



# DALRYMPLE BAY COAL TERMINAL PTY LTD

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## Energy Savings Plan

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The Energy Savings Plan outlines the Dalrymple Bay Coal Terminals baseline energy data and includes a plan for implementing energy savings measures.

### **Description of business:**

As part of the world's largest coal export port, Dalrymple Bay Coal Terminal exports thermal and metallurgical coal from Central Queensland's Bowen Basin mines to ports around the world. The terminal operates around the clock and has a name plate capacity of 85 Mtpa.

Coal arrives at the terminal by rail and is unloaded "on the move" as trains pass through one of three Rail Receiving stations. An extensive conveyor network then transports the coal either directly to the wharf for loading or to the stockyard for storage.

The stockyard covers nearly 67 hectares and provides eight rows of stockpiles with a combined live capacity of over 2.28 million tonnes. Stacking machines are used to create stockpiles by transferring coal from the conveyors at a rate of up to 7,500 tonnes per hour. The average stockpile contains about 20,000 tonnes of coal (approximately two train loads), is 80 metres in length and is stacked no higher than 13.2 metres to minimise dust creation. Each coal product is different and has a different purpose, so care is taken to ensure there is no cross-contamination of products.

When a ship is ready for its cargo, reclaimer machines use a bucketwheel to clear the stockpiles and place the coal back on the conveyor system. These machines reclaim at an average rate of up to 4200 to 5800 tonnes per hour. Stacker/reclaimer machines, as their name suggests, can perform both tasks.

The reclaimed coal is transported to one of two surge bins that act as buffers between the yard system and the conveying system to the shiploaders, ensuring an even loading rate is sustained. The surge bins are also used to mix different types of coal to create a requested coal blend. After the coal is tested to ensure it meets buyer requirements it is then transported along the 3.8 kilometre jetty to the wharf.

The 1.66 kilometre wharf features four berths, which can accommodate ships ranging from 20,000 to 220,000 dead weight tonne. Three manually-operated shiploaders are used to transfer coal from the wharf conveyors into the holds of ships at a nominal loading rate of 7200 tonnes per hour. While the size and cargo of each ship visiting the terminal can vary greatly, it takes about 22 hours to load the average 80,000 tonne cargo. (Dalrymple Bay Coal Terminal, 2010)



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Measure Number	Measure Type	Project Description	Energy Savings
1	Management Improvement in Energy Recording Systems	Investigate installation of sub metering to capture energy consumption of major plant items not currently monitored. Develop work scope and associated project definition documents.	Potential energy savings if consumption is understood
2	Management Improvement in Energy Recording Systems	Investigate a specialised energy management solution or package. Develop user requirements and justification documentation.	Potential energy savings if consumption is understood
3	Efficiency Reduction in peak demand periods	Investigate possible interlocking of major equipment and system start ups to potentially eliminate coincidental start up's and reduce peak demands. Develop control systems requirements.	Potential energy savings if consumption is understood. Numerous major system components up to 900kW starting will reduce the instantaneous peak demands.
4	Efficiency System efficiencies	Investigate impact of conveyor drive misalignment on energy consumption. Develop appropriate processes for drive system alignment if investigation shows benefits.	Potential energy savings if consumption is understood. Trial and monitor motor loads on a controlled plant item.
5	Efficiency Site wide area lighting	Replacement of difficult to access light fittings where scaffolding is required for maintenance. Lights replaced with equivalent LED fitting as replacement is necessary.	Replacement of 400W metal halide lamp with equivalent 60W LED light fitting. Energy consumption per year metal halide 1460 kWh versus LED light fitting 219 kWh.
6	Conservation Site wide area lighting	Site wide area lighting. Controlling of non critical area lighting. Review of site lighting functional operating specification. Identify potential improvements	Potential energy savings if consumption is understood