

# 30 CUMULATIVE EFFECTS

## 30.1 ASSESSMENT OF CUMULATIVE EFFECTS

### Issue:

It was suggested that the BHP Billiton Olympic Dam operation, like all mining of non-renewable resources, should reduce rather than increase production rates. It was suggested that this in turn would ensure a supply for future generations.

**Submissions:** 8, 270, 318, 353 and 356

### Response:

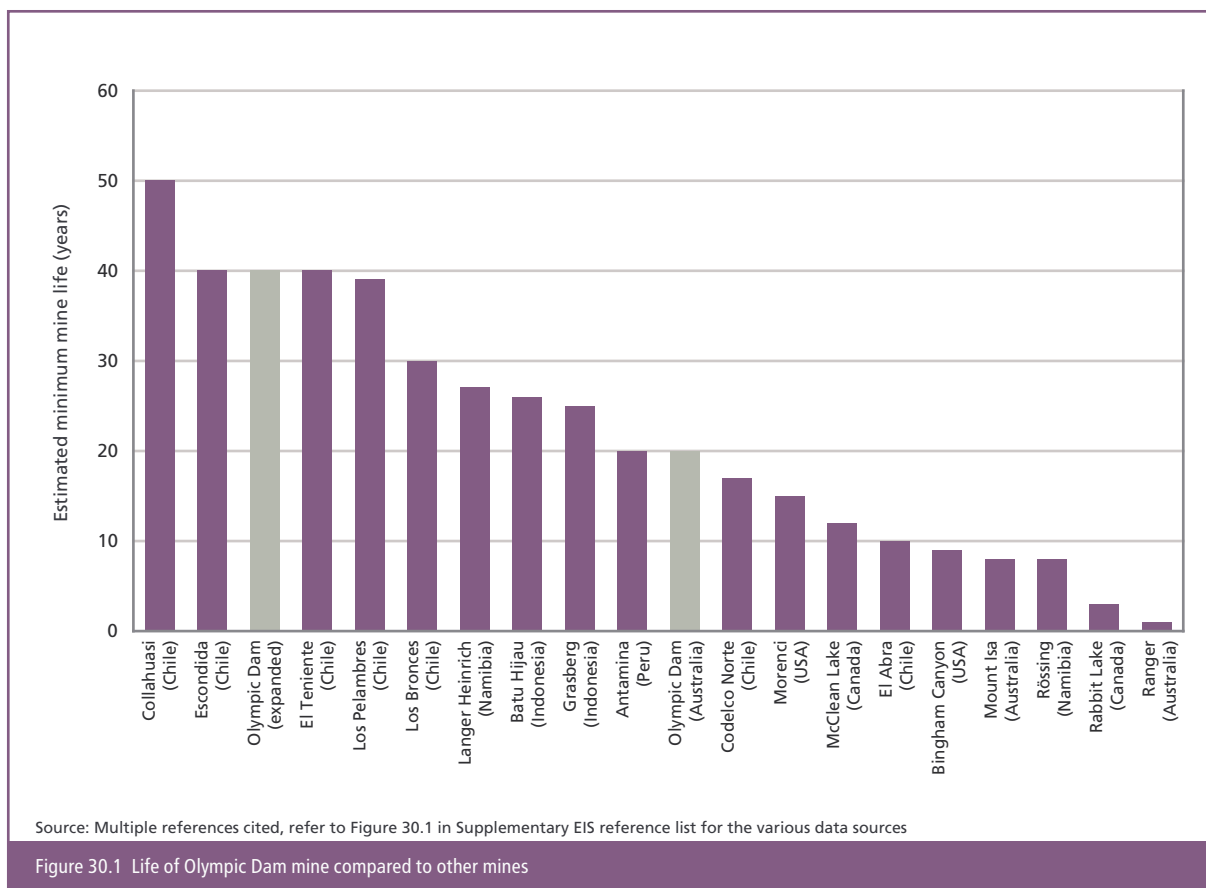
Reducing production rates would make the Olympic Dam operation uneconomic, and would shorten the life of the mine and prevent the effective utilisation of the resource.

These submissions suggest the operation would continue for longer and provide a mineral resource and jobs for future generations if less ore was extracted and processed each year. While at face value this may seem logical, it does not take into account the financial consequences of a lower production rate. Most, if not all, mining operations operate for only as long as they can generate a positive financial return. Lowering a production rate in an environment of increased capital and operating costs would more than likely lead to an early closure of the mine, rather than extending its life, with adverse consequences for employment and economic activity for future generations.

The scale of production for the proposed expansion of Olympic Dam was determined following consideration of the capital and operating costs for the necessary infrastructure, and the forecast economic return from the sale of Olympic Dam products. The proposal to expand Olympic Dam to the scale detailed in Chapter 5 of the Draft EIS is the result of this analysis.

As was presented in the Draft EIS, Olympic Dam has an estimated operating life of 20 years if it continues as an underground mine producing around 200,000 tonnes per annum of copper plus associated products. Increasing the annual production rate to 750,000 tonnes plus associated products by changing to an open pit operation actually increases the life of the mine to at least 40 years, and most likely well beyond that to about 100 years. This was illustrated in Figure 3.9 of the Draft EIS, with that figure reproduced in the Supplementary EIS as Figure 30.1. The life of the mine would be extended because the proposed open pit method would allow more of the ore to be recovered (refer Section 4.4 and Figure 4.1 of the Draft EIS for details). The additional costs of establishing and operating an open pit mine could not be justified, however, without a higher production rate, which in turn ensures that the expansion generates a positive economic return.

Therefore, the increased production rate at Olympic Dam would in fact extend, not reduce, the life of the operation by ensuring the resource was utilised more efficiently, which is to the benefit rather than the detriment of future generations.



**Issue:**

It was suggested that the cumulative effects were not assessed and that this should occur in the coastal areas of the project, even if new projects arose in these areas after the Olympic Dam expansion project components had been developed.

**Submissions:** 16, 207, 211, 227, 281, 301 and 346

**Response:**

The cumulative effects on coastal areas were assessed and the findings presented in the Draft EIS.

Chapter 25 of the Draft EIS presented the assessment of the cumulative effects of the existing operation and the expansion project (refer Section 25.2). The chapter also considered the effects of the expansion project plus other major projects and the associated infrastructure in the region of Olympic Dam (refer Section 25.4 of the Draft EIS). The purpose of the analysis in Section 25.4 of the Draft EIS was to discuss those major projects considered to be most relevant to the expansion project.

In assessing cumulative effects on South Australian coastal areas potentially impacted by the Olympic Dam expansion, Section 25.4 assessed the implications of the:

- Techport Australia and SEA 4000 ship building project in Port Adelaide
- Port Adelaide waterfront redevelopment project
- Port Adelaide shipping channel deepening at Outer Harbour
- Port River Expressway and its implications on rail and road transport
- South Australian Government desalination plant at Port Stanvac

- proposed developments near Point Lowly, including the:
  - South Australian Government's planned 500 ha industrial zone
  - bulk commodity harbour facility and associated Cape-class berthing jetty
  - Port Bonython Fuels' proposed tank farm to receive, store and distribute diesel fuel
  - expansion of the existing Cleanseas aquaculture industry.

The key impacts or effects identified were the competing demands for labour and energy from the state's electricity grid, the potential for increased community concerns about the industrialisation of coastal areas, and the further contributions that these projects plus the Olympic Dam expansion would have on the South Australian economy.

In assessing the cumulative effects on Northern Territory coastal areas, Section 25.4 assessed the implications of six existing or proposed resource projects and the ongoing expansion of the Darwin Business Park adjacent to the East Arm port facility. The key considerations relating principally to BHP Billiton are the ability to gain access to port land in light of the growing demand for the port, and increased shipping movements through Darwin Harbour.

Apart from this analysis, it is not plausible for this EIS to address new projects that may arise in an area after the Olympic Dam expansion project had been developed. That would be the responsibility of the proponent wishing to undertake the subsequent development, in the same way that the Olympic Dam Draft EIS assessed the cumulative effect of existing and planned developments.

**Issue:**

It was suggested that the Draft EIS did not adequately identify the long-term benefits for regional areas, particularly Port Augusta.

**Submissions:** 68, 211 and 263

**Response:**

The Draft EIS presented information about the long-term benefits of the proposed expansion for South Australian regional areas. Port Augusta is part of the Northern Statistical Division.

As noted in Section 19.3.1 and illustrated in Figure 19.1 of the Draft EIS, the Northern Statistical Division covers an area of about 810,000 km<sup>2</sup> in northern South Australia, and encompasses the three regional cities of Port Augusta, Whyalla and Port Pirie as well as numerous smaller towns and settlements in the Flinders Ranges and the Outback.

The opportunities to supply infrastructure and resources for the expansion may benefit businesses throughout South Australia and Australia. The long-term benefits for the Northern Statistical Division were reported in the Draft EIS as follows:

- Approximately 1,000 new jobs would be created during the peak construction period and more than 1,000 workers would be sourced from this area during the subsequent operational phase (refer Section 19.5.1). In total, the 30-year projection for direct and indirect employment is 7,000 additional jobs (full-time equivalents) created in the Northern Statistical Division (refer Table 21.4 in Section 21.4.2 and Table 21.8 in Section 21.5).
- Training and employment opportunities would be created via relevant training institutions (refer Section 19.5.1).
- An anticipated increase in population, the scale of which would depend on the extent of prefabrication work undertaken at the pre-assembly yard associated with the proposed landing facility (refer Section 19.5.4).
- A forecast average increase in gross regional product (GRP) for the Northern Statistical Division of \$470 million each year from Year 0 to Year 6; \$2 billion each year from Year 7 to Year 11; and \$3.2 billion each year from Year 12 to Year 30 (refer Section 21.4.1). The forecast increases in GRP over these three time periods represent an increase above the business-as-usual case of 23%, 93% and 126% respectively. No financial modelling was undertaken beyond Year 30 because of the increasing uncertainty associated with modelling over such extended timeframes, but it is anticipated that Olympic Dam would operate well beyond this time. Section 21.4.1 of the Draft EIS acknowledged that the majority of the financial benefits in the Northern Statistical Division would occur in Roxby Downs, but the positive economic effects should nonetheless be experienced across the division.

**Issue:**

BHP Billiton was asked to justify its claims of increased energy efficiency, when the proposal requires a massive increase in electricity consumption.

**Submission: 144****Response:**

The World Energy Council defines energy efficiency as 'a reduction in the energy used for a given service or level of activity'. It distinguishes energy efficiency from energy consumption, which is a measure of the total energy used (World Energy Council 2010).

As presented in Section 25.5 of the Draft EIS, electricity consumption for the expanded operation would increase as a result of the new open pit mine, and the greater throughput of ore in the expanded metallurgical plant. Measured as a function of ore throughput, the existing electricity consumption is around 93 kilowatt hours (kWh) per tonne of ore milled. Following the proposed expansion, consumption would fall to around 73 kWh per tonne of ore milled, which is a 25% increase in efficiency.

Similarly, as a measure of total energy, the existing operation has a greenhouse gas intensity of around 105 kg of carbon dioxide equivalents per tonne of ore milled. This would fall to about 50 kg of carbon dioxide equivalents per tonne of ore milled when at full operating capacity, which is an increase in total energy efficiency of around 52%.

Therefore, the proposed expansion would improve the energy efficiency of the Olympic Dam operation.