

OLYMPIC DAM EXPANSION EIS

MATERIALS HANDLING AND TRANSPORT

The existing operation requires about one million tonnes per annum (Mtpa) of supplies and product to be transported primarily by road to and from Olympic Dam. These are mainly copper cathodes, sulphur, diesel and various reagents used in the metallurgical plant. The proposed expansion would increase transport volumes to about 4.8 Mtpa, mainly due to the new concentrate product proposed (1.6 Mtpa), increased sulphur usage (from 80,000 tpa to about 1.8 Mtpa) and increased diesel usage (from about 25 ML/a to about 430 ML/a).

The materials handling and transport method chosen for the expansion would maximise the bulk transport of materials by rail with some transport to continue by road. The infrastructure required to deliver this transport solution is discussed below.

Over-dimensional loads

The Stuart Highway between Port Augusta and Pimba, and Olympic Way between Pimba and Olympic Dam, would be used to carry oversized loads that could not be carried by rail. Over the first seven years these loads would be:

- up to 5.5 m wide – on average twice a day
- police escorted loads up to 8 m wide – on average every four to five days
- loads greater than 8 m wide – on average once every three to four days.

Most over-dimensional loads (94%) would be less than 8 m wide and therefore could be managed within existing government policies and guidelines. Some over-dimensional loads (about two per week) would be wider than 8 m, and require special attention as vehicles would not be able to pass these loads in either direction of travel. To ensure the safety of this arrangement and to minimise delays and inconvenience to other road users, where practicable, these loads would not be moved in peak traffic times.

The following upgrades would also be needed within and around Roxby Downs because the construction and operation of the expansion would change the volumes and types of road traffic using the local road network:

- road extensions, new distributors, improved intersections and traffic management measures in Roxby Downs
- relocating Borefield Road.

Transport safety

The transportation of material to and from Olympic Dam during the construction period represents a major logistical exercise for BHP Billiton. The corresponding increase in road traffic, particularly heavy trucks and over-dimensional loads has the potential to inconvenience some road users. BHP Billiton has recognised this and proposes to install a rail spur from Pimba to Olympic Dam and an intermodal road/rail freight facility at Pimba which would significantly reduce transport impacts. In addition, BHP Billiton would implement other measures such as specific traffic management plans, 15 passing bays between Port Augusta and Olympic Dam and traffic control measures in Roxby Downs.



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Rail

Rail would be the primary mode for transporting goods and products to and from Olympic Dam. A 105 km rail line would be built to link Olympic Dam to the existing interstate rail line near Pimba. An average of three train movements is expected each day between Port Adelaide and Olympic Dam, and one train per day would transport concentrate to the Port of Darwin.

An overpass would be built 15 km north of Woomera to separate road and rail traffic.

Once the rail line was operational the bulk of materials (which would include concentrate, sulphur and diesel) would be transported by rail, providing a significant and ongoing reduction in road traffic for the operation.

BHP Billiton would still need to transport some materials (such as oversized equipment) by road after the rail spur was built, but at much reduced volumes.

Intermodal facility - Pimba

An intermodal facility would be constructed at Pimba to maximise the transport of materials by rail before the new rail spur was built. Materials would be railed to the facility on the existing rail network and transferred to trucks for delivery to Olympic Dam, and vice versa.



Landing facility – Port Augusta

Some components of the expansion would be prefabricated as modules in other parts of Australia or overseas. Because of their bulk and irregular dimensions (up to 15 m wide by 15 m high and 500 tonnes in weight), a landing facility would be needed at the coast to unload these modules prior to transporting them by road to Olympic Dam.

The preferred location for the landing facility is around 12 km south of Port Augusta on the western shore of Upper Spencer Gulf at Snapper Point, north of O’Connell Court. The site would be linked by a dedicated access corridor to a pre-assembly yard at Port Augusta.

The preferred location avoids the need for dredging a navigational channel, avoids impacts on mangroves, and limits disturbance to the owners of coastal homes.

The facility would be a pier, rather than a causeway, to ensure negligible impact on tidal flow, wave propagation and shoreline stability.

Ocean going ships would moor in deep water in Upper Spencer Gulf south of Point Lowly and offload the modules onto barges to bring them to the landing facility. On landing, the modules would undergo a quarantine inspection in a 2 ha yard adjacent to the facility and then be trucked, as over-dimensional loads on the dedicated access corridor to the Port Augusta pre-assembly yard, where they would be further prepared for movement on the Stuart Highway to Olympic Dam.

The landing facility would off-load up to 280 vessels during the first seven years of the expansion meaning a vessel calling, on average, every 11 days. A barge would take about 3 days to unload. After that, the facility would be used occasionally to meet the requirements of the on-going operation at Olympic Dam. Modelling indicates that noise limits would be exceeded at the 13 coastal homes south of

the facility during unloading, which would only occur during daylight hours. Mitigation arrangements are currently being discussed with potentially affected landholders.

Outer Harbor

An additional 1.8 million tonnes of sulphur and 430 million litres of diesel would be imported each year through Adelaide’s Outer Harbor, which already receives smaller volumes of these commodities for the existing operation. The increased volume of sulphur would require the construction of new bulk off-loading and storage facilities likely to be operated by third parties. The additional volumes of diesel would be accommodated by existing third-party facilities.

Outer Harbor has access to rail and can receive the Panamax-class vessels required for the large shipments of sulphur. Additional diesel shipments would be brought in via Port Adelaide.

Additional product (refined copper and a portion of uranium oxide) would be exported via existing facilities at Outer Harbor.

Alternative South Australian ports were investigated but are not the preferred option on the basis of the availability, impact, and cost of dredging channels for Panamax-class access and upgrading facilities.

Olympic Dam Airport

Development of the rock storage facility would encroach on the existing airport at Olympic Dam Village, requiring it to be moved. A new airport to cater for commercial and company flights would be built about 17 km east of Roxby Downs on the Andamooka Road. A new all-weather runway would handle aircraft such as the Boeing 737-800 or A320 and the airport would support both day and night flights.



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Port of Darwin (East Arm)

Port of Darwin

The Port of Darwin (East Arm) is already used by BHP Billiton to export a portion of the uranium oxide produced at Olympic Dam. The expanded operation would construct facilities at East Arm to temporarily store and then export additional uranium oxide and up to 1.6 million tonnes per annum of copper concentrate containing uranium, gold and silver (concentrate).

The additional export of uranium oxide would require minor modifications to the existing storage and handling facilities.

New storage, handling and loading facilities would be constructed at East Arm for the concentrate. The concentrate is an odourless black powder, insoluble in water, with a uranium content of up to 2,000 parts per million (compared to 900,000 parts per million for the uranium oxide already shipped from the port). However, the uranium in the concentrate would still be sufficient for the product to be considered radioactive and therefore would be transported according to the requirements of the Australian Radiation

Protection and Nuclear Safety Agency's Code of Practice for the Safe Transport of Radioactive Material.

Dedicated rail wagons fitted with air and water proof lids would transport the material from Olympic Dam to the Port of Darwin using the existing rail line and the proposed spur linking the operation to Pimba. A closed system would prevent the release of dust during transportation and at the storage and handling facility at East Arm. The concentrate would be transferred from the storage facility to dedicated export vessels in enclosed conveyors and a dedicated BHP Billiton ship loader to be installed on the East Arm wharf.

Wash-down facilities would be installed within the enclosed handling area to clean the wagon exteriors after unloading. This wash-down water would be recycled on-site for reuse until it became too dirty, when it would be transported back to Olympic Dam for recycling on-site.