



Energy Refining

Client

Brisbane Water and BP Amoco

Location

Brisbane, Australia

Design and Construction for the Luggage Point Reclamation Plant

Project Highlights

- Dual membrane wastewater reclamation plant producing 14,000 m³/d
- Designed to reclaim secondary effluent from the Luggage Point Wastewater Treatment Plant to provide continuous, reliable high quality product water exclusively for the BP refinery
- Short delivery timeframe (42 weeks)
- 4-km delivery pipeline
- 12,000 m³ storage

Project Description

Brisbane Water selected CH2M HILL as the Construction Manager and Design/Technical Consultant for the design, construction, and commissioning of a 14 ML/d dual membrane wastewater reclamation plant. Responsibilities included preliminary design and layout; detailed process design and performance specification; contract documentation and technical specifications; tender pre-selection; tender assessment and evaluation; construction management; and commissioning management.

The expansion of the BP Amoco Bulwer Island Refinery would increase water consumption and was required by October 2000, providing a lead-time of less than four months. Supply could not be met under the existing water supply infrastructure. To meet the increased water demand, CH2M HILL designed and coordinated installation of a 14 ML/d dual membrane filtration plant treating secondary effluent from the Luggage Point Wastewater Treatment Plant for industrial use by BP.

CH2M HILL adopted a D&C delivery methodology to achieve practical completion in 42 weeks.

The water reclamation plant produces very high quality water for BP to use as boiler feed, cooling tower makeup, and other process uses.

The dual membrane plant comprises the PALL microfiltration system using their 0.1 micron PVDF membranes, followed by an Ionics reverse osmosis system using Dow thin film composite polyamide membranes. The product is stored in two 6,000 m³ lined HDPE lagoons, then further chlorinated before transfer to the BP refinery, 4 kilometers away. Reject water from both membrane stages is routed back to the head of WWTP.

The contractor successfully completed a 30-day plant-proving period to achieve practical completion.

The plant is fully automated with all 12 process modules individually monitored with automatic shutdown and startup of standby units.