Draft

DALRYMPLE BAY COAL TERMINAL
Review of DBCTM Expenditure to 30 June 2016 on Post 85Mtpa Incremental Expansion Studies

January 2017

Commercial-in-Confidence

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1. Executive Summary

The Queensland Competition Authority (the "*QCA*") is an independent statutory body responsible for the economic regulation of ports and other major infrastructure monopolies in Queensland.

These responsibilities include the regulation of access to the Dalrymple Bay Coal Terminal ("*DBCT*"), a common user coal export facility located south of Mackay in central Queensland. The Queensland Government has declared the coal-handling services of DBCT for third party access under Part 5 of the Queensland Competition Authority Act 1997.

The Dalrymple Bay Coal Terminal Management Pty Ltd ("*DBCTM*") Draft Approved Access Undertaking ("*2010 AU*""), amongst other things, provides the framework under which capital expenditure is made on the terminal. The 2010 AU was approved by the QCA on the 23rd September 2010 and the terms of it commenced on the 1st January 2011.

Since 2012[1], DBCT Management has investigated the incremental expansion pathway to meet potential future demand. DBCT Management made application to the QCA to add costs it has incurred for the DBCT Incremental Expansion Study (the "*Expansion Study*') to its Regulated Asset Base ("*RAB*"). The study comprises three elements:

1. 'Zone 4': further development of existing row 8 and its associated existing infrastructure and the replacement of Reclaimer 2 to increase terminal capacity from 85 to 89 million tonnes per annum('Mtpa').
2. '8X': a program of works within the terminal's existing footprint to increase terminal capacity from 89 to 100 Mtpa. They include; amongst other things; a new inloading string and associated rail receival pit and tracks, the replacement of stacker No.1, upgrade of existing conveyors, upgrade of rows 1 and 2 and a further berth.
3. '9X': addition of a new stockyard area at Louisa Creek to the west of the existing stockyard to increase terminal capacity from 100 to 135 Mtpa

The QCA has engaged Flagstaff Consulting Group Pty Ltd ("*Flagstaff*") to provide it with an assessment of:

A. whether it was prudent to undertake the study;

B. whether the study was carried out efficiently; and

C. to form a view on whether:

   i. the scope of the expansion study was appropriate;

   ii. the standard of the expansion study was excessive; and

   iii. the costs of the expansion study were reasonable.

[1] QCA Draft Decision on the 2015 DAU at Table 25

1(a) Methodology

Flagstaff's methodology consists of two parts namely:

1. Understand the tasks performed, and demonstrate that understanding;
2. Evaluate the suitability of the sequence of study activities and the Consultant's interface with DBCTM and QCA.

1(b) Findings of this Report

Flagstaff notes that whilst the 2010 AU requires DBCTM to undertake expansion studies, the processes it puts in place to determine if costs have been prudently incurred only apply to costs of terminal capacity expansions actually completed and not to studies to determine if they should proceed at all. In that circumstance, Flagstaff has agreed with the QCA that it is reasonable to undertake this review utilising the measures of prudency provided in the 2010 AU for costs where an expansion has actually occurred as this is the basis of all other assessments as to whether costs should be added to the RAB.

Flagstaff recommends the following findings to QCA, in accordance with the requirements of Clause 12.5(m) of the DBCT Access Undertaking, namely that:

(i) the scope of works and services undertaken satisfy the requirements of Clause 12.5(m)(3) of the Access Undertaking and the requirements of the Port Services Agreement ("PSA");

(ii) the standard of services undertaken satisfy the requirements of Clause 12.5(m)(4) of the Access Undertaking and the requirements of the PSA; and

(iii) the costs incurred are reasonable when assessed in accordance with the requirements of Clause 12.5(m)(5) of the Access Undertaking.

This report is based on information supplied by DBCTM in Appendices A & B hereto, and DBCTM's replies to specific questions at interview and in writing.

Overall, Flagstaff submits that the total Direct Study Costs, of $7,281,898, are reasonable when assessed in accordance with the requirements of the undertaking and have been prudently incurred.

Flagstaff notes that DBCTM's application includes Financing Costs and Interest during construction. These costs have been advised by DBCTM to be outside of the application and outside of the study costs and are outside Flagstaff's area of expertise. They are not dealt with in this assessment.

2. Regulatory Framework

Flagstaff has performed assessments of this type for the QCA in the past and is aware that there is a regulatory framework within which the assessments must be made. Hence in choosing the methodology it has employed to complete the task, Flagstaff has firstly addressed the regulatory framework to determine if it is applicable to this consultancy.

2(a) Should expansion studies have been undertaken

Clause 11.1 of the PSA requires DBCTM to accommodate additional terminal capacity.

[redacted]

Clause 11.2 of the PSA requires that DBCTM [redacted]' to provide the additional capacity as soon thereafter and in any event within 12 months after:

[redacted]

Clause 11.3 of the PSA says that capacity expansion must be undertaken in line with the Master Plan and notably clause 11.4 provides that if DBCTM do not comply then damages will not be an adequate remedy.

The PSA does not mandate that studies be undertaken to determine which; if any; expansion should be pursued, nor does the 2010 AU, however it is impossible to contemplate that the QCA would approve an expansion application under clause 12.5 of the 2010 AU without one having been undertaken. The 2010 AU requires at 12.1 that Terminal and System capacity modelling be undertaken and at 12.2 to consult with Access Holders, but it does not mandate a feasibility study.

The 2010 AU at clause 5.10 deals with how the cost of any such feasibility study may be added to the RAB, but it doesn't mandate such a study.

Flagstaff says that given the magnitude and value of the works required to undertake potential expansions, it is inconceivable that an expansion would be undertaken without studies of this type having been undertaken. It is industry standard to undertake the studies. Therefore, where there is an obligation in the PSA to undertake expansions, Flagstaff says there is a complementary obligation to undertake studies to decide which; if any; expansion shall be pursued given the level of access applications DBCTM holds at any given time.

Equally where the 2010 AU at clause 5.10 deals with how the cost of any such feasibility study may be added to the RAB, then in the absence of an express requirement, there is an implied obligation that such studies should be undertaken.

Flagstaff has been shown the access applications to which DBCTM refer in its Board Paper No. 123 of the 3rd November 2014.[2] These 99Mtpa of access applications; the earliest of which might be converted in 2019; are in addition to the 80.7Mtpa of existing take or pay contracts of which 72Mtpa was used in the last year.

The 2010 AU only requires that a potential user be reasonably creditworthy for DBCTM to be obligated to consider their access application. Whether their application will actually translate into an access undertaking and the size of that eventual undertaking is a difficult issue with which DBCTM have to weigh against the additional capacity they may achieve from various expansion options[3]. In the Board Paper DBCTM have broken the 99Mtpa into three categories of applications; those from existing DBCT users (53Mtpa), applications from existing mines (28Mtpa) and applications from organisations with no currently operating mine (18 Mtpa). It says that "*the peak capacity of all Access Applications combined forms the basis of the design of the terminal expansion*"[4].

Flagstaff agrees that philosophy is driven by the regulatory regime, as it takes into account not only the new applications and when that capacity may be required, but also the timing of when existing take or pay contracts end, which DBCTM show graphically on page 10 of its 7th October Application. That part of the application is not reproduced in Appendix B as it is marked confidential. Flagstaff have sighted that page.

Flagstaff agrees where DBCTM have access applications from existing users which exceed the current capacity of the port, then it is obligated to undertake studies to determine how it can best meet that capacity.

Those studies should investigate the various expansion options available, the cost and timing of the options and what additional capacity the various options might deliver.

2(b) Front End Loading Process (FEL1-3)

DBCTM use the Kellogg Brown and Root ("KBR") Front End Loading process to define the stages of a project. Schedule H of the 2010 AU states:

Feasibility Studies *means in relation to a proposed Terminal Capacity Expansion, a FEL 1 Feasibility Study, FEL 2 Feasibility Study and FEL 3 Feasibility Study.*
FEL 1 Feasibility Study *means in respect of a proposed Terminal Capacity Expansion, a conceptual desktop engineering study to be undertaken in advance of a pre-feasibility study.*
FEL 2 Feasibility Study *means in respect of a proposed Terminal Capacity*

[2] Refer Appendix A – DBCTM Board Paper No. 123 - Page 2
[3] Refer Appendix C – Flagstaff Questions of DBCTM
[4] Refer Appendix B - 7th October Application – Page 3

Expansion, a prefeasibility engineering study.
***FEL 3 Feasibility Study** means in respect of a proposed Terminal Capacity Expansion, a definitive engineering study.*

The KBR process is shown in Appendix D.

Therefore the KBR process is the de-facto regulated process which also sets the scope of those studies. Thus where Flagstaff says the report meets the KBR standard, it meets the regulated standard.

2(c) Do the studies undertaken comply with regulatory obligations for funding

Clauses 5.10(j) and (l) of the 2010 AU deal specifically with the funding of feasibility studies. They relevantly provide:

*"(j) (**Contributions to Funding of Feasibility Studies by DBCT Management)***

Subject to Section 5.10(l), DBCT Management may at its discretion elect to itself bear all or part of the costs of a FEL 1 Feasibility Study or FEL 2 Feasibility Study which one or more Access Applicants fail to Fund. Nothing in this Section 5.10(j) affects:

(1) DBCT Management's rights to apply to have such sum included in the regulated asset base if the relevant proposed Terminal Capacity Expansion Proceeds or to apply to have such sum (but not exceeding 20% of the prudent cost of the FEL 1 Feasibility Study or FEL 2 Feasibility Study (as relevant)) included in the regulated asset base on a Review Event if the proposed Terminal Capacity Expansion does not proceed;

(2) DBCT Management's obligation to fund a FEL 3 Feasibility Study;

or

(3) Section 5.10(l)"; and

*"(l) **(Feasibility costs necessitated by Port Services Agreement)***

*[Notwithstanding Section 5.10(j), if DBCT Management is required by the Port Services Agreement or Part 12 of this Undertaking to undertake a Terminal Capacity Expansion then to the extent that Access Seekers do not fund the Feasibility Study required for that Terminal Capacity Expansion in accordance with Section 5.10(a), DBCT Management may fund such Feasibility Study (without prejudice to its rights to seek to have such funds included in the regulated asset base).] **[DBCT Management intends seeking amendments to the Port Services Agreement so as to align the Port Services Agreement with this Undertaking. If the Port Services Agreement is so amended, Section 5.10(l) will be deleted]"***

To Flagstaff's knowledge the Port Services Agreement ("*PSA*") has not been amended and therefore clause 5.10(l) of the 2010 AU has not been removed as DBCTM intimates may happen in "Section 5.10(l) of the 2010 AU.

Firstly, the PSA at clause 13.1 requires that DBCTM:

[redacted]

[redacted]

In assessing the cost of these studies the first point is relevant as any expenditure needs to comply with the Master Plan, however the second point is irrelevant as no construction is undertaken as part of the study costs.

At the time the decision was made to proceed with these studies, the 2009 Terminal Master Plan was in use.

The Terminal Master Plan is intended as an evolutionary document[5], changing from time to time dependent upon user requirements, market conditions and the state of the existing facilities. Draft plans are prepared yearly[6] and final plans from time to time. The next iteration of the Master Plan is the 2016 Master Plan.

In the QCA's decision[7] on the DBCTM 2015 draft access undertaking, at 10.7.5, the QCA says:

"*Our final decision is to approve the 2016 Terminal Master Plan that will be contained in Schedule F of the 2015 DAU.*

The 2015 DAU acknowledges that the Terminal Master Plan, and any amendments, is a contractual document which is subject to the approval of DBCT Holdings in accordance with the PSA. Clause 15 of the 2015 DAU provides the QCA and stakeholders with consultation rights in the development of DBCTM's Terminal Master Plan, and in the development of any amendments that may be submitted to DBCT Holdings for approval over the regulatory period.

Chapter 7 of the 2016 Terminal Master Plan contains detailed information on the consultation process DBCTM has undertaken with access seekers, users, DBCT PL, DBCC service providers, North Queensland Bulk Ports Corporation, relevant government departments, the local community and DBCT Holdings.

However, it should not be inferred that the QCA's approval of the 2016 Terminal Master Plan's inclusion in the 2015 DAU constitutes an:

- *approval of the prudency of the proposed expansions, including estimated costs, contained in the Master Plan*
- *endorsement of views expressed in the Master Plan regarding DBCTM's risk profile or the coal market climate. The QCA's views on these matters are discussed elsewhere in this final decision.*

The QCA confirms that it will consider the prudency of a capital expansion at a future point in time when DBCTM submits a Terminal capacity expansion application to the QCA for approval. The process to be followed by the QCA when considering the prudency of the scope, standard and cost of a future capital expansion is provided for under clause 12.5 of the 2015 DAU."

Therefore, whilst this 2016 approval specifically excludes QCA approval of the

[5] Refer to 13.2(b) of the PSA [redacted]

[6] Refer 13.2(b) of the PSA

[7] Dated November 2016

prudency of the expenditure, which Flagstaff addresses in this report, it does indicate that the QCA is comfortable with the evolution of the 2009 Terminal Master Plan into the 2016 Terminal Master Plan and of the adequacy of the consultation that was undertaken as part of that evolution. Where QCA is comfortable with that evolution, Flagstaff says it is unnecessary for it to delve into the 2009 Master Plan to seek a consistency between it and the studies if that consistency can be found in the approved 2016 Terminal Master Plan.

In its previous report on study costs post the 7X expansion[8], Flagstaff notes that many of the options contained in the Zone 4, 8X and 9X expansions were contemplated.

The 2016 Master Plan[9] specifically names the Zone 4, 8X and 9X projects as expansion options. Therefore, costs incurred to study these options are definitively compliant with point 1 in the PSA at clause 13.1, as they [redacted], which is not to say they have been prudently incurred, merely that they comply with the requirement in the PSA.

Secondly, the 2010 AU, at Section 12.3, requires DBCTM to undertake Terminal Capacity Expansions as necessary to, amongst other things, "*accommodate growth*". Flagstaff says studies to determine the viability of those expansion options seem to advance that purpose.

Thus, both arms[10] of clause 5.10 of the 2010 AU indicate that DBCTM are required to undertake Terminal Capacity Expansion at some point in time, and in the 2016 Terminal Master Plan, to address these three expansion options.

Flagstaff specifically asked DBCTM if the Access Seekers were funding the Feasibility Studies and if the costs had been previously added to the RAB and were informed that in both cases they were not[11].

Therefore, where DBCTM funds the studies themselves; regardless of whether they are FEL 1, 2 or 3; and clause 12.3 of the 2010 AU requires the studies be undertaken, then under clause 5.10(l) of the 2010, regardless of clause 5.10(j) and its 20% limit on the recoverability of FEL1 and FEL2 costs, DBCTM retains its right to seek QCA approval to have the full cost included in the RAB.

The cost of undertaking a feasibility study seems to be consistent with the definition of Capital Expenditure in Schedule H[12] of the 2010 AU at (a) and / or (d):

"***Capital Expenditure*** *means expenditure (incurred by DBCT Management) which*:"

"*(a) relates to replacement or expansion of any part of the Terminal;"*

"*(d) is ancillary or incidental to paragraphs (a)…"*

In addition to DBCTM's obligation to undertake Terminal Capacity Expansions

[8] Dated the 26th March 2013
[9] At 1.4
[10] The PSA and clause 12 of the 2010 AU
[11] Flagstaff met with DBCTM at their offices on the 20th December 2016 and made notes to that effect.
[12] Definitions and Interpretation

under clause 12.3 of the 2010 AU, in order for the costs of doing that work to be considered for inclusion in the RAB under clause 12.5(e), the QCA is required to determine if the expenditure is prudent having regard to: the scope of the work, the standard and specification of the work and if the works were undertaken in accordance with the requirements of the Tender Control and Management Plan ("TCMP"); but only following completion of the Terminal Capacity Expansion.

Clearly the study expenditure is not made following completion of a Terminal Capacity Expansion (even though it may precipitate it) and thus, this measure does not apply. Under clause 12.5(e)(2), one only moves to an assessment under 'other costs' in terms of clause 12.5(m), where QCA have already determined the expenditure does not pass the tests in clause 12.5(e)(1). Indeed it would seem that 'other costs' don't arise until that happens and when an application under clause 12.5(a) is made.

However, clause 12.5(m) is a measure of whether costs have been prudently incurred, in the 2010 AU.

Prudency is this measure the QCA asks Flagstaff to assess in regard to these Expansion Study costs, which is entirely consistent with the measure in the 2010 AU which is applied to all other capital expenditure assessed under clause 12.3.

Flagstaff reported on earlier DBCTM Study Costs in its report entitled "*Review of DBCTM Post 85Mtpa Expansion Studies*" dated 26th March 2013. On that occasion QCA requested that Flagstaff undertake its review based on clause 12.5(m) of the 2010 AU, by treating the study costs as 'other costs'.

The measures of prudency under clause 12.5(m) are very similar to the measures the QCA seeks to apply to this consultancy.

There does not seem to be a specific measure of prudency for expansion study costs in the 2010 AU because:

- Clause 12.5(e) only applies following completion of the Terminal Capacity Expansion; and

- Clause 12.5(m) only applies once where QCA have already determined the expenditure does not pass the tests in clause 12.5(e)(1).

Whilst that is the case, the measures QCA require Flagstaff to utilise are compatible with measures in clause 12.5(e) and clause 12.5(m) and Flagstaff has previously reported on study costs using the measures applied to 'other costs' in clause 12.5(m).

Therefore, for consistency, Flagstaff has undertaken the task to answer the questions in the QCA terms of Reference dates 20th October 2016, in a manner consistent with the one that it employed in its previous report of March 2013.

3. Scope of Works

In section 2 of this report Flagstaff has already confirmed that DBCTM undertaking expansion studies conforms with the Terminal Master Plan.

Flagstaff also confirmed that an assessment of the costs in terms of "Other Costs" under clause 12.5(m) is consistent with previous reporting, with the assessment of other costs of this nature on the DBCT and with the 2010 AU.

Compliance with clause 12.5(f) of Schedule G of the 2010 AU in relation to the scope of works may be demonstrated by addressing the elements of clause 12.5(m)(3).

3(a) Introduction to Clause 12.5(m)(3)

Clause 12.5(m)(3) of the 2010 access undertaking states:

(3) In assessing the scope of the works and any associated ancillary services undertaken, the QCA will have regard for, inter alia;

a) the scope of the proposed Capacity Expansion;

b) the current Master Plan (and any variations to the Master Plan approved by DBCT Holdings);

c) the extent of current contracted demand, likely future demand and any spare capacity considered appropriate, and the need for capital works to accommodate that demand;

d) the appropriateness of DBCT Management's processes to evaluate and select proposed capital works, including the extent to which alternatives are evaluated as part of the process;

e) the extent to which capital projects that were undertaken were subjected to DBCT Management's evaluation and selection process; and

f) the extent to which consultation has occurred with relevant stakeholders about the proposed capital works.

3(b) Methodology

The methodology adopted in reviewing the scope of the works and any associated ancillary services of Other Costs was:

(i) review each section of Clause 12.5(m)(3) i.e. parts (a) to (f), and determine the relationship between them and Other Costs and then identify specific issues that need to be reviewed – Section 3(c); and

(ii) undertake review of issues related to the relevant sections of Clause 12.5(m)(3)(a)-(f) – Section 3(d).

3(c) Application of Clause 12.5(m)(3) to review of Study Costs

3(c)(i) Categorisation of Other Costs

Flagstaff has previously determined that Other Costs consist of four primary groups of costs which can be categorised into two broad types.

The first type (Type 1) is '**Services**' supplied to the Project to ensure that the Permanent Works are constructed in accordance with the DBCT access undertaking.

This includes the following groups:

- Owner's Costs – these costs are Owner-Managed, and are incurred directly by DBCTM in management of the project.
- Engineering Procurement and Construction Management (EPCM) Costs – an EPCM contract is where the Owner/s engage/s a 3rd party to undertake the Engineering, Procurement and Construction Management functions for and on behalf of the Owner/s.
- Construction Facilities and Services (CF&S) – contracts within this category are required to support construction of the project - such as temporary offices, cleaning services, site first aid, vehicles used by EPCM personnel, etc.

The second type (Type 2) is '**Permanent Works**' supplied as part of Other Costs.

A key category under this classification is:

- Direct Non-Tender and Contract Management Plan ("TCMP") costs (DNT) – are direct costs of construction or supply of Terminal assets.

Flagstaff notes that in relation to the 'Expansion Study Costs' the subject of this report, the only costs incurred are Type 1 -Owners Costs.

The definition of Capital Expenditure at Schedule H of the 2010 DBCT Access Undertaking is as follows…

"*Capital Expenditure means expenditure (incurred by DBCT Management) which:*

(a) relates to replacement or expansion of any part of the Terminal;"

Flagstaff is satisfied that costs incurred in studying the expansion of the terminal fit this definition.

3(c)(ii) The Scope of the Capacity Expenses – Clause 12.5(m)(3)(a)

DBCTM advises that the scope of activities undertaken in incurring the costs were entirely the engagement of consultants and the management of them by DBCTM staff.

Flagstaff has previously reported to the QCA that, "*it is prudent to assess all feasible options prior to selection of the preferred option for the next stage of development*" and further that the development of all alternatives to a point where they may be assessed and then dismissed or continued is standard industry practice. Those statements also apply to these studies.

Flagstaff is satisfied that DBCTM had received access applications in excess of the current terminal capacity and that it was reasonable to seek ways by which those applications may be satisfied and further that it was reasonable to explore options until they were ruled out and cease work on those options when they were. In that way DBCTM could continue to expend its study resources on exploring remaining options until the preferred option had been selected.

In Flagstaff's 2013 report the 8X existing terminal upgrades was contemplated but work discontinued at that time where access applications were of such magnitude that a new stockyard was contemplated. The cost of the 8X study in this application is lower because of the retained learnings from that discontinued study. The 9X expansion at that time included options for new stockyards at either Dudgeon Point, the Southern Stockyard and at Louisa Creek. Dudgeon Point was ruled out as part of those studies and DBCTM

advised that users had ruled out a Southern Stockyard[13] which left the Louisa Creek option as the only available location for an additional stockyard.

Flagstaff is further satisfied that the scope of those costs would include owner's team costs and consultant costs.

3(c)(iii) The Current Master Plan - Clause 12.5(m)(3)(b)

Clause 11.1(a) of the Port Service Agreement ("PSA"), says DBCTM is obliged to [redacted]

Under 13.1(b) of the PSA, DBCTM must not [redacted]" and further, under clause 13.2(b) of the PSA, [redacted]

Flagstaff restates in this report that it is important to note that master plans cannot be developed without undertaking the type of studies which are the subject of this report. The studies predate any master plan as it is as a result of them. Therefore it is inappropriate to compare the requirements of individual master plans against the scope of these studies. The scope of the studies is more appropriately compared to the requirements in the PSA.

Under Schedule 2 of the PSA, master plans must address…

[redacted]

Therefore, for any master plan to meet the objectives above, the studies that are undertaken to develop that master plan must be directed toward the master plan meeting those objectives.

Flagstaff has reviewed the studies undertaken and is satisfied they:

(a) meet the Primary Lessee's development objectives for DBCT. In this regard Flagstaff met with DBCTM at their offices on the 20th December 2016[14] and questioned DBCTM at length about the current and future market, not only for coal exported through DBCT, but also that of coal exported through the Gladstone Facilities and the effect of the rail link to the Abbot Point facility. Flagstaff's intention in doing this was to ensure DBCTM had considered all the factors which may impact decisions miners may take in respect of their

[13] Where it is understood land is no longer available in any event

[14] Attended by Flagstaff's Jonathan Smith and Allan Reid and DBCTM's Terry Harvey, Peter Wotherspoon and by telephone Jesse Knight.

selection of the export terminal from which they would export additional coal thereby making the most reasonable assessment of the likelihood of such coal passing through DBCT. Conversely it was necessary for Flagstaff to confirm that DBCTM had reasonably considered potential depletion of volumes from miners present requirements due to mine life and market considerations. Specifically Flagstaff questioned DBCTM on the capacity modelling done and whether it took into account excess capacity in other locations and the relative freight charges to taking coal to particular ports. A significant consideration was the Queensland Ports Strategy document which indicates continued growth in export volume, but that export of it would be preferred through existing terminals. In that circumstance expansion of DBCT is preferred over new development to limit ship traffic through new areas of the Barrier Reef;

(b) provide options for expansion and supporting engineering reports and the Primary Lessee's preferred option for expansion. The 2016 plan which Flagstaff have mentioned above specifically raises the Zone 4, 8X and 9X expansions in the form they take in these studies;

(c) have been undertaken as a result of the Primary Lessee's assessment of the current and future needs of users for services and facilities (See (a) above);

(d) deal with the Primary Lessee's proposals for land use and related development of the site. The FEL1 report for 9X deals in greater detail with this issue than does the FEL1 report for 8X and the FEL3 report for Zone 4, as 9X is outside the existing terminal footprint;

(e) deal with forecasts relating to noise and pollution exposure levels and proposals for management. Each of the reports specifically deals with these issues;

(f) deal with the Primary Lessee's assessment of environmental issues that might reasonably be expected to be associated with the implementation of the plan. Each of the reports specifically deals with these issues;

(g) deal with the Primary Lessee's assessment of environmental impacts and plans for dealing with those impacts (including plans for ameliorating or preventing environmental impacts). Each of the reports specifically deals with these issues;

(h) identifies the Primary Lessee's proposals for public consultation. Each of the reports specifically deals with this consultation;

(i) take into account projections for the demand for the services of DBCT. Each of the reports specifically deals with these projections.

On that basis, Flagstaff's assessment is that Clause 12.5(m)(3)(b) has been complied with.

3(c)(iv) 'The Extent of Current Contracted Demand' – Clause 12.5(m)(3)(c)

This item refers to matching proposed Permanent Works to demand, as a part of determining the overall scope of the Permanent Works. The extent of users' current contracted demand has been specifically considered by DBCTM as part of determining whether there is broad user support for the expansion and meeting this requirement (refer to Clause 12.5 (h) – 60/60 requirement).

The services provided as part of the Expansion Studies have determined which Permanent Works construction option(s) will meet the various potential levels of user tonnage requirements such that the 60/60 requirement may be satisfied.

Therefore, this Clause 12.5(m)(3)(c) is not a key focus in assessing the scope of these Other Costs.

3(c)(v) 'The appropriateness of DBCTM's processes to evaluate and select proposed capital works, including the extent to which alterations are evaluated as part of the process' – Clause 12.5(m)(3)(d)

The appropriateness of DBCTM's processes to evaluate and select the proposed capital works were assessed by Flagstaff in its earlier review of the DBCT Master Plan and Tender and Contract Management Plan (TCMP). Whilst the Master Plans have changed considerably since 2007, Flagstaff is not aware of any changes to them since that review which changes the processes for evaluating and selecting proposed capital works. Importantly Flagstaff is not aware of any changes in the 2016 Master Plan which changes this process.

In past reports to the QCA, Flagstaff has said it was appropriate for DBCTM to engage the existing DBCTM team and consultants, primarily Aurecon Hatch, who were already in place on the 7X expansion to undertake work on previous studies.

- Due to their intimate knowledge of the terminal and;
- As they had previously undertaken similar studies of this type on DBCT and therefore had access to and knew where data relevant to these studies might be;
- That the cost of engaging a new team and consultants who would need to gather that intimate knowledge would certainly have been considerably higher.

However during the last few years in Queensland; there has been a significant loss of skills in the engineering sector as there was little activity in this state, staff were retrenched or moved elsewhere, notably to NSW, to seek work. Flagstaff questioned DBCTM at length about the particular individuals who were, or would be at the time of engagement, doing this work for Aurecon Hatch. Flagstaff is satisfied that the individuals involved in this work were the same individuals who had been involved at DBCT for a considerable time and hence held that in-depth knowledge of the site and its operations. In that circumstance Flagstaff says it remained appropriate for DBCTM to engage Aurecon Hatch to undertake this work.

The engagement of Aurecon Hatch provided a prudent balance between price and risk as they has long experience on this site.

In this regard Flagstaff reiterates its approval of the sole sourcing approach taken with regard to Connell Hatch[15] in its Other Costs report on the DBCT 7X Expansion in August of 2010 and its studies report of 2013. In that report Flagstaff found that sole sourcing in these circumstances was appropriate and standard industry practice. DBCTM says and Flagstaff accepts that the low cost, compared to industry standards, of the 9X FEL 1 study is a direct result of a combination of the engagement of the individuals who had performed the previous work on a Louisa Creek stockyard but also the retained learnings from that discontinued study.

[15] On the 1st June 2009 Connell Hatch changed its name to reflect its parent company and became known as Aurecon Hatch

Flagstaff says that it is normal industry practice to continue with consultants in their role from stage to stage of a project where there is, or is intended to be integration of existing facilities which the consultants have studied, designed and been involved in the construction of, in the absence of any real concern over the ability of the consultant or their performance to date. Flagstaff is satisfied the staff put forward had been involved in the DBCT 7X expansion and Flagstaff is not aware of any concerns over their ability or performance to date, indeed the working relationship and output of them seems to be of a very high quality and well regarded by DBCTM and their working relationship seems harmonious.

DBCTM has addressed the sole sourcing of Aurecon Hatch in its Board Paper.[16]

Flagstaff says where DBCTM were using consultants with an intimate knowledge of the site then their ability to identify options; whilst not any better than other professionals; would likely be more efficient and in particular their ability to rule out unworkable solutions given their knowledge of the operating environment of the facility would be more efficient and thus more cost effective.

Flagstaff finds that the requirements of Clause 12.5(m)(3)(d) have been satisfied in the context of this review and, therefore, this criteria is not a key focus of this report.

3(c)(vi) 'The extent to which 'Capital Projects' were subject to DBCTM's evaluation and selection process' – Clause 12.5(m)(3)(e)

Flagstaff notes that 'capital projects', in this context, relates to study expenditure on options for capital projects. Flagstaff notes that the DBCTM evaluation and selection process has already been reviewed through a previous process related to the TCMP. Flagstaff considers that the criterion used in that process relates well to the evaluation and selection process for Study Costs. Additionally, Study Cost expenditure is necessary to support permanent work expenditure. This detailed assessment of the procurement process for each primary component of Study Costs is provided in Section 3 (d).

3(c)(vii) 'The extent to which consultation has occurred with relevant stake holders about the proposed capital works' – Clause 12.5(m)(3)(f)

The costs of stakeholder's consultation are included in the Owners labour costs; however the assessment of the level of and effectiveness of the consultation is not within the terms of reference of this Assessment and Report.

The driver for these studies is applications for access from existing users and new access seekers. Each of the reports deals with engagement with stakeholders although engagement with the community in those reports seems to be projected to happen rather than has happened. Flagstaff questioned DBCTM on this issue and was informed that regular community engagement meetings are held on site.

Flagstaff has been provided with a presentation made to Glencore in January 2016. This presentation is consistent with the application made by DBCTM to the QCA.

[16] Refer Appendix A

DBCTM commenced the studies based upon terminal access applications from both existing users and Access Seekers.

Flagstaff is satisfied that the expenditure is justified in terms of Clause 12.5(m)(3)(f) of the DBCT Port Access Undertaking.

3(d) Specific Issues for Review

Flagstaff says that a review of the scope of 'Study Costs' should focus on whether the studies were specifically for expansion of the DBCT terminal because it accepts studies for expansion are a DBCTM responsibility under the PSA.

The total direct cost of $8,259,959 was expended as follows…

Activity	Aurecon Hatch	DBCTM	Others	Total
Study management	764,965	981,094	36,122	1,782,181
Capacity modelling			544,491	544,491
Geotechnical & survey	-		89,183	89,183
Preliminary studies	68,385		38,009	106,394
Zone 4 study	3,561,920		187,295	3,749,216
8X study	648,348			648,348
9X study	362,086			362,086
Direct study costs	**5,405,704**	**981,094**	**895,100**	**7,281,898**
Financing costs				166,852
Interest during construction (IDC)				811,239
Total study costs				**8,259,989**

Flagstaff has not addressed Financing Costs or Interest during Construction in this report, but says it has no reason not to accept the construction timelines in the DBCTM Board Paper.

Taking each of these cost types in turn.

Whilst these studies were not done as an owners team, but by Aurecon Hatch as a contractor, there is significant input required from DBCTM in order that the options are palatable to the port users and also to DBCTM hence inevitably there are significant DBCTM costs incurred in managing them.

The modelling costs are a necessary element of the scope as they determine the throughput capacity for the various expansion options to match.

In order to undertake studies of this type a level of geotechnical investigation and survey work is necessary to identify scope that will be required to be done in each option to achieve the desired capacity expansion. The amount of this type of work increases as the studies move from FEL1 to FEL3. Flagstaff accepts that this work is within scope for a study.

The costs that directly relate to the studies are clearly within scope. Flagstaff have reviewed the ledger line items[17] in the background to DBCTM's cost report and can confirm, on the basis of a line by line review but without having undertaken a detailed audit of each invoice, that each of those line item descriptions are costs of a type Flagstaff would expect to be incurred in undertaking these studies. On that basis Flagstaff says they are within scope.

Unlike Flagstaff's 2013 report on study costs, these studies were undertaken on a stand alone basis by the individuals concerned. In the studies reviewed by Flagstaff in

[17] DBCTM provided the complete cost file in Excel format 8S Cost Report for Study Application.xls for Flagstaff's review.

2013, those individuals were also engaged in the 7X expansion and hence separating out their cost vs productive effort for each element was not possible. Equally it was more difficult in that 2013 report to compare the cost of the studies in relation to the proposed capital cost of the infrastructure which may come from them.

That is not the case here, as whilst there is some cross-over with Non-Expansionary Capital ("NECAP") works being undertaken on, amongst other things, the industrial dam, those are minor in comparison to these study costs.

Therefore Flagstaff is satisfied that each element of the scope of work undertaken was necessary.

3(e) Cost as an indicator of scope

DBCTM have identified[18] the capital costs and the cost of each of the studies for them as follows.

Step	Capital Cost	Study Cost	Percentage
Zone 4 (FEL3)	$356M	$5.7M	1.6%
8X (FEL1)	$491M	$1M	0.2%
9X (FEL 1)	$2,844M	$0.6M	0.02%
Total	$3,691M	$7.3M	0.2%

3(f) Flagstaff's body of knowledge

Flagstaff has been involved in running these types of studies, taking active roles in owners' teams undertaking these types of studies and in reviewing these types of studies for owners since Flagstaff was established in 1995. Hence it has a body of knowledge that whilst confidential in individual cases, provides it with a good understanding of the range of costs which can be expected for these studies as stand-alone exercises. Correspondence of the costs to those ranges is a good indicator that there is unlikely to have been unnecessary scope.

Flagstaff's experience is that the costs of management of these types of studies comes to approximately 12.5% of the cost of the study, both for the owner and the contractor, in this case Aurecon Hatch undertakes the work.

DBCTM expended $981,091 on a total study cost of $7,281,898 or 13.4%.

Aurecon Hatch's management costs were $895,100 on a total study cost of $7,281,898 or 12.3%.

Hence both are within the expected range.

In combination, the total expended by Aurecon Hatch and DBCTM on management of the studies amounts to 26% which is within the range Flagstaff expects, arising from Flagstaff's involvement in management and review of studies, for the costs of management of the study work.

In its experience Flagstaff says the costs of the various level of studies on projects such as those proposed for DBCT where no work has been done previously are as follows:

[18] Appendix B - Expansion Study Application

Study	Cost of study as a % of Estimated Final Capital Cost	Cumulative Cost as a % of Estimated Final Capital Cost
FEL 1	0.3%	0.3%
FEL 2	0.8%	1.1%
FEL 3	2.5% - 3%	3.6% - 4.1%

3(f)(viii) FEL1 study of 8X

The cost of the FEL1 study DBCTM has undertaken for the 8X expansion at 0.2% is below the level of expenditure Flagstaff would expect where there was no prior knowledge to inform it. In the case of the proposed 8X expansion the elements of scope have in some cases a significant amount of prior knowledge:

Proposed Scope	Effect of Prior Knowledge	Cost above or below expected %
New Rail Receival Pit 4	This pit is in the same locations generally as the existing pits and of the new rail loop dam, therefore geotechnical conditions should be similar as will the construction and engineering challenges.	The cost of this study should be somewhat lower due to information available from and lessons learned from the previous inloading pit design and construction.
New Inloading System 4	The proposed location is the same as the existing inloading string therefore geotechnical conditions should be similar as will the construction and engineering challenges.	The cost of this study should be somewhat lower due to information available from and lessons learned from the previous inloading system design and construction. There is residual risk in the condition of the existing infrastructure at the point where this new string connects to the existing system as it can be difficult to perform condition assessment in an operating environment.
Replacement of ST1	DBCTM have replaced a number of yard machines, most recently in October 2014, Flagstaff reported on the replacement of SR1 on this same Bund.	The cost of the study should be considerably less due to information available from and lessons learned from the replacement of other yard machines on this bund.

Upgrades to IL2, ST2, OL2, R1 and R2	There will have been considerable knowledge gained from previous works on DBCT	The cost benefit will be minimal as where upgrades are proposed to existing infrastructure, DBHCTM / Aurecon Hatch could not be aware of the actual condition of sometimes difficult to access existing infrastructure to determine the actual scope of any repair which may be necessary at the time of construction. Hence much work is required in scenario planning.
New Berth to the South	It can be inferred from previous dredging and piling exercises in the 7X expansion what the ground conditions might be in that location.	Given the cost of off-shore works it would be imprudent for DBCTM / Aurecon Hatch not to commence all below water study from scratch. Hence there is little cost benefit of the existing work.

Taking these things into account Flagstaff says the cost at 0.2% of the estimated final capital expenditure is reasonable and therefore does not indicate that unnecessary scope has been undertaken in the FEL1 study on 8X.

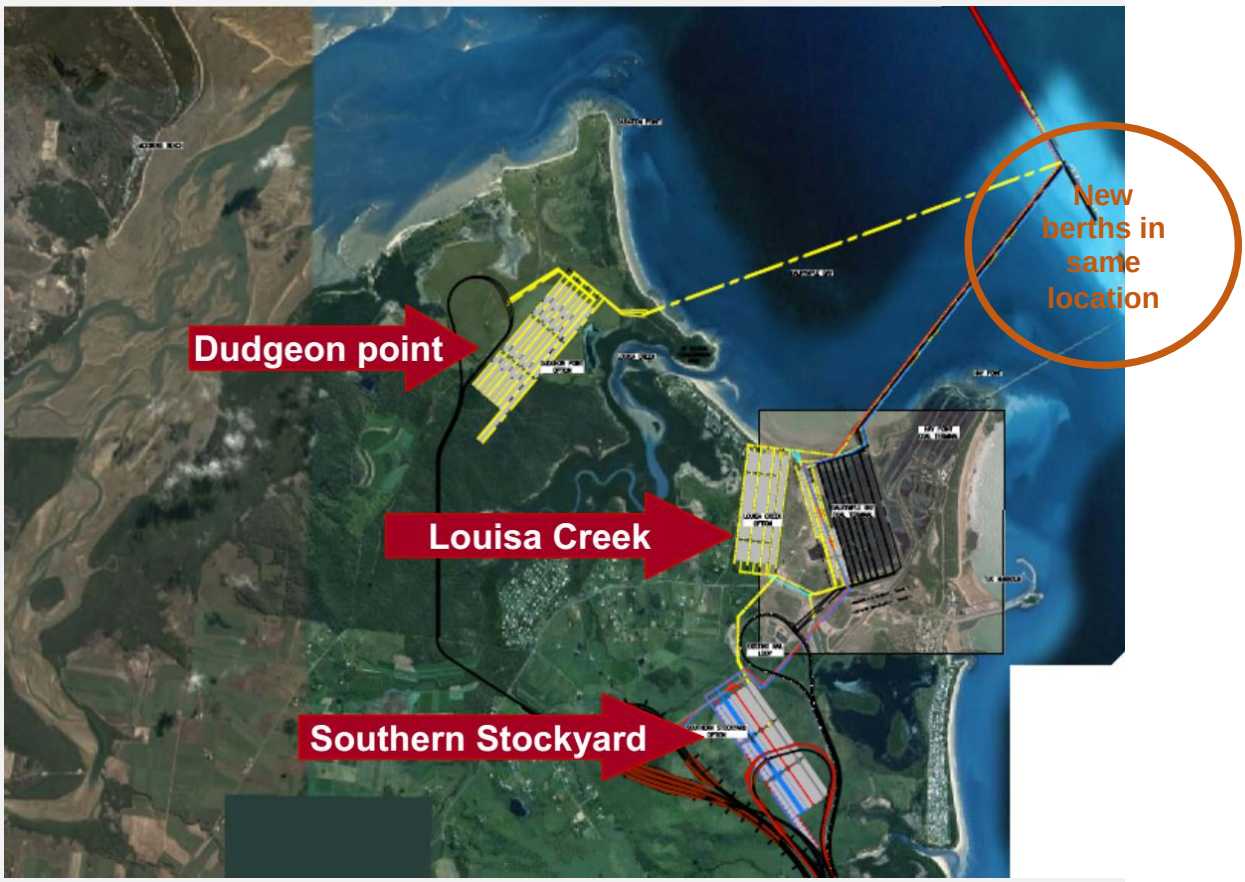
3(f)(ix) FEL1 study of 9X

The cost of the FEL1 study DBCTM has undertaken for the 9X expansion at 0.02% is considerably below the level of expenditure Flagstaff would expect where there was no prior knowledge to inform it. In the case of the proposed 9X expansion the elements of scope have a significant amount of prior knowledge:

Proposed Scope	Effect of Prior Knowledge	Cost above or below expected %
New Louisa Creek Stockyard	The studies upon which Flagstaff reported in 2013 looked at a proposed stockyard at Louisa Creek, albeit a much large one. Hence most of the preliminary work to allow an FEL1 study of a small stockyard had already been done.	The cost of the study should be considerably less than that Flagstaff would expect for a new yard where no preliminary work had been done.
Upgrade to IL1	IL1 has been operating for some time and hence as an item if infrastructure is well known in an operating	The cost of the study should be considerably less than that Flagstaff would expect for a new

	sense. It is some years however since it was constructed. However the new element to connect the proposed Louisa Creek stockyard is greenfield work upon which Flagstaff reported in 2013.	yard where no preliminary work had been done.
New Out-loading System 4	The new Out-loading system 4 for the proposed Louisa Creek yard then connects to the existing outload at the northern end of row 8.	The cost of the study should be somewhat less due to information available the previous study however on the northern end this proposed expansion is considerably different to that reviewed in 2013.
Up to 2 berths to the north	There has been considerable knowledge gained from previous works on DBCT. Flagstaff reported in 2013 on an option for a much larger stockyard at Louisa Creek which involved a new out-loading jetty, as shown below[19], but for two new berths in precisely the same location as the two new berths proposed in this study.	The work and hence much but not all of the cost of this element of the FEL1 study was included in the application upon which Flagstaff reported in 2013 and thus will ne negligible here.

[19] From the DBCTM presentation to Producers on Wednesday 22 July 2009 "Post 85 MTPA Expansion Concepts, Strategy & Forward Plan" provided to Flagstaff as part of its review of study costs in 2013.



Taking these things into account Flagstaff says the cost at 0.02% of the estimated final capital expenditure is reasonable and therefore does not indicate that unnecessary scope has been undertaken in the FEL1 study on 8X.

3(f)(x) FEL3 study of Zone 4

The cost of the FEL3 study DBCTM has undertaken for the proposed Zone 4 expansion at 1.6% of the estimated capital cost, is well below the level of expenditure Flagstaff would expect (of 2.5% - 3%) where there was no prior knowledge to inform it. This study is at a far more advanced stage than the FEL1 studies for 8X and 9X. These works were not addressed by the 2013 Flagstaff report.

Proposed Scope	Effect of Prior Knowledge	Cost above or below expected %
Completion of Row 8	The completion of row 8 has always been contemplated as an expansion option, however due to the difficult topography in this area was not progressed at that time.. Much work has occurred through this area from the construction of the western end of row 7 in the 7X expansion to NECAP works in the stormwater	The cost of this study should be somewhat lower due to information available from and lessons learned from the previous civil works in this area and the work on Row7.

	improvement project. Whilst not specific to the extension of Row 8 it is in the same location and therefore of benefit.	
Vertical Western Wall	The works done for the quarry dam and the stormwater improvement project have provided some information to inform this study, however Flagstaff says the significance of the civil works particularly where it lies below the quarry dame should not be taken lightly.	Flagstaff says it would expect the cost of studying works of this complexity to be significantly higher than normal. For example significant additional work is necessary to study the manner by which risk associated with leakage from the Quarry Dam is mitigated to an acceptable level.
New stacker and conveyor on Row 8	DBCTM have replaced a number of yard machines, most recently in October 2014, Flagstaff reported on the replacement of SR1 on this same Bund.	The cost of the study should be considerably less due to information available from and lessons learned from the replacement of other yard machines and of the construction of new yard machines and conveyors on the adjacent row 7. There is residual risk in the existing infrastructure at the point where this new row connects to the existing system, as it can be difficult to perform condition assessment in an operating environment.
Replace RL2	DBCTM have replaced a number of yard machines, most recently in October 2014, Flagstaff reported on the replacement of SR1.	The cost of the study for this element should be considerably less due to information available from and lessons learned from the replacement of other yard machines.

Taking these things into account Flagstaff says the cost at 1.6% of the estimated final capital expenditure is reasonable and therefore does not indicate that unnecessary scope has been undertaken in the FEL3 study on Zone 4.

Thus Flagstaff is satisfied that all of the scope for which DBCTM expended the various funds was justified.

4. Standard of Services provided by Other Costs – Clause 12.5(m)(4), Clause 12.5(g) of Schedule G and the PSA

Regardless of whether the study costs are regarded as Other Costs or not, Clause 12.5(m)(4) is essentially the same as clause 12.5(g)(1) of Schedule G of the 2010 DAU, that Schedule also requires assessment of the contracts let and whether the specification has been amended and if so why.

4(a) Introduction to Clause 12.5(m)(4), Clause 12.5(g) of Schedule G of the 2010 DAU and the PSA Clause 12.1

Clause 12.5(m)(4) states:

"In assessing the standard and specifications of the works undertaken, the QCA will ensure that the proposed works do not involve any unnecessary works or contain design standards that exceed those standards necessary to comply with Section 12.1 of the Port Services Agreement."

Clause 12.5(g) of Schedule G states:

"(g) ***Standard and specifications of works***
(1) The QCA will review the standard and specifications of the works and all relevant contract terms to ensure that the proposed works do not involve any unnecessary works or contain design standards that exceed those standards necessary to comply with Section 12.1 of the Port Services Agreement, or, in the case of contract terms, are not likely to materially adversely impact on a prudent balance between price and risk.

(2) The QCA will accept or not accept on a contract by contract basis the standard, specifications, and contract terms for the works within 20 Business Days of receipt of the technical specifications, design drawings and contract terms for the works and any other information needed by the QCA to review the standard, specifications and contract terms for the works. If the QCA does not accept the standard, specifications and contract terms of the works, it will give reasons in writing.

(3) If DBCT Management amends the submitted technical specifications and/or design drawings and/or material contract terms after an approval by the QCA, DBCT Management will immediately advise the QCA of the changes. The QCA will accept or not accept the changes."

PSA Section 12.1 states:

[redacted]

4(b) Methodology

The methodology adopted is as follows:

Review Clause 12.5(m)(4))and Clause 12.5(g) of Schedule G of the 2010 DAU and the and discuss their relationship with Study Costs and then:

- identify the specific issues that need to be reviewed to identify whether the standard of work was appropriate – Section 3(d); and
- undertake a review of the specific requirements for each category within Other Costs and draw conclusions – Section 3(e).

Flagstaff has in the past:

- Visited the site 8 times;
- Reported to the QCA on the processes, planning, contracts let and the outcome of those contracts on the 7X Expansion project.
- Reported to the QCA on the processes, planning, contracts let and the outcome of NECAP contracts at DBCT.
- Reported to the QCA on the cost of study costs for expansionary work including very similar scope to this expenditure.

Flagstaff has in relation to this report specifically:

- Reviewed information provided by DBCTM and;
- Questioned DBCTM personnel in writing and verbally on areas it considers further information is required, requested that information and reviewed that information.

Flagstaff, therefore, consider that it has a reasonable overview of the studies to enable it to advise on the standard of the Study Cost expenditure.

4(c) Review of Clause 12.5(m)(4), Clause 12.5(g) of Schedule G of the 2010 DAU and the PSA Clause 12.1 in relation to Study Costs.

The 'standard' of work for Study Costs does not relate to a technical specification, rather it refers to the level and effectiveness of the various services supplied under Study Costs to help identify expansions to DBCT. Therefore the requirements of Clause 12.5(g)(3) of Schedule G of the 2010 DAU are not relevant here.

Flagstaff submits that those services need to be reviewed to identify whether:

- unnecessary 'services' were supplied; and
- the standard of the 'services' was adequate to deliver the Project efficiently, including the requirements of the PSA.
- The contracts terms of the contracts let to perform the work prudently addressed these things.

These reviews will be detailed in Section 4(d).

4(d) Review of Works Undertaken

Services in excess of the standards required could be defined as services, which if not used, would not have negatively affected risk management or the actual outcome of the Studies in terms of time, cost or quality.

This judgement can only be subjective and is based on Flagstaff's experience and its review of available information.

The tests applied are:

(i) whether the cost categories are a reasonable requirement for the delivery of these Studies; and

(ii) whether the standard of Services were adequate to efficiently deliver the Studies.

By necessity, this is a subjective analysis.

4(d)(i) Review of Whether the Cost Categories Are a Reasonable Description of the Services Required To Deliver This Project

Flagstaff has reviewed the cost categories involved in these studies. They are as follows.

Category	Cost Type
Engineering & Design	Aurecon Hatch
DBCTM's Costs	Staff Costs
	Consultant Fees (E.g. Geotechnical & Survey)
	Travel
	Office Expenses

In dealing with the scope of the studies, Flagstaff has already decided that the scope of the services provided was reasonable to deliver the Studies.

Flagstaff confirms that the cost categories are a reasonable description of the Services required to deliver the Studies and that no unnecessary services were supplied.

4(d)(ii) Compliance with Standards requirements of 12.5(m)(4)

This Clause is reviewed against the requirement defined in Section 4(c), namely:

- whether the standard of Services were adequate to efficiently deliver the Studies.

DBCTM have adopted the KBR FEL process and Flagstaff has accepted in 2(b) of this report that it is the de-facto regulated method, therefore Flagstaff has adopted a two stage review:

- Has DBCTM covered each of the items identified in the KBR FEL process for FEL1 (8X and 9X) and FEL 3 ((Zone 4); and
- Has DBCTM addressed each of those things adequately to inform DBCTM and the Users of the Terminal of the options available for expansion of DBCT, the scope thereof and the cost thereof.

Flagstaff has reviewed the study reports named at 3(d) above and confirms that they address each of the things shown in Annexure D for an FEL1 (8X and 9X) and FEL3 (Zone 4) report.

Where KBR say the "*emphasis of FEL-1 is to determine the basic economic viability of the conceptual project before committing to the expense of more definitive engineering and study expenses*" and then names the specific deliverables, Flagstaff says the FEL1 reports for 8X and 9X detail inter alia:

- Strategic Business Assessment and Risks
    - Each of the 8X and 9X reports detail the decisions made in selection of options based upon the current and expected

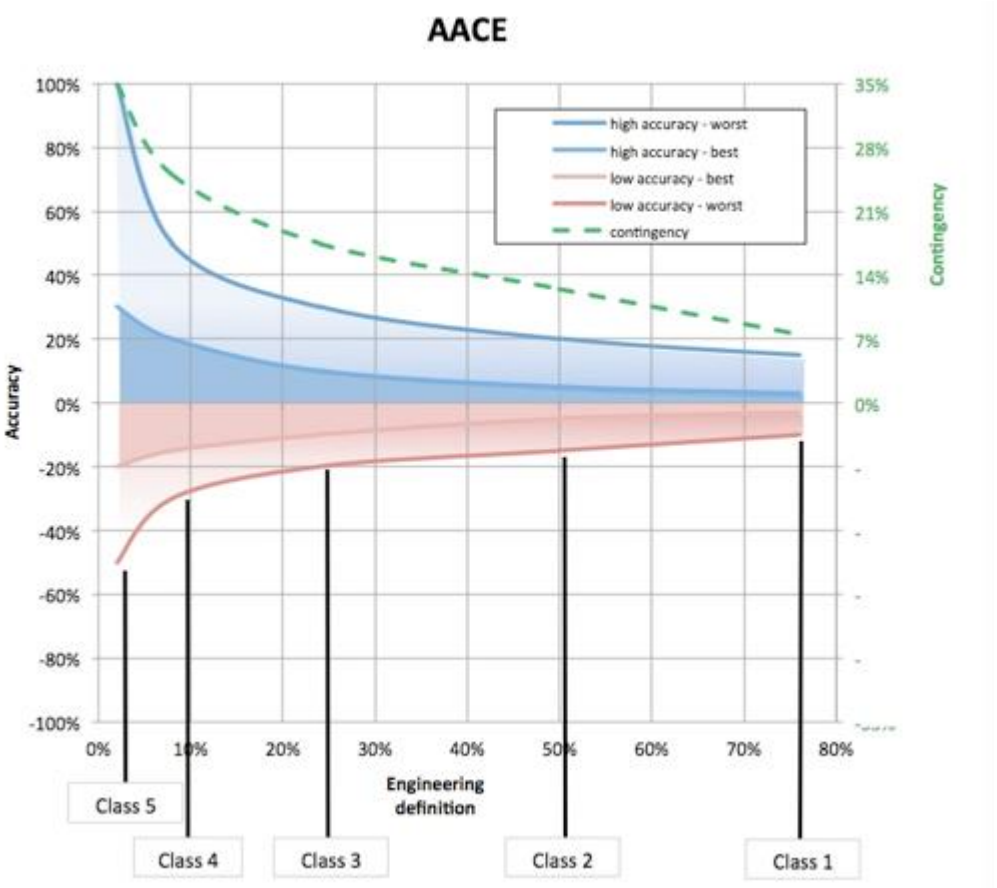
capacity requirements of the terminal. This is particularly evident in the assessments of:

- In the 8X report Aurecon Hatch review the ranking of various options in relation to the capacity of the three available inloading strings. Therefore it deals with existing capacity rather than the capacity of a new terminal footprint.
- The 9X Report deals with an expansion of the terminal footprint and with the assessment of why the Louisa Creek site is now considered a better alternative than the Southern Stockyard identified as best option in the studies on which Flagstaff reported in 2013. The change in the market for seaborn coal and the potentially much larger expansion requirements in 2013 led to a need for a much larger stockyard than is now proposed. The report spends considerable time addressing these issues.

- Risks have been specifically addressed in risk workshops involving DBCTM and Aurecon Hatch staff. The outcome of those assessments is shown in Appendix D to the 8X Report and Appendix E to the 9X Report. Flagstaff says these reviews are detailed and identify and deal with potential risks arising from the options identified.

- Technology Selection
  - The reports each identify the technological method by which they will meet the expansion requirements; and
  - In particular they deal with the options available, why one was selected and another rejected.
- Potential Sites Identified
  - The reports are evolutionary:
    - 8X deals with work within the existing footprint; and
    - 9X expands the footprint of the terminal. Whilst building on the expansion options reviewed in the Flagstaff report of 2013.
- Cost Estimate (+/- 40 to 50%)
  - Section 8.2 of the 8X report refers to a target accuracy of the capital cost estimate of -25% to +35% at 80% confidence.
  - Section 8.3 of the 9X report refers to a target accuracy of the capital cost estimate of -25% to +35% at 80% confidence.

- AACE International[20] provides the range of outcomes below. The extent of engineering definition in an FEL1 study is approximately 3%. Hence the worst case scenario is that the estimate will be -50% to +100% and the best case scenario is -20% to +50%. Hence these ranges are broader than those quoted in the two reports and the reports are showing a level of accuracy better than industry expectations.



- Preliminary Project Schedule
  - The 8X report provides a high level review of the options (sequences) of the proposed expansions and a more detailed schedule for the reclamation works.[21] At a high level this meets the KBR standard.
  - The 9X report provides a detailed schedule of the one option considered and hence complies with the KBR standard.

[20] AACE is the publisher of *Cost Engineering*, a monthly technical journal, *Skills and Knowledge of Cost Engineering* (currently in its fifth edition), *AACE Certification Study Guide* (currently in its third edition), 14 different AACE International Professional Practice Guides, and its most comprehensive publication, the *Total Cost Management (TCM) Framework*. It is an internationally recognized authority in cost management.

[21] At 7.10.7

- Block Flow Diagrams - Both reports use 3D block-flow diagrams to detail the various expansion options and therefore meet the KBR standard.
- Process Cases Identified
    - The 8X reports deals with the various processes involved in the development of the options to meet expansion targets.
    - The 9X report details how the Louisa Creek option will meet its expansion target.

      Therefore both meet the KBR standard.
- Long Lead Equipment Identified – In each of the Staging Detailed Reports, the procurement of long-lead and in particular internationally procured items is considered and therefore the reports meet the KBR standard.

As the FEL1 reports meet the KBR standard then they meet the standard required by the AU and PSA.

Where KBR say the "*The emphasis of FEL-3 is to achieve the best practical level of project definition and a good quality project estimate. This level of project definition and cost estimate quality are normally required in order to present to management a candidate project which has the right combination of overall risk and projected economic performance, and thereby secure an AFE*[22]*.*" and then names the specific deliverables, Flagstaff says the FEL3 report for Zone 4 details inter alia:

- Updated Strategic Business Assessment – The Zone 4 report deals with the Integrated Logistics Companies ("***ILC***") modelling showing that the capacity of the Goonyella system is constrained to 83.8Mtpa where DBCTM has a name plate capacity of 85Mtpa. All of the 83.8Mtpa is contracted. The Zone 4 project allows rows 7 & a new full row 8 to operate as a 4th Zone allowing stockpiling of material which in turn increases the capacity of the Goonyella system to 89.1Mtpa on that same ILC modelling. Therefore, the rationale is that this expansion would release the currently unusable nameplate capacity between 83.8 and 85Mtpa to existing users and also provide them with an additional 4.9Mtpa. Thus the assessment complies with KBR's standard.
- Detailed EPC Phase Project Execution Plan and Schedule. The plan provides:
    - Complete Implementation plan; and
    - Complete plan of operational readiness;

    And hence complies with KBR's standard.

[22] Authorisation for expenditure

- Completed Environment Permit Submittal. The study identifies in the Operational Readiness plan[23] that none is required.

  "*As DBCT is an existing operation all environmental management plans required under the Environmental Authority (EA) are in place to support that operation. However, due to the change with Zone 4 these existing management plans will require review and update*"

  Therefore the plan meets the KBR standard.

- Training, Commissioning & Start-up Plans. The Operational Readiness plan deals with this at 2.1. Therefore the study meets the KBR standard.

- Cost Estimate (+/- 10 - 20%).

  The basis of the estimate is shown at section 14 of the study report and states "*The estimate accuracy determined following the QRA was assessed at –15.6% to +18.9% at 90% confidence."*

  Therefore the accuracy of the estimate falls within; albeit at the high side' of the order of accuracy provided for in the KBR standard.

- Finalised Utility Flow Diagrams & Balances. In Appendices B & F to the report, Aurecon Hatch show the finalised flow diagrams. Therefore the report complies with the KBR standard.

- P&ID's - Issue IPL (Issue For Plant Layout). In Appendices B & F to the report, Aurecon Hatch show the plant layout diagrams. Therefore the report complies with the KBR standard.

- Plot plans & Critical Equipment Layouts. In Appendices B & F to the report, Aurecon Hatch show the critical equipment layout diagrams. Therefore the report complies with the KBR standard.

- Equipment List & Equipment Datasheets. In Appendix F to the report, Aurecon Hatch show the critical equipment layout diagrams. Therefore the report complies with the KBR standard.

- Single-line Electrical Diagrams. In Appendix F to the report, Aurecon Hatch show the critical equipment layout diagrams. Therefore the report complies with the KBR standard.

- Pre-Design Hazard Review. As part of the Risk Review in section 4 of the study report, Aurecon Hatch address these issues and hence the study complies with the KBR standard

The work undertaken by DBCTM in managing the delivery of these studies is, in Flagstaff's opinion consistent with industry practice and specifically to the adopted industry standard of FEL1 to FEL3 as detailed by KBR which has

[23] Appendix E thereto at 2.2.1

been adopted in the AU and hence is the regulated standard with which DBCTM must comply.

The delivery of studies of this type and the management in terms of presentation to users means that the lead consultant, in this case Aurecon Hatch, work in a team with the owner (DBCTM) to deliver the outcome.

Flagstaff has been given a copy of the contract of engagement of Aurecon Hatch for the three studies and can confirm that it is consistent with the requirements of the 2010 DAU and does not seek additional work outside the scope of these studies. Flagstaff has already said that the engagement of Aurecon Hatch[24] provided a prudent balance between price and risk as they has long experience on this site. The contract reasonably represents a industry standard form of engagement of such an Engineering organisation.

Flagstaff says it is reasonable to conclude that the services supplied to manage the Studies were adequate to deliver the project efficiently and satisfy the requirements of Clause 12.5(m)(4) and Clause 12.5(g) of Schedule G of the 2010 DAU.

4(d)(iii) Compliance with PSA

Flagstaff has reported at 4(c)(iii) above that studies such as this are a precursor to the development of the master plan and not the reverse. Thus in order to have a master plan from which it might comply with the PSA 12.1(g), Flagstaff says it is necessary to undertake these studies.

Flagstaff is satisfied that the studies undertaken are of sufficient breadth, depth and quality such that DBCTM might comply with PSA12.1(g) and therefore the requirements of clause 12.5(m)(4) are satisfied.

They do not contain work that is unnecessary to deliver such a master plan.

On this basis, Flagstaff confirms that the proposed works do not contain any unnecessary works or contain design standards that exceed those necessary to comply with Section 12.1 of the PSA.

[24] At 3(c)(v)

5. Reasonableness of Study Costs – Clause 12.5(m)(5) and Clause 12.5(m)(5) & (6) of Schedule G

5(a) Introduction to Clause 12.5(m)(5) and Clause 12.5(m)(5) & (6) of Schedule G

Clause 12.5(m)(5) is consistent with Clause 12.5(m)(5) of Schedule G and states:

> *"In assessing the reasonableness of the cost of works undertaken, the QCA will have regard for, inter alia:*
>
> (a) *the level of such costs relative to the scale, nature, cost and complexity of the project;*
>
> (b) *the circumstances prevailing in the markets for engineering, equipment supply and construction;*
>
> (c) *the manner in which the Capacity Expansion has been managed, including but not limited to the manner in which DBCTM has balanced the needs of:*
>
> *(i) safety during construction and operation;*
>
> *(ii) compliance with environmental requirements during construction and operation;*
>
> *(iii) minimising disruption to operating capacity during construction;*
>
> *(iv) accommodating the reasonable requests of Access Holders to change the scope and sequence of the works undertaken to suit their needs;*
>
> *(v) a prudent balance between:*
>
> *(A) a higher price in return for more certainty as to final cost;*
>
> *(B) a lower price accepting that formal cost may be less certain; and*
>
> *(C) costs, schedule and minimising disruption to operating capacity during construction;*
>
> *(vi) minimising whole of asset life costs including future maintenance and operating costs; and*
>
> *(vii) minimising the total cost of the Capacity Expansion which may at times not be consistent with minimisation of individual costs."*

Clause 12.5(m)(6) of Schedule G merely states that QCA will undertake the process Flagstaff is performing here.

5(b) Methodology

The following methodology has been adopted:

- discuss Clause 12.5(m)(5) to obtain an overview of the issues that must be considered when reviewing the reasonableness of cost of the Studies – Refer Section 4(c);
- assess the reasonableness of Study Costs on the following basis:
  - review of the reasonableness of the original budget for the various cost categories – Refer Section 4(d);
  - overall comparison of the actual final Study Costs relative to the budget – Refer Section 4(e); and
  - review of the justification for over budget items – Refer Section 4(f).

5(c) Review of Clause 12.5(m)(5)

This Clause requires QCA to have regard to a range of issues when reviewing

the reasonableness of the Study Costs. The issues are broad and relate in the main to construction of an expansion rather than studies to determine if any expansion might be accepted for inclusion in a master plan.

In section 3 above Flagstaff has already confirmed that the costs incurred by DBCTM are within and below the range of costs Flagstaff would expect to be expended for studies of this type which is consistent with the level of knowledge DBCTM and Aurecon Hatch have of the site.

As studies such as this develop options; and then the options are whittled down to the desired one after extensive consultation with many Users, any assessment of the costs in relation to 12.5(m)(5) of the DBCT Access Undertaking will be subjective. Whilst some distinct elements of the work may be able to be estimated in the normal way, specified tasks would be estimated for lump sum type work, these studies take as long as is necessary to reach a conclusion or are stopped at the behest of the users and therefore the assessment of the level of the costs will be a subjective one based upon available information.

The costs to undertake these types of studies where there is an approval process with external parties (the users) are inevitably almost entirely time related; both in the payment of consultants and in owners team costs. Decisions on options where there are many users with sometimes competing commercial imperatives means that they can take much longer to make than studies that proceed from single point approval hold point to hold point.

That subjective assessment can only be made against the output – the study report and an assessment of the hours that study might take based upon experience.

Flagstaff has applied its experience in undertaking and managing studies and in engaging engineering services to review the costs in terms of 12(m)(5) of the DBCT Access Undertaking.

5(d) Review of DBCTM Methods of Preparing the Original Budget

The budget for the studies is found in the DBCTM Board Paper No. 123 dated the 3rd November 2014 for a total of $8.1M.[25] That budget development was one made conjointly by Aurecon Hatch and DBCTM based upon an assessment of the hours[26] required to undertake the task.

At the time of the Board Paper the indicative capital expenditure was $3.7B made up of Zone 4 $400M, 8X $900M and 9X $2,500M.

In section 4 above Flagstaff has confirmed the levels of expenditure it would expect on as FEL1 0.2%, FEL2 0.8% and FEL3 2.5% of capital cost where there was no prior knowledge of the scope which was the subject of the studies.

Therefore at the time the Board paper was formulated Flagstaff expects the budgeted cost; with no prior knowledge; to have been $20M for FEL1 studies on 8X and 9X and an FEL2 and an FEL3 study on Zone 4.

[25] Appendix A hereto at page 9

[26] Refer 5(c) above

The actual budget was $7.1M, therefore Flagstaff says it is reasonable to assume the difference between the two of $12.9M or 65%, is a combination of:

- the value of work it had already performed; and
- the cost benefit of engaging Aurecon Hatch who had staff who had performed this work at DBCTM for many years and therefore would do it more quickly and efficiently where they knew where to place their hands on data already in hand.

Where the final cost of the studies excluding the financing costs and interest is within 3% of this budget confirms that position.

5(e) Assessment of Actual Study Costs

In assessing these costs in terms of 12.5(m)(5) of Schedule G of the 2010 DAU, Flagstaff says the assessment of study costs is entirely different to an assessment of physical construction work. Hence many of the categories of thing this element of the 2010 DAU requires QCA to have regard for, are not relevant to study work.

Flagstaff has had regard for (5)(A) and 5(B), but says that much of (C) is irrelevant as no on the ground physical construction work was undertaken. Flagstaff deals with changes in market conditions since the last reports were done, what relevant market rates are now and what it expects the total cost to have been below.

In section 5 of this report Flagstaff have confirmed by a comparison of:

- the only available absolute measure; Flagstaff's historical record of costs incurred in the performance of studies; and
- its review of the scope undertaken versus
  - the work which it understands had already been done; and
  - the level of knowledge of those undertaking the study;

  that the total cost is reasonable.

It is review of the types of costs incurred Flagstaff has made a high level review; but not an audit; of the complete cost file in Excel format "*8S Cost Report for Study Application.xls*" provided to it by DBCTM. Flagstaff cannot see any cost which appears in that list which is inconsistent with undertaking a study.

5(f) Comparison of Actual Costs vs. Budget

There are two elements to this comparison.

Firstly in its application DBCTM say the project was completed 10% under budget. In a strict sense of the word that is the case but it is important to note what is included in the budget amount to which it refers and what is included in the costs.

The Board Paper No. 123[27] shows a budget estimate of $7.071M plus a 15% contingency for a total of $8.1M[28]. It proposes in that document that the budget be debt funded, but does not include financing costs or interest during construction in the $8.1M budget or at least does not make clear that part of the 15% contingency will be used for financing and interest costs..

The actual costs identified in the application[29] of $8.26M are made up of $7.282M in direct costs and $0.977M in interest and financing costs.

Therefore the two are not directly comparable.

Applying the matching principle it is the $7.071M in budget which is directly comparable with the $7.282 in costs. Therefore the direct cost of doing the studies is approximately 3% over the budgeted direct cost.

The original budget showed a 15% contingency for overruns of this type and Flagstaff says that DBCTM's ability to keep the costs to within 3% of budget (or using only 3% of an available 15% budgeted contingency) is a very good outcome and indicates that DBCTM have managed the cost of the studies very well.

Flagstaff says that the finance and interest costs are outside its area of expertise.

Secondly as the majority of the work was undertaken by Aurecon Hatch on hourly rates, Flagstaff has reviewed the rates charged by Aurecon Hatch.

In its Board Paper at Table 2.6.1 DBCTM compares rates from Aurecon Hatch in 2009 to those proposed in 2014. They show a considerable drop in the rates over the period from 2009 to 2014.

Classification	2009 Aurecon DBCT Rate	2014 Aurecon DBCT Rate	Change	2014 Large Infrastrucrture Project
Senior Conjsultant	[redacted]	[redacted]	-15%	$ 282.00
Consultant			-8%	$ 239.70
Engineers			-12%	$ 181.00
Designers and Technicians			-12%	$ 153.00
Administrative Staff			-14%	$ 112.00

Flagstaff confirms that a significant drop in rates occurred during this period as the mining construction boom tapered off and as there was little other infrastructure work to replace it. Aurecon Hatch retained staff with long experience of the site but, as did all other engineering consultancies; shed other staff as a result of this drop in work. In doing that culling, all engineering consultancies try to keep their best resources. Flagstaff has also compared the rates to those rates from another engineering consultancy on a large Infrastructure Project in 2014 and they are comparable or slightly lower.

In section 3(c)(v) of this report Flagstaff agreed with the use of resources who have retained learnings from previous expansions and studies at DBCTM. It was prudent to use such resources where they are competitively priced.

DBCTM engaging such engineering consultants at rates demonstrably equal to, or less than, the market at that time is a very good outcome.

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[27] Appendix A hereto
[28] On page 9
[29] At Appendix B hereto, at page 7

Flagstaff is satisfied that the work done was within scope of DBCT expansion, the rates at which it was performed are reasonable and that they were prudently incurred.

6. Summary

6(a) Scope of Other Costs

Flagstaff has undertaken a review of the reasonableness of the scope of Other Costs, and advises that;

- the scope of Study Costs are reasonable and have been prudently incurred.

Flagstaff therefore submits that, in relation to Study Costs, the requirements of Clause 12.5(m)(3) have been satisfied.

6(b) Standard of service for Study Costs

Flagstaff has undertaken a review of the reasonableness of the standards of services and advises that;

- no unnecessary services were supplied and;
- the standard of service was adequate to deliver the studies, and do not exceed the requirements of the PSA.

Flagstaff therefore concludes that, in relation to Other Costs, the requirements of Clause 12.5(m)(4) have been satisfied and the PSA standards have been satisfied (but not exceeded).

6(c) Reasonableness of Costs

Flagstaff has undertaken an analysis of the reasonableness of the actual cost outcome of 'Study Costs', and advises that:

- this report has accepted the reason for each of the items of approved funding for these studies was reasonable.
- the review has been undertaken taking into consideration the circumstances prevailing in the market consistent with clause 12.5(m)(5)(B).

Flagstaff advises that the costs are reasonable in relation to Clause 12.5(m)(5)(C) of the DBCT access undertaking as that work was required of in the development of the study alternatives.,

Flagstaff therefore concludes that, in relation to Study Costs, the requirements of Clause 12.5(m)(5) have been satisfied.

Appendix A – DBCTM Board Paper No. 123

DBCTM has claimed confidentiality

Appendix B – Expansion Study Application

DBCT MANAGEMENT

07 October 2016

Mr Charles Millsteed
Chief Executive Officer
Queensland Competition Authority

Dear Mr Millsteed

DBCT Incremental Expansion Study

The DBCT 2010 access undertaking (**AU**) provides for the costs of feasibility studies necessitated by the Port Services Agreement (**PSA**) to be included in the regulated asset base (**RAB**) in accordance with s.5.10(l) and the definition of Review Event (e)(5) of the AU.

DBCT Management (**DBCTM**) is obligated under the PSA to accommodate prospective capacity increases at the terminal. In 2014, some Access Seekers expressed interest in incremental capacity at the terminal, and in response the DBCT Incremental Expansion Study (**the Study**) was commenced.

DBCTM now seeks approval for the Study costs of $8.3m to be added to the RAB. DBCTM advises in relation to the expenditure that:

- It was prudently incurred in accordance with DBCTM's obligations under the PSA and AU.
- It falls within the definition of Capital Expenditure, in that it relates to a capacity expansion at DBCT, and it is neither maintenance nor operating expenditure.
- It has not previously been added to the RAB or otherwise double-counted; and
- It includes an allowance for financing costs & interest during construction (**IDC**) consistent with existing practice, calculated in accordance with the AU.

DBCTM's ARR modelling has been provided to the QCA as part of this application. DBCTM notes that approval of this application will increase the RAB, ARR and TIC by $8.3m, $0.6m and $0.0073/tonne respectively in the 2016-17 financial year. DBCTM further notes that a one-off adjustment will apply for the relevant revenue owing to DBCTM from 1 July 2016 to the date of approval. In addition, the ARR and TIC will be subject to a true-up following the QCA's approval of the DBCT 2015 DAU.

Further details are contained in the Supporting Material attached for the QCA's consideration.

Please contact me or Jonathan Blakey on 3002 3113 if you have any related queries.

Yours sincerely

Anthony Timbrell
Chief Executive Officer
DBCT Management

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Supporting Material

Table of contents

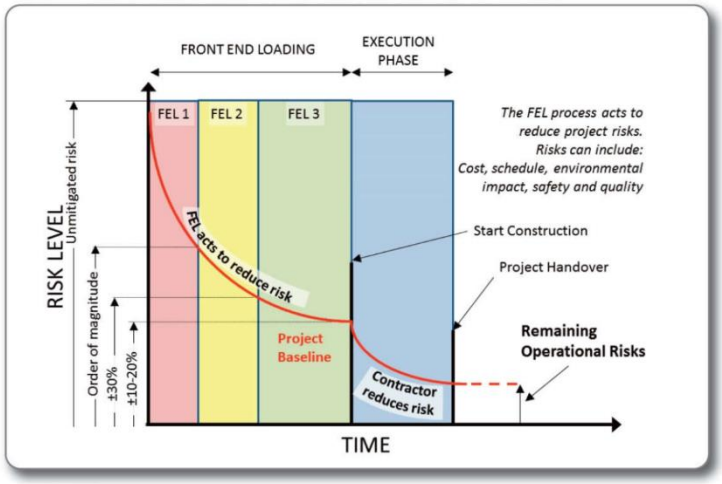
1. Study description

The need for a feasibility study

DBCTM is obligated under the PSA[1] to accommodate the actual and reasonably anticipated future growth of demand for the use of DBCT by Users and prospective users. Existing and prospective users must formally notify DBCTM of their future capacity requirements at DBCT, in order to find a place in the queue for allocation of terminal capacity. Those requiring capacity at the terminal (**Access Seekers)** submit an Access Application in accordance with the AU, stating the required capacity, the source, and the expected period over which the capacity will be required. The peak capacity of all Access Applications combined forms the basis of the design of the terminal expansion[2].

A feasibility study is an essential part of any proposed capital expenditure program. The study (or series of studies) is undertaken to identify options that will provide the required expansion capacity with regard to the timing of the mine development, at the lowest capital cost in consideration of whole-of-life terminal costs, safety, operating efficiency, the environment, construction standards, and other requirements of the PSA and other relevant regulations.

The DBCT Master Plan identifies the stages of development necessary to provide the additional capacity. Prior to undertaking any expansion at the terminal, the scope of work required to achieve the additional capacity is identified as the preferred option resulting from a feasibility study, which is then submitted to DBCT Holdings for approval for addition to the Master Plan. It is prudent to assess all feasible options prior to selection of the preferred option for the next stage of development. A feasibility study is considered best practice in the industry[3], as it cost effectively mitigates the keys risks to stakeholders (including risks to cost, schedule, performance and operability). This is illustrated in the figure below[4]:



Therefore, a feasibility study is a prudent and necessary investment in the expansion and development of DBCT to support the efficient use of capital in the provision of the required services.

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[1] PSA clause 11.1(a) Expansion of DBCT.
[2] Refer Appendix 1 Access applications
[3] A feasibility study is also known as pre-project planning, front-end planning/loading/engineering and design, etc. Relevant evidence includes: Edward W Merrow (IPA Independent Project Analysis) Industrial Megaprojects: Concepts, Strategies, and Practices for Success; SH Lee et al The relative impacts of selected practices on project cost and schedule; PMSA Knowledge Series CII Best practices: front end planning and alignment; OTC The Benefits of Good FEL (Front-End Loading)
[4] IPLOCA Road to Success Fig. 3 Reduction of project risks during the FEL and execution phases

The existing terminal

DBCT's capacity was expanded to 85 Mtpa as part of the DBCT 7X Project (**7X**), completed in June 2009. The terminal comprises 3 inloading strings, a nominal 2.2 Mt capacity stockyard and 3 outloading strings feeding 3 shiploaders on 4 berths. The terminal and its supply chain operate on a cargo assembly model. A relatively short cargo assembly period provides a high throughput potential within a constrained stockyard footprint.

Studies for incremental expansion options

Since 2012, the declining price of coal has impacted the coal industry to the extent that plans for new mining developments have been deferred or cancelled, and consequently major new terminals and expansions such as Dudgeon Point, Abbot Point T4 and Wiggins Island Phase 2 have also been deferred or cancelled. However, increased demand for metallurgical coal (as evidenced by record throughput at DBCT), and fully contracted capacity of DBCT at the time, created renewed interest in an incremental expansion of DBCT.

A number of other external factors at the time also favoured the incremental development of DBCT:

- The Queensland Ports Strategy[5] focused future coal export developments on incremental expansion of existing facilities within the Priority Port Development Areas of Gladstone, Hay Point and Abbot Point.
- A further expansion of DBCT was a cost competitive solution for northern and central Bowen Basin mines because of its proximity and competitive cost of freight.
- Large scale expansions proposed for other terminals require large-scale dredging campaigns within the Great Barrier Reef Marine Park. However incremental expansions at DBCT require significantly less berth dredging quantities, which can be accommodated within relatively small areas adjacent to DBCT.

In view of these factors, DBCTM confirmed current access applications of 99Mtpa[6] with Access Seekers. While DBCTM did not expect all of this demand to be realised, it was clear that an understanding of the incremental expansion pathway was necessary to satisfy DBCTM's obligations under the PSA and the AU.

In response to the confirmation of demand for additional capacity at DBCT, DBCTM developed a prudent program of works aimed at positioning DBCT for further incremental expansions. DBCTM committed to a full bankable feasibility study (**BFS**) for the development of Zone 4, which the ILC has confirmed would increase capacity at DBCT from 85Mtpa to 89Mtpa. DBCTM also undertook concept level (**FEL1**[7]) studies for 8X and 9X. 8X is a program of works within DBCT's existing footprint which increases system capacity from 89Mtpa to 100Mtpa. 9X is the addition of a new stockyard area at Louisa Creek which increases system capacity from 100Mtpa to 135Mtpa. DBCTM submits that these studies were a measured and reasonable response to 99Mtpa of access applications.

A summary of the Study scope and outcomes is shown in Table 1 below, with an overview of the expansion options in Appendix 2. The Study indicated that while the cost of Zone 4 was relatively high, it would provide a solid foundation for a much lower cost expansion in 8X.

[5] Queensland Department of State Development, Infrastructure and Planning Queensland Ports Strategy 2014
[6] This is the sum of peak capacity of each Access Applications, in addition to the contracted capacity of 85Mtpa. Refer to Appendix 1
[7] Refer KBR Front-End Loading Process for description of FEL

Table 1 : Study summary							
Step	Scope	Capacity		Study		Project	
		Change	Total	Level	Budget	Capex	Cost/t
Zone 4	Completion of row 8 Vertical western wall New stacker and conveyor on Row 8 Replace RL2	4	89	FEL3	$6.5m	$356m	$87/t
8X	Stockyard Augmentation Project (SAP) New rail receival pit 4 New inloading system 4 Replacement of ST1 Upgrades to IL2, ST2, OL2, R1, R2 New berth to the south	11	100	FEL1	$0.9m	$491m	$45/t
9X	New Louisa Creek stockyard Upgrade to IL1 New outloading system 4 Up to 2 berths to the north	35	135	FEL1	$0.7m	$2,844m	$81/t

Zone 4 expansion FEL3

The Zone 4 scope was relatively well defined during the concept development phase (FEL1). In FEL2 a better understanding was gained of major cost and schedule drivers including geotechnical conditions, layout constraints, lease issues (additional land requirements) and potential project timing issues. Also during this phase, all of the significant alternatives were resolved leading to a single go-forward option which was then taken to the technical feasibility phase (FEL3). During FEL3, critical aspects of the detail design were completed and market pricing and timing was sought for some of the larger and more critical aspects. At the completion of FEL3, the design was approximately 20-25% complete and the cost and schedule was understood.

8X expansion concept studies

The 8X FEL1 study examined the cost, capacity benefit and operational impact of several possible individual capacity elements that could be combined into the 8X Expansion. The goal of the 8X FEL1 study was to maximise system capacity utilising the existing terminal stockyard footprint and three existing outloading systems. Capacity assessments were undertaken by Aurecon Hatch for various combinations of expansion elements in parallel with dynamic capacity modelling being undertaken by Ausenco. The FEL1 deliverable identified the most efficient combination of elements to maximise the capacity of the terminal under the nominated constraints. More detailed system capacity modelling would be required early in future stages (FEL2) should they proceed.

9X expansion concept studies

The 9X concept was reasonably well understood prior to commencement of the studies because of knowledge gained from previous Post 85 Studies[8]. The study confirmed that the Louisa Creek stockyard provides the most efficient terminal expansion beyond 8X. The Louisa Creek stockyard concept was further developed to ensure that there was sufficient land adjacent to DBCT to suit the targeted capacity and operating mode. Various possible operating modes were identified during the study and suitable expansion solutions were identified for each.

[8] The DBCT Post-85 Mtpa Expansion Study was approved by the QCA on 24 April 2013. This study developed a number of options to satisfy Access Seeker requirements at the time, including the 8X upgrade to 90Mtpa, and the 9X upgrade to 153Mtpa. The study was discontinued in 2010 in favour of a new terminal at Dudgeon Point which would best serve Access Seeker requirements.

Addition to DBCT RAB

DBCTM submits that the costs incurred in the Study should be included in the DBCT RAB because:

- It was reasonably and prudently incurred in accordance with DBCTM's obligations under the PSA.
- It falls within the definition of Capital Expenditure, in that it relates to a capacity expansion at DBCT, and it is neither maintenance nor operating expenditure. The Study related entirely to expansions for DBCT.
- It has not previously been added to the RAB or otherwise double-counted.
- It includes an allowance for financing costs & interest during construction (**IDC**) consistent with existing practice, calculated in accordance with the AU.
- It was expended on behalf of Access Seekers (which includes a majority of existing Access Holders), in respect of formal Access Applications for additional capacity for their projected future demand. DBCTM formally checked the validity of the access applications before commencing the Study. On completion of the Study, Access Seekers determined not to proceed with any related expansion[9].
- In accordance with s.5.10(l) of the AU, as the Access Seekers have not funded these study costs, DBCTM now seeks to include these costs in the RAB as part of a Review Event in accordance with the definition of Review Event (e)(5).

[9] No Access Application has been updated or withdrawn at this time

2. Reasonableness of costs

Table 2 summarises the costs incurred during the Study.

Table 2 : Study Costs				
Activity	**Aurecon Hatch**	**DBCTM**	**Others**	**Total**
Study management	764,965	981,094	36,122	1,782,181
Capacity modelling			544,491	544,491
Geotechnical & survey	-		89,183	89,183
Preliminary studies	68,385		38,009	106,394
Zone 4 study	3,561,920		187,295	3,749,216
8X study	648,348			648,348
9X study	362,086			362,086
Direct study costs	**5,405,704**	**981,094**	**895,100**	**7,281,898**
Financing costs				166,852
Interest during construction (IDC)				811,239
Total study costs				**8,259,989**

The original budget approved by the DBCTM Board was $8.1m, and the Study scope was completed 10% below budget at $7.3m.

The majority (74%) of the direct Study cost[10] was associated with concept design and options analysis by Aurecon Hatch, which has significant expertise in the area. The team involved in the Study work were also involved in 7X and in many other port and terminal projects on the Australian east coast. The requirements were scoped by DBCTM and performed by Aurecon Hatch personnel on a standard hourly rate basis, which is typical in the industry and appropriate for this type of work. All invoices were examined by DBCTM to ensure the charges were correctly calculated. The role of Aurecon Hatch was to:

- provide expertise in assessment of options for the terminal expansion
- develop plans, general arrangements and high-level engineering appraisals of each option
- identify relative capital cost, constructability and project duration
- identify environmental and community impacts

Capacity modelling by ILC[11] and Ausenco, geotechnical investigations by Cardno, and miscellaneous other study requirements comprised 12% of the direct Study costs. ILC is the Dalrymple Bay Coal Chain (**DBCC**) central coordinator, and Ausenco (formerly Sandwell) is the independent expert appointed to determine terminal capacity in accordance with s.12.1(a) of the AU. Capacity modelling is a critical component of the expansion option development and analysis.

The Study management costs incurred by DBCTM over the 2 years of the Study duration comprised 13% of the direct Study costs. This is less than the previous study[12] approved by the QCA in 2013, due to the comparatively straightforward nature of this study and the shorter timeframe. The costs again included a majority of the Project Director's time, as well as labour and related costs for DBCTM technical specialists and administrative support staff. DBCTM's role was to:

- direct and assess the work performed by Aurecon Hatch and other consultants
- analyse the commercial impact to the Access Holders
- update the Master Plan for approval by DBCT Holdings
- manage interfaces with stakeholders including the terminal operator, Access Seekers, Access Holders, the local community and regulatory bodies as appropriate.

[10] Direct study costs exclude financing and IDC
[11] Refer Integrated Logistics Company (ILC) history and background at http://ilco.com.au/About-Us/History-Background
[12] DBCT Post-85 Mtpa Expansion Studies reports and papers at the QCA website. DBCTM costs were 25% of the direct Study cost.

The remaining costs were financing and IDC costs required for the funding of the study. This was calculated using existing methods in accordance with the AU, and its proportion (13%) of direct Study cost is reasonable considering the duration over which expenditure was incurred by DBCTM (2 years). Also this is considerably lower than the previous study (44%) which was over a much longer period.

DBCTM submits that the costs are reasonable in the context of the scope of the proposed expansions, the duration of the necessary study work, the level of expertise required, and the outcome provided by the Study. In addition, the costs were prudently expended on work essential to the scope of the Study.

3. Modelling

The Study costs were cut off at 30 June 2016 and include financing costs and IDC calculated in accordance with the AU. In accordance with the Review Event definition, the change in RAB, ARR & TIC will be effective from 1 July 2016, in the event the QCA approves the costs.

The method for calculation of ARR is consistent with existing practice. The modelling has been supplied to the QCA as part of this application, and the revenue building blocks are summarised in Table 3 below.

Table 3 : Revenue Building Blocks for Study Costs

Parameters	
Item	**Value**
Return on capital up to Review Event	9.86%
Return on capital after Review Event	7.00%
Expected inflation	2.50%
Costs of raising equity (% of equity)	3.55%
Debt financing costs (% of debt)	1.00%
Review Event date	1 July 2016

Study cost summary	
Asset group	**Cost ($m)**
Distributable Costs	7.282
Financing Costs	0.167
IDC	0.811
Total Cost	**8.260**

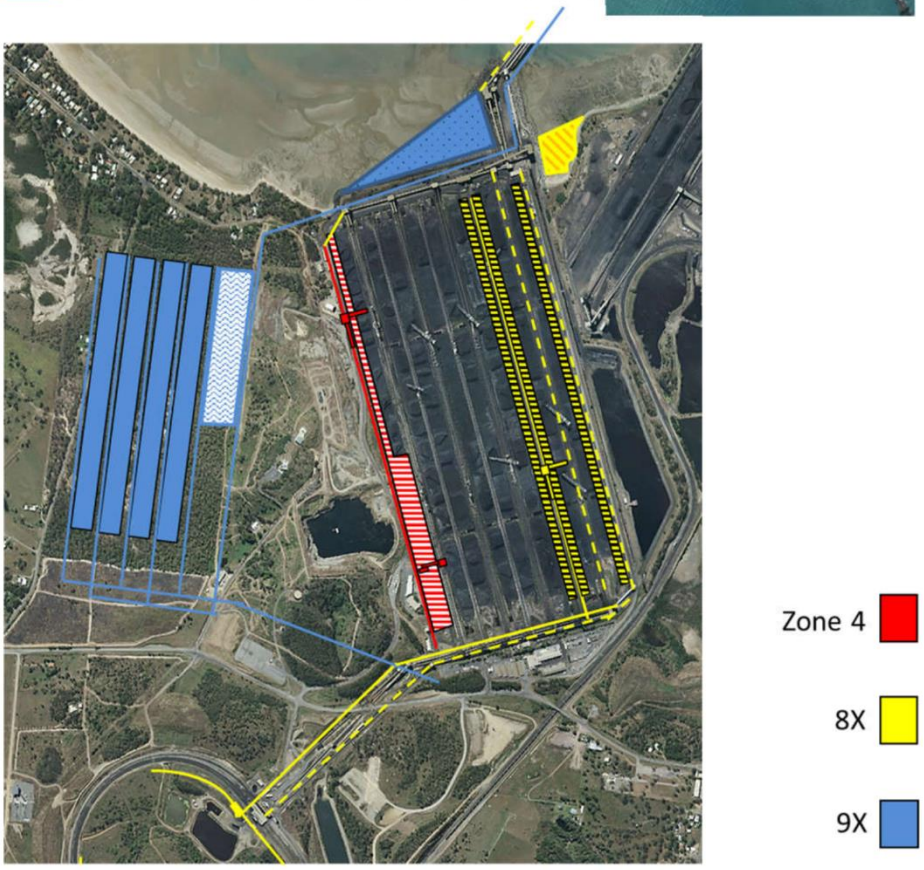
Study		2016-17
RAB ($m)	**Opening RAB**	**8.260**
	Indexation	0.206
	Nominal depreciation	0.223
	Closing RAB	8.244
Building Block Revenues ($m)	Opening RAB	8.260
	Working capital	0.048
	Total Assets	**8.308**
	Return on asset	0.562
	Return of asset	0.215
	Less inflationary gain	(0.200)
	Tax payable	0.009
	ARR	**0.587**

Overall for DBCT 2016-17			
Item	**Existing**	**Study**	**Total**
Opening RAB ($m)	2,388.867	8.260	2,397.127
ARR ($m)	196.913	0.587	197.499
NCT & ART (Mtpa)	80.700	-	80.700
TIC ($/t)	2.4400	0.0073	2.4473

Page 10 of the application has been withheld as it is marked confidential. It has been sighted by Flagstaff.

Appendix 2: Options overview

DBCT Incremental Expansion Study Outcomes							
Step	Likely scope	Capacity		Study		Project	
		Change	Total	Level	Cost	Capex	Rate
Zone 4	Completion of row 8 Vertical western wall New stacker on Row 8 New conveyor on Row 8 Replace reclaimer RL2	4	89	FEL3	$5.7m	$356m	$87/t
8X	Stockyard Augmentation Project (SAP) New rail receival pit 4 New inloading system 4 Replacement of ST1 Upgrades to IL2 Upgrade to ST2 Upgrade to OL2 Upgrade to R1 and R2 New berth to the south	11	100	FEL1	$1.0m	$491m	$45/t
9X	New Louisa Creek stockyard Upgrade to IL1 New outloading system 4 Up to 2 berths to the north	35	135	FEL1	$0.6m	$2,844m	$81/t



Appendix 3: Deliverables

A large quantity of documentation (some which is confidential) was issued to the QCA's consultant for assessment of the scope of work and reasonableness of costs, including:

- Study reports from Aurecon Hatch
- Presentations to Access Holders and Access Seekers
- Layout drawings of options
- Monthly status reports & meeting minutes
- Accounting ledger transactions, invoices & detail cost reports

Appendix C - Questions and Answers (Flagstaff / DBCTM)

DALRYMPLE BAY COAL TERMINAL

ANALYSIS OF EXPANSION STUDY COSTS

		Flagstaff Personnel:	J Smith
Date:	6th December 2016	DBCTM Personnel:	T Harvey

No.	Flagstaff Question	DBCTM Answer	Flagstaff Comment
	Regulatory Framework & Capacity Planning		
1	In the 2010 AU at 5.10(l) its says "***[DBCT Management intends seeking amendments to the Port Services Agreement so as to align the Port Services Agreement with this Undertaking. If the Port Services Agreement is so amended, Section 5.10(l) will be deleted]***" Did this occur?	No, there were no amendments to the PSA. This provision has been deleted from the 2015 DAU	
2	The trigger for capacity increases which might lead to an expansion is reciept of access applications. Please provide a copy of, or allow Flagstaff to view in your office the access applications for the tonnages shown in Appendix 1 of the application. Flagstaff is not only interested in the volume but also the contract length in terms of the 60/60 requirement. (**Flagstaff says this may be best dealt with by holding a face to face discussion**)	Peter Wotherspoon Project Director and Jesse Knight Senior Manager Operations are in the office next week, and should be available to present and discuss the access applications at your convenience. We could supply electronic versions of the applications if that would help, however these are confidential and we request these not be specifcially referenced in any public documentation (unless redacted for publication). Note that Appendix 1 of the application will be redacted for publication.	
3	The DBCTM application refers to user applications for a total of 99Mtpa.broken down as per Appendix 1.Of those Operating mines which are already DBCT users. What was the actual tonnage exported breakdown for those mines given the total shown as exported in the Jan 2016 Glencore presentation was approx 70MT in 2014-2015 and calendar year 2015.	Apologies, that terminology was not clear enough. The referenced table divides the access seekers into one of three categories (as an indicator of probability): currently operating miners with mines shipping through DBCT, currently operating miners shipping through other ports; and access seekers with no operating mines. There are seven access applications that reference existing mining operations, totalling about 25Mtpa average production through DBCT (via access agreements, separate to the access applications in the list). Note the access applications refer to all new tonnage from mine expansions, not existing tonnage already contracted at the terminal.	
4	Are the applications from the "No operating mines" group highly conditional?	These access applications generally utilise the Standard Access Agreement (SAA) template provided in the AU. They aren't explicitly conditional, however there is an implied condition that the mine needs to become operational before capacity will be utilised.	

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5	How regularly does actual exported tonnage exceed the tonnage applications and by how much?	Actual exported tonnage relates to access **agreements**, while access **applications** are non-binding requests for capacity at some time in the future. Typically access agreements are in excess of the actual tonnage shipped. DBCT's highest throughput for any 12 month period is 72 Mtpa for a contracted capacity of 80.7Mtpa recently. The access applications for additional capacity have been near or above 100 mtpa at least since the 7X expansion.	
6	Please comment on the 12 month / as soon as possible provision in clause 11.2 of the PSA with respect to expansions of capacity in terms of a robust planning / design / execution regime. In particular Flagstaff notes the schedule in the Zone 4 FEL3 report at Appendix C.	The provision of capacity within 12 months is not contemplated in the Master Plan (and the study reports), which includes more realistic delivery timeframes for expansions, and is accessible to Access Seekers. Importantly, the terms of an Approved Access Undertaking for DBCT supersede the relevant terms in the PSA, as the PSA also requires DBCTM to comply with the AU in accordance with clause 9. In this case, the time periods in clause 11.2 of the PSA are superseded by s.12.4 of the AU, which provides for DBCTM to use "its best endeavours to ensure that as soon as reasonably practical" to accommodate the new capacity request. This is more reflective of the complexity of the process, but even so, as part of the consultation process, Users, Access Seekers, the QCA and DBCT Holdings will be notified of the time required to deliver the relevant expansion.	
	Scope		

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7	In Flagstaff's review of expansion studies in 2013, the Louisa Creek stockyard being contemplated at that stage (and rejected in favour of a Southern Stockyard) was considerably larger than that proposed in this application. Are the incremental expansion tonnage targets for 8X (100Mtpa) and 9X (135Mtpa) set by capacity modelling by ILC / Ausenco to meet forecast user requests, or are they a result of a resultant capacity which will be available should a particular event occur which provides 'at least' the forecast amount. eg addition of a new inloading string? That is - in order to get to a forecast tonnage a particular expansion will be required but that work will actually increase the capacity beyond that forecast as required. (Which is contemplated by the PSA)	All of the expansion options are incremental in nature and haven't been tailored to any particular capacity target. Note that 8X (including Zone 4) will deliver an additional 15Mtpa to a total of 100Mtpa, and 9X will deliver 35Mtpa for a total of 135Mtpa. The options were conceptualised, tested via ILC and Ausenco modelling and a resulting nameplate capacity value was refined, challenged and derived. Some of the expansion options, such as a new outloading string in 9X, may provide a resultant incremental capacity which is greater than the aggregate of those access applications which are to be formalised into an access agreement (i.e. the real demand at the time) For clarity, the Access Applications are applications for capacity additional to the capacity already contracted via access agreements. At the time the expansion studies were undertaken, DBCT was contracted at or around 85 Mtpa. None of the expansion options satisfy the aggregate of the access agreements and Access Applications. DBCT Management only expects to be able to satisfy some of the access applications from the Zone 4, 8X and 9X expansion options. DBCT Management expects that these expansion options will be sufficient to satisfy the near and medium term demand for terminal capacity.	
8	In that same study user demand was separated between that which could be accomodated at the existing DBCT and that which would be accomodated at Dudgeon Point. Given that projected demand is now much lower, can Flagstaff assume that the Dudgeon Point expansion - which in that study was to be considered a new project rather than an expansion, will now no longer go ahead in the foreseeeable future and that all capacity projections for the system are considered in the DBCT expansion planning?	This is correct. Brookfield retains rights over 50% of the Dudgeon Point land area, however between existing terminal capacity including Zone 4, 8X And 9X (up to 136 Mtpa), DBCT Management expects to satisfy demand from only the existing or expanded terminal for the foreseeable future.	

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9	Please consider the following statement. "*DBCTM have access applications in excess of the capacity ~~of the Zone 4 expansion and almost equal to that of the 8X expansion~~* ***provided by Zone 4, 8X and 9X combined*** *(FCG notes DBCTM do not expect this demad to be realised). Zone 4 is an expansion which provides additional capacity within the existing stockyard footprint whilst having the least effect on existing operations during construction. ~~Zone 4 provides additional capacity to off set any reduction in capacity during 8X works on rows 1 & 2.~~ 8X is an expansion which maximises the use of the existing stockyard footprint. 9X is the first expansion stage outside of the existing footprint which deals with forecast increase in user demand.*"	An amendment to the statement is provided for your consideration. Working backwards, the confirmed access applications total 99Mtpa, and in addition to the existing capacity of 85Mtpa, this porovides a combined total of 184Mtpa if all were realised. Realistically, given that current users are only shipping 70Mtpa, 15Mtpa of the 99Mtpa could be accommodated within the existing terminal capacity, leaving a combined requirement of 169Mtpa. The existing terminal plus Zone 4 plus 8X plus 9X provide a total of 136Mtpa however, leaving a satisfied demand of 66Mtpa, and surplus demand of 33Mtpa. This stepped pathway is reasonable and prudent in consideration of the system capacity increases required to upstream infrastructure, and that a proportion of the access requests are unlikely to be realised. DBCT's access applications are in excess of the access agreements already contracted between DBCT Management and terminal users (85 Mtpa at the time studies were undertaken). In aggregate, the DBCT access applications exceeded all expansion options contemplated at DBCT (up to 136 Mtpa - 9X). There will be brownfield expansion capacity losses if the 8X expansion is undertaken. Whether these losses equate to throughput losses will depend on what throughput demand exists at the time. These losses are unlikely to be offset by the then already implemented Zone 4 expansion. Each of the expansion options in the expansion pathway need to be implemented sequentially to deliver the nameplate capacity associated with each of the options.	
10	Does DBCTM have a timeline for FEL2 and FEL3 studies should they be required for 8X and 9X? If so what are those timelines?	A detailed program has not been developed. However FEL2/FEL3 for 8X is expected to take 12-18 months depending on capacity of the engineering market at the time and 9X would take approximately 6 months longer than that. Note, if necessary, these projects could be done simultaneously.	
	Standard		

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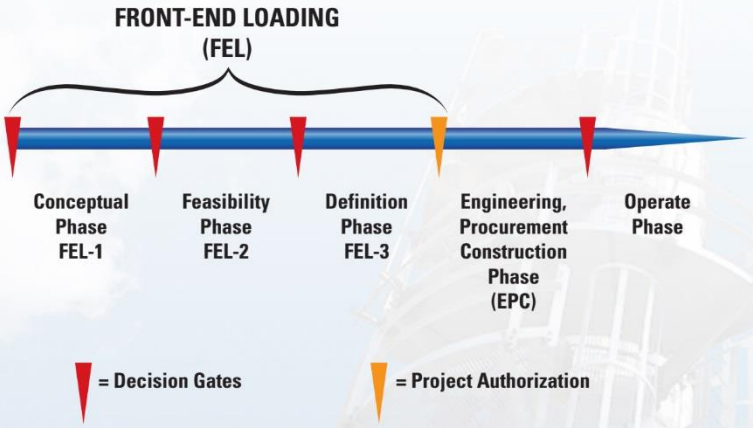
11	Please provide Flagstaff with a copy of the formal instructions to Hatch to perform the studies.	The Aurecon Hatch consultancy agreement is attached for reference.	
	Reasonable Cost		
12	Flagstaff assumes Aurecon Hatch was employed due to their knowledge of the site and having undertaken the previous studies.	Aurecon/Aurecon Hatch have been involved in all expansions of DBCT to date. Accordingly, Aurecon was utilised due to their DBCT expertise. The sole source justification is attached for reference	
13	What was the basis of their enjgagement, Lump sum - Schedule of Rates, a combination with some reimbursible costs etc?	AH was engaged on a schedule of rates basis (please refer to attached consultancy agreement)	
14	If rates were accepted, were they rates previously used on site or recently. If they were were they further market tested at the time of engagement?	The rates were significantly reduced from previous commissions in recognition of the competitive market conditions that prevailed in 2014.	
15	If there is a contract summary for this engagement, please provide one to Flagstaff.	Refer Sole Source justification and Consultancy Agreement	

Appendix D – KBR Front End Loading Process

KBR | Front End Loading Process

Front-End Loading (FEL) is staged-gate process where KBR develops a definition of the scope and cost of a capital project to meet our clients' business objectives. The final products of the FEL process are typically a design-basis package of information that may be used to support the production of detailed engineering design documents and a cost estimate of suitable accuracy to gain project AFE (Authorization for Expenditure) or Project Authorization.



Parameters of FEL Phases

Cost estimate accuracy, cumulative engineering hours spent, and the contingency assigned to the cost estimate are important aspects of each phase of FEL. The engineering hours spent during each phase of FEL vary widely between small and large projects. This is also true for those projects where new or emerging technology is being applied or where higher throughput capacities are being applied than previously commercially demonstrated. Projects such as these may require additional engineering to achieve the desired estimate accuracy and project contingency desired.

Typical Conceptual Phase (FEL-1) deliverables:

The emphasis of FEL-1 is to determine the basic economic viability of the conceptual project before committing to the expense of more definitive engineering and study expenses.
Deliverables include:

- Strategic Business Assessment and Risks
- Technology Selection
- Potential Sites Identified
- Cost Estimate (+/- 40 to 50%)
- Preliminary Project Schedule
- Block Flow Diagrams
- Process Cases Identified
- Long Lead Equipment Identified

Typical Feasibility Phase (FEL-2) deliverables:

In this phase, the goal is to determine the best technical and economic flow scheme, associated technology, required support systems and a plot plan sufficiently detailed to support the development of a cost estimate.
Deliverables include:

- Updated Strategic Business Assessment
- Project Schedule Level 1
- Cost Estimate (+/- 25%)
- Overall Project Execution Strategy
- Permitting & Regulatory Compliance Plan
- Process and Utility Flow Diagrams For Selected Option(s)
- Preliminary Sized Equipment List and Specifications
- Process Hazards Analysis Report
- Value Improving Practices (VIPs) Reports

Typical Definition Phase (FEL-3) deliverables:

The emphasis of FEL-3 is to achieve the best practical level of project definition and a good quality project estimate. This level of project definition and cost estimate quality are normally required in order to present to management a candidate project which has the right combination of overall risk and projected economic performance, and thereby secure an AFE.
Deliverables include:

- Updated Strategic Business Assessment
- Detailed EPC Phase Project Execution Plan and Schedule
- Completed Environment Permit Submittal
- Training, Commissioning & Startup Plans
- Cost Estimate (+/- 10 - 20%)
- Finalized Utility Flow Diagrams & Balances
- P&ID's - Issue IPL (Issue For Plant Layout)
- Plot plans & Critical Equipment Layouts
- Equipment List & Equipment Datasheets
- Single-line Electrical Diagrams
- Pre-Design Hazard Review