	250 (0.2%)
Government revenue (NPV)	
Australian Government	$2.6 billion
South Australian Government[2]	$3.4 billion
Northern Territory Government[2]	$47 million

[1] Sourced from MMRF-Green model.
[2] This includes payroll, other local taxes, and royalties but excludes GST revenue collected in South Australia and the Northern Territory.

Issue:
Project cost and commodity price assumptions were not disclosed in the Draft EIS, and this information was requested.

Submissions: 1, 2 and 10

Response:

As noted in the Draft EIS, BHP Billiton is not in a position to provide commodity price or project cost assumptions as this information is commercially sensitive and could affect future negotiations and/or contracts. As noted in Chapter 21 of the Draft EIS, the model assumes that there would be major initial capital expenditure from Year 0 to Year 6, with a subsequent input of investment from Year 7 to Year 11, and with ongoing capital investments throughout the remaining modelled 18 years. The model predicted that this injection of capital into the economy by BHP Billiton would substantially stimulate the national, state and regional economies. The economic sensitivity analysis reported in Section 1.4 of the Supplementary EIS demonstrates that the scale and longevity of the project would continue to realise significant economic and social benefits even if the demand for Olympic Dam products led to a slower than predicted economic injection from the expansion project.

Long-term commodity price forecasts could be obtained from analyst reports produced by various investment banks and other businesses that provide this type of information.

BHP Billiton prefers not to provide information from these sources to government or the public because it does not wish to imply its approval of or agreement with such forecasts.

Issue:

Additional information was requested on the assumptions about labour supply elasticity and employment predictions, particularly given the recent economic downturn.

Submissions: 1 and 2

Response:

The MMRF-Green model is a public, peer-reviewed model developed from Australian Bureau of Statistics (ABS) data. Assumptions regarding labour supply elasticity are derived from ABS data.

The MMRF-Green model considered the number of hours worked, not the number of jobs created. Once the model has projected the change in the number of hours worked, the increase in the number of jobs created is calculated. The model assumes that a 1% increase in hours worked would generate additional jobs and more hours worked per person. If labour market conditions are tight, then it is generally assumed there would be fewer jobs created than in a labour market that has more 'slack', and more hours worked per person.

For example, in slack labour market conditions, the MMRF-Green model assumes that 50% of the additional hours worked would translate into additional jobs. Conversely, in tight labour market conditions, the MMRF-Green model assumes that 30% of the additional hours worked would translate into additional jobs and 70% would be extra work for people who already have jobs. This is modelling convention-based, in the main, on general long-run labour market conditions and behaviour. The convention has no bearing on any result other than reported numbers of people employed.

The modelling undertaken for the proposed expansion indicated labour market conditions would be tight. This means the estimate of the number of jobs created is conservative. The crowding out impact of the increase in the number of hours to be worked would be the same in either case. Rerunning the calculations based on an assumption of a slack labour market would have the effect of substantially increasing the expected number of jobs compared to the scenario presented in the Draft EIS; therefore the jobs impact reported in the Draft EIS was appropriately conservative.

With respect to the impact of the recent economic downturn (commonly known as the Global Financial Crisis – GFC), it is important to remember that the modelling shows the change from the base case where no expansion would occur. The modelling predicted the changes in the economy relative to the base case based on long-run data collected by the ABS regarding the impacts of new investment on the economy. The proposed expansion is BHP Billiton's response to predicted global increases in the demand for copper, uranium oxide, gold and silver. However, it is not uncommon for large-scale, long-life projects to be impacted by an array of factors that may result in either an accelerated program or a slow-down in schedule due to changes in global economic conditions over the life of the project. The Global Financial Crisis (GFC) of 2008 is a recent example where numerous projects the world over were impacted by the dramatic downturn in the world's economy. Therefore, it is only prudent that these possibilities are captured in the SEIS project schedule by expressing the schedule across a range of timelines. The outcomes of an economic sensitivity analysis are provided in Section 1.4 of the Supplementary EIS.

Ultimately, however, the modelling is best used to project the order of magnitude of the impacts and benefits over the longer term, and the modelling for the Draft EIS and Supplementary EIS demonstrate significant economic and social benefits over the long term.

Issue:

Further explanation of the use of a 7% social discount rate was requested, along with a sensitivity analysis using a range of discount rates, including a commercial discount rate.

Submissions: 1 and 10

Response:

The Net Present Value (NPV) of an investment or stream of cash flows quantifies the present value of future revenues and expected costs associated with the investment. This is premised on the concept of the 'time value of money': that is, a dollar is generally worth less tomorrow than it is today. To determine the present value of a project or investment, future cash outlays and revenues are 'discounted' using a social discount rate. Discounting cash flows enable decision makers to compare different investments on a like-for-like (present value) basis.

The choice of the social discount rate reflects the opportunity cost of capital: that is, the return that could be made from investing the funds in the 'next best alternative'. The notional return from investing in 'risk-free' government bonds is usually accepted as the appropriate 'next best alternative' investment for the purposes of an economic impact assessment. At the time of writing this section of the Draft EIS (2008), the government bond rate was approximately 7%.

It is important to note that the modelling was conducted in real terms (i.e. discounting for the effects of inflation), and the discount rate represents a real discount rate. Currently, the nominal long-term bond rate is 6%, which was quoted as the basis for the proposed Resource Super Profits Tax. This could suggest a more appropriate real discount rate would be in the order of 4%. The 7% real discount rate used in the modelling for the Draft EIS is therefore a conservative discount rate (i.e. using a 7% discount rate instead of 4% means the estimated net benefits are lower, as is illustrated in Table 24.2 of the Supplementary EIS).

Table 24.2 presents the key findings of a sensitivity analysis to show the impact of a 5% and 10% real discount rate.

Table 24.2 Key findings – social discount rate sensitivity analysis

Economic measure	NPV 5%, Year 0–30	NPV 7%, Year 0–30	NPV 10%, Year 0–30
GDP – Australia	$25,297 million	$18,721 million	$12,375 million
GSP			
South Australia	$63,044 million	$45,701 million	$29,355 million
Northern Territory	$1,265 million	$936 million	$619 million
Gross Regional Product			
Adelaide SD	$33,628 million	$24,223 million	$15,388 million
Northern SD	$30,899 million	$22,627 million	$14,778 million
Consumption			
Australia	$29,137 million	$21,754 million	$14,622 million
South Australia	$27,557 million	$19,822 million	$12,604 million
Northern Territory	$1,457 million	$1,088 million	$731 million
Government revenues			
Australia	$3,562 million	$2,599 million	$1,685 million
South Australia*	$4,685 million	$3,381 million	$2,153 million
Northern Territory*	$62 million	$47 million	$31 million

* This includes payroll, other local taxes, and royalties but excludes GST revenue collected in South Australia and the Northern Territory.

24.1.2 MODEL OUTPUTS

Issue:

Full data tables from the MMRF-Green model were requested to show potential economic impacts across all regions and industries.

Submissions: 1, 2 and 44

Response:

The full data output tables from the MMRF-Green model have been provided in a commercial-in-confidence arrangement to the Australian, South Australian and Northern Territory governments. A summary of the data from the MMRF-Green model (as presented in Tables 21.1, 21.4, 21.5 and 21.6 of the Draft EIS) is presented in the Supplementary EIS as Tables 24.3 to 24.6 (see also Section 1.4 and Appendix A6).

Table 24.3 National, state and regional economic benefits

Region	Average annual increase and % change over the BAU case		
	Year 0–6	Year 7–11	Year 12–30
Australia – GDP	$350 million (0%)	$1.9 billion (0.2%)	$2.5 billion (0.2%)
South Australia – GSP	$650 million (1%)	$4.3 billion (6.4%)	$6.9 billion (8.7%)
Northern Territory – GSP	$18 million (0.1%)	$93 million (0.5%)	$125 million (0.5%)
Adelaide SD – GRP	$230 million (0.6%)	$2.4 billion (6.0%)	$3.7 billion (7.9%)
Northern SD – GRP	$470 million (23%)	$2.0 billion (93%)	$3.2 billion (126%)

Table 24.4 Employment effects

Region	Average increase in FTEs and % change over the BAU case		
	Year 0–6	Year 7–11	Year 12–30
Australia	1,900 (0%)	400 (0%)	–400 (0%)
South Australia	5,400 (1.5%)	15,700 (6.1%)	15,200 (6.4%)
Northern Territory	250 (0.2%)	250 (0.2%)	250 (0.2%)
Adelaide SD	1,600 (0.3%)	8,800 (1.5%)	8,500 (1.4%)
Northern SD	3,900 (11.7%)	7,600 (22.5%)	7,400 (21.1%)

Table 24.5 Top five industry impacts – South Australia (Year 0–30)

Industries	BAU-case projected CAGR (%)	Expansion scenario projected CAGR (%)	Real value added (NPV7%)
Chemical products ex. petrol	1.5	1.8	$90 million
Electricity supply	1.7	2.5	$730 million
Road transport services	1.3	1.8	$2.1 billion
Rail transport industry	1.4	2.2	$570 million
Water transport services	1.0	1.6	$30 million

Table 24.6 Top five industry impacts – Northern Territory (Year 0 to Year 30)

Industries	BAU-case projected CAGR (%)	Expansion scenario projected CAGR (%)	Real value added (NPV7%)
Electricity supply	1.7	1.8	$14 million
Construction services	1.1	1.1	$68 million
Road transport services	1.3	1.3	$46 million
Rail transport services	1.4	1.4	$12 million
Water transport services	1.0	1.1	$1 million

24.1.3 LOCAL AND STATE ECONOMIES

Issue:

Further information was sought on the proposed expansion and potential impact on the economy and the job market, namely whether:

- the export and processing of copper concentrate overseas would reduce the benefits to the South Australian economy
- the local economy would be affected by a lack of jobs available at the mine in the future
- BHP Billiton would guarantee long-term job security for the mine.

Submissions: 2, 10 and 218

Response:

The potential impact and benefits on the local and state economies and the job market were presented in Chapter 21 of the Draft EIS and further information has been presented in Section 1.4 and 24.1 of the Supplementary EIS.

The proposed expansion includes the export and processing of copper concentrate overseas, and the economic impact assessment was undertaken on this basis. The proposed expansion provides a significant benefit to the South Australian economy. Section 4.2.2 of the Supplementary EIS discusses the reasons for rejecting the processing of all copper concentrate at Olympic Dam, highlighting that this would require an additional smelter to be constructed at Olympic Dam and the additional cost of this smelter would not provide the optimal return on investment.

As noted in Section 19.5.1 of the Draft EIS, a substantial construction workforce would be required during the first 11 years of the proposed expansion, and the operational workforce would also increase during this time and then remain stable once the expansion was fully operational (refer Table 19.12 of the Draft EIS). This predicted workforce is based on the continued processing of about 800,000 tpa of copper concentrate at Olympic Dam and the export for processing of about 1.6 Mtpa of copper concentrate overseas. As this is the proposed mode of operation for the next 40 years (the duration of the impact assessment for the Draft EIS), the job market should remain stable and allow local business owners to develop sound business plans and ensure the local economy remained strong.

While BHP Billiton cannot control or predict the behaviour of global financial markets, it is committed to the long-term operation of Olympic Dam, including the proposed expansion (should it be approved) and would endeavour to ensure that job security was maintained in the future.

Issue:

The potential for crowding out was questioned, given the scale of the project in the context of the South Australian economy. Concern was also expressed about the potential effects on business opportunities and employment when the construction phase was completed.

Submissions: 2 and 10

Response:

The economic impact assessment predicts the change in jobs available and other economic activity created in each year as a result of the proposed expansion. Full industry employment tables have been provided to the South Australian Department of Trade and Economic Development (as requested) and a summary of the results is presented in the Supplementary EIS (see Section 24.1.2). These tables show that while the number of jobs in some industries may decrease compared to the business-as-usual case, overall there is still growth in employment. The detailed analysis predicted that there would be a net expansion in economic activity and jobs in each year relative to what would have otherwise occurred. Moreover, the analysis shows that the proposed expansion would accelerate growth for some time but that the industries would be expected to continue growing even as the stimulus from the expansion declined over time.

The analysis in the economic impact assessment provides a basis for government and other industries to plan their response to the proposed expansion.

The economic modelling was undertaken in 2008. Since then, an economic downturn (commonly known as the GFC) has occurred. The potential crowding out impact estimated by the model based on the 2008 data may be reduced in the short to medium term as a result of the GFC. This would suggest the estimates of net economic benefit for South Australia and Australia are likely to be conservative (i.e. the actual benefits may be higher than those presented in the Draft EIS).

The inputs for the economic model included year-by-year estimates of direct employment in both the construction and operational phases of the proposed expansion, which were provided in Chapter 19 of the Draft EIS (refer Tables 19.12 and 19.13). The economic model predicted the total employment that would be generated by the proposed expansion (see Section 1.4 and Table 24.1 of the Supplementary EIS): that is, the direct (BHP Billiton jobs) and indirect employment effects. While the number of direct jobs declines following the construction phase, the number required during the operational phase is significant, especially given the long timeframe for this phase. The operational phase would be expected to continue providing a stimulus to other industries.

Issue:

Commentary was requested on the capacity of South Australian businesses to supply products for the proposed expansion, and whether BHP Billiton's procurement strategy allows for local businesses to provide products and services.

Submission: 2

Response:

The assessment of business opportunities was presented in Section 19.6 of the Draft EIS and established the following:

- while the direct and indirect business opportunities from the proposed expansion are significant, the scale and speciality of the goods and services required may extend beyond the capacity of many local companies
- a high residual benefit is predicted in the short, medium and long term for South Australian and Australian businesses as a result of the proposed expansion, assuming that companies can improve their capacity to supply goods and services competitively.

BHP Billiton would continue to work with local and regional industry organisations, such as the Industry Capability Network (ICN) and economic development boards, to identify business opportunities and help local businesses take advantage of them. An online project supplier database has also been created by BHP Billiton and the ICN to provide a snapshot of business capability in South Australia and Australia, and to enable potential suppliers to register their interest in the expansion project. As discussed in Section 19.5.1 of the Draft EIS, information would also be provided on current and future business opportunities, tendering processes and BHP Billiton's standards to facilitate pre-qualification of South Australian businesses.

As noted in Section 7.3.2 of the Draft EIS, a series of information sessions was held in 2008 in Roxby Downs, Port Augusta and Adelaide for potential suppliers to help them identify opportunities in the project.

As far as is reasonable and economically and commercially practicable, where price, quality, delivery and service were equal to or better than that obtainable elsewhere, BHP Billiton would:

- use South Australian labour or, where this was not available, Australian labour
- use the services of South Australian contractors and consultants or, where these were not available, Australian contractors and consultants
- acquire goods and materials from South Australian manufacturers and suppliers or, where these were not available, acquire from Australian manufacturers and suppliers.

24.1.4 FUTURE ECONOMIC ENVIRONMENT

Issue:

It was questioned whether potential changes in the future economic environment, particularly related to emissions/carbon trading, had been considered during the impact assessment.

Submissions: 1, 10 and 136

Response:

In accordance with BHP Billiton's position on climate change, a carbon pricing sensitivity analysis was undertaken internally for the proposed expansion. This information is commercially sensitive and remains confidential.

The modelling for the Draft EIS economic assessment was undertaken during 2008. It did not contemplate a potential emissions trading scheme (ETS) as the design of such a scheme was not then known. It remains unclear today what the final design of such a scheme would be and how it may influence the economic impact of major resource projects in Australia. The Australian Government has recently delayed the implementation of an ETS until at least 2013.

Issue:

It was questioned whether the Draft EIS had taken into account broader economic factors such as changes in demand and its impact on BHP Billiton's ability to secure contracts.

Submission: 1

Response:

The assumptions underpinning the economic impact modelling were based on conservative long-run estimates for demand. Furthermore, an economic sensitivity analysis for the project assessing potential changes to market demand has been undertaken and is discussed in Section 1.4 of the Supplementary EIS.

With regard to contracts, as production from the proposed expansion is still some years away, securing contracts, and the types of contracts entered into, would be determined at the appropriate time in accordance with BHP Billiton policies, the prevailing market conditions and risk profiles.

24.2 GOVERNMENT REVENUE AND EXPENDITURE

24.2.1 INDUSTRY SUBSIDIES

Issue:

With the proposed increase in the use of diesel fuel, concern was raised about the monetary value of rebates BHP Billiton would receive from the Australian Government over the life of the proposed expansion. It was questioned whether the proposed expansion would be financially sustainable if these rebates were reduced or removed.

Submissions: 2, 7, 10, 11, 12, 13, 24, 35, 42, 43, 44, 46, 65, 92, 112, 116, 125, 136, 141, 147,159, 161, 177, 185, 196, 216, 217, 241, 247, 248, 254, 255, 288, 289, 299, 331, 351, 363, 369, 379, 388 and 389

Response:

The economic assessment of the proposed expansion assumed the existing regime of diesel fuel rebates would continue. It is a matter for the Australian Government as to whether this regime continues. In the event that diesel fuel rebates were not continued, or were reduced, BHP Billiton and its specialist consultants would assess the potential financial impact on the operation at that time and investigate alternative energy strategies in accordance with the prevailing market conditions and technological advances that may have arisen.

24.2.2 GOVERNMENT REVENUE

Issue:

It was suggested that the royalty rate paid to the South Australian Government for the proposed expansion should be increased above the current rate of 3.5%.

Submissions: 13, 16, 26, 78, 88 and 269

Response:

The royalty rate applicable to Olympic Dam is a matter for the South Australian Government.

Issue:

Clarification was sought on the revenue that would be received by the South Australian Government (in the form of rates, fees and taxes) for the proposed desalination plant at Point Lowly.

Submission: 26

Response:

It is not yet possible to quantify the revenue that would be received by the South Australian Government for the proposed desalination plant at Point Lowly.

At the time of construction and operation of the plant, the South Australian Government and/or Whyalla City Council would determine the appropriate rates, fees or taxes to be applied.

24.2.3 GOVERNMENT EXPENDITURE

Issue:

Clarification was sought on the cost to the Australian, South Australian and Northern Territory governments for infrastructure, and in particular for infrastructure related to the NT transport option.

Submissions: 10, 35 and 205

Response:

The cost to the Australian, South Australian and Northern Territory governments for infrastructure related to the proposed expansion is a matter for government consideration and would not be determined by BHP Billiton.

As noted in Section 21.4.4 of the Draft EIS, no incentives from any of these three governments were included in the economic model. However, $100 million in South Australian Government expenditure was assumed in the model to be a contribution to common-user economic and social infrastructure in Roxby Downs, for items such as schools, hospitals and police stations. This was an estimate for modelling purposes only and no commitments have been made by the South Australian Government. In addition, the MMRF-Green model assumed that the growth in economic activity leads to investment over time by the public sector to meet expanded demand for public services.

As discussed in Section 21.1.1 of the Draft EIS, no commercial arrangements (i.e. capital and operating cost arrangements) have been determined for the Port of Darwin facilities, and therefore, for the purpose of the model, no expenditure from the Northern Territory Government was assumed. It is noted, however, that some investment by the NT Government would be required as part of land reclamation activities for the ongoing development at East Arm. The East Arm Wharf Facilities Masterplan 2030 Land Use Strategy (Darwin Port Corporation 2010) has been released and provides a blueprint for the future development of the East Arm wharf. The Masterplan is part of a $150 million infrastructure program to upgrade the East Arm wharf over the next 20 years (NT Government 2010).

The NT Government, as owner of the rail line from Alice Springs to Darwin, is responsible for the safety and maintenance of the line. Section 20.3 of the Supplementary EIS provides details of the cost of recent upgrades to the rail line (and in particular level crossings) completed by the NT Government (Department of Lands and Planning).

24.3 ECONOMIC COSTS AND BENEFITS

24.3.1 COST-BENEFIT ANALYSIS

Issue:

It was questioned whether a cost-benefit analysis was undertaken for the proposed expansion, considering both potential costs and benefits to government and the public.

Submissions: 13, 26, 44, 79, 147 and 363

Response:

The joint government EIS Guidelines did not specifically request a cost-benefit analysis to be undertaken for the proposed expansion. The economic impact assessment (refer Chapter 21 of the Draft EIS) presented the most comprehensive way to evaluate the net impact and benefit of the proposed expansion on the economy, and the potential costs and benefits associated with the project. Importantly, while the economic modelling takes account of the benefits, it also takes account of the costs, including the crowding out impact on other investments in South Australia (derived from data collected and published by ABS) and the opportunity costs of funding for public infrastructure and services due to expanded activity in the state.

The environmental, economic and social impact assessment presented in the Draft EIS not only identified potential impacts of the proposed expansion, but also the benefits and opportunities created. Section 3.5 of the Draft EIS summarised the potential benefits (economic, environmental and social) that would be forgone if the proposed expansion did not go ahead.

24.3.2 ECONOMIC IMPACT OF HAZARDS/RISKS

Issue:

Further explanation of the basis of the economic risk assessment was requested.

Submission: 2

Response:

An assessment of financial risk of major hazards was undertaken and the outcomes were presented in Section 26.3.4 of the Draft EIS. The risk assessment considered the major project hazards that could have an economic impact to a third party, such as business, industry or the community. In determining the likelihood and consequence of each potential hazard, the risk assessment considered the duration of potential impacts (i.e. days, months or years), the impact area (i.e. local, regional, state or national) and the potential cost (i.e. <$10m, $10m–$100m, >$100m–$1b or >$1b). Of the 27 identified risk events or risk situations that could have a significant economic impact on a third party, there were no 'extreme' risks, five 'high' risks, six 'medium' risks and 16 'low' risks. Section 1.6.2 of the Draft EIS provided the risk assessment look-up tables (i.e. the tables for determining likelihood, consequence and the resulting risk rating). All of the identified economic risks have been transferred to the BHP Billiton Olympic Dam Expansion Project Risk Register.

Issue:

The potential financial impact on BHP Billiton and the South Australian economy should the proposed operations be disrupted due to seismic activity was questioned.

Submission: 2

Response:

Chapter 8 of the Supplementary EIS discusses the risk of seismic events at Olympic Dam and the possible consequences. It is likely that there would be some seismic activity during the establishment of the open pit. However, the magnitude would be unlikely to disrupt operations. The likelihood of an event greater than 5.7 on the Richter scale is also discussed in Chapter 8. The likelihood of such an event is 'rare', and the consequence would be 'serious'. As such, the potential risk of disruption to the proposed operations and subsequent financial impact on BHP Billiton and the South Australian economy is categorised as moderate.