

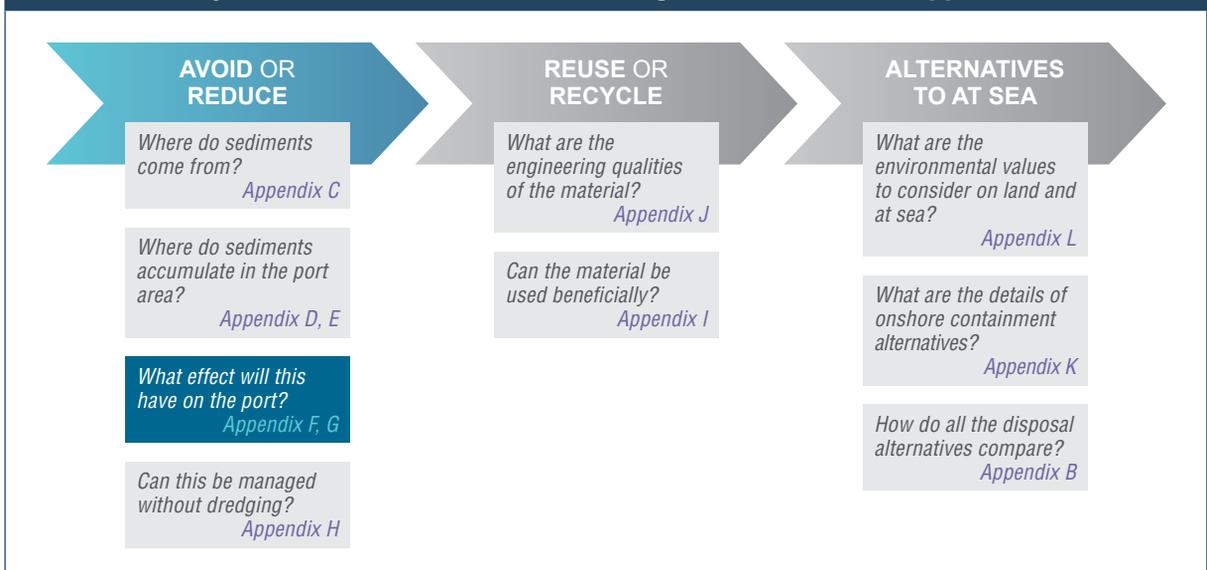
# ▶ APPENDIX G

**Economic impact of not managing sediments  
at Dalrymple Bay Coal Terminal (DBCT)**

The lower half of the page features a large, abstract graphic composed of several overlapping, curved shapes. The colors used are a bright orange, a dark brown, a dark blue, and a purple. The shapes are layered, with the purple shape at the bottom, followed by the dark blue, then the dark brown, and the bright orange at the top. The white space between the shapes creates a sense of depth and movement.



### Hay Point sustainable sediment management assessment approach



#### Purpose of study:

This study looked at the likely loss of capacity and potential economic flow on effects in the event that dredged berth pockets were not maintained at or close to design depths.

#### Broad study approach:

The study examined existing and historical terminal capacity, including associated user and vessel mix, to illustrate how maintenance of DBCT berth pockets is key to the economic sustainability of port operations for the DBCT terminal. It took previous modelled data on the impacts on terminal capacity relative to reductions in berth depths and overlaid this with the current vessel mix at DBCT to estimate the potential loss in capacity and consequent revenue flow on effects as depths reduce.

#### Key findings:

The key findings of the study are summarised below:

- DBCTPL is required to operate and maintain the DBCT port facility at the contracted design capacity of 85MTPA in accordance with the Operating and Maintenance Contract. Any deviations could lead to a loss of contract.
- The study showed that as declared depth reduces (19.6m to 16m) so does the capacity (from 85MTPA to just under 80MTPA).
- Previous models identified that delays are experienced once berth pockets are less than ~18.5m (Very Large Cape (VLC) type vessels) and ~17.6m (Cape vessels).
- For each of the past DBCT developments, capital dredging and ongoing maintenance dredging has been undertaken and is key to maintaining terminal capacity.
- Loss in depth has the potential to delay vessels or prevent loading to their maximum capacity leading to flow on economic effects of potential lost revenue.
- The report found a direct link between any reduction in terminal capacity leading to a loss in royalties to the Queensland Government.



# Dalrymple Bay Coal Terminal

Economic Impact

of

Not Managing Sediments at DBCT

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## 1. BACKGROUND INFORMATION

Dalrymple Bay Coal Terminal was established in 1981 and exported first coal in November 1983. Initial capacity was 14.55MTPA operating with a single outloading system.

At completion of the most recent 7X Expansion, offshore facilities now comprise of 3 outloading systems with four berths for a combined throughput capacity of 85 Million tonnes per annum (MTPA)

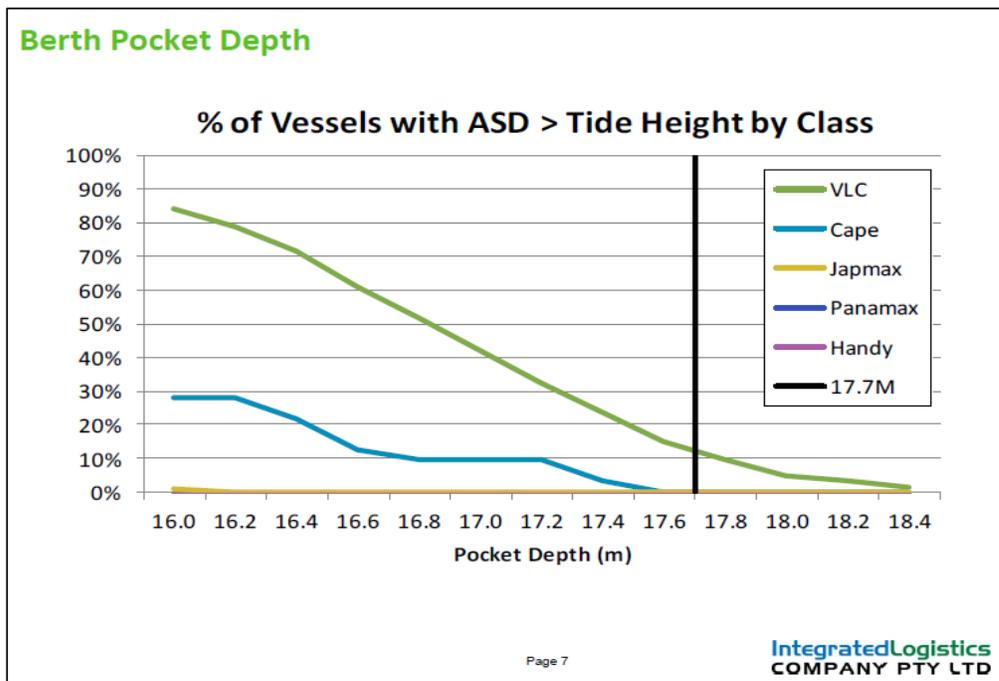
For each of the berth developments, dredging has been undertaken and is a key component of the terminal capacity. Any loss in depth has the potential to delay vessels or prevent loading to their maximum capacity. Additional dredging has also been undertaken to dredge a defined departure path to allow larger vessels to sail over a longer tidal period.

## 2. TERMINOLOGY

| Acronym | Description                          | Comments   |
|---------|--------------------------------------|--|
| ILC     | Integrated Logistics Company Pty Ltd | Independent body working to maximise system capacity         |
| DBCT    | Dalrymple Bay Coal Terminal          | The terminal   |
| DBCTPL  | Dalrymple Bay Coal terminal Pty Ltd  | The operator   |
| MTPA    | Million tonnes per annum             | Terminal throughput  |
| NQBP    | North Queensland Bulk Ports          | Port administrator on behalf of Qld Govt.                    |
| ASD     | Advised sailing draft                |  |
| VLC     | Very Large Cape size vessel          | Vessel above 140,000DWT                                      |
| CAPE    | Cape size vessel                     | Vessel size above 100,000DWT                                 |
| UKC     | Underkeel Clearance                  | A minimum of 1.5 metres must be maintained as per port rules |

### 3. PRIOR INVESTIGATIONS

In 2012, The Integrated Logistics Company (ILC) were requested to model the impacts on terminal capacity relative to reductions in berth pocket declared depth. Their report determined that loading delays commenced once berth pocket depths were less than ~18.5 metres initially impacting VLC type vessels followed by Cape” vessels when depths reduced to approximately 17.6 metres. Their modelling was limited to 16 metres depth.



[ Integrated Logistics – July 2012]

### 4. DBCT DETERMINATIONS

Dalrymple Bay Coal Terminal Pty. Ptd. (DBCTPL) operate the terminal under an Operating & Maintenance contract requiring the operator to manage the terminal at the contracted design capacity of 85MTPA.

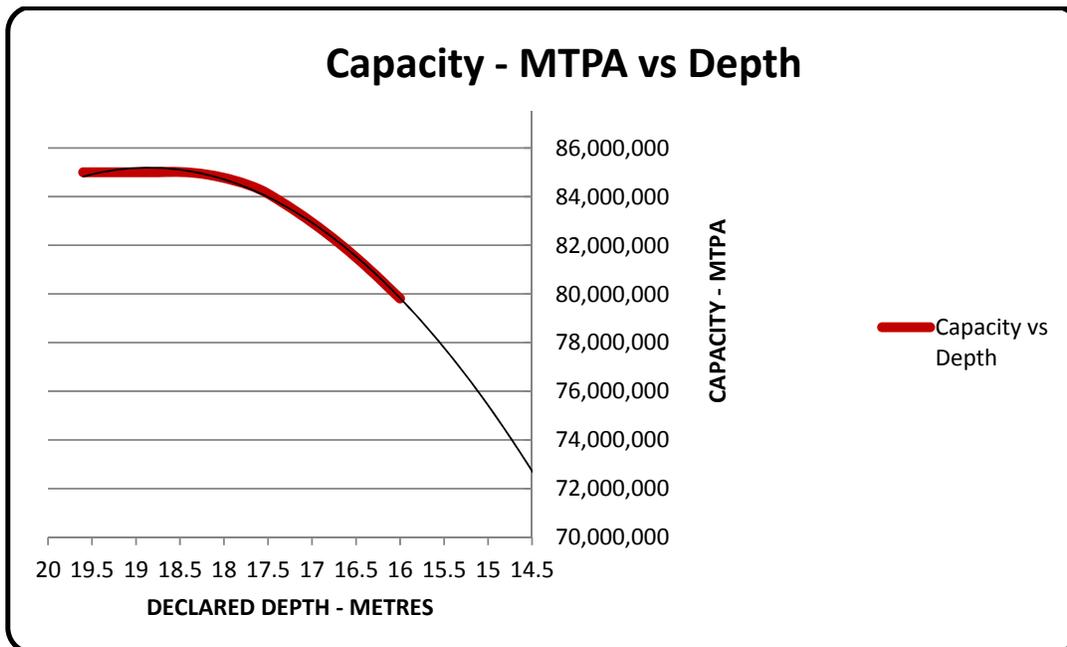
The vessel average cargo size for 2014/15 was 115,000T and approximately 47% of all vessels comprising Cape and VLC arriving at the port have the potential to be delayed by tides.

Using the data provided by ILC and overlaying the current vessel mix, DBCTPL have calculated the likely loss in capacity and direct flow on effects as depth reduces.

## 5. IMPACTS CALCULATED

### 5.1. Terminal Capacity

The current design capacity of 85MTPA requires that each of the berth pockets is maintained such that tidal delays are minimised. DBCTPL have used the modelling data provided by ILC and aligned with the terminal's vessel mix over the 2015 calendar year. A sample of vessels have been measured for immersion rate, tide cycle and under keel clearance (UKC) to determine the extent of the tidal delay as depths reduce for each vessel type. This has allowed us to calculate a revised terminal capacity based on those losses. The graph below depicts these calculated losses as depth reduces. Because the original ILC modelling only extends to 16.0 metres, the DBCTPL interpretation assumes that vessel types other than VLC and Cape will not be impacted. It is possible that smaller vessels may be impacted also. This would require further modelling should we wish to understand these potential impacts.



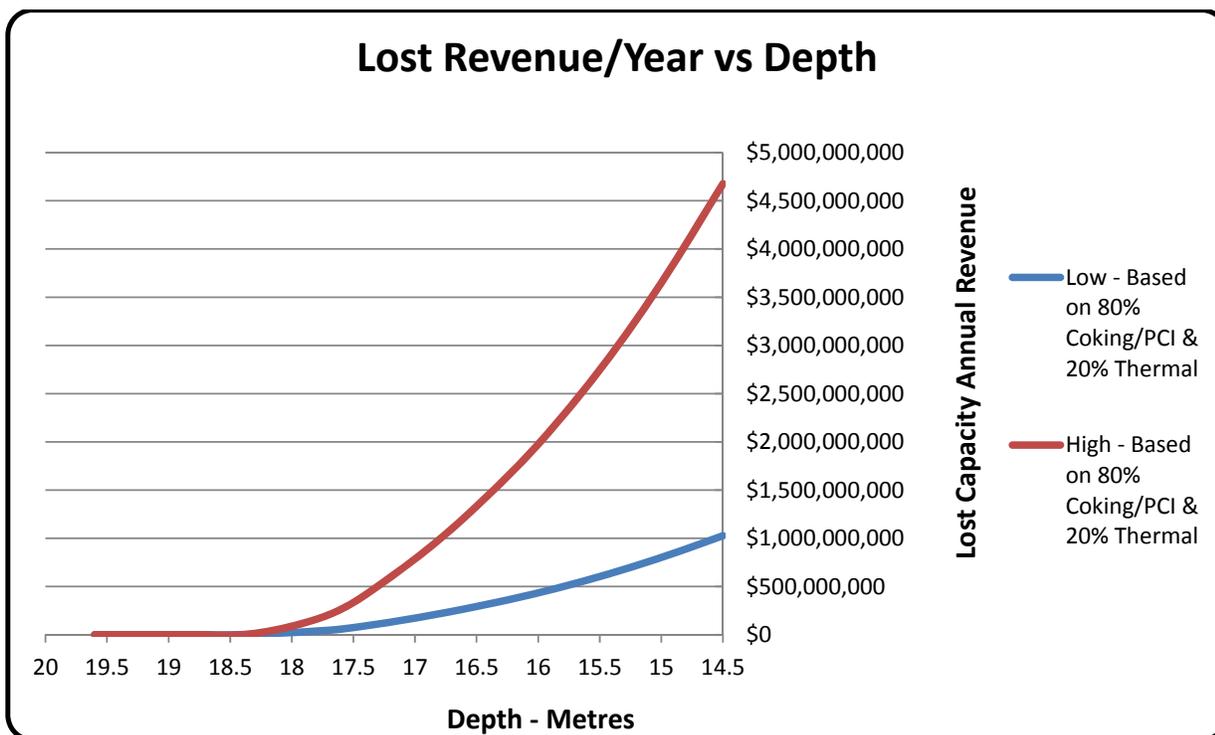
### 5.2. User Revenue

User revenue is based on tonnes loaded to the vessel and the price of coal. Although not privy to individual contracts, we have made a determination on likely lost revenues using the spot price of coal over the period December 2007 to April 2015. The variation in coal prices is as follows:

| Coal Type | Proportion | Lowest Price | Highest Price |
|-----------|------------|--------------|---------------|
| Thermal   | 20%        | \$70.75      | \$198.65      |
| Coking    | 80%        | \$104.50     | \$426.50      |

[DBCTM 2016]

Using these details, and the calculated lost terminal capacity, the potential revenue losses can then be calculated and are depicted below.



[DBCT P/L 2016]

### 5.3. Qld. Govt. Royalties

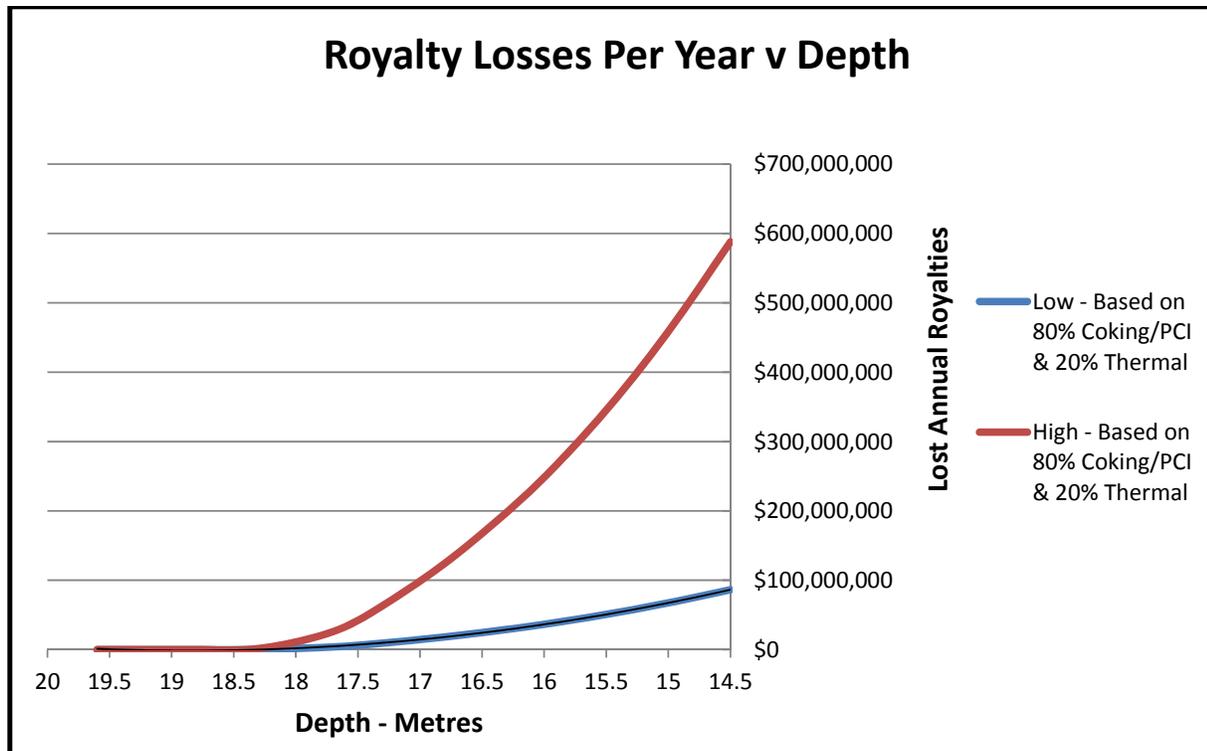
The royalty rate for coal is calculated by reference to the average price per tonne of the coal sold, disposed of, or used in that period. The chart below depicts the variable scale for royalty

payments to the Qld Government. Based on this information, royalties ranged in value from \$4.95/Tonne for the lowest price steaming coal to \$54.65/Tonne for highest price coking coal.

| Average price per tonne for period       | Rate        |       |
|--|-------------|-------|
| Up to and including \$100                |             | 7%    |
| Over \$100 and up to and including \$150 | First \$100 | 7%    |
|  | Balance     | 12.5% |
| More than \$150                          | First \$100 | 7%    |
|  | Next \$50   | 12.5% |
|  | Balance     | 15%   |

[Qld. Treasury - October 2015]

Any reduction in terminal capacity will result in reduced royalties to the State Government. The graph below depicts the loss in revenue at capacity using the range of high and low coal prices.



[DBCT P/L 2016]

#### **5.4. DBCTPL – Operations & Maintenance Contract**

DBCTPL is required to operate and maintain the facility at the designated terminal capacity rate of 85MTPA in accordance with the Operating & Maintenance contract. Any deviation would require approval in writing and could possibly lead to a breach of contract.

### **6. IMPACTS – NOT CALCULATED**

#### **6.1. Expansion Replacement Cost**

It is conceivable that lost capacity could be retrieved by undertaking additional expansion of the terminal at a significant capital cost. However a number of expansion phases require additional capital dredging and ongoing maintenance dredging to be viable. Only those expansion paths with no marine content will provide a direct gain.

#### **6.2. Stakeholders**

North Qld Bulk Ports is the port authority for the port of Hay Point. They are responsible for a range of services including port planning and development, and maintaining safe navigable depths for shipping. These services are funded from port shipping charges and are calculated on a cost per tonne basis. Any reduction in charges may have a short term impact on NQBP's ability to carry out their key business plan tasks, and in the longer term is likely to incur additional expenses on coal companies.

Terminal Users may not be able to meet their contractual obligations in the event that terminal capacity cannot be achieved.

#### **6.3. Wider Community**

Any reductions in terminal capacity and resultant reduction in operational and maintenance activity will have a flow on effect to the wider community within the Mackay district , hinterland communities, and the state wide economy including:

- Service industry support
- Mine employees, their families
- Schools and training centres
- Potential health and welfare issues

- Not for profit organisations such as sporting and service clubs
- Taxes and charges collected by both state and federal governments

## **7. CONCLUSION**

This report has outlines direct economic impacts identified by DBCTPL in the event that dredged berth pockets are not maintained to or close to design depths. The graphs depicted in [Section 5](#) provide an understanding of the magnitude of the key economic impacts.