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Economists

A review of the economic issues raised in relation to criterion (b)

A report for DLA Piper

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Executive summary

We have been asked by DLA Piper (DLA), on behalf of DBCT Management Pty Limited (DBCTM), to revisit our earlier conclusions that the coal handling service supplied at Dalrymple Bay Coal Terminal (DBCT) does not satisfy criterion (b).¹

The DBCT User Group and Peabody Energy have made submissions to the Queensland Competition Authority (QCA) which conclude that the coal handling service at DBCT (DBCT service) satisfies criterion (b).² These conclusions are primarily based on economic modelling conducted by PricewaterhouseCoopers (PwC), that:³

- estimates total foreseeable demand in the market by reference to forecasts of coal throughput at DBCT; and
- assesses that this throughput can be served at least cost by existing or expanded capacity at DBCT, as compared to existing or expanded capacity at other terminals.

A number of critical differences in underlying assumptions drive the differing findings of our assessment of criterion (b) and that of PwC. These are:

- the approach to the definition of the service:
 - > we define the service as the coal handling service at DBCT, consistent with the definition set out at section 250(1)(c) of the QCA Act; whereas
 - > PwC commences with an underlying assumption that the coal handling services at DBCT are differentiated from those provided at HPCT because it is a common-user facility;
- the approach to definition of the market for the service:
 - > we assess the boundaries of the relevant market using a conventional framework in which the area of close competition between firms is analysed by reference to the different dimensions of the market; whereas
 - > PwC does not establish the boundaries of the market and instead emphasises points of differentiation between the DBCT service and coal handling services at other terminals, which it contends affects substitutability between these services;
- the approach to estimating total foreseeable demand in the market:
 - > we estimate this by reference to the forecast production of mines which we assess as being in the market, using forecasts sourced from AME; whereas
 - > PwC estimates total foreseeable demand in the market by reference to forecasts of the throughput at DBCT, using forecasts sourced from Wood Mackenzie;
- the approach to assessing the least cost means of meeting total foreseeable demand in the market:
 - > we find that the incremental costs to society (or 'resource costs') of meeting demand at existing facilities other than DBCT are lower than the resource costs of expanding DBCT to meet demand that exceeds its existing capacity; whereas

¹ HoustonKemp, *Does DBCT's coal handling service satisfy criterion (b)?*, 28 May 2018, pp 58-59.

² See: Dalrymple Bay Coal Terminal User Group, *Declaration review regarding Dalrymple Bay Coal Terminal: Submission to the Queensland Competition Authority*, 30 May 2018, p 71; and Peabody Energy Australia, *Response to QCA staff paper*, 30 May 2018, p 12.

³ PricewaterhouseCoopers, *Dalrymple Bay Coal Terminal User Group: 2018 access declaration review*, 29 May 2018.

- > PwC compares the costs of expanding DBCT to meet total foreseeable demand to the charges associated with meeting this demand at existing facilities.

Each of these differences represents a material divergence between the economic approach that we and PwC respectively have adopted in assessing criterion (b).

Our analysis of these differences confirms that PwC's report provides no information that would cause us to revise our earlier assessment that the DBCT service does not satisfy criterion (b). We set out below four dimensions that cause PwC's approach to conclude incorrectly that criterion (b) is satisfied.

First, PwC commences its assessment of criterion (b) on a presumption that the coal handling service provided at DBCT may be differentiated from other coal handling services on the basis that it handles 'common-user coal'. The 'common-user' designation applied by PwC does not appear to change any of the fundamental characteristics of the service, and sets PwC's entire, subsequent analysis of criterion (b) down the wrong path.

Second, the approach to defining the relevant market proposed by PwC contains significant shortcomings and is not capable of being used reliably to define the market within which the DBCT service is provided. A fundamental difficulty with PwC's approach to market definition is that it does not apply the conventional framework developed for that purpose. Rather, the focus of PwC's analysis is limited to the degree of substitutability between DBCT and other coal terminals without first having established the boundaries of the relevant market. In so doing, PwC's approach to market definition:

- focuses on supporting its implicit assumption (drawn from its definition of the service) that DBCT is the only terminal that provides services in the relevant market; and
- does not use any framework to identify the customers that are in the relevant market.

Third, PwC estimates total foreseeable demand in the market by reference to the volume of coal handling services that are forecast to be supplied at DBCT, instead of by reference to the demand of customers in the market. This approach:

- conflates the concepts of 'supply' and 'demand', such that it will not generally give rise to an estimate of total foreseeable demand in the market; and
- is at odds with the purpose of estimating total foreseeable demand in the market, which is to assess whether DBCT is a natural monopoly.

Fourth, PwC's assessment of the costs of meeting foreseeable demand using available capacity at existing terminals is based on *charges*, which reflect *average* costs rather than *incremental* costs. The effect of this incorrect use of average costs is that PwC significantly overstates the relative cost of meeting foreseeable demand using available capacity at existing terminals.

In light of these observations, our earlier conclusion that the coal handling service provided at DBCT does not satisfy criterion (b) under Part 5, Division 2 of the QCA Act remains unchanged.

1. Introduction

The Queensland Competition Authority (QCA) is reviewing whether the declared services specified in section 250 of the *Queensland Competition Authority Act 1997* (QCA Act) should be declared following the expiry of the existing declarations on 8 September 2020.

1.1 Scope of this report

We⁴ have been asked by DLA Piper (DLA), on behalf of DBCT Management Pty Limited (DBCTM), to review whether the coal handling service supplied at Dalrymple Bay Coal Terminal (DBCT) satisfies criterion (b) of section 76(2) of the QCA Act, being:

that the facility for the service could meet the total foreseeable demand in the market—

- (i) over the period for which the service would be declared; and
- (ii) at the least cost compared to any 2 or more facilities (which could include the facility for the service);

An earlier report we prepared addressing this question (our earlier report) was provided to the QCA as part of DBCTM's submission. In that report we concluded that the coal handling service supplied at DBCT (the DBCT service) does not satisfy criterion (b).⁵ We drew this conclusion because our analysis showed that:

- total foreseeable demand in the market in which the DBCT service is provided cannot be met at least cost by DBCT alone over the period for which the service would be declared; and
- at least some of this demand is met at least cost by Hay Point Coal Terminal (HPCT), Adani Abbot Point Coal Terminal (AAPT) or RG Tanna Coal Terminal (RGCT).

The DBCT User Group and Peabody Energy have made submissions to the QCA which conclude that the DBCT service satisfies criterion (b) and that total foreseeable demand in the market is met at least cost by DBCT rather than any two or more facilities.⁶ These conclusions are based on modelling conducted by PricewaterhouseCoopers (PwC).⁷

The DBCT User Group also engaged Castalia to advise on criterion (a) issues.⁸ Some of Castalia's advice is relevant to an assessment of criterion (b) and draws upon similar analysis.

DLA has asked us to revisit our earlier conclusions in relation to whether the DBCT service satisfies criterion (b), or otherwise, in light of the submissions made by the DBCT User Group and Peabody Energy, and the expert advice upon which they rely.

⁴ The authors of this report are Greg Houston and Daniel Young. Copies of our respective curricula vitae are attached as annexure 1 to this report.

⁵ HoustonKemp, *Does DBCT's coal handling service satisfy criterion (b)?*, 28 May 2018, pp 58-59.

⁶ See: Dalrymple Bay Coal Terminal User Group, *Declaration review regarding Dalrymple Bay Coal Terminal: Submission to the Queensland Competition Authority*, 30 May 2018, p 71; and Peabody Energy Australia, *Response to QCA staff paper*, 30 May 2018, p 12.

⁷ PricewaterhouseCoopers, *Dalrymple Bay Coal Terminal User Group: 2018 access declaration review*, 29 May 2018.

⁸ Castalia, *Dalrymple Bay Coal Terminal: Economic analysis of declaration criteria*, May 2018.

1.2 Framework for advice

In our earlier report, we noted that the economic and analytical framework that should be applied in the assessment of criterion (b) to the DBCT service rested on five cornerstones:⁹

- the 'service' which is to be assessed;
- the 'facility' for the service;
- the 'market' for the service;
- the 'foreseeable demand in the market'; and
- the assessment of 'least cost'.

There are a number of critical differences in underlying assumptions that drive the different findings of our assessment of criterion (b) and that of PwC. Although it is uncontroversial that the *facility* that provides the service is DBCT, there are substantive disagreements in the way that we each approach other aspects of the assessment, including the specification of the *service* provided by the DBCT facility.

1.3 Structure of this report

The remainder of this report is set out as follows:

- section 2 describes why PwC's approach to defining a service for the handling of 'common-user' coal has the effect of setting its analysis of criterion (b) down the wrong path;
- section 3 explains that PwC's approach to market definition contains significant shortcomings and is not capable of being used reliably to define the market within which the DBCT service is provided;
- section 4 shows how PwC's approach to market definition means that it is unable to estimate correctly the total foreseeable demand in the market and, instead, estimates the volumes expected to be supplied by DBCT;
- section 5 demonstrates that PwC overstates the costs of meeting demand using available capacity at existing terminals and incorrectly concludes that it would be least cost to meet total foreseeable demand using expanded capacity at DBCT in preference to using available capacity at existing terminals; and
- section 6 contains our declaration as to the basis on which we have prepared this report.

⁹ HoustonKemp, *Does DBCT's coal handling service satisfy criterion (b)?*, 28 May 2018, p 16.

2. Definition of the service

In our earlier report, we described the service to be assessed for the purposes of criterion (b) as:

...the coal handling service at DBCT, being the service that is currently declared and regulated by the QCA.¹⁰

Our understanding is that the specification of the DBCT service is uncontroversial, not least since the QCA Act states at section 250(1)(c) that the presently declared service is:

...the handling of coal at Dalrymple Bay Coal Terminal by the terminal operator.

In contrast, PwC adopts a definition of services at DBCT that includes:¹¹

... all services provided by the rail receiving stations through to the offshore wharves and outloading systems as required to handle *common-user* coal at the Terminal... [emphasis added]

PwC's definition of the service is functionally similar to that described by us and specified in the QCA Act, but for the insertion of a reference to the service handling 'common-user coal'.

PwC does not elaborate on what it means 'to handle common-user coal'. Nevertheless, we take this to be a reference to the fact that the DBCT facility handles coal sourced from different mines, with each or many of these mines having different ownership interests.

By adopting this definition, PwC commences its assessment of criterion (b) on a presumption that the coal handling service provided at DBCT may be differentiated from other coal handling services on the basis that it handles 'common-user coal'. In our opinion, this distinction sets PwC's entire, subsequent analysis of criterion (b) down the wrong path.

The 'common-user' designation applied by PwC does not appear to change any of the fundamental characteristics of the service, the essence of which involves:¹²

- the receipt and unloading of coal transported by rail from various mines;
- stockyard and coal blending facilities, one purpose of which is to manage the receipt and temporary storage of different grades and types of coal, from different mines; and
- wharves, jetties, berths and ship loading systems, for transferring coal onto ships, including both the blending and keeping separate the different grades and types of coal at each stage so that any ship may transport more than one grade and/or type of coal.

The fact that the DBCT facility handles coal from differently owned mines appears to be of little or no consequence for the service it provides. By way of illustration, if each of the mines served by DBCT was owned by the same entity (or, say, by just two entities), it is unclear how any the essential characteristics of the service described above would change. For example, if all the mines served at DBCT or any other coal terminal were under common ownership, there would still be a need:

- to receive and unload separately coal transported by rail from the various mines;
- to stockpile and keep separate different grades and types of coal according to the mine from which it emanated; and

¹⁰ HoustonKemp, *Does DBCT's coal handling service satisfy criterion (b)?*, 28 May 2018, p 16.

¹¹ PricewaterhouseCoopers, *Dalrymple Bay Coal Terminal User Group: 2018 access declaration review*, 29 May 2018, p 8.

¹² See: HoustonKemp, *Does DBCT's coal handling service satisfy criterion (b)?*, 28 May 2018, p 8, for a summary of these functions.

- to transfer coal onto ships in such manner that kept separate the different grades and types of coal at each stage so that any ship may transport more than one grade and/or type of coal.

In short, the common-user designation applied by PwC is not a meaningful characteristic of the service provided at DBCT. Rather, it amounts to a description of the range of customers to whom the facility provides that service, but with no clear implications for the service itself. In defining the service as it does, PwC extends the ordinary meaning of the term 'service' to incorporate considerations that are not characteristics of the service.

The effect of this apparently manufactured definition of the service is to constrain the subsequent market definition process to the consideration of common-user facilities. PwC thereby excludes at the outset mines served by and services provided by HPCT from:

- its definition of the market;
- its assessment of foreseeable demand in the market; and
- its assessment of the least cost means of meeting that foreseeable demand.

The imposition of such a constraint has no analytical basis and is inappropriate because it is the function of the market definition process to determine the area of close competition between firms, and therefore to assess the extent to which the common-user nature of the DBCT facility affects the boundaries of the market in which the DBCT service is supplied.

3. Market definition

In this section we describe the essential differences between our approach to market definition and the analysis of the market undertaken by PwC.

The approach to defining the relevant market proposed by PwC contains significant shortcomings and is not capable of being used reliably to define the market within which the DBCT service is provided.

A fundamental difficulty with PwC's approach to market definition is that it does not apply the conventional framework developed for that purpose. Rather, the focus of PwC's analysis is limited to the degree of substitutability between DBCT and other coal terminals without first having established the boundaries of the relevant market. In so doing, PwC's approach to market definition:

- focuses on supporting its implicit assumption (drawn from its definition of the service) that DBCT is the only terminal that provides services in the relevant market; and
- does not use any framework to identify the customers that are in the relevant market.

PwC's approach to market definition is narrowly concerned with the characteristics of potential suppliers. However, for the assessment of criterion (b), we define a market for the purpose of estimating total foreseeable demand in the market. Without an understanding of the customers that are in the relevant market, PwC's approach to defining the market is not capable of estimating foreseeable demand in the market. We discuss this in more detail at section 4 below.

We explain in our earlier report¹³ that the process of defining a market requires:

- first, the identification of the products and geographic regions actually or potentially supplied, and over which customers would be willing or able to find substitutes for the goods or services in question;
- second, an evaluation of whether it would be profitable for a hypothetical monopolist controlling all relevant suppliers in the candidate market to impose a small but significant, non-transitory increase in price (SSNIP) on the customers served by those suppliers; and
- third, in the event the SSNIP hypothesised at step two was not profitable, the expansion of the candidate market identified in the first step to include the area or product from which the competitive constraint came.

In organising below our analysis of PwC's approach, we consider in turn the various factors raised by PwC in the context of the market dimension to which they are relevant, that is, the product, geographic and temporal dimensions.¹⁴ Once properly considered within a conventional, competition economics framework for market definition, there is no aspect of PwC's analysis that causes us to revise our conclusions as regards the appropriate boundaries for the market in each of these dimensions.

3.1 PwC does not apply any framework for defining a market

PwC's approach to defining the market does not apply any conventional framework developed for that purpose, and so does not clearly define the market within which the DBCT service is supplied. Rather, PwC's analysis can more accurately be described as a qualitative assessment of factors that may limit the substitutability between DBCT and other coal terminals. This approach is not capable of establishing the

¹³ HoustonKemp, *Does DBCT's coal handling service satisfy criterion (b)?*, 28 May 2018, pp 16-19

¹⁴ We do not address the functional dimension of the market because it does not appear to be a point of disagreement between ourselves and PwC.

boundaries of the relevant market – even though this is an important prerequisite for the subsequent step of estimating total foreseeable demand in that market.

In defining the market in which the DBCT service is supplied, it is important to start with a clear concept of what a ‘market’ is. We explain in our earlier report that the Trade Practices Tribunal has described a market as the area of close competition between firms.¹⁵ This area is conventionally determined by reference to four dimensions:¹⁶

- the products or services supplied – the product dimension;
- the geographic area over which the products are supplied – the geographic dimension;
- the level in the supply chain at which the parties operate – the functional dimension; and
- the period within which the market operates – the time dimension.

Defining the scope of the market within which the DBCT service is supplied is fundamental to estimating total foreseeable demand in that market. It requires an understanding of the customers that are in the market and will be expected to be in the market over the period for which the service would be declared. To do this requires establishing the boundaries of the market in each of the relevant dimensions.

However, PwC’s framework for analysis does not establish those boundaries. Rather, PwC cites various factors that it contends as weighing qualitatively on the extent of substitutability between DBCT and other coal terminals. These factors include:¹⁷

- limited capacity on existing infrastructure in other rail systems, such that these systems may need to be expanded to accommodate additional volumes exported from terminals on these systems;
- limited capacity at other terminals, with little or no available capacity at AAPT and RGTCT;
- existing take-or-pay contracts with terminals and for rail access and haulage, meaning that substitutability is limited to ‘infrequent opportunities to switch’;
- higher charges that would be incurred by miners located in the Goonyella system to export coal from terminals in other systems;
- differences in the reference train size on each system, with Goonyella having reference train sizes of 10,000 tonnes, compared to 6,800 for Newlands and 8,500 for Blackwater, such that sending coal to other terminals will involve higher haulage costs;
- physical difficulties with miners using their existing rail spur to send coal to other terminals, which may give rise to increased costs;
- HPCT being unavailable for miners other than BMA and BMC, with this arrangement argued to be efficient;
- co-shipping opportunities offered at DBCT but not elsewhere, so that customers are more likely to value coal acquired at DBCT; and
- stockpile trading offered at DBCT which are not offered at other terminals.

Noting these factors, PwC contends that the relevant market is *‘the market for the provision of common user coal handling services at the port of Hay Point’*.¹⁸ Impliedly, DBCT is the only supplier in this presumed market.

¹⁵ Re Queensland Co-Op Milling Association Limited and Defiance Holdings Limited (1976) 8 ALR 481 at 22

¹⁶ HoustonKemp, *Does DBCT’s coal handling service satisfy criterion (b)?*, 28 May 2018, p 17.

¹⁷ PricewaterhouseCoopers, *Dalrymple Bay Coal Terminal User Group: 2018 access declaration review*, 29 May 2018, pp 8-19.

¹⁸ PricewaterhouseCoopers, *Dalrymple Bay Coal Terminal User Group: 2018 access declaration review*, 29 May 2018, p 18.

It is important to emphasise the distinction between PwC's analysis and the conventional framework and approach to market definition, as developed in the competition economics literature. We state above that a market is the area of close competition between firms. PwC's analysis does not establish any such area. Rather, PwC's analysis can be more accurately described as a qualitative assessment of factors that may limit the substitutability between DBCT and other coal terminals. This is not an approach capable of identifying the boundaries of a market.

A market within which a service is supplied may include regions within which there are close substitutes to that service and regions within which there are no close substitutes. The boundaries of the market are defined by reference to the former.

By way of example, at Appendix B of the Staff Issues Paper, the QCA notes that facility V operates *'in the market for processing widgets within approximately 100km of V'*.¹⁹ If this is the market in which the service provided by facility V is provided, and there are costs associated with the transporting widgets to V, then it appears likely that:

- customers of facility V located at or near the boundaries to this market (that is, 100km from V) can be expected to have access to one or more close substitutes for the service provided by facility V – since otherwise, the market would be wider still; and
- customers of facility V located close to the facility may not necessarily have access to close substitutes for the service provided by facility V.

Several of the factors cited by PwC may individually be relevant to estimating the scope of various dimensions of the relevant market – notably the geographic, product and temporal dimensions. However, PwC does not assess any those factors in this way and so does not establish the boundaries that define the market in each of its dimensions.

Demand for a good or service arises from the preferences of its potential customers. With its narrow focus on the characteristics of potential suppliers, and without having established the boundaries of the relevant market and thereby identifying the customers that are in the market, PwC's approach to market definition does not put it in a position to estimate demand in the market. We discuss this concern in more detail at section 4 below.

3.2 Product dimension of the market

In our earlier report, we assessed the product dimension of the market as being the coal handling service. We did not identify any reason to adopt a narrower approach to this dimension of the market.

In its analysis of substitutability between DBCT and other coal terminals, PwC identifies a number of factors that may be said to be relevant to the scope of the product dimension of the market, that is:

- HPCT being unavailable for miners other than BMA and BMC, with this arrangement argued by BHP to be efficient;
- physical difficulties with miners using their existing rail spur to send coal to other terminals, which may give rise to increased costs;
- co-shipping opportunities offered by DBCT which other terminals cannot match, so that customers are more likely to value coal acquired at DBCT; and
- stockpile trading offered at DBCT which is not offered at other terminals.

¹⁹ QCA, *Staff issues paper | Declaration reviews: applying the access criteria*, April 2018, p 31.

None of these factors provides a sufficient reason to distinguish the coal handling service at one terminal from another to a sufficient extent that they may be supplied in different markets. We discuss the relevance of each of these factors to the market definition process below.

3.2.1 Substitution between DBCT and HPCT

PwC claims that the coal handling service provided by HPCT is not a close substitute for the DBCT service, because of the 'asymmetric' nature of the substitution:²⁰

HPCT is not a viable substitute for the coal handling services offered by DBCT. BHP/BMA have never made available HPCT capacity to any other user other than BMA, BHP Mitsui Coal or their predecessors and, for efficiency reasons, BHP has advised that it would not make available capacity at HPCT to third parties. The fact that BMA/BHP affiliated user can take up capacity at DBCT does not demonstrate substitutability for all other users. This type of asymmetric substitution should not result in a wider market definition, which includes services that non-BMA/BHP affiliated cannot switch to.

The reasoning disclosed above by PwC makes clear that it approaches market definition on the basis that services supplied by HPCT are only in the relevant market if they represent a viable option for 'all' customers in that market. This is not consistent with any generally accepted framework for market definition.

Consistent with our observations at section 3.1, it is entirely possible that there may be a significant number of customers in the relevant market for which the DBCT service is the only viable coal handling service. However, this observation does not establish that other coal handling services (and mines that use them) should be excluded from the relevant market.

In particular, we note that the coal handling service supplied by HPCT:

- is supplied at the same location as DBCT at the Port of Hay Point – such that that the costs and constraints associated with the transport of coal to these terminals are likely to be identical; and
- is used by BMA and BMC mines to export up to 55 mtpa of coal, using essentially the same service characteristics²¹ as those adopted at DBCT.

Put another way, a significant volume of coal is exported through HPCT by miners who could otherwise seek to export through DBCT at similar overall cost. Furthermore, the majority of mines that are presumed to regularly export coal from HPCT have exported substantial volumes of coal through DBCT in the past, are currently exporting through DBCT and are expected to continue to do so in the future.²² The substitution possibilities available to these mines represent a substantial proportion of the potential demand for the DBCT service and so cannot be overlooked in considering the boundaries of the product dimension of the market.

3.2.2 Mine site rail infrastructure

Rail infrastructure at each mine site may be configured so as to be used most cost effectively in conjunction with export from a particular terminal or location. By way of example, the rail infrastructure at Peak Downs mine site, located in the southern part of the Goonyella system, is shown in figure 3.1 below.

Peak Downs' rail infrastructure is configured to send coal north on the Goonyella system, towards Hay Point. In addition to these terminals, coal could also be sent to Abbot Point via the GAPE and Newlands systems, albeit that this would incur greater rail access and haulage charges than exporting coal from the Hay Point terminals.

²⁰ PricewaterhouseCoopers, *Dalrymple Bay Coal Terminal User Group: 2018 access declaration review*, 29 May 2018, p 18.

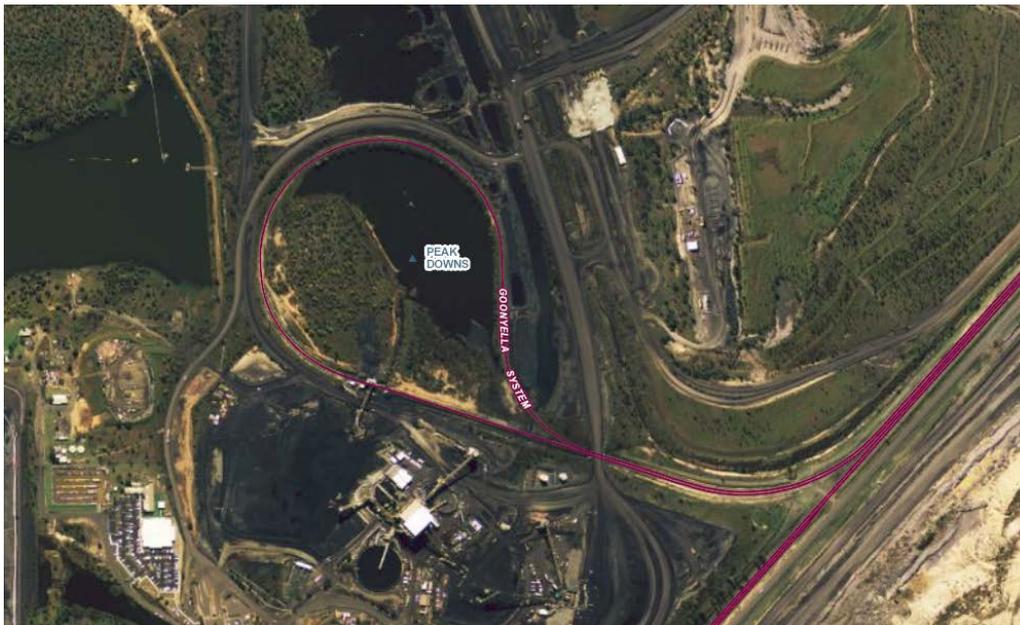
²¹ We describe these service characteristics at section 3.

²² HoustonKemp, *Does DBCT's coal handling service satisfy criterion (b)?*, 28 May 2018, p 28.

Alternatively, sending coal from Peak Downs south to Gladstone would require either investment in mine site rail infrastructure to facilitate this, or higher rail access and haulage costs. For example, PwC states that:²³

While a train can alter its direction of travel to an alternative rail network and port terminal, there would be disruption in the existing service standards as a train was being manoeuvred to enable its access to the alternative path. This could also lead to impacts on the available capacity on the main line.

Figure 3.1: Rail infrastructure configuration at Peak Downs mine site



Source: Queensland Globe

However, not all mine sites have rail infrastructure that affects substitution in this way. For example, the rail infrastructure at Lake Vermont mine site, located south of Peak Downs, is shown in Figure 3.2 below. This configuration allows coal from Lake Vermont to be sent either north to Hay Point or Abbot Point, or south to Gladstone.

²³ PricewaterhouseCoopers, *Dalrymple Bay Coal Terminal User Group: 2018 access declaration review*, 29 May 2018, p 17.

Figure 3.2: Rail infrastructure configuration at Lake Vermont mine site



Source: Queensland Globe

We agree that, for some miners, existing rail infrastructure at a mine site may reduce the substitutability of the DBCT service and other coal handling services. However, such an observation is not determinative for defining the product dimension of the market, because:

- the extent of this effect *for these miners* is limited to either the costs associated with upgrading the rail infrastructure or the higher transport costs associated with overcoming these issues using more complex rail access and haulage services; and
- even if these costs were very high so that switching terminals is not a viable option *for these miners*, for the reasons we discuss at section 3.1 above it does not follow that other terminals do not supply coal handling services in the relevant market – rather, the relevant question is the extent to which mines do have a readily available choice of coal terminal.

In this respect, it is useful to clarify that, in our earlier report, we stated that expected production from a mine is in the relevant market if, among other requirements, it is ‘physically feasible for that mine to use coal handling services at the Port of Hay Point’.²⁴ One way that physical feasibility is realised is if a mine is connected to Aurizon Network’s central Queensland coal network. Although a lack of optimised mine site rail infrastructure may increase the cost of sending coal to a particular terminal, it may not have a bearing on the physical feasibility of sending coal to that terminal. However, in our earlier report we assumed that it did.²⁵ We made this assumption because we did not have information about the costs that would be required to overcome the issues raised by the infrastructure configuration.

²⁴ HoustonKemp, *Does DBCT’s coal handling service satisfy criterion (b)?*, 28 May 2018, p 26.

²⁵ HoustonKemp, *Does DBCT’s coal handling service satisfy criterion (b)?*, 28 May 2018, p 70.

3.2.3 Co-shipping opportunities and stockpile trading

PwC cites co-shipping opportunities and stockpile trading as examples of factors that differentiate the DBCT service and other coal handling services, making them less substitutable.²⁶

We understand that, because many miners choose to ship coal from DBCT, there are a wide range of coal types exported from the terminal. This may make DBCT a more attractive destination for customers who wish to buy parcels of discrete coal types, so that a single vessel can be loaded with more than one type of coal – known as ‘co-shipping’.

The availability of co-shipping opportunities is not an intrinsic property of the DBCT service. Rather, it is an advantage conferred on miners who use DBCT as a result of the mix of miners that use the terminal. It would equally be available at other terminals should those miners use alternative coal handling services.

Nevertheless, setting aside this observation and accepting co-shipping opportunities and stockpile trading as features of the DBCT service (as opposed to features of DBCT’s customer mix), they can best be described as features that differentiate the quality of the coal handling service at DBCT as being greater than that provided at other terminals.

However, the existence of a higher quality service does not provide a sufficient basis to conclude that there is a materially higher willingness to pay for the DBCT service and so it cannot be substituted with other services. In particular, any higher quality linked to these factors does not appear to be material, because:

- some mines proximately located to DBCT send their coal to other terminals despite the apparently greater quality of the DBCT service – thereby indicating that this distinction is not itself determinative in miners’ decisions as to the choice of coal terminal;
- we understand that about 38 per cent of coal exported through DBCT in financial year 2017-18 was shipped on multi-cargo vessels; and
- other coal terminals could adopt similar practices to stockpile trading if these were considered to be of significant value to users.

To the extent that there is a distinction in quality, however material, it follows that the boundaries of the market within which the DBCT service is provided must be *greater* than they would be if stockpile trading and co-shipping opportunities did not exist. Since these factors make DBCT preferable to a wider range of mines, their effect will be to expand the area from which its potential customers may be drawn, across all dimensions of the market. Such expansion of the reach of mines for which DBCT is an attractive alternative must draw demand from potential customers away from other terminals that – although in the same market – are said not to offer those services.

This conclusion underlines the distinction between the process of establishing the boundaries of a market definition and the analysis of substitutability conducted by PwC. Properly considered, the factors that PwC cites as suggesting a *narrower* market in fact indicate a *broader* market.

3.3 Geographic dimension of the market

Our approach to identifying the boundaries of the geographic dimension of the market focused on the region from which potential customers of the DBCT service are (or are likely to be) drawn. We apply this approach:

- at the current time, by reference to current and recent customers of the DBCT service; and
- over the period for which the service would be declared, by reference to the customers who would incur the lowest charges to use coal handling services supplied at Hay Point as compared to other, differently located coal handling services.

²⁶ PricewaterhouseCoopers, *Dalrymple Bay Coal Terminal User Group: 2018 access declaration review*, 29 May 2018, p 17.

This is a conventional approach to estimating the geographic scope of a market. For example:

- the Australian Competition Tribunal described the geographic dimension of the market in the following terms:²⁷

The geographic area of the market (ie whether it is local, regional, national or international) takes into account, principally, the area within which buyers choose to purchase their goods (ie actual buying patterns) and the areas within which sellers traditionally supply (or could easily supply in response to changed market conditions) their goods.

- similarly, the QCA's example assessment of criterion (b) for 'the use of the widget processing facility provided at V' adopts a geographic dimension as being 'the market for processing widgets within approximately 100km of V', for the reason that:²⁸

...users up to 100km away use, or have previously used, V to process widgets.

Our approach gives rise to a list of mines that are within the geographic dimension of the market, both at the current time and over the period for which the service would be declared – see for example, figure 4.1, table 4.2, figure 4.3 and figure 4.4 of our previous report.

Such a process is also consistent with the geographic scope of the 'Hay Point Catchment' identified by Castalia for the DBCT User Group, in which:²⁹

...the Port of Hay Point via either DBCT or the Hay Point Loader for BMA mines, is the lowest cost logistics chain.

By contrast, PwC does not form a view about the region from which potential customers of the DBCT service would be drawn. Instead, PwC suggests that the opportunities for customers of DBCT to export coal from terminals in other geographic locations are limited because higher charges would be incurred by miners located in the Goonyella system to export coal from terminals in other systems.³⁰

We explain at section 3.1 above that this observation does not, by itself, establish which mines are in or out of the relevant market. Furthermore, higher charges required to access other terminals are explicitly accounted for in a conventional approach to geographic market definition that examines the location of existing and potential customers, and considers the costs involved in switching between more or less distant suppliers.

PwC compares the relative charges for a representative DBCT user of exporting coal using existing capacity at DBCT as against available capacity at other terminals. The diagram at figure 7 of PwC's report purports to show these relative charges. We replicate this diagram at figure 3.3 below, indicating that the relative charges associated with exporting coal through DBCT are much lower than those for exporting coal through other terminals.

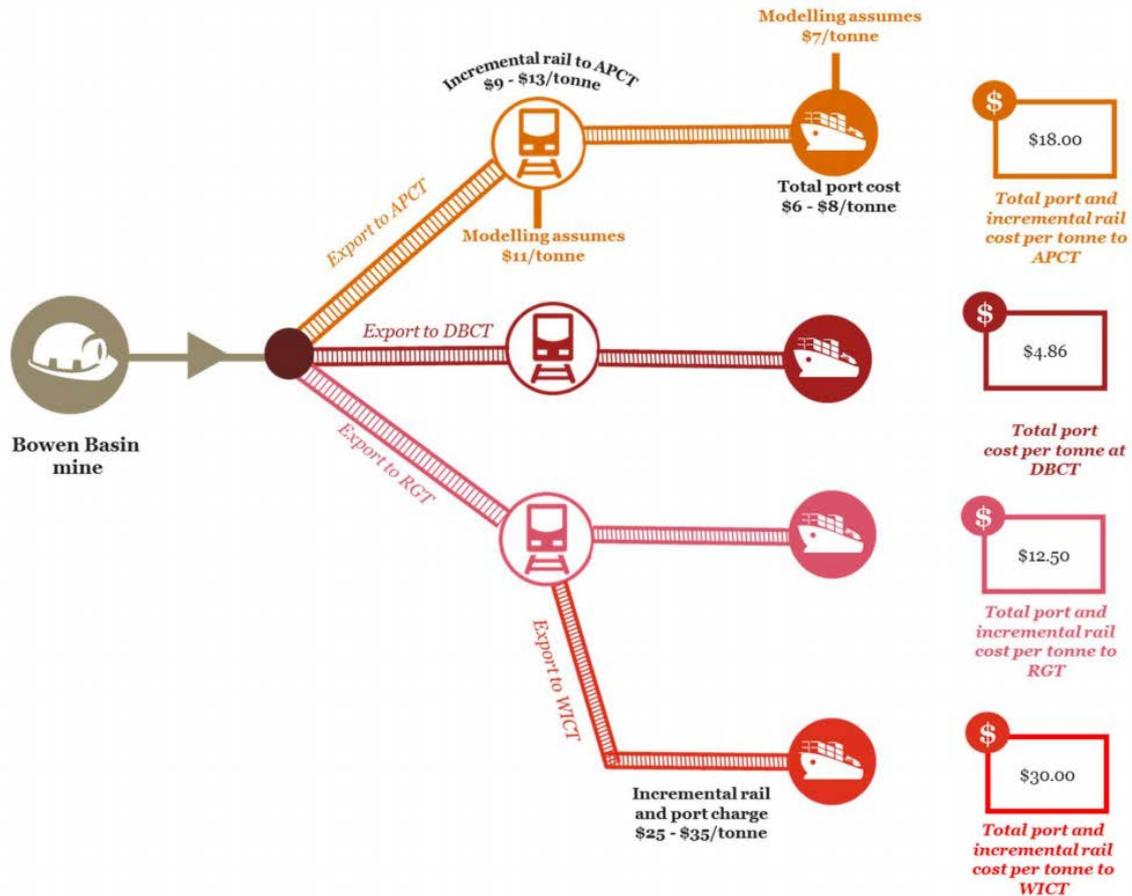
²⁷ Application by Chime Communications Pty Ltd (No 2) [2009] ACompT 2 (27 May 2009), para 21.

²⁸ QCA, *Staff issues paper | Declaration reviews: applying the access criteria*, April 2018, p 31.

²⁹ Castalia, *Dalrymple Bay Coal Terminal: Economic analysis of declaration criteria*, May 2018, p 7.

³⁰ PricewaterhouseCoopers, *Dalrymple Bay Coal Terminal User Group: 2018 access declaration review*, 29 May 2018, pp. 16-18.

Figure 3.3: PwC’s calculation of alternative cost pathways for existing DBCT users

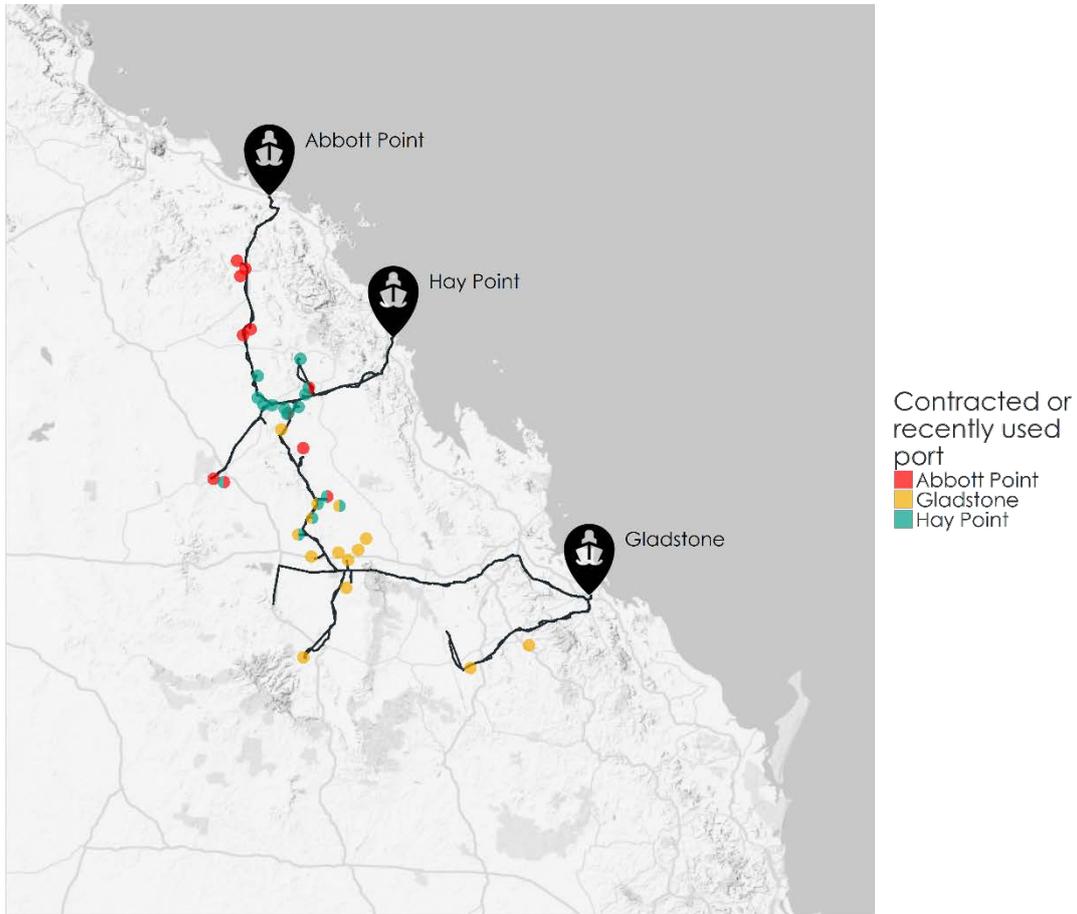


PwC does not explicitly use the information presented in figure 3.3 above as part of its approach to market definition. Nevertheless, as we explain above, the principles underpinning the comparison drawn by PwC are important to the market definition process.

In particular, if the comparison of alternative cost pathways drawn by PwC is an accurate snapshot of the relative charges for current users of DBCT, it represents strong evidence that current demand in the market in which the DBCT service is provided is greater than the volumes currently served at the terminal. If the choice between DBCT and alternative coal handling facilities is as stark for existing users as PwC suggests, then it is reasonable to suppose that there is a further set of coal mines that would also use the coal handling service at DBCT in preference to those at other facilities. That further set of mines not served by DBCT can then reasonably be said to represent demand for the DBCT service.

Figure 2.10 in our earlier report showed the location of mines with contracts at each coal terminal, and is reproduced at figure 3.4 below. Figure 3.4 demonstrates that the mines with contracts at DBCT are located within a broad geographic region that contains numerous mines that utilise other coal handling services. On PwC’s evidence, these mines (and potentially others that are located slightly outside this region) represent demand for DBCT’s services that is currently not met by DBCT.

Figure 3.4: Location of mines with contracts at each port



Source: AME, DBCTM, Google Maps

However, there are important caveats to the comparison of relative terminal and rail charges that is presented by PwC. We explore these potential issues in greater detail at appendix A1 to this report.

3.4 Time dimension of the market

PwC notes that mines hold take-or-pay contracts with terminals and for rail access and haulage, so that substitutability is limited to ‘infrequent opportunities to switch’.³¹

PwC also highlights the importance of capacity constraints in limiting the ability of mines to switch, because:³²

- there is limited capacity on existing rail infrastructure to export coal from other terminals, citing available capacity of 2.3 mtpa on the Newlands and GAPE systems and 17.9 mtpa on the Blackwater systems, such that these systems may need to be expanded to accommodate additional volumes; and
- there is limited capacity at other terminals, with little or no available capacity at AAPT and RGTCT.

³¹ PricewaterhouseCoopers, *Dalrymple Bay Coal Terminal User Group: 2018 access declaration review*, 29 May 2018, p 18.

³² PricewaterhouseCoopers, *Dalrymple Bay Coal Terminal User Group: 2018 access declaration review*, 29 May 2018, p 18.

This analysis focuses on the constraints to substitutability between terminals over a short term horizon – the period within which mines are bound by existing contractual commitments and limited by existing infrastructure constraints.

The appropriate time dimension of the market is the period over which the market operates – that is, the period over which transactions are normally conducted. A normal transaction for a coal handling service is a long term contract, and the time dimension of the market should be consistent with this practice.

Recent transactions entered by DBCT have been for a term of ten years and this is consistent with what is known about contracts made with AAPT. Substitutability must be assessed over a timeframe that is consistent with the term of these transactions.

Long term contracting is consistent with competitive outcomes in markets in which both suppliers and customers are making significant investments in sunk costs, with long term contracts being important in underwriting investment in new capacity to relieve infrastructure constraints.

It follows that the effects of long term contracts and capacity constraints on the ability and incentive of mines to switch providers of coal handling services in the short term would not be expected to affect market definition. Rather, the boundaries of the market must be determined over a long timeframe in which new contracts may be entered, potentially underwriting expansions.

Reinforcing the long term perspective that should be brought to the time dimension of the market, we note that criterion (b) is to be assessed over the period for which the service would be declared. In our earlier report, we assumed that this was ten years. PwC assesses the relevant period as ten to fifteen years,³³ but does not draw any linkage between this and its observations as to the limitations of contracts and capacity for mines' switching between terminals.

By contrast, this period does not constrain our assessment of criterion (b). We stated in our earlier report that:³⁴

No contract to use coal handling services at DBCT extends to 2030, and nor are we aware of any contract exceeding this duration to use coal handling services at any other coal terminal

DBCTM's submission states that 91 per cent of contracted tonnage is the subject of agreements that are set to expire within the three and a half years from the expiry of declaration, if not extended.³⁵

The DBCT User Group raises the prospect that long term contracts may act to constrain a user from being in a position to switch terminals, even in the long term, because of the effect of overlapping rail haulage, rail access and terminal contracts:³⁶

Rail haulage and rail access agreements are typically entered on at least a 10 year take or pay basis – such that switching terminals is a choice that can only ever arise at the point of re-contracting (and where that time for re-contracting can be aligned with the term of the DBCT User Agreements which are also typically 10 year take or pay contracts initially with 5 year 'evergreen' renewal options thereafter).

The implicit suggestion made by the DBCT User Group is that, without alignment of their various obligations, users might never face an effective choice between terminals.

³³ PricewaterhouseCoopers, *Dalrymple Bay Coal Terminal User Group: 2018 access declaration review*, 29 May 2018, pp 19-21.

³⁴ HoustonKemp, *Does DBCT's coal handling service satisfy criterion (b)?*, 28 May 2018, p 17.

³⁵ DBCTM, *DBCT Management submission to the QCA*, 30 May 2018, para 374.

³⁶ Dalrymple Bay Coal Terminal User Group, *Declaration review regarding Dalrymple Bay Coal Terminal: Submission to the Queensland Competition Authority*, 30 May 2018, p 29.

This prospect does not deserve serious consideration. To the extent that users actually enter contracts such that the terms of their obligations to various providers are not aligned, then it is reasonable to assume that they would do so with the expectation that they could trade these obligations in a secondary market transaction. By way of example, Castalia notes that this type of trading for contracted capacity at DBCT exists, is efficient and is material, with 23 million tonnes of DBCT capacity assigned in this way over the past three years.³⁷ Without the availability of secondary trading of capacity, it would be irrational for miners to enter into contractual terms that would limit their ability to secure the lowest possible prices from suppliers of rail haulage or coal handling services.

³⁷ Castalia, *Dalrymple Bay Coal Terminal: Economic analysis of declaration criteria*, May 2018, pp 19-20.

4. Total foreseeable demand in the market

This section identifies the essential differences between our approach to estimating total foreseeable demand in the market and that adopted by PwC.

Demand for a product is derived from the preferences of customers. In our earlier report we estimate total foreseeable demand in the relevant market by reference to the total forecast production of mines that we assess to be in that market over the period for which the DBCT service would be declared.

In contrast, PwC is unable to estimate total foreseeable demand in the relevant market because it does not define that market. In other words, it is not possible to say what demand arises in PwC's presumed market because it does not specify the boundaries within which the customers in that market are located. Instead, PwC estimates total foreseeable demand in the market by reference to the volume of coal handling services that are forecast to be supplied at DBCT. This approach:

- conflates the concepts of 'supply' and 'demand', such that it will not generally give rise to an estimate of total foreseeable demand in the market; and
- is at odds with the purpose of estimating total foreseeable demand in the market, which is to assess whether DBCT is a natural monopoly.

Beyond the conceptual difference between our estimates of foreseeable demand and those developed by PwC, there are also empirical differences. We rely on forecasts of mine production provided by AME to estimate demand in the relevant market, whereas PwC relies on forecasts of terminal throughput sourced from Wood Mackenzie. In the analysis we set out below, we show that the difference in data supplier is not determinative and that, once estimated consistent with a conventional approach to market definition, total foreseeable demand in the market exceeds the existing capacity of DBCT over the period for which the service would be declared.

4.1 PwC estimates supply at DBCT, not foreseeable demand

The purpose of establishing the boundaries of the relevant market in the assessment of criterion (b) is to estimate total foreseeable demand in that market. We explain in section 3.1 that PwC's approach to the market does not define a market by reference to its boundaries. This raises challenges for estimating total foreseeable demand in the market, since the customers that form one side of the market are not defined.

The nature of this challenge is posed by the description of the relevant market proposed by PwC being:³⁸

...the market for the provision of common user coal handling services at the port of Hay Point.

An atypical feature of this proposed market is that it is implicitly defined by reference to one supplier, DBCT (being the only common-user coal handling facility at the port of Hay Point), rather than by reference to the customers in the market. Since this market definition does not contain information that would identify the customers in the market, it follows that it is not possible to estimate total foreseeable demand in this market.

However, PwC does not attempt to estimate total foreseeable demand in the market. Instead, it estimates coal handling volumes that are expected to be supplied at DBCT, by reference to:

- existing contract cover at DBCT;
- forecasts of contracts and throughput at DBCT; and

³⁸ PricewaterhouseCoopers, *Dalrymple Bay Coal Terminal User Group: 2018 access declaration review*, 29 May 2018, p 18.

- the DBCT access queue.

Although PwC refers to this approach as an estimate of ‘total foreseeable demand in the market’, there is a strong conceptual difference between estimates of the expected output of one supplier in a market and estimates of the expected demand of customers in a market. This distinction is of fundamental significance, even if there is only a single supplier in the market. Specifically, the approach applied by PwC assumes that that demand in the market is limited to the volumes that are served at DBCT, rather than assessing whether demand in the market could potentially exceed this. This has important consequences for the assessment of criterion (b) – for reasons that we explain further at section 4.2 below.

By contrast, when an appropriate approach to market definition is adopted, then estimating total foreseeable demand in the market is a relatively simple task of summing the expected demand from each of the customers identified as being in the market.

Our proposed approach describes the market as:³⁹

...the market for coal handling services for mines that are proximate to the Port of Hay Point.

This description includes a statement of the customers who are in the market, by reference to their proximity – based on the analytical framework that we use to assess this, which we explain at section 4 of our previous report. It follows that total foreseeable demand in this market is the total expected demand for coal handling services from each of these customers.

4.2 Volumes served at DBCT is inconsistent with the purpose of criterion (b)

PwC estimates total foreseeable demand ‘in the market’ by reference to the volumes served (or expected to be served) at DBCT. By construction, this approach constrains total foreseeable demand to be no more than the capacity of DBCT.

In our previous report, we stated this approach to estimating total foreseeable demand in the market would not be an appropriate basis for the assessment of criterion (b). We explained that:⁴⁰

Foreseeable demand in the market encompasses coal volumes that, by preference, would be served by coal handling services at the Port of Hay Point. In principle, this volume is not constrained by the capacity of DBCT – either at present or in the future.

If foreseeable demand in the market is estimated so as to be constrained by the capacity of DBCT, then the assessment of criterion (b) would be predisposed to identify the service provided by that terminal as a natural monopoly in circumstances where this was not the case.

A facility that involves significant fixed or sunk costs is likely to be able to meet total foreseeable demand in the market at least cost if demand is constrained to be less than its capacity – because the costs of using capacity, once built, are very low. It follows that any approach that limits foreseeable demand in the market to that served by the facility of interest will typically find that the facility satisfies criterion (b), irrespective of the degree of substitution between any two facilities.

To demonstrate the circumstances to which we refer in principle above, we developed a simple example in which

...coal mine production in a region near terminal A grows by 40 mtpa, and:

- 10 mtpa of this additional production is handled using available capacity at terminal A, which is costless; and

³⁹ HoustonKemp, *Does DBCT’s coal handling service satisfy criterion (b)?*, 28 May 2018, p 26.

⁴⁰ HoustonKemp, *Does DBCT’s coal handling service satisfy criterion (b)?*, 28 May 2018, p 34.

- 30 mtpa of this additional production is handled at another terminal B, because the cost of expanding terminal A is greater than the cost of sending these volumes to terminal B.

Terminal A is not a natural monopoly, because foreseeable demand in the market for coal handling services in the region near terminal A cannot be met by that terminal.

Despite this, PwC's approach to estimating total foreseeable demand, applied to terminal A, would find that the 30 mtpa served at terminal B (because of the lack of availability of terminal A) is not part of total foreseeable demand in the market since it is not served at terminal A. From this incorrect conclusion, it is straightforward to draw the similarly incorrect corollary, that terminal A is a natural monopoly because it can serve total foreseeable demand in the market at least cost.

4.3 Empirical estimates of total foreseeable demand

A critical question in the assessment of criterion (b) for the DBCT service is whether total foreseeable demand in the market can be served within the existing capacity of the terminal or whether it exceeds the existing capacity of the terminal. We explain in our earlier report that:⁴¹

The evaluation of the resource costs of meeting foreseeable demand is likely to be significantly affected by the fact that the provision of rail and terminal infrastructure is capital intensive. It follows that the resource costs of meeting foreseeable demand using existing infrastructure (which does not require new capital investment) are likely to be significantly lower than the resource costs associated with the construction and use of new infrastructure.

Put another way, since the capital costs of the existing capacity at DBCT are sunk and many of the operating costs are likely to be fixed, if total foreseeable demand in the market can be met within the existing capacity of DBCT, the costs that may be avoided by meeting foreseeable demand elsewhere will be relatively low.

Conversely, if total foreseeable demand in the market exceeds the existing capacity of DBCT, then the incremental costs of meeting foreseeable demand above this capacity will be relatively high since they will reflect the capital costs of a capacity expansion. We show in section 5.2.1 below that the incremental costs of serving foreseeable demand using capacity expansions at DBCT are considerably higher than the incremental costs of serving foreseeable demand using existing capacity at other terminals.

PwC estimates total foreseeable demand in the market by reference to forecasts of throughput at DBCT, including forecasts developed by Wood Mackenzie. The DBCT User Group submission notes that this forecast is for throughput at DBCT to increase to a maximum of 69 mtpa over 2024 and 2025, before sharply falling away to 43 mtpa by 2030.

By contrast, we estimate total foreseeable demand in the market by reference to forecasts of the total production of customers within the relevant market based on forecasts developed by AME. In this section, we use the same methodology to estimate total foreseeable demand in the market using forecasts of production developed by Wood Mackenzie. We find that:

- total foreseeable demand in the market calculated using Wood Mackenzie's forecasts substantially exceeds the existing capacity of DBCT – and exceeds even the capacity of DBCT with all expansion options implemented – including the 9X expansion; and
- even if total foreseeable demand in the market is calculated so as to exclude volumes supplied at HPCT – an approach we consider to be inappropriate – it still significantly exceeds the existing capacity of DBCT.

We explain below how we have reached these conclusions.

⁴¹ HoustonKemp, *Does DBCT's coal handling service satisfy criterion (b)?*, 28 May 2018, p 21.

4.3.1 Production forecasts provided by Wood Mackenzie

DLA has provided us with two forecasts of throughput at DBCT prepared by Wood Mackenzie, that is, those developed:

- contemporaneously to the estimates that were supplied to the DBCT User Group and its advisors in February 2018; and
- those developed more recently, in June 2018.

We note that the February 2018 forecasts provided by Wood Mackenzie for throughput at DBCT are higher than those reported by the DBCT User Group. The former forecast is for throughput at DBCT to increase to a maximum of 75.4 mtpa in 2024, sharply declining to 54.2 mtpa by 2030. We understand that Wood Mackenzie has advised DLA that the DBCT User Group amended its forecast of throughput at DBCT by moving some throughput from DBCT to HPCT.

As of June 2018, Wood Mackenzie's forecasts of throughput at DBCT have increased yet further to a maximum of 83.6 mtpa by 2026, with a much more gradual drop-off – to 79.0 mtpa by 2030.

The Wood Mackenzie forecasts identify the mines from which production is assumed to be handled at DBCT and those from which production is assumed to be handled at other terminals. This information indicates that Wood Mackenzie forecasts of throughput at AAPT, HPCT, RGTCT and Wiggins Island Coal Export Terminal (WICET) include production from mines that we assess as being in the market in which the DBCT service is supplied. These mines include all of those operated by BMA and BMC, and also:

- Lake Vermont, which Wood Mackenzie assumes exports coal through AAPT, DBCT and RGTCT;
- Middlemount, which Wood Mackenzie assumes exports coal through AAPT and DBCT;
- Kestrel, which Wood Mackenzie assumes exports coal through RGTCT; and
- Oaky Creek, which Wood Mackenzie assumes exports coal through RGTCT.

We use this information to prepare estimates of total foreseeable demand in the market by reference to the forecast production of customers in the market, rather than the forecast throughput at DBCT.

4.3.2 Estimates of total foreseeable demand in the market

At appendix A1 of our earlier report, we provided a table including each mine that we assessed as being in the market, and the forecasts of production from those mines over the period from 2021 to 2030. We reproduce this at table 4.1 below. For clarification, we observe the production forecasts embodied at table 4.1 are sourced from AME, and Wood Mackenzie transport data is used to determine the list of mines that we assess as being in the market.

We have used the February 2018 and June 2018 Wood Mackenzie forecasts to construct alternative estimates of total foreseeable demand in the market. These estimates are shown at table 4.2 and table 4.3 below.⁴²

Wood Mackenzie provides production forecasts for most but not all of the mines that we assess to be in the market. It does not provide production forecasts for Talwood, Grosvenor West, Saraji East, Denham, Winchester South (in February 2018), Hillalong and Teresa. However, Wood Mackenzie prepares forecasts

⁴² Wood Mackenzie and AME use different naming conventions for some mines. In comparing production forecasts, we assume that: AME's Capcoal mine is equivalent to Wood Mackenzie's German Creek Grasstree and Lake Lindsay mines; AME's Oaky Creek mine is equivalent to Wood Mackenzie's Oaky North mine; AME's Moorvale West mine is equivalent to Wood Mackenzie's Moorvale mine; and AME's Goonyella mine is equivalent to Wood Mackenzie's Goonyella Riverside and Broadmeadow mines.

for two mines within the geographic scope of the market that are not captured within the AME dataset – namely, Rockwood and Carborough Downs.

Total foreseeable demand in the market assessed on the basis of coal handling throughput over the period for which the service would be declared is:

- between 123.7 mtpa and 147.6 mtpa using Wood Mackenzie's February 2018 forecasts; and
- between 132.2 mtpa and 151.7 mtpa using Wood Mackenzie's June 2018 forecasts.

We explained in our earlier report why we expect that the demand for throughput would be, on average, 90 per cent of the demand for contracted capacity.⁴³ Taking into account this difference, total foreseeable demand in the market assessed on the basis of coal handling contract capacity over the period for which the service would be declared is:

- between 137.4 mtpa and 163.9 mtpa using Wood Mackenzie's February 2018 forecasts; and
- between 146.9 mtpa and 167.7 mtpa using Wood Mackenzie's June 2018 forecasts.

All these estimates of total foreseeable demand materially exceed existing capacity at DBCT and, in fact, exceed the capacity of DBCT with all expansion options implemented – including the 9X expansion, which is subject to significant uncertainty as to its feasibility.

4.3.3 Estimates of total foreseeable demand in the market excluding volumes supplied at HPCT

These estimates of total foreseeable demand include production from mines operated by BMA and BMC. We set out at section 3.2.1 that this inclusion is appropriate because all of these mines are either current, recent or potential customers of DBCT and prefer to use coal handling services at the Port of Hay Point.

However, we note at section 2 above that PwC distinguishes the coal handling service provided at HPCT from that provided at other coal terminals by reference to the fact that it is not a common-user facility. We understand that PwC contends that the coal handling service at HPCT is therefore not supplied in the relevant market.

Notwithstanding our disagreement with this contention, we also examine the effect of preparing an alternative estimate of total foreseeable demand in the market, using Wood Mackenzie data, which excludes 55 mtpa on the basis that this represents the volume of coal handling services supplied at HPCT.⁴⁴ This assumes that the 'overflow' of BMA and BMC volumes served at common-user terminals, such as DBCT, remain in the relevant market and are included in total foreseeable demand in the market.⁴⁵

Assessed on this basis, total foreseeable demand in the market for coal handling throughput over the period for which the service would be declared is:

- between 68.7 mtpa and 92.6 mtpa using Wood Mackenzie's February 2018 forecasts; and
- between 77.2 mtpa and 96.7 mtpa using Wood Mackenzie's June 2018 forecasts.

Total foreseeable demand in the market assessed on the basis of coal handling contract capacity over the period for which the service would be declared is therefore:

⁴³ HoustonKemp, *Does DBCT's coal handling service satisfy criterion (b)?*, 28 May 2018, p 37.

⁴⁴ We assume for this purpose that the contract utilisation at HPCT is 100 per cent.

⁴⁵ We note that it is unlikely to be appropriate to assume that HPCT could economically be expanded. We understand that the total capital expenditure associated with expanding HPCT from 44 mtpa to 55 mtpa was approximately \$3 billion – see BHP's website, <https://www.bhp.com/media-and-insights/news-releases/2015/12/new-bma-hay-point-coal-terminal-boosts-queenslands-coal-exports>, accessed 10 July 2018. . This substantially exceeds estimates of the unit costs of expanding DBCT, as set out at HoustonKemp, *Does DBCT's coal handling service satisfy criterion (b)?*, 28 May 2018, p 41.

- between 76.3 mtpa and 102.8 mtpa using Wood Mackenzie's February 2018 forecasts; and
- between 85.8 mtpa and 107.5 mtpa using Wood Mackenzie's June 2018 forecasts.

All these estimates of total foreseeable demand materially exceed existing capacity at DBCT, and the total foreseeable demand for contracted capacity also exceeds the capacity of DBCT with the Zone 4 and 8X expansions implemented.

Table 4.1: Total foreseeable demand for throughput in the market by mine (AME forecast production)

Operator	Mine	2021	2022	2023	2024	2025	2026	2027	2028	2029	2030
Anglo American	Capcoal	7.9	4.9	4.9	4.9	4.9	4.9	4.9	4.9	4.9	4.9
	Grosvenor	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0
	Moranbah North	5.8	5.8	5.8	5.8	5.8	5.8	5.8	5.8	5.8	5.8
	Moranbah South	1.8	5.0	9.0	14.0	14.0	14.0	14.0	14.0	14.0	14.0
Aquila	Eagle Downs	3.5	4.5	4.5	4.5	4.5	4.5	4.5	4.5	4.5	4.5
	Talwood	0.0	0.0	0.0	0.9	1.6	3.6	3.6	3.6	3.6	3.6
BHP Mitsubishi Alliance	Caval Ridge	5.5	5.5	5.5	5.5	5.5	5.5	5.5	5.5	5.5	5.5
	Daunia	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0
	Goonyella	17.8	17.8	17.8	17.8	17.8	17.8	17.8	17.8	17.8	17.8
	Grosvenor West	1.5	2.6	3.8	3.8	3.8	3.8	3.8	3.8	3.8	3.8
	Peak Downs	12.0	12.0	12.0	12.0	12.0	12.0	12.0	12.0	12.0	12.0
	Saraji	9.5	9.5	9.5	9.5	9.5	9.5	9.5	9.5	9.5	9.5
	Saraji East	0.0	0.0	0.0	1.0	2.5	4.0	5.5	7.0	7.0	7.0
BHP Mitsui Coal	Poitrel	3.3	3.3	3.3	3.3	3.3	3.3	3.3	3.3	3.3	3.3
	South Walker Creek	5.3	5.3	5.3	5.3	5.3	5.3	5.3	5.3	5.3	5.3
Fitzroy Resources	Ironbark No. 1	1.7	2.6	4.3	4.3	4.3	4.3	4.3	4.3	4.3	4.3
Glencore	Clermont	13.0	13.0	13.0	13.0	13.0	13.0	0.0	0.0	0.0	0.0
	Oaky Creek	5.1	5.1	5.1	5.1	5.1	5.1	5.1	5.1	5.1	5.1
Jellinbah Group	Lake Vermont	9.3	9.3	9.3	9.3	9.3	9.3	9.3	9.3	9.3	9.3
Middlemount Coal	Middlemount	3.8	3.8	3.8	3.8	3.8	3.8	3.8	3.8	3.8	3.8
New Hope	New Lenton	1.3	1.3	1.3	3.2	3.2	3.2	3.2	3.2	3.2	3.2
Peabody	Codrilla	0.0	0.0	0.0	0.0	0.9	1.8	3.2	3.2	3.2	3.2
	Coppabella	4.0	4.0	4.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
	Denham	0.0	0.0	0.0	0.0	0.7	2.9	3.5	4.5	5.5	6.0
	Moorvale West	0.0	0.0	0.4	1.0	1.0	1.0	1.0	1.0	1.0	1.0

Operator	Mine	2021	2022	2023	2024	2025	2026	2027	2028	2029	2030
	North Goonyella	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0
	Olive Downs North	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0
	Vermont East/Willunga	0.0	0.0	0.6	1.3	2.0	3.1	3.1	3.1	3.1	3.1
	West/North Burton	0.0	0.0	0.0	0.4	1.0	1.0	1.0	1.0	1.0	1.0
Realm Resources	Foxleigh	3.3	3.3	3.3	3.3	3.3	0.0	0.0	0.0	0.0	0.0
Rio Tinto	Hail Creek	10.0	10.0	10.0	10.0	10.0	10.0	10.0	10.0	10.0	10.0
	Kestrel	5.7	5.7	5.7	5.7	5.7	5.7	5.7	5.7	5.7	5.7
	Winchester South	0.0	0.0	0.0	0.0	0.0	1.8	3.6	4.0	4.0	4.0
Shandong Energy Group	Hillalong	3.6	3.6	3.6	3.6	3.6	3.6	3.6	3.6	3.5	3.5
Stanmore Coal	Isaac Plains	1.2	1.2	1.2	1.2	1.2	1.2	1.2	1.2	0.0	0.0
Terracom	Blair Athol	2.0	2.0	2.0	2.0	2.0	0.0	0.0	0.0	0.0	0.0
United Mining Group	Teresa	0.0	2.0	2.9	3.3	6.4	6.4	6.4	6.4	6.4	6.4
Yanzhou	Harrybrandt	0.0	0.0	0.0	1.0	2.5	2.5	2.5	2.5	2.5	2.5
Total foreseeable demand		150.9	156.1	164.8	172.7	182.4	186.7	179.0	181.9	181.6	182.1
Less capacity of HPCT		55.0	55.0	55.0	55.0	55.0	55.0	55.0	55.0	55.0	55.0
Total foreseeable demand (excluding HPCT capacity)		95.9	101.1	109.8	117.7	127.4	131.7	124.0	126.9	126.6	127.1

Source: AME terminal charge and production volumes data, Wood Mackenzie transport charge data, HoustonKemp analysis

Table 4.2: Total foreseeable demand for throughput in the market by mine (Wood Mackenzie February 2018 forecast production)

Operator	Mine	2021	2022	2023	2024	2025	2026	2027	2028	2029	2030
Anglo American	Capcoal	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
	Grosvenor	4.8	4.8	4.8	4.8	4.8	4.8	4.8	4.8	4.8	4.8
	Moranbah North	5.7	5.7	5.7	5.7	5.7	5.7	5.7	5.7	5.7	5.7
	Moranbah South	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.5
Aquila	Eagle Downs	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
BHP Mitsubishi Alliance	Caval Ridge	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
	Daunia	5.2	5.2	5.2	5.2	5.2	5.2	5.2	5.2	5.2	5.2
	Goonyella	20.0	20.0	20.0	20.0	20.0	20.0	20.0	20.0	20.0	20.0
	Peak Downs	14.0	14.0	14.0	14.0	14.0	14.0	14.0	14.0	14.0	14.9
	Saraji	10.0	10.0	10.0	10.0	10.0	10.0	10.0	10.0	10.0	10.0
BHP Mitsui Coal	Poitrel	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5
	South Walker Creek	5.5	5.5	5.5	5.5	5.5	5.5	5.5	5.5	5.5	5.5
Fitzroy Resources	Carborough Downs	1.8	1.8	1.8	1.8	1.8	0.9	0.0	0.0	0.0	0.0
	Ironbark No. 1	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
Glencore	Clermont	13.0	13.0	13.0	13.0	13.0	2.0	0.0	0.0	0.0	0.0
	Oaky Creek	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5
Jellinbah Group	Lake Vermont	8.8	8.8	8.8	8.8	8.8	8.8	8.8	8.8	8.8	8.8
Middlemount Coal	Middlemount	4.3	4.3	4.3	4.3	4.3	4.3	4.3	4.3	3.7	0.0
New Hope	New Lenton	0.5	1.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0
Peabody	Codrilla	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
	Coppabella	4.0	4.0	4.0	4.0	4.0	4.0	1.6	0.0	0.0	0.0
	Moorvale West	0.9	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
	North Goonyella	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5
	Olive Downs North	0.0	0.0	0.0	0.0	0.0	0.4	0.8	0.8	0.8	0.8
	Vermont East/Willunga	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	1.0	2.0

Operator	Mine	2021	2022	2023	2024	2025	2026	2027	2028	2029	2030
	West/North Burton	1.5	1.0	0.2	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Realm Resources	Foxleigh	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	2.9	0.0
Rio Tinto	Hail Creek	11.0	11.0	11.0	11.0	11.0	11.0	11.0	11.0	11.0	11.0
	Kestrel	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0
Stanmore Coal	Isaac Plains	1.8	1.8	1.8	1.8	1.8	1.8	0.1	0.0	0.0	0.0
Terracom	Blair Athol	1.6	1.6	1.6	1.2	0.0	0.0	0.0	0.0	0.0	0.0
U & D Coal	Rockwood	0.0	0.0	1.0	2.0	3.0	3.0	3.0	3.0	3.0	3.0
Yanzhou	Harrybrandt	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total foreseeable demand		146.9	146.0	147.2	147.6	147.4	135.9	129.3	127.6	127.9	123.7
Less capacity of HPCT		55.0	55.0	55.0	55.0	55.0	55.0	55.0	55.0	55.0	55.0
Total foreseeable demand (excluding HPCT capacity)		91.9	91.0	92.2	92.6	92.4	80.9	74.3	72.6	72.9	68.7

Source: AME terminal charge data, Wood Mackenzie production volumes and transport costs data, HoustonKemp analysis.

Table 4.3: Total foreseeable demand for throughput in the market by mine (Wood Mackenzie June 2018 forecast production)

Operator	Mine	2021	2022	2023	2024	2025	2026	2027	2028	2029	2030
Anglo American	Capcoal	9.5	9.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
	Grosvenor	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0
	Moranbah North	6.2	6.2	6.2	6.2	6.2	6.2	6.2	6.2	6.2	6.2
	Moranbah South	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Aquila	Eagle Downs	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
BHP Mitsubishi Alliance	Caval Ridge	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
	Daunia	5.2	5.2	5.2	5.2	5.2	5.2	5.2	5.2	5.2	5.2
	Goonyella	17.5	18.5	18.5	18.5	18.5	18.5	18.5	18.5	18.5	18.5
	Peak Downs	14.0	14.0	14.0	14.0	14.0	14.0	14.0	14.0	14.0	14.0
	Saraji	10.0	10.0	10.0	10.0	10.0	10.0	10.0	10.0	10.0	10.0
BHP Mitsui Coal	Poitrel	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5
	South Walker Creek	6.0	6.0	6.0	6.0	6.0	6.0	6.0	6.0	6.0	6.0
Fitzroy Resources	Carborough Downs	0.0	0.0	0.0	0.0	0.0	0.0	0.0	1.0	2.0	3.0
	Ironbark No. 1	0.4	1.2	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
Glencore	Clermont	12.5	12.5	12.5	12.5	12.5	12.5	1.5	0.0	0.0	0.0
	Oaky Creek	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5
Jellinbah Group	Lake Vermont	9.2	9.2	9.2	9.2	9.2	9.2	9.2	9.2	9.2	9.2
Middlemount Coal	Middlemount	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	1.3	0.0
New Hope	New Lenton	0.5	1.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0
Peabody	Codrilla	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
	Coppabella	4.0	4.0	4.0	4.0	0.9	0.0	0.0	0.0	0.0	0.0
	Moorvale West	2.5	2.5	2.5	2.5	0.7	0.0	0.0	0.0	0.0	0.0
	North Goonyella	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0
	Olive Downs North	0.0	0.0	0.0	0.0	0.0	0.4	0.8	0.8	0.8	0.8
	Vermont East/Willunga	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	1.0	2.0

Operator	Mine	2021	2022	2023	2024	2025	2026	2027	2028	2029	2030
	West/North Burton	1.5	1.0	0.2	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Realm Resources	Foxleigh	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0
Rio Tinto	Hail Creek	11.0	11.0	11.0	11.0	11.0	11.0	11.0	11.0	11.0	11.0
	Kestrel	5.3	5.3	5.3	5.4	5.5	5.5	5.5	5.5	5.5	5.5
	Winchester South	0.0	0.0	0.0	1.5	3.0	4.5	6.0	6.5	6.5	6.5
Stanmore Coal	Isaac Plains	2.1	1.9	1.8	1.8	1.8	1.6	1.6	1.5	0.0	0.0
Terracom	Blair Athol	1.7	1.7	1.7	1.7	1.7	1.5	0.0	0.0	0.0	0.0
U & D Coal	Rockwood	2.5	2.5	2.5	2.5	2.3	2.0	2.0	1.7	0.0	0.0
Total foreseeable demand		150.6	151.7	149.6	151.0	147.3	147.1	136.5	136.1	132.2	132.9
Less capacity of HPCT		55.0	55.0	55.0	55.0	55.0	55.0	55.0	55.0	55.0	55.0
Total foreseeable demand (excluding HPCT capacity)		95.6	96.7	94.6	96.0	92.3	92.1	81.5	81.1	77.2	77.9

Source: AME terminal charge data, Wood Mackenzie production volumes and transport costs data, HoustonKemp analysis

5. Meeting foreseeable demand at least cost

This section describes our approach to assessing the least cost means of meeting total foreseeable demand in the market and compares it with the approach adopted by PwC.

There are three key features of the assessment of least cost:

- the range of options that are considered as being potentially available to serve total foreseeable demand in the market;
- the scope of costs that are captured in the assessment of least cost; and
- the measure of costs that are captured in the assessment of least cost.

Our approach and that proposed by PwC are relatively closely aligned in respect of the first two features. We both consider that it is relevant to:

- assess the costs of meeting foreseeable demand using available capacity at existing terminals and using newly constructed capacity at expanded terminals (or new developments); and
- take into account the costs relating to both coal handling at the terminal and rail transport to the terminal.

However, there are significant differences in our approaches in relation to the measure of costs that are to be captured in the assessment of least cost. Whereas we identify that the relevant costs are *incremental costs to society* (or resource) costs, PwC's assessment of the costs of meeting foreseeable demand using available capacity at existing terminals is based on *charges*, which reflect *average* costs rather than *incremental costs*.

The effect of this incorrect use of average costs is that PwC significantly overstates the relative cost of meeting foreseeable demand using available capacity at existing terminals. We show that when PwC's comparison is reframed to use incremental costs, its analytical framework confirms that meeting total foreseeable demand in excess of DBCT's current capacity will be achieved at least cost using available capacity at existing terminals other than DBCT, including AAPT and RGTCT.

5.1 Options to serve total foreseeable demand in the market

PwC explains that to assess whether the single terminal at DBCT is the least cost option to serve total foreseeable demand in the market requires consideration of:

- the cost of existing capacity at the existing terminal,
- the cost of the incremental expansions to the existing terminal infrastructure, or alternative (non-DBCT) terminal options, in various combinations as might be necessary to service total foreseeable demand, and
- the cost of alternative export pathways outside of the market for DBCT's services, including the costs of transporting coal using existing rail networks to export coal at the ports of Abbot Point and Gladstone.

Setting aside differences between us and PwC in respect of the scope of the market and the level of total foreseeable demand in the market, we agree with this basic framework for consideration of the least cost

means of meeting demand. PwC's approach is consistent with the approach we set out in our earlier report.⁴⁶

We also agree with PwC's stated approach to considering the costs of meeting foreseeable demand, even from terminals that do not currently provide services in the market.⁴⁷ This is particularly important when demand is forecast to be increasing over time, potentially driving expansions of terminal capacity. Since terminal expansions may be very costly, it is likely that the prospect of these costs may make it less costly to serve demand that exceeds capacity using available capacity at other terminals.

This contrasts with the view expressed by the DBCT User Group that:⁴⁸

The issue of the costs of meeting demand from existing terminals does not actually arise based on the appropriate market definition – as there is, and will continue to be for the proposed declaration period, no other operating terminal in the Hay Point common user coal handling services market.

This statement is founded on an assumption that the focus of the assessment of criterion (b) should be made only by reference to those facilities that are considered to be in the market. However, there is no basis for this contention. An assessment of the least cost means by which to serve foreseeable demand can objectively be made by reference to the option of any facility whether inside or outside the market.

5.2 Costs captured in the assessment of least cost

We explain in our previous report that the appropriate costs to analyse in the assessment of least cost are the incremental costs to society associated with rail access and rail haulage as well as terminal infrastructure and handling. We describe these as 'resource costs'.

Our focus on incremental costs to society (or resource costs) is appropriate because:⁴⁹

- the sunk costs of existing rail and terminal infrastructure have already been incurred and will not be incurred again over the period for which the service would be declared; and
- even if the sunk costs of existing rail and terminal infrastructure were to be taken into account in an assessment of least cost, these costs would be captured under all scenarios in which total foreseeable demand in the market is met and are therefore not relevant to determining whether the facility for the service can meet this demand at least cost.

PwC is in broad alignment with our perspective on the scope of costs to be included in the assessment – it also examines both rail and terminal costs. However, its approach to estimating the costs associated with meeting foreseeable demand varies depending on the nature of the costs. In our view, this inconsistency gives rise to some significant difficulties in PwC's assessment of least cost.

PwC's conclusions on least cost are summarised in figure 8 of its report in which it assesses the costs of alternative means of meeting foreseeable demand as:⁵⁰

- \$4.86 per tonne, using existing capacity at DBCT;
- \$8.02 per tonne, using expanded capacity at DBCT with the Zone 4 and 8X expansions;

⁴⁶ HoustonKemp, *Does DBCT's coal handling service satisfy criterion (b)?*, 28 May 2018, p 20.

⁴⁷ While PwC state that it includes this for 'completeness only', for the reasons we set out above there may be some circumstances in which facilities that are not in the market may contribute to serving total foreseeable demand in the market at least cost.

⁴⁸ Dalrymple Bay Coal Terminal User Group, *Declaration review regarding Dalrymple Bay Coal Terminal: Submission to the Queensland Competition Authority*, 30 May 2018, p 71.

⁴⁹ HoustonKemp, *Does DBCT's coal handling service satisfy criterion (b)?*, 28 May 2018, p 21.

⁵⁰ PricewaterhouseCoopers, *Dalrymple Bay Coal Terminal User Group: 2018 access declaration review*, 29 May 2018, p 34.

- \$12.50 per tonne, using existing capacity at RGTCT;
- \$18.00 per tonne, using existing capacity at AAPT;
- \$28.46 per tonne, using new capacity at Dudgeon Point (stage 1);
- \$30.00 per tonne, using existing capacity at WICET; and
- \$32.47 per tonne, using expanded capacity at DBCT with the Zone 4, 8X and 9X expansions.

We understand that these estimates are produced by reference to an assessment of the least cost option to serve 95 mtpa.

We explain in section 4.2 that there is an important difference between an assessment of whether DBCT can meet total foreseeable demand at least cost depending on whether this demand:

- exceeds the existing capacity of the terminal, thereby requiring significant capital investment in new capacity so as to meet this demand at DBCT; or
- does not exceed the existing capacity of the terminal, such that demand can be met at the terminal without new capital expenditure.

As a matter of principle, we agree with the approach used by PwC to estimate the cost of using *new or expanded capacity* to meet foreseeable demand. In particular, the approach is based on the incremental costs of the expansions, spread over the demand that would be served by the increased capacity. This is consistent with our own approach to capturing these costs.⁵¹

However, there are important deficiencies with PwC's approach to estimating the costs associated with meeting foreseeable demand using *existing capacity*, whether at DBCT or at alternative coal terminals. In particular, PwC's estimates of these costs:

- represent an incorrect basis for assessing the cost of meeting total foreseeable demand in the market because they reflect *average costs* rather than *incremental costs*; and
- may reflect an 'apples' with 'oranges' comparison because it appears to include only the terminal cost in respect of DBCT, but both the terminal and rail costs for other terminals.

5.2.1 PwC does not measure incremental costs

PwC's estimates of the costs of using existing terminal capacity to meet foreseeable demand are based primarily on *charges* for rail and terminal services, which are in turn based on *average costs*, rather than *incremental costs*. This causes PwC to overstate significantly the costs associated with meeting foreseeable demand at existing facilities.

Costs that are not incremental will be incurred regardless of whether they are used to meet demand or not. Critically, this means that they cannot be *avoided* if foreseeable demand is met elsewhere. PwC's framework for assessing least cost does not take this into account.

The costs associated with the construction of existing coal terminals are sunk. These costs were incurred in the past and now cannot be avoided, regardless of whether, prospectively, the terminal is used or not. Similarly, many of the costs associated with the operation of existing coal terminals are fixed and do not change based on the utilisation of the terminal.

⁵¹ We note that PwC uses lower capital costs for DBCT expansions and a lower cost of capital than our assumptions, meaning that its assessment of the unit cost of an expansion of DBCT is somewhat lower than how we would estimate it on the same basis.

Box 5.1: Only incremental costs are relevant to the assessment of least cost

The importance of costs that are unavoidable to the assessment of least cost can be demonstrated by reference to a simple example. Suppose that there are two means of meeting total foreseeable demand, using either:

- available capacity at terminal A, which is currently in operation; or
- new capacity at terminal B, which is yet to be constructed.

Suppose further that the capacities of terminal A and terminal B are each sufficiently great to meet total foreseeable demand on a standalone basis.

In these circumstances, the cost of meeting total foreseeable demand at terminal B would be expected to be considerably higher than the cost of meeting total foreseeable demand at terminal A because:

- to meet the demand at terminal B would necessitate the construction and operation of an entirely new terminal; whereas
- to meet the demand at terminal A would require only modestly higher operating costs at terminal A.

The sunk and fixed costs at terminal A do not factor into this assessment. This is because these costs are incurred whether total foreseeable demand is met at terminal A or terminal B. They do not change an assessment of which option is the least cost means to meet total foreseeable demand.

Using the example in Appendix B of the QCA staff issues paper, facility V processes 180 widgets per year at a cost of \$1 per widget, whereas total foreseeable demand in the market is 200 widgets per year. To meet total foreseeable demand in the market:

- facility V may be expanded to process an additional 20 widgets at an incremental cost of \$24; or
- facility W may process an additional 20 widgets at an incremental cost of \$22.

For facility V to satisfy total foreseeable demand in the market would give rise to total costs of \$204 per year. However, if facility W were to meet 20 widgets of this demand, then the costs of meeting total foreseeable demand would be \$202 per year.

In this example, the cost of meeting total foreseeable demand at facility V is greater than the cost of meeting total foreseeable demand across facility V and facility W. That is, total foreseeable demand in the market cannot be met by the facility for the service at least cost.

Most of the costs cited by PwC as being relevant to the use of existing capacity at terminals are not incremental costs and would be incurred whether or not this capacity is used to meet foreseeable demand. PwC should therefore either:

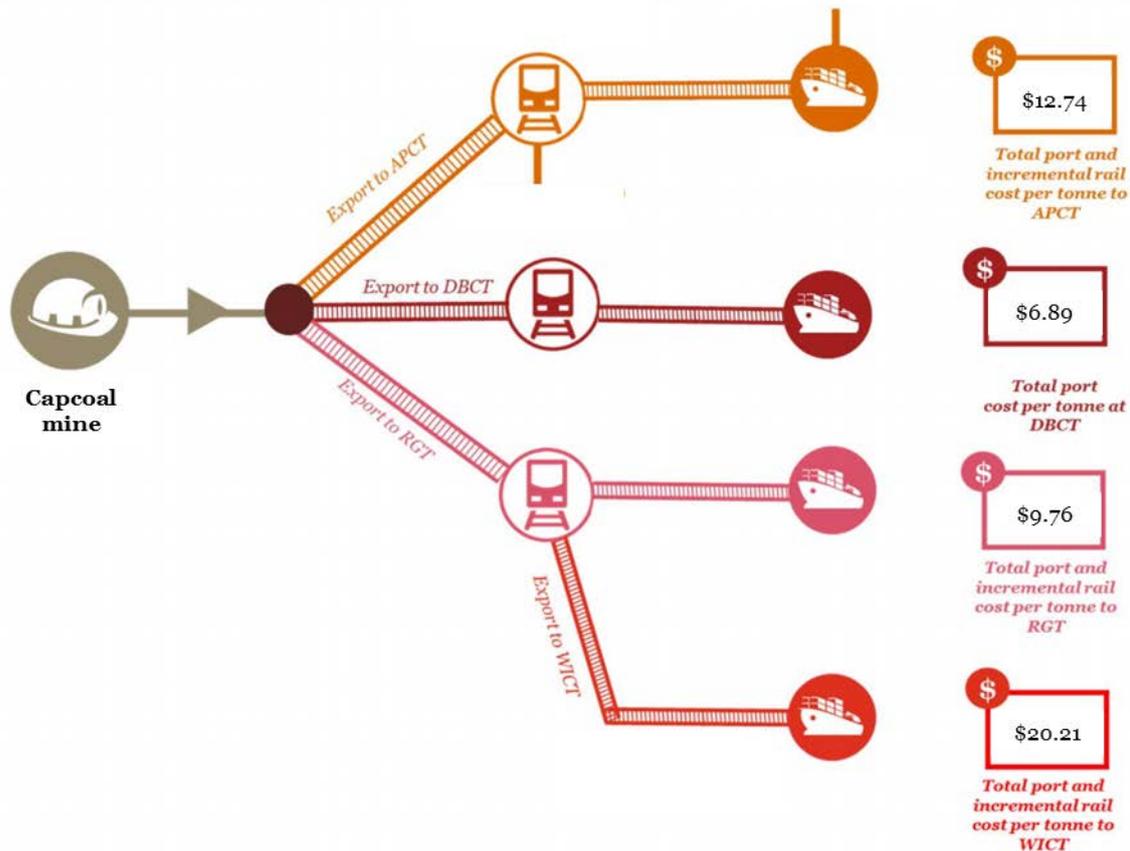
- ignore these non-incremental costs from its assessment of the cost of meeting foreseeable demand using existing capacity; or
- factor these non-incremental costs into its assessment of the cost of meeting foreseeable demand from all alternatives, including alternatives using existing capacity and those using expanded or new capacity.

The effect of these options is the same. We demonstrate their effect below, by reference to the example of Capcoal mine.

Figure 5.1 below illustrates our calculation of the alternative charges for Capcoal mine to export coal through DBCT and alternative coal terminals. Figure 5.1 shows that the charges associated with using the DBCT

service are lower than the charges associated with other terminals, which is consistent with Capcoal being located within the relevant market in which the DBCT service is supplied.

Figure 5.1: Alternative cost pathways for Capcoal mine using charges



Source: AME terminal charges, Wood Mackenzie rail charges

Figure 5.2 below demonstrates this comparison using only incremental costs, where we estimate incremental costs as:

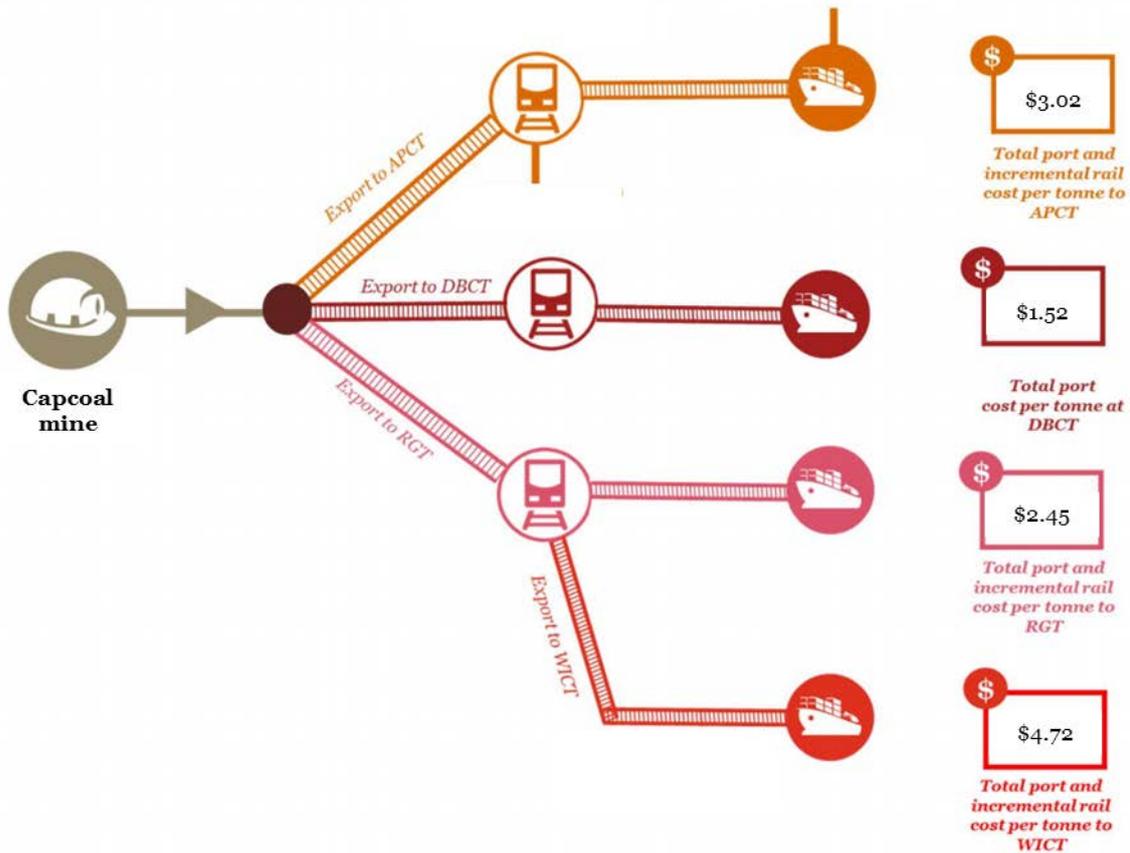
- 22 per cent of coal handling charges, based on the relative share of DBCT's Handling Charge Variable as against total coal handling charges that apply from 1 April 2018;⁵²
- 17 per cent of rail access charges, based on access undertakings for Aurizon's rail network;⁵³ and
- 50 per cent of rail haulage charges.⁵⁴

⁵² HoustonKemp, *Does DBCT's coal handling service satisfy criterion (b)?*, 28 May 2018, p 65. The HCV for DBCT effective from 1 April 2018 is \$1.0953 per tonne while the total port handling charges were \$4.9467 per tonne.

⁵³ HoustonKemp, *Does DBCT's coal handling service satisfy criterion (b)?*, 28 May 2018, p 69. The QCA's draft decision for Aurizon's draft access undertaking in December 2017 allowed \$1,560 million of operating and maintenance expenditure over the control period, representing 40.1 per cent of total costs which are included as allowable revenue – see QCA, *Draft decision: Aurizon Networks' 2017 draft access undertaking*, December 2017, p 4. Separately, the QCA found that, for the West Moreton network operated by Queensland Rail, the proportion of variable maintenance costs was 42.7 per cent – see QCA, *Decision: Queensland Rail's draft access undertaking*, June 2016, pp 128-129. We estimate the proportion of rail access charges that are variable costs as the product of these two values.

⁵⁴ HoustonKemp, *Does DBCT's coal handling service satisfy criterion (b)?*, 28 May 2018, *Does DBCT's coal handling service satisfy criterion (b)?*, 28 May 2018, p 69. There is limited information upon which to estimate the proportion of rail haulage charges that reflect

Figure 5.2: Alternative cost pathways for Capcoal mine using incremental costs



Source: AME terminal charges, Wood Mackenzie rail charges

Figure 5.2 shows that the incremental costs of using available capacity at existing terminals are:

- much lower than the charges associated with using available capacity at existing terminals; and
- much lower than any of the DBCT expansion scenarios costed by PwC.

Although existing capacity at DBCT remains the lowest cost option for meeting foreseeable demand, if total foreseeable demand in the market exceeds the existing capacity of DBCT then the least costly alternative will be for coal mined at Capcoal to be served using available capacity at RGTCT – rather than using expanded capacity at DBCT. Similarly, utilising available capacity at AAPT and WICET are all lower cost means of meeting foreseeable demand than expanding DBCT.

5.2.2 PwC’s comparison of costs may not be on a like-for-like basis

PwC does not fully explain the basis for its comparison between charges for exporting coal from DBCT as against from alternative coal terminals. It compares the ‘total port cost per tonne at DBCT’ as against the ‘total port and incremental rail cost per tonne’ to other terminals but does not explain the calculation of the ‘incremental rail cost’.

incremental costs. Reflecting that these charges are likely to rely to be less capital intensive than those for rail access and coal handling charges.

Setting aside the issues that we note at section 5.2.1 above, this comparison will be appropriately specified if the 'total port and incremental rail cost per tonne' refers to:

- the alternative terminal charge; plus
- the rail charges to the alternative terminal; less
- the rail charges to DBCT.

This specification makes no assumptions about existing contracts that have been entered into with any terminal or rail transport provider and is equivalent to a direct comparison of the total terminal and rail costs to each terminal.

However, it is not clear that this is the basis for the comparison drawn by PwC. It appears possible that it may have adopted estimates of the 'total port and incremental rail cost per tonne' without deducting the rail charges to DBCT, on the assumption that these rail charges will be incurred in any case due to take-or-pay transport arrangements.

This second basis for comparing costs is not a reasonable basis for assessing the costs of meeting foreseeable demand. Existing contractual relationships do not affect costs to society and are not relevant to the assessment of least cost. This approach to assessing least cost overestimates the relative cost of meeting foreseeable demand using available capacity at other terminals.

Although we are unable to ascertain whether PwC's comparisons are affected by this issue, the comparisons that we develop at appendix A1 below and in figure 5.2 above use the 'apples with apples' specification that we describe above.

6. Declaration

We are pleased to confirm that in relation to the analysis presented and the conclusions drawn in our report:

- the factual matters set out in our report are, as far as the we know, true:
- in preparing this report, we have made all enquiries we consider appropriate; and
- that the opinions stated in our report are genuinely held by us and that our report contains reference to all matters the we consider significant.

Greg Houston/Daniel Young
13 July 2018

A1. Comparison of alternative cost pathways

PwC compares the relative charges for a representative DBCT user to export coal as against the charges for using available capacity at other terminals. The diagram at figure 7 of PwC's report purports to show these relative charges. Figure 7 is reproduced in this report at figure 3.3 above.

It is important at the outset to distinguish this comparison from an analysis of least cost. For the reasons we explain in section 5.2 above, a comparison of the charges associated with accessing existing capacity at different terminals is not an appropriate basis for an assessment of least cost. An assessment of least cost would properly include:

- consideration of only the incremental costs associated with meeting foreseeable demand, rather than charges; and
- the costs of expanding capacity at DBCT in circumstances in which total foreseeable demand in the market exceeds the existing capacity at DBCT.

Subject to the reservations we state below, the analytical framework used by PwC to compare the charges for miners to access existing capacity at different terminals is better suited for use in the market definition step. Indeed, it bears some similarities to the approach that we applied in our earlier report for defining the market in which the DBCT service is supplied.⁵⁵

However, a threshold issue is that it is not clear whether the comparison drawn at figure 7 of PwC's report is on an 'apples with apples' basis. PwC does not describe exactly what it means by 'incremental rail cost per tonne' and whether this calculation deducts the rail costs that would be saved from transporting coal to DBCT. We described this concern in more detail, in terms of its relevance to PwC's assessment of least cost, at section 5.2.2 above. The remainder of this appendix proceeds on the assumption that this concern does not arise, and that PwC's comparison is drawn on an 'apples with apples' basis.

Beyond this threshold issue, there are three fundamental difficulties with the comparison drawn by PwC in terms of its usefulness for market definition:

- PwC's comparison represents all users with a single snapshot of transport charges – an approach that glosses over the geographic variety in transport charges that is important to understanding the bounds of the geographic dimension of the market within which the DBCT service is supplied;
- PwC's comparison is based on data sourced from users rather than an independent body, and it finds a much greater difference between the charges associated with exporting coal through DBCT as compared to exporting coal at other locations, as compared with our calculations based on data sourced from Wood Mackenzie and AME; and
- PwC's comparison ignores the option for BHP-affiliated miners to choose between handling their coal at DBCT or at HPCT, which means that this comparison does not identify the substitution opportunities that are available to these miners.

Mines within the market in which the DBCT service is supplied vary according to their location. This means that the relative rail charges associated with transporting coal to DBCT as compared with potential alternative facilities for handling coal will also vary.

PwC's approach to representing the relative charges for coal transport and handling does not capture the richness of this variation – reducing it to a single comparison in which it appears that there is a stark contrast between the charges associated with using DBCT and the charges associated with using alternatives, with

⁵⁵ HoustonKemp, *Does DBCT's coal handling service satisfy criterion (b)?*, 28 May 2018, pp 23-35.

the charges to use DBCT being much lower than the alternatives. A more appropriate comparison would be to look at the choices faced by miners at different locations.

Furthermore, because PwC's comparison is based on data sourced from users, it is not possible to verify its estimates of rail and terminal charges or amend the comparison to a more appropriate basis.

We show below examples of the comparison that we have constructed using data from AME (for terminal charges) and Wood Mackenzie (for transport charges) for:

- Goonyella mine;
- Clermont mine;
- Capcoal mine; and
- Kestrel mine.

All of these mines are in the relevant market and would therefore be expected to face lower charges to use existing capacity at DBCT as compared to terminals in locations other than Hay Point. This is borne out in our example calculations, presented below.

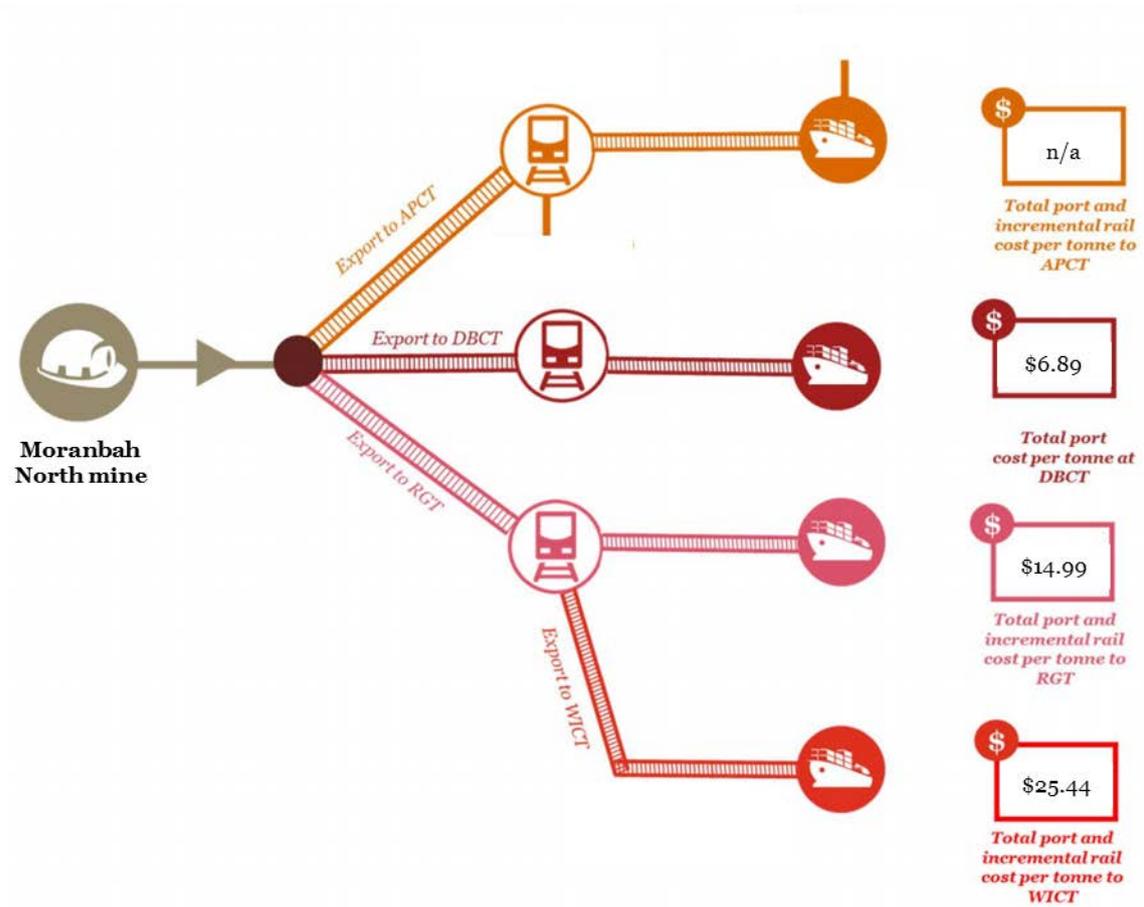
These examples demonstrate that the comparison between the costs of exporting coal from DBCT and from other terminals varies depending on the location of the mine and the rail infrastructure at the mine. In particular, they suggest that:

- while PwC's calculations present AAPT as being a distinctly inferior option to DBCT, by \$13.14 per tonne, for Clermont and Capcoal the incremental charges for accessing AAPT are only \$4.47 per tonne and \$5.85 per tonne more expensive respectively; and
- while PwC's calculations present RGTCT as being a distinctly inferior option to DBCT, by \$7.64 per tonne, for Capcoal and Kestrel the incremental charges for accessing RGTCT are only \$2.87 per tonne and \$1.82 per tonne more expensive respectively.

Figure A.1 shows this comparison for Moranbah North mine, owned by Anglo American and located in the northern part of the Goonyella system. Despite its location close to the GAPE, the rail infrastructure at the mine is not optimised to send coal north towards AAPT and so we assume that this option is not available to it.

Consistent with PwC's presentation, we compare the coal handling charges at DBCT compared to the coal handling charges and incremental cost of transporting coal to alternative terminals. This comparison establishes that, for Moranbah North, it would be around \$8.10 per tonne more expensive to export coal from RGTCT than from DBCT.

Figure A.1: Alternative cost pathways for Moranbah North mine

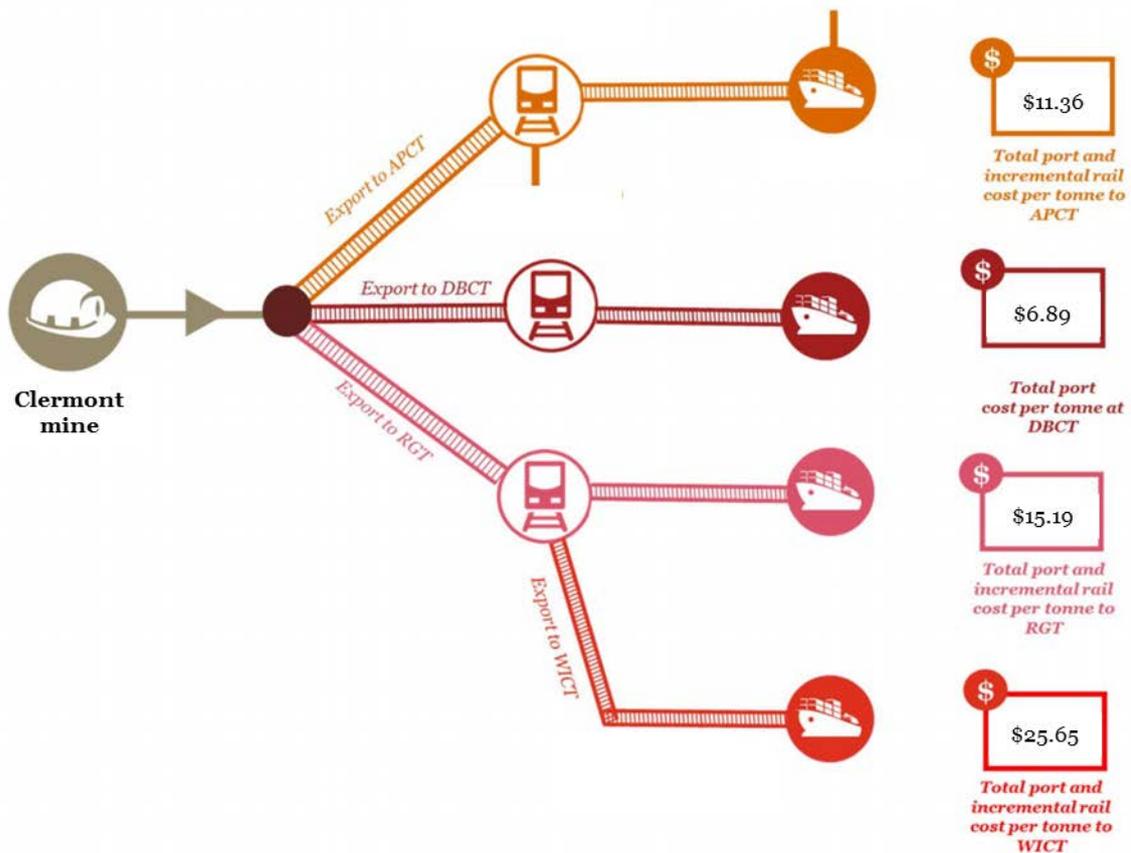


Source: AME terminal charges, Wood Mackenzie rail charges

Figure A.2 shows the equivalent comparison for Clermont mine, owned by Glencore and located in the south-west of the Goonyella system on the Blair Athol spur. Coal from this mine could feasibly be sent to AAPT, DBCT, RGTCT or WICET.

This comparison establishes that, for Clermont mine, it would be around \$4.47 per tonne more expensive to export coal from AAPT than from DBCT, and \$8.30 per tonne more expensive to export coal from RGTCT than from DBCT.

Figure A.2: Alternative cost pathways for Clermont mine

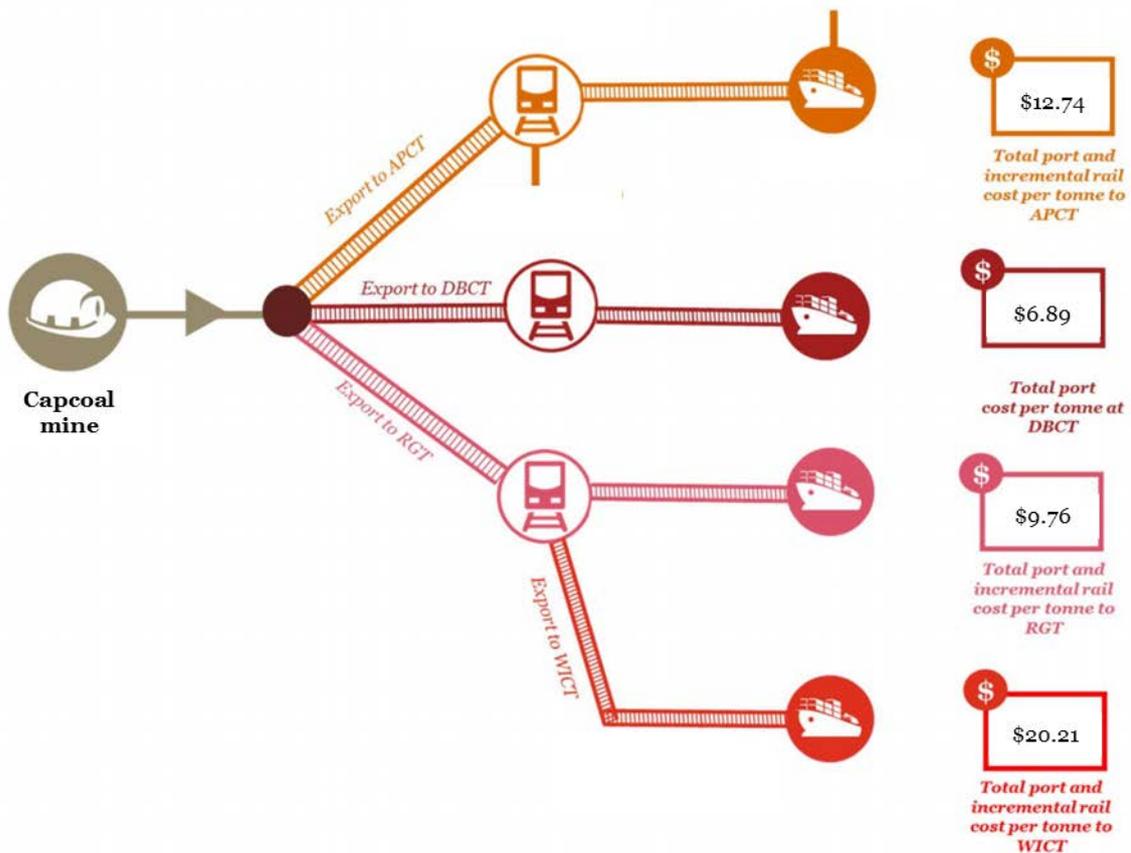


Source: AME terminal charges, Wood Mackenzie rail charges

Figure A.3 shows the equivalent comparison for Capcoal mine, owned by Anglo American and located in the southern part of the Goonyella system. Coal from this mine could feasibly be sent to any of AAPT, DBCT, RGTCT or WICET.

This comparison establishes that, for Capcoal mine, it would be around \$5.85 per tonne more expensive to export coal from AAPT than from DBCT, and \$2.87 per tonne more expensive to export coal from RGTCT than from DBCT.

Figure A.3: Alternative cost pathways for Capcoal mine

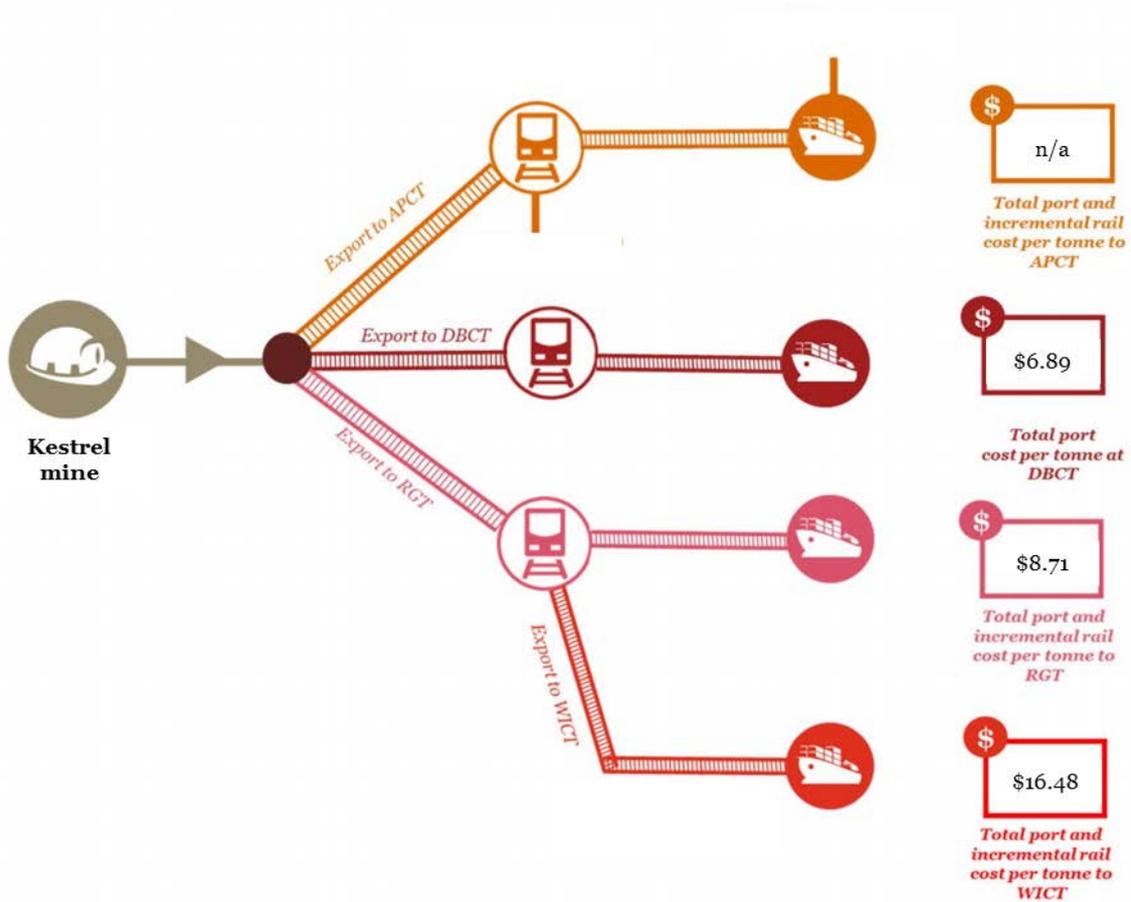


Source: AME terminal charges, Wood Mackenzie rail charges

Figure A.4 shows the equivalent comparison for Kestrel mine, owned by Rio Tinto and located in the northern part of the Blackwater system. Coal from this mine can be sent to DBCT, RGTCT and WICET.

This comparison establishes that, for Kestrel mine, it would be around \$1.82 per tonne more expensive to export coal from RGTCT than from DBCT.

Figure A.4: Alternative cost pathways for Kestrel mine



Source: AME terminal charges, Wood Mackenzie rail charges

Annexure 1 Curricula vitae



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Overview

Greg Houston is a founding partner of the firm of expert economists, HoustonKemp. He has twenty five years' experience in the economic analysis of markets and the provision of expert advice in litigation, business strategy, and policy contexts. His career as a consulting economist was preceded by periods working in a financial institution and for government.

Greg has directed a wide range of financial, competition and regulatory economics assignments during this consulting career. His work in the Asia Pacific region principally revolves around the activities of the enforcement and regulatory agencies responsible for these areas, many of whom also number amongst his clients. On competition and antitrust matters he has advised clients on merger clearance processes, competition proceedings involving allegations of anticompetitive conduct ranging from predatory pricing, anti-competitive agreements, anti-competitive bundling and price fixing. Greg also has deep experience of infrastructure access regulation matters, and intellectual property and damages valuation. In his securities and finance work Greg has advised clients on a large number of securities class actions, as well as market manipulation and insider trading proceedings, and on cost of capital estimation.

Greg's industry experience spans the aviation, beverages, building products, cement, e-commerce, electricity and gas, forest products, grains, medical waste, mining, payments networks, office products, petroleum, ports, rail transport, retailing, scrap metal, securities markets, steel, telecommunications, thoroughbred racing, waste processing and water sectors.

Greg has acted as expert witness in valuation, antitrust and regulatory proceedings before the courts, in various arbitration and mediation processes, and before regulatory and judicial bodies in Australia, Fiji, Malaysia, New Zealand, the Philippines, Singapore, the United Kingdom and the United States.

Prior to the formation of HoustonKemp in April 2014, Greg was a Director of the global firm of consulting economists, NERA Economic Consulting, where for twelve years he served on its United States' Board of Directors, for five years on its global Management Committee and for sixteen years as head of its Australian operations.

Greg also serves on the Competition and Consumer Committee of the Law Council of Australia.

Qualifications

1982 **University of Canterbury, New Zealand**
B.Sc. (First Class Honours) in Economics

Prizes and scholarships

1980 University Junior Scholarship, New Zealand

Career details

2014- **HoustonKemp Economists**
Partner, Sydney, Australia

1989-2014 **NERA Economic Consulting**
Director (1998-2014)
London, United Kingdom (1989-1997)
Sydney, Australia (1998-2014)

1987-89 **Hambros Bank, Treasury and capital markets**
Financial Economist, London, United Kingdom

1983-86 **The Treasury, Finance sector policy**
Investigating Officer, Wellington, New Zealand

Project experience¹

Competition, access and mergers

2018 **Queensland Rail**
Access to facilities
Advice in relation to the Queensland Competition Authority's review of the presently declared status of services provided by QR's five rail networks.

2018 **Westpac Banking Corporation**
Competition analysis
Expert report prepared for the Productivity Commission in response to the draft finding in its banking competition inquiry that each of Australia's banks holds substantial market power.

2017-18 **Ashurst/Confidential client**
Anti-competitive bundling
Advice in relation to an ACCC investigation of bundled discounts that are alleged to have had an anti-competitive effect.

2018 **DLA Piper/DBCT Management**
Access to facilities
Expert reports submitted to the Queensland Competition Authority's review of the presently declared status of services provided by the Dalrymple Bay Coal Terminal.

2017-18 **Gilbert + Tobin/Confidential client**
Alleged cartel conduct
Advice in relation to an ACCC investigation of alleged cartel conduct.

¹ Past ten years only.

- 2017-18** **Wilson Harle/Confidential client**
Competitive effects of merger
Advice in relation to a Commerce Commission investigation of an already completed merger transaction.
- 2017-18** **King & Wood Mallesons**
Competition analysis
Advice to a major digital platform service provider on potential competition concerns arising in the ACCC's digital platforms inquiry.
- 2017** **Minter Ellison Rudd Watts/Complete Office Supplies**
Competitive effects of merger
Expert reports submitted in High Court of New Zealand proceedings concerning the proposed acquisition of OfficeMax by Platinum Equity injunction.
- 2017** **Minter Ellison/CrownBet**
Merger authorisation
Expert reports and testimony in Competition Tribunal proceedings concerning the proposed acquisition of Tatts by Tabcorp.
- 2016** **Bird & Bird/Generic Health**
Competitive effects of patent infringement
Expert reports and testimony in Federal Court proceedings concerning the damages arising from infringement of a pharmaceutical patent.
- 2016** **Manildra Group**
Competition analysis
Advice and preparation of an expert report assessing competitive constraints in the supply of fuel grade ethanol.
- 2016** **Clayton Utz/Anglo American**
Competitive effects analysis
Expert reports assessing the economic impact on the equine critical industry cluster if certain thoroughbred breeding operations were to leave the Upper Hunter.
- 2014-16** **Ashurst and Gilbert + Tobin/Confidential client**
Competitive effects of agreements
Analysis and advice prepared in context of an ACCC investigation of agreements between a supplier and its major customers that are alleged to harm competition.
- 2015-16** **King & Wood Mallesons/Confidential client**
Competition analysis
Analysis and advice in the context of the ACCC's inquiry into eastern and southern Australia wholesale gas prices.
- 2015** **Port of Newcastle Operations**
Access to facilities
Expert report submitted to the National Competition Council on matters arising in the applying the criteria for declaration under Part IIIA, in the context of the application by Glencore for declaration of services provided by the Port of Newcastle.
- 2015** **Corrs/Confidential client**
Merger clearance
Analysis, advice and expert report submitted to the ACCC in the context of a proposed acquisition in the office products sector.

- 2014-15** **Australian Government Solicitor/Commonwealth of Australia**
Competition and trade analysis
Expert report on competition and trade in tobacco products, prepared in the context of the World Trade Organisation dispute settlement proceedings concerning Australia's tobacco plain packaging legislation.
- 2014-15** **King & Wood Mallesons/Confidential client**
Competitive effects of agreement
Analysis and advice prepared in context of an ACCC investigation of agreements between a supplier and its major customers that are alleged to harm competition.
- 2013-14** **Corrs/Australian Competition and Consumer Commission**
Effect of cartel conduct
Expert report on the price effects of an alleged market sharing arrangement in relation to the supply of forklift gas, prepared in the context of Federal Court proceedings brought against Renegade Gas (Supagas).
- 2013-14** **Australian Competition and Consumer Commission**
Merger clearance
Expert report and testimony before the Competition Tribunal in the context of the ACCC's decision to oppose the acquisition of Macquarie Generation by AGL Energy.
- 2013-14** **Ashurst/BlueScope**
Merger clearance
Expert reports submitted to the ACCC in the context of the clearance of three approved transactions in the domestic steel industry.
- 2013-14** **Australian Government Solicitor/ACCC**
Merger clearance
Analysis and advice prepared in the context of the ACCC's review of the proposed acquisition of petrol retailing sites in South Australia.
- 2013** **Corrs/Generic Health**
Patent damages estimation
Expert report on the nature and extent of the analysis necessary to estimate damages in a patent infringement proceeding.
- 2012-13** **Minter Ellison/Confidential client**
Merger clearance
Expert reports submitted to the ACCC in the context of a confidential application for clearance of a proposed acquisition in the industrial gases industry.
- 2011-12** **Gilbert + Tobin/Pact Group**
Merger clearance
Expert reports submitted to the ACCC on the competitive implications of the proposed acquisition of plastic packaging manufacturer Viscount Plastics by Pact Group.
- 2011** **Gilbert + Tobin/Caltex**
Access to facilities
Expert report submitted to the National Competition Council on matters arising in the applying the criteria for declaration under Part IIIA, in the context of the application by the Board of Airline Representatives of Australia (BARA) for the declaration of services provided by the Caltex jet fuel pipeline serving Sydney airport.

- 2010-12** **Mallesons/APA**
Merger clearance
Expert reports submitted to the ACCC on the competitive implications of the proposed acquisition of the gas pipeline assets of Hastings Diversified Utilities Fund by APA Group.
- 2010-11** **Johnson Winter & Slattery/ATC and ARB**
Competitive effects of agreement
Expert reports and testimony in Federal Court proceedings concerning the competitive effects of restrictions on the use of artificial techniques in the breeding of thoroughbred horses for racing.
- 2010-11** **Victorian Government Solicitor/State of Victoria**
Competitive effects of agreement
Expert report prepared for the State of Victoria on the effects of certain restrictions applying to the trading of water rights on inter-state trade in the context of a constitutional challenge brought against the state of Victoria by the state of South Australia.
- 2009-11** **Arnold + Porter/Visa Inc, Mastercard Inc and others**
Payment card markets
Expert reports and deposition testimony on behalf of defendants in the United States Re Payment Card Interchange Fee and Merchant Discount Antitrust Litigation, on the effects of regulatory interventions in the Australian payment cards sector.
- 2010** **Australian Competition and Consumer Commission**
NBN Points of Interconnection
Report and advice on the competition implications in the markets for both telecommunications backhaul and retail broadband services of different choices as to the number of 'points of interconnection' in the proposed architecture of the national broadband network.
- 2010** **JWS, Gilbert & Tobin/Jetset Travelworld, Stella Travel Services**
Merger clearance
Advice on the competitive implications of the merger between Jetset Travelworld and Stella Travel Services.
- 2009-10** **Australian Government Solicitor/ACCC**
Misuse of market power
Expert report and testimony in the context of Federal Court proceedings brought by the ACCC against Cement Australia in relation to conduct alleged to have breached sections 45, 46 and 47 of the Trade Practices Act.
- 2008-10** **Gilbert & Tobin/Confidential client**
Merger assessment
Advice on the competitive implications of the then proposed merger and then subsequently the proposed iron ore production joint venture between BHP Billiton and Rio Tinto.
- 2008-10** **Allens/Amcor**
Cartel damages assessment
Advice and preparation of an expert report on the approach to and quantification of economic loss in the context of two separate actions seeking damages arising from alleged cartel conduct.

- 2009** **State Solicitor’s Office/Forest Products Commission**
Alleged breach of s46
Expert advice in the context of Federal Court proceedings alleging breaches of section 46 of the Trade Practices Act.
- 2009** **Clayton Utz/Confidential client**
Joint venture arrangement
Reviewed the competitive implications under s50 of the Trade Practices Act of a proposed joint venture transaction in the rail industry.
- 2009** **Blake Dawson Waldron/Airservices**
Effect of potential industrial action by Air Traffic Controllers
Expert report in the context of a potential application to the Australian Industrial Relations Commission for termination or suspension of a bargaining period addressing the economic effect that certain forms of industrial action by Air Traffic Controllers would be likely to have on passengers, businesses, and the Australian economy.
- 2005-06, 08-09** **Phillips Fox/Fortescue Metals Group**
Access to facilities
Expert report and testimony in the Federal Court proceedings concerning whether or not access to the BHP Billiton and Rio Tinto rail lines, serving iron ore export markets in the Pilbara, amounted to use of a production process. Subsequently, prepared expert reports on matters arising in interpreting the criteria for declaration under Part IIIA, and testified before the Competition Tribunal in late 2009.
- 2009** **Clayton Utz/Confidential client**
Competitive implications of agreement
Advice on the competitive effects of a joint venture arrangement in the port terminal sector, in the context of Federal Court proceedings brought by the ACCC under section 45 of the Trade Practices Act.
- 2009** **Australian Competition and Consumer Commission**
Competitive effects of buy-sell agreements
Advice to the ACCC on the extent to which buy-sell arrangements between the four major refiner-marketers of petroleum products in Australia may be inhibiting competition in a relevant market.
- 2008-09** **Watson Mangioni/ICS Global**
Alleged misuse of market power
Expert report prepared in the context of Federal Court proceedings alleging breaches of section 46 of the Trade Practices Act.
- 2008-09** **Australian Competition and Consumer Commission**
Competitive effects of various agreements
Expert advice on potential theories of competitive harm arising from agreements between competitors in the oil and gas, and petroleum retailing industry sectors.
- 2008** **Johnson Winter & Slattery/Pepsico**
Merger analysis
Advice on the competitive implications certain potential transactions in the soft drinks sector.

- 2008** **Australian Competition and Consumer Commission**
Exemption from access undertaking
'Peer review' report of the ACCC's draft decision on applications by Telstra for exemption from its standard access obligations (SAOs) for the supply by resale of the local carriage service (LCS) and wholesale line rental (WLR) in 387 exchange service areas in metropolitan Australia.
- 2008** **Deacons/eBay**
Exclusive dealing notification
Expert report submitted to the ACCC analysing the competitive effects of eBay's proposal that users of its online marketplace be required to settle transactions using eBay's associated entity, PayPal
- 2007-08** **Australian Energy Market Commission**
Wholesale market implications for retail competition
Provided an overview of the operation and structure of the wholesale gas and electricity markets within the National Electricity Market (NEM) jurisdictions and identified issues the AEMC should consider when assessing the influence of the wholesale markets on competition within retail gas markets.

Regulatory analysis

- 2017-18** **King & Wood Mallesons/Tasmania Gas Pipeline**
Gas pipeline arbitration arrangements
Expert reports on economic aspects of the Part 23 regime arbitration with Hydro Tasmania on the terms of access to the Tasmanian Gas Pipeline.
- 2017-18** **Victorian and South Australian electricity distribution networks**
Productivity adjustments
Expert report on the conceptual and empirical basis for pre-emptive productivity adjustments to DNSPs' projected operating expenditure.
- 2017-18** **Jemena**
Gas pipeline arbitration arrangements
Advice and analysis in relation to the new rules for arbitration of prices for services provided by non-scheme gas pipelines.
- 2016-2018** **APA Group**
Gas market reform
Expert reports submitted to the Gas Market Reform Group in the context of its review of the gas pipeline coverage criteria, and the proposal to introduce the compulsory auction of contracted but un-nominated gas pipeline capacity.
- 2016-2017** **Minter Ellison Rudd Watts/Trustpower, New Zealand**
Transmission pricing methodology
Expert reports submitted to the Electricity Authority and to the High Court of New Zealand in relation to proposed reforms to the transmission pricing methodology and the distributed generation pricing principles.
- 2016** **Johnson Winter & Slattery/Australian Gas Networks**
Materially preferable decision
Expert report reviewing whether aspects of the Australian Energy Regulator's (AER's) draft access arrangement decision would be likely to result in a materially preferable decision in terms of achievement of the national gas objective.

- 2015-17** **Government of New South Wales**
Economic regulation for privatisation
Advisor to government of New South Wales on all economic regulatory aspects of the proposed partial lease the electricity transmission and distribution entities, TransGrid, AusGrid and Endeavour Energy.
- 2014-16** **Powerco**
Input methodologies review
Advice and several expert reports prepared in the context of the Commerce Commission's reviews of cost of capital and others aspects of the Input Methodologies governing the determination of maximum prices for New Zealand electricity and gas distribution networks.
- 2015** **ActewAGL**
Regulatory price review
Expert report on the economic interpretation of provisions in the national electricity law and rules in relation to the application of the national electricity objective to the entire price determination of the Australian Energy Regulator.
- 2014-16** **Atco Gas**
Access price review
Expert reports on the economic interpretation of provisions in the national gas law and rules in relation to depreciation and the application of the national gas objective to the entire draft decision, submitted to the Economic Regulation Authority of WA.
- 2014-16** **Government of Victoria**
Economic regulation for privatisation
Advisor to government of Victoria on the design, development and application of the framework for economic regulation of the Port of Melbourne Corporation in the context of the privatisation of the port by way of long term lease.
- 2013** **Actew Corporation**
Interpretation of economic terms
Advice on economic aspects of the decision of the Independent Competition and Regulatory Commission in relation to the price controls applying to Actew.
- 2012-13** **Gilbert + Tobin/Rio Tinto Coal Australia**
Price review arbitration
Analysis and expert reports prepared in the context of an arbitration concerning the price to be charged for use of the coal loading facilities at Abbott Point Coal Terminal.
- 2012-13** **Ashurst/Brisbane Airport Corporation**
Draft access undertaking
Advice, analysis and expert reports in the context of the preparation of a draft access undertaking specifying the basis for determining a ten year price path for landing charges necessary to finance a new parallel runway at Brisbane airport.
- 2012** **King & Wood Mallesons/Origin Energy**
Interpretation of economic terms
Expert reports and testimony in the context of judicial review proceedings before the Supreme Court of Queensland on the electricity retail price determination of the Queensland Competition Authority.

- 2012** **Contact Energy, New Zealand**
Transmission pricing methodology
Advice on reforms to the Transmission Pricing Methodology proposed by Electricity Authority.
- 2011-12** **Energy Networks Association**
Network pricing rules
Advice and expert reports submitted to the Australian Energy Market Commission on wide-ranging reforms to the network pricing rules applying to electricity and gas transmission and distribution businesses, as proposed by the Australian Energy Regulator.
- 2010-12** **QR National**
Regulatory and competition matters
Advisor on the competition and regulatory matters, including: a range of potential structural options arising in the context of the privatisation of QR National's coal and freight haulage businesses, particularly those arising in the context of a 'club ownership model' proposed by a group of major coal mine owners; and an assessment of competitive implications of proposed reforms to access charges for use of the electrified network.
- 2002-12** **Orion New Zealand Ltd, New Zealand**
Electricity lines regulation
Advisor on regulatory and economic aspects of the implementation by the Commerce Commission of the evolving regimes for the regulation of New Zealand electricity lines businesses. This role has included assistance with the drafting submissions, the provision of expert reports, and the giving of expert evidence before the Commission.
- 2011** **Meridian Energy, New Zealand**
Undesirable trading situation
Advice on the economic interpretation and implications of the New Zealand electricity rule provisions that define an 'undesirable trading situation' in the wholesale electricity market.
- 2011** **Ausgrid**
Demand side management
Prepared a report on incentives, constraints and options for reform of the regulatory arrangements governing the role of demand side management in electricity markets.
- 2010-11** **Transnet Corporation, South Africa**
Regulatory and competition policy
Advised on the preparation of a white paper on future policy and institutional reforms to the competitive and regulatory environment applying to the ports, rail and oil and gas pipeline sectors of South Africa.
- 2010-11** **Minter Ellison/UNELCO, Vanuatu**
Arbitral review of decision by the Vanuatu regulator
Expert report and evidence before arbitrators on a range of matters arising from the Vanuatu regulator's decision on the base price to apply under four electricity concession contracts entered into by UNELCO and the Vanuatu government, including country risk component of the allowed rate of return and bringing to account events from the prior regulatory period.

- 2007-11** **Powerco/CitiPower**
Regulatory advice
Wide ranging advice on matters arising under the national electricity law and rules, such as the framework for reviewing electricity distribution price caps, the treatment of related party outsourcing arrangements, an expert report on application of the AER's efficiency benefit sharing scheme, the potential application of total factor productivity measures in CPI-X regulation, and arrangements for the state-wide roll out of advanced metering infrastructure.
- 1999-2004,**
2010-11 **Sydney Airports Corporation**
Aeronautical pricing notification
Wide ranging advice and expert reports on regulatory matters, including advice and expert reports in relation to SACL's notification to the ACCC of substantial reforms to aeronautical charges at Sydney Airport in 2001. This involved the analysis and presentation of pricing principles and their detailed application, through to discussion of such matters at SACL's board, with the ACCC, and in public consultation forums. Subsequent advice on two Productivity Commission reviews of airport charging, and notifications to the ACCC on revised charges for regional airlines.
- 2010** **Industry Funds Management/Queensland Investment Corporation**
Due diligence, Port of Brisbane
Retained to advise on regulatory and competition matters likely to affect the future financial and business performance of the Port of Brisbane, in the context of its sale by the Queensland government.
- 2009-10** **New Zealand Electricity Industry Working Group, New Zealand**
Transmission pricing project
Advice to a working group comprising representatives from lines companies, generators, major users and Transpower on potential improvements to the efficiency of New Zealand's electricity transmission pricing arrangements.
- 2007-09** **GDSE, Macau**
Electricity tariff reform
Advice to the regulator of electricity tariffs in Macau on a series of potential reforms to the structure of electricity supply tariffs.
- 2001-09** **Auckland International Airport Limited, New Zealand**
Aeronautical price regulation
Advice and various expert reports in relation to: the review by the Commerce Commission of the case for introducing price control at Auckland airport; a fundamental review of airport charges implemented in 2007; and the modified provisions of Part IV of the Commerce Act concerning the economic regulation of airports and other infrastructure service providers.
- 2008** **Western Power**
Optimal treatment and application of capital contributions
Advice on the optimal regulatory treatment of capital contributions, taking into account the effect of alternative approaches on tariffs, regulatory asset values, and network connection by new customers.
- 2000-08** **TransGrid**
National electricity market and revenue cap reset
Regulatory advisor to TransGrid on a range of issues arising in the context of the national electricity market (NEM), including: the economics of transmission pricing and investment and its integration with the wholesale energy market, regulatory asset valuation, the cost of capital and TransGrid's 2004 revenue cap reset.

Valuation and contract analysis

- 2016** **SyCip Salazar Hernandez & Gatmaitan/Maynilad Water Services**
Concession contract dispute
Expert reports and testimony in arbitration proceedings concerning the application of the price review clauses in the Manila Water Concession agreements.
- 2015-16** **Clyde and Co/Apache Corporation**
Contract dispute
Expert reports submitted in the context of Supreme Court of Victoria proceedings concerning the appointment of receivers for Burrup Fertilisers Pty Ltd, in relation to the market price of gas available to supply an anhydrous ammonia plant on the Burrup Peninsula.
- 2015-16** **Raja, Darryl & Loh/Serudong Power Sdn Bhd (SPSB)**
Power purchase agreement arbitration
Expert reports submitted in the context of an international arbitration held in Kuala Lumpur concerning the interpretation of price indexation provisions in a power purchase agreement between SPSB and Sabah Electricity Sdn Bhd.
- 2015-16** **Australian Government Solicitor/Commonwealth of Australia**
Native title compensation
Expert reports and testimony before the Federal Court in relation to the native title compensation claim against the Northern Territory for certain acts extinguishing native title in the town of Timber Creek.
- 2014-15** **Minter Ellison/Foxtel Management Pty Ltd**
Assessment of reasonable licence fee
Expert reports prepared in the context of proceedings before the Copyright Tribunal concerning the appropriate valuation of the rights to be paid by Foxtel for the broadcast and communication of commercial recordings licensed by the Phonographic Performance Company of Australia.
- 2014-15** **Rahmat Lim & Partners/Port Dickson Power Berhad, Malaysia**
Power purchase agreement arbitration
Expert reports submitted in the context of an arbitration held in Kuala Lumpur concerning the interpretation of the price indexation provisions in a power purchase contract between Port Dickson Power Berhad and Tenaga Nasional Berhad.
- 2013** **Johnson Winter & Slattery/Origin**
Gas supply agreement price review
Analysis and advice on the implications of certain contract terms for the price of gas, to be determined in a potential arbitration concerning the terms of a substantial long term gas supply agreement.
- 2013** **Herbert Smith Freehills/Santos**
Gas supply agreement price review
Analysis and advice on factors influencing the market price of gas in eastern Australia, to be determined in a potential arbitration concerning the terms of a substantial long term gas supply agreement.

- 2012-13** **Herbert Smith Freehills/North West Shelf Gas**
Gas supply agreement arbitration
Expert reports on the implications of certain contract terms for the price of gas under a substantial long term gas supply agreement.
- 2012-13** **Allens/BHP Billiton-Esso**
Gas supply agreement arbitration
Analysis, advice and expert report on the implications of certain contract terms for the price of gas under a substantial long term gas supply agreement.
- 2012** **King & Wood Mallesons/Ausgrid**
Power purchase agreement arbitration
Expert report prepared and filed in an arbitration on the in relation to the effect of the government's newly introduced carbon pricing mechanism on the price to be paid under a long term power purchase and hedge agreement between an electricity generator and retailer.
- 2011** **Kelly & Co/Santos**
Wharfage dues agreement arbitration
Expert report and testimony in arbitration proceedings to determine the 'normal wharfage dues' to be paid for use of the port facility at Port Bonython for the transfer of petroleum products to tanker ships from a processing terminal in South Australia.
- 2010** **Barclays Capital/Confidential client**
Due diligence, Alinta Energy
Advice on the key industry related risks and issues facing Alinta Energy's gas and electricity assets during the due diligence process associated with its recapitalisation and sale.
- 2009** **Freehills/Santos**
Gas supply agreement price review
Analysis and advice on factors influencing the market price of gas in eastern Australia, to be determined in a potential arbitration concerning the terms of a substantial long term gas supply agreement.
- 2008-09** **Clayton Utz/Origin Energy**
Gas supply agreement arbitration
Expert reports and testimony in an arbitration concerning the market price of gas, which was determined and applied in a substantial long term gas supply agreement.
- 2008-09** **Minter Ellison/Confidential client**
Treatment of past capital contributions
Expert report and evidence given in arbitration proceedings on the extent to which a discount should apply under a long term water supply contract, in recognition of a capital contribution made at the outset of the agreement.
- 2008** **Freehills/Tenix Toll**
Logistics contract arbitration
Advice on the appropriate methodology for adjusting prices under a long term logistics contract in light of changing fuel costs.
- 2008** **BG plc**
Market analysis
Advise on economic aspects of the operation of the east Australian wholesale gas market in the context of the potential development of coal seam gas for use in LNG production and export.

- 2008** **Gilbert + Tobin/Waste Services NSW**
Damages estimation
Damages assessment in the context of a Federal Court finding of misleading and deceptive conduct in relation to the extent of environmental compliance in the provision of waste services.

Securities and finance

- 2018** **William Roberts/Representative proceeding**
Misleading and damaging conduct
Preliminary analysis on the extent of liability and potential damages arising from a shareholder class action alleging breach of disclosure obligations.
- 2017-18** **Australian Pipelines and Gas Association**
Allowed rate of return
Advice in relation to the Rate of return guideline review being undertaken by the Australian Energy Regulator, including participation in the AER's concurrent expert evidence session one.
- 2017** **Slater and Gordon/Gasmere Ltd**
Share portfolio valuation
Expert report prepared in relation to Supreme Court of Victoria proceedings brought against Shaw and Partners concerning the appropriate valuation of a share portfolio, the subject of a damages claim following the collapse of Opus Prime.
- 2017** **Portfolio Law/Representative proceeding**
Misleading and deceptive conduct
Expert report in representative proceedings in the Supreme Court of Victoria concerning the effect of certain disclosures on the price of ASX listed securities in Myer Ltd.
- 2016-17** **Allens/QBE**
Shareholder class action
Advice and analysis on the extent of liability and potential damages arising from a shareholder class action alleging breach of QBE's ASX disclosure obligations.
- 2016** **Elliot Legal/Representative proceeding**
Misleading and deceptive conduct
Expert reports in representative proceedings in the Supreme Court of Victoria concerning the effect of certain disclosures on the price of ASX listed securities in Downer EDI Ltd.
- 2015-16** **Maurice Blackburn/Representative proceeding**
Misleading and deceptive conduct
Expert reports submitted to the Federal Court assessing the effect of alleged misstatements in relation to the annual accounts and associated going concern assumption in relation to Tamaya Resources Ltd (in liquidation).
- 2013-15** **Sydney Water Corporation**
Cost of capital estimation
Prepare three expert reports for submission to the Independent Pricing and Regulatory Tribunal (IPART) on the framework for determining the weighted average cost of capital for infrastructure service providers, and on estimation of an appropriate equity beta.

- 2012-15** **HWL Ebsworth/Confidential client**
Insider trading
Expert advice and analysis in the context of criminal proceedings alleging insider trading in certain ASX-listed securities (2012-13). Subsequent expert report filed in Supreme Court of Tasmania estimating price effects of inside information in context of 'proceeds of crime' proceedings.
- 2014** **Wotton Kearney/Genesys Wealth Advisors**
Misleading and deceptive conduct
Expert report submitted to the Supreme Court of Victoria assessing the accuracy of product disclosure statements and other information in relation to two fixed interest investment funds offered by Basis Capital.
- 2014** **TransGrid**
Cost of capital estimation
Preparation of an expert report for submission to the Australian Energy Regulator (AER) estimating the weighted average cost of capital for electricity network service providers.
- 2011-13** **Slater & Gordon/Modtech**
Shareholder damages assessment
Expert reports and testimony in representative proceedings before the Federal Court alleging misstatement and/or breach of the continuous disclosure obligations of the ASX-listed entity, GPT.
- 2011-12** **Freehills/National Australia Bank**
Shareholder damages assessment
Expert advice in connection with representative proceedings before the Federal Court alleging misstatement and/or breach of the continuous disclosure obligations of an ASX-listed entity.
- 2012** **Johnson Winter & Slattery/Victorian gas distributors**
Cost of equity estimation
Expert report submitted to the AER on the appropriate methodology for estimating the cost of equity under the capital asset pricing model.
- 2009-13** **Minter Ellison/Confidential client**
Misleading and deceptive conduct
Expert report and related advice in light of investor claims and pending litigation following the freezing of withdrawals from a fixed interest investment trust that primarily held US-denominated collateralised debt obligations (CDOs), as offered by a major Australian financial institution. Analysis undertaken includes the extent to which the investment risks were adequately described in the fund documents, and the quantum of any potential damages arising.
- 2011** **Barringer Leather/Confidential client**
Market manipulation
Expert report prepared in the context of criminal proceedings brought in the Supreme Court of NSW alleging market manipulation in the trading of certain ASX-listed securities.
- 2010-11** **Wotton Kearney/Confidential client**
Misleading and deceptive conduct
Expert report and analysis in light of investor claims and pending litigation following the freezing of withdrawals from two fixed interest investment trusts that primarily held US-denominated collateralised debt obligations (CDOs).

- 2010-11** **Maurice Blackburn/Confidential client**
Shareholder damages assessment
Analysis and advice in connection with representative proceedings before the Federal Court alleging misstatement and/or breach of the continuous disclosure obligations of an ASX-listed entity.
- 2010-11** **Mallesons/ActewAGL**
Judicial review of rate of return determination
Expert report and testimony in Federal Court proceedings seeking judicial review of a decision by the Australian Energy Regulator of its determination of the risk free rate of interest in its price setting determination for electricity distribution services.
- 2009-11** **William Roberts/Clime Capital**
Shareholder damages assessment
Expert reports submitted in representative proceedings before the Federal Court alleging misstatement and/or breach of the continuous disclosure obligations of ASX-listed entity, Credit Corp.
- 2009** **Jemena Limited**
Cost of equity estimation
Co-authored an expert report on the application of a domestic Fama-French three-factor model to estimate the cost of equity for regulated gas distribution businesses.
- 2008-09** **Clayton Utz/Fortescue Metals Group**
Materiality of share price response
Expert report and testimony before the Federal Court addressing alleged breaches of the ASX continuous disclosure obligations and the associated effect on the price of FMG securities arising from statements made by it in 2004.
- 2008-09** **Energy Trade Associations – APIA, ENA and Grid Australia**
Value of tax imputation credits
Preparation of expert report on the value to investors in Australian equities of tax imputation credits, for submission to the Australian Energy Regulator.
- 2008-09** **Freehills/Centro Properties**
Shareholder damages assessment
Assistance in the estimation of potential damages arising in representative proceedings concerning accounting misstatements and/or breach of the continuous disclosure obligations of an ASX-listed entity.
- 2008** **Slater & Gordon/Boyd**
Shareholder damages assessment
Expert report for submission to a mediation on the damages arising in representative proceedings before the Federal Court alleging accounting misstatements and/or breach of the continuous disclosure obligations of EDI Downer.
- 2007-08** **Maurice Blackburn/Watson**
Shareholder damages assessment
Advice in relation to damages arising in representative proceedings before the Federal Court alleging accounting misstatements and/or breach of the continuous disclosure obligation by the ASX-listed entity, AWB Limited.

Institutional and regulatory reform

- 2008-11** **Department of Sustainability and Environment**
Management of bulk water supply
Advice on the concept and merits of establishing market based arrangements to guide both the day-to-day operation of the bulk water supply system in metropolitan Melbourne, as well as the trading of rights to water between the metropolitan water supply system and those throughout the state of Victoria.
- 2008** **Department of Treasury and Finance**
Access regime for water networks
Report on the principles that should be applied in developing a state-wide third party access regime for water supply networks.

Sworn testimony, transcribed evidence²

- 2018** **Expert evidence before the Board of the Australian Energy Regulator, on behalf of the South Australian public lighting customers, in arbitration proceedings concerning public lighting charges**
Expert reports, transcribed evidence, Melbourne, 7 May 2018
- Expert evidence before the Board of the Australian Energy Regulator, on behalf of the Australian Pipelines and Gas Association, in the Review of Rate of Return Guidelines, Concurrent expert evidence session one**
Joint expert report, transcribed evidence, Sydney, 15 March 2018
- Expert evidence before the Federal Court on behalf of Changshu Longte Grinding Ball Co Ltd, in the matter of Changshu Longte v Anti-Dumping Review Panel and others.**
Expert reports, sworn evidence, Sydney, 1 February 2018
- 2017** **Expert evidence before the Competition Tribunal on behalf of CrownBet, in the application by Tabcorp for authorisation to acquire Tatts**
Expert reports, sworn evidence, Melbourne, 30 May–1 June 2017
- 2016** **Expert evidence before the Federal Court on behalf of Generic Health, in the matter of Bayer Pharma Aktiengesellschaft v Generic Health Pty Ltd**
Expert reports, sworn evidence, Sydney, 14-15 December 2016
- Testimony before an UNCITRAL arbitral tribunal on behalf of Maynilad Water Service Inc (MWSI), in the matter of MWSI v Republic of the Philippines**
Report, sworn evidence, Singapore, 6 December 2016
- Expert evidence on behalf of Powerco, at the Commerce Commission's Conference on the Cost of Capital matters**
Transcribed evidence, public hearings, Wellington, 7 September 2016
- Expert evidence before the Federal Court on behalf of plaintiffs, in the matter of HFPS v Tamaya**
Expert reports, sworn evidence, Sydney, 13 May 2016

² Past ten years only.

Expert evidence before an arbitral tribunal on behalf of Serudong Power Sdn Bhd (SPSB), in the matter of SPSB v Sabah Electricity Sdn Bhd (SESB)
Expert reports, sworn evidence, Kuala Lumpur, 27-28 April 2016

Expert evidence before the Federal Court on behalf of the Commonwealth of Australia, in the matter of Griffiths v Northern Territory
Expert reports, sworn evidence, Darwin, 24-25 February 2016

2015 **Expert evidence before an arbitral tribunal on behalf of Port Dickson Power Berhad (PDP), in the matter of PDP v Tenaga Nasional Berhad (TNB)**
Expert reports, sworn evidence, Kuala Lumpur, 28 January 2015

2014 **Expert evidence before a UNCITRAL arbitral tribunal on behalf of Manila Water Corporation Inc (MWCI) in the matter of MWCI v Metropolitan Waterworks and Sewerage System (MWSS)**
Expert reports, sworn evidence, Sydney (by videolink to Manila), 31 August 2014

Expert evidence before the Australian Competition Tribunal on behalf of the ACCC, in the matter of AGL Energy v ACCC
Expert reports, sworn evidence, Sydney, 10-11 June 2014

2013 **Expert evidence before the Supreme Court of Victoria on behalf of Maddingley Brown Coal in the matter of Maddingley Brown Coal v Environment Protection Agency of Victoria**
Expert reports, sworn evidence, Melbourne, 12 August 2013

Expert evidence before the Federal Court on behalf of Modtech in the matter of Modtech v GPT Management and Others
Expert reports, sworn evidence, Melbourne, 27 March 2013

2012 **Expert evidence before the Supreme Court of Queensland on behalf of Origin Energy, in the matter of Origin Energy Electricity Ltd and Others v Queensland Competition Authority and Others**
Expert reports, sworn evidence, Brisbane, 3 December 2012

2011 **Expert evidence before the Federal Court on behalf of the Australian Turf Club and Australian Racing Board, in the matter of Bruce McHugh v ATC and Others**
Expert report, sworn evidence, Sydney, 12 and 14 October 2011

Expert evidence in arbitration proceedings before J von Doussa, QC, on behalf of Santos in the matter of Santos, and Others v Government of South Australia
Expert report, sworn evidence, Adelaide, 13-15 September 2011

Expert evidence before a panel of arbitrators on behalf of UNELCO, in the matter of UNELCO v Government of Vanuatu
Expert report, sworn evidence, Melbourne, 23 March and 21 April 2011

Expert evidence before the Federal Court on behalf of ActewAGL, in the matter of ActewAGL v Australian Energy Regulator
Expert report, sworn evidence, Sydney, 17 March 2011

Deposition Testimony in Re Payment Card Interchange and Merchant Discount Litigation, in the United States District Court for the Eastern District of New York

Deposition testimony, District of Columbia, 18 January 2011

2010

Expert evidence before the Federal Court in behalf of the Australia Competition and Consumer Commission, in the matter of ACCC v Cement Australia and others

Expert report, sworn evidence, Brisbane, 19-21 October 2010

Expert evidence on behalf of Orion NZ, at the Commerce Commission's Conference on its Input Methodologies Emerging View Paper

Transcribed evidence, public hearings, Wellington, 24 February 2010

Deposition Testimony in Re Payment Card Interchange and Merchant Discount Antitrust Litigation, in the United States District Court for the Eastern District of New York

Deposition Testimony, District of Columbia, 18 February 2010

2009

Expert evidence before the Australian Competition Tribunal on behalf of Fortescue Metals Group Ltd, in the matter of Application for Review of Decision in Relation to Declaration of Services Provided by the Robe, Hamersley, Mt Newman and Goldsworthy Railways

Expert report, sworn evidence, Melbourne, 12-13 October and 5-6 November 2009

Expert evidence on behalf of Orion NZ, at the Commerce Commission's Conference on its Input Methodologies Discussion Paper

Transcribed evidence, public hearings, Wellington, 16 September 2009

Expert evidence before the Federal Court on behalf of Fortescue Metals Group Ltd, in the matter of ASIC v Fortescue Metals Group and Andrew Forrest

Expert report, sworn evidence, Perth, 29 April–1 May 2009

Expert report and evidence in arbitration proceedings before Hon Michael McHugh, AC QC, and Roger Gyles, QC, between Origin Energy and AGL

Expert report, sworn evidence, Sydney, 19-24 March 2009

2008

Expert evidence on behalf of Orion NZ, at the Commerce Commission's Conference on its Draft Decision on Authorisation for the Control of Natural Gas Pipeline Services

Transcribed evidence, public hearings, Wellington, 21 February 2008

2007

Expert report and evidence in arbitration proceedings before Sir Daryl Dawson between SteriCorp and Stericycle Inc.

Expert report, sworn evidence, 11 July 2007

Speeches and publications³

- 2017**
- IPART 25th Anniversary Conference**
Electricity and Water: Mutual Lessons
Speech, Sydney, 27 October 2017
- GCR 6th Annual Law Leaders Forum**
ACCC v Flight Centre: What was going on?
Speech, Sydney, 6 May 2017
- Association for Data-driven Marketing and Advertising**
Driving Customers to you: Insights from Location Data
Speech, Melbourne, 5 April 2017
- Global Competition Review Conference**
Roadblocks and Solutions in Cross Border Mergers
Panel discussant, Singapore, 2 March 2017
- 2016**
- NSW Planning Assessment Commission**
Economic Effects of Drayton South Mine on Upper Hunter Industry
Presentation to public hearing, Muswellbrook, 16 November 2016
- 2015**
- Electricity Networks Association Regulation Seminar, Brisbane**
Participant in Expert Plenary Panel
Speech, Brisbane, 5 August 2015
- NZ Commerce Commission Input Methodologies Review, Wellington**
'Allocation of Risk' and 'New Technologies'
Panel Discussant, Wellington, 29 July 2015
- Competition Matters Conference, Wellington**
Disruptive Technologies
Chair, Discussion Panel, Wellington, 24 July 2015
- Competition Law Conference**
The Public Interest in Private Enforcement
Speech, Sydney, 30 May 2015
- Singapore Aviation Academy, Singapore**
Private Financing of Airport Infrastructure Expansions
Speech, Singapore, 5 March 2015
- GCR 4th Annual Law Leaders Forum Asia-Pacific**
Differences in using economics in EU and Asia Pacific
Speech, Singapore, 5 March 2015
- AEMC Public Forum**
East Coast Gas Market Review
Speech, Sydney, 25 February 2015
- 2014**
- Competition and Consumer Workshop, Law Council of Australia**
An Economist's Take on Taking Advantage
Paper and Speech, Brisbane, 14 September 2014

³ Past ten years only

Energy Networks 2014

Innovation and Economic Regulation
Speech, Melbourne, 1 May 2014

The Network Industries Quarterly, *Consumer Advocacy in Australian Regulatory Decision Making – ‘Hard Choices Await’*, Vol. 16, No 1, 2014

Ecole Polytechnique Federale de Lausanne, 31 March 2014

GCR 3rd Annual Law Leaders Asia Pacific

Role of Economists in Competition Law Enforcement in Asia-Pacific
Speech, Singapore, 6 March 2014

2013**University of South Australia – Competition and Consumer Workshop**

Empirical test and collusive behaviour
Speech and participation game, Adelaide, 16 November 2013

Energy in WA Conference

Capacity Payments in the WEM – Time to Switch?
Panel Discussion, Perth, 21 August 2013

ACCC/AER Regulatory Conference

Designing Customer Engagement
Speech, Brisbane, 25 July 2013

Victorian Reinsurance Discussion Group

Australian Mining – When Opportunities and Risk Collide
Speech, Melbourne, 1 March 2013

NZ Downstream Conference

Investment and Regulation
Panel Discussion, Auckland, 25 July 2013

2012**Rising Stars Competition Law Workshop**

Expert Evidence in Competition Cases
Speech, Sydney, 24 November 2012

KPPU – Workshop on the Economics of Merger Analysis

Theories and Methods for Measuring the Competitive Effects of Mergers
Speech, Bali, 19-21 November 2012

University of South Australia – Competition and Consumer Workshop

Reflections on Part IIIA of the Competition Act
Speech, Adelaide, 12 October 2012

NZ Downstream Conference

Lines company consolidation – what are the benefits and risks?
Panel discussion, Auckland, 6-7 March 2012

2011**Law Council of Australia - Competition Workshop**

Coordinated effects in merger assessments
Speech, Gold Coast, 27 August 2011

ACCC Regulatory Conference

Adapting Energy Markets to a Low Carbon Future
Speech, Brisbane, 28 July 2011

- 2010** **IPART Efficiency and Competition in Infrastructure**
Improving Performance Incentives for GTE's
Speech, Sydney, 7 May 2010
- Law and Economics Association of New Zealand**
Shareholder Class Actions – A Rising Trend in Australia
Speeches, Auckland and Wellington, 15-16 November 2010
- 2009** **ACCC Regulatory Conference**
Substitutes and Complements for Traditional Regulation
Speech, Gold Coast, 30 July 2009
- Minter Ellison Shareholder Class Action Seminar**
Investor Class Actions – Economic Evidence
Speech, Sydney, 18 March 2009
- Competition Law and Regulation Conference**
Commerce Amendment Act: Impact on Electricity Lines Businesses
Speech, Wellington, 27 February 2009
- 2008** **Non-Executive Directors**
Shareholder Class Actions in Australia
Speech, Sydney, 28 July 2008
- Mergers & Acquisitions: Strategies 2008**
Competition Law Implications for Mergers & Acquisitions
Speech, Sydney, 27 May 2008
- Institute for Study of Competition and Regulation**
Role of Merits Review under Part 4 and Part 4A of the Commerce Act
Speech, Wellington, 20 February 2008
- 2007** **Law Council of Australia - Trade Practices Workshop**
Hypothetical breach of s46
Economic expert in mock trial, 20 October 2007
- Assessing the Merits of Early Termination Fees, *Economics of Antitrust: Complex Issues in a Dynamic Economy*, Wu, Lawrence (Ed)**
NERA Economic Consulting 2007
- Assessing the Impact of Competition Policy Reforms on Infrastructure Performance**
ACCC Regulation Conference
Speech, Gold Coast, 27 July 2007

Daniel Young

Senior Economist

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Overview

Daniel has thirteen years' experience in solving economic problems arising in regulatory, policy, finance and competition matters. He has a particular strength in the use of mathematical and statistical tools to inform his insights.

Daniel has advised corporations, regulators and governments across a range of industry sectors including energy, communications, water and transport. Daniel brings a deep understanding of regulatory frameworks, and particularly the application of building block models, approaches to asset valuation and tariff design.

Daniel has extensive experience advising on telecommunications matters in Australia, New Zealand and beyond. This includes the design and review of cost models for fixed line and mobile networks, advice on regulatory policy, analysis of competition issues and the calculation of damages. Daniel has a particular interest in the development of regulatory frameworks to address issues raised by the increasing penetration of fibre networks.

In the finance area, Daniel has played a significant role in advancing the regulatory debate on rate of return issues. He has advised businesses and regulators on these issues across a wide range of sectors and jurisdictions. His analysis has underpinned a series of successful Competition Tribunal appeals on the return on debt, and includes contributions to understanding the application of the capital asset pricing model in Australia and advice on using financial market data to estimate the current cost of equity.

On competition matters Daniel has assisted clients to improve the understanding complex problems through mathematical and statistical modelling. His experience includes advice on the likely effects of proposed mergers and acquisitions in relation to electricity wholesale, mining, media, petrol retailing, pharmaceuticals and metering. Daniel has advised businesses in a range of commercial litigation and arbitrations, including in relation to the renegotiation of major gas supply contracts and in the calculation of damages in international arbitrations.

Prior to joining HoustonKemp, Daniel was an Associate Director at the Competition Economists Group and an Analyst at NERA Economic Consulting. Daniel holds a Master of Commerce with first class honours majoring in Economics from the University of Auckland. He also holds a Bachelor of Commerce majoring in Economics and a Bachelor of Science majoring in Operations Research from the University of Auckland.

Qualifications

1999-2004 **University of Auckland**
Master of Commerce in Economics
(First Class Honours)
Bachelor of Commerce and Science in Economics and Operations Research

Prizes and Scholarships

2004 Senior Scholarship in Statistics

2004 Senior Prize in Economics

2004 University of Auckland Masters Scholarship

2003 University of Auckland Department of Economics Scholarship

Career Details

2015- **HoustonKemp Economists**
Senior Economist, Sydney, Australia

2008-2015 **CEG Asia Pacific**
Associate Director, Sydney, Australia

2005-2007 **NERA Economic Consulting**
Analyst, Sydney, Australia

Project Experience

Competition Analysis

- 2017-18** **DLA Piper/Dalrymple Bay Coal Terminal Management, Australia**
Application of declaration criteria
Provided advice to DLA Piper assessing the prospects of DBCT satisfying access criteria. Our advice included detailed modelling and analysis establishing whether the service provided is a natural monopoly and whether declaration would promote competition in dependent markets.
- 2017-18** **Gilbert + Tobin, Australia**
Advice on the requirements of Part 23 of the NGR
Prepared advice for a confidential gas pipeline operator advising on the nature and outcomes of workably competitive markets, reflecting the objective of the new rules, and the implications of this for pipeline revenues and prices determined in arbitration under these rules.
- 2017** **Minter Ellison/Crownet Australia**
Proposed acquisition of Tatts by Tabcorp
Contributed to the preparation of an expert report, prepared for Minter Ellison on behalf of Crownbet, examining the effects of the proposed acquisition by Tabcorp of Tatts. The report was submitted to the Australian Competition Tribunal.
- 2016-17** **Confidential Client, Australia**
Proposed merger
Prepared a report setting out the likely effect of a proposed merger in the gas pipeline sector, and provided a framework for examining the competitive effect of mergers to be used for future transactions.
- 2016** **APA Group, Australia**
Proposed auction for contracted but un-nominated gas pipeline capacity
Prepared advice for APA in relation to the AEMC's proposals to introduce a new auction for all contracted but un-nominated capacity in eastern Australia. The advice included an assessment of the economic propositions underpinning the AEMC's proposals.
- 2015** **Johnson Winter & Slattery/Confidential Client**
Substantial lessening of competition
Contributed to a report on whether certain business conduct would substantially lessen competition in the context of a potential investigation or prosecution by the ACCC.
- 2014** **Vector, New Zealand**
Electricity smart metering merger
Advised Vector on the competitive effects of its successful bid to acquire Meridian Energy's electricity smart metering provider, Arc Innovations. This required a high degree of familiarity with the market framework and the competitive dynamics, including the "market-driven" nature of the deployments to date.
- 2014** **Vector, New Zealand**
Competition in gas metering
Provided advice to Vector as part of a preliminary inquiry by the Commerce Commission into whether to regulate gas metering services.

- 2014** **Commerce Commission, New Zealand**
Mobile spectrum auction purchase
Provided modelling of the costs involved in a number of alternative potential ownership configurations of mobile spectrum in New Zealand in advice to the New Zealand Commerce Commission.
- 2013** **Australian Competition and Consumer Commission, Australia**
Advice on proposed petrol station acquisitions
Advised the ACCC on the competitive analysis provided in support of a proposed acquisition of retail petrol stations. Our advice included new econometric analysis of the effects of the proposed acquisition on price formation and leadership in the relevant markets.
- 2012** **Australian Energy Market Commission, Australia**
Market power in generation markets
Assisted in preparing a report for the AEMC on the existence of market power and barriers to entry in the markets for electricity generation within the NEM
- 2011** **Australian Competition and Consumer Commission, Australia**
Advice on proposed media acquisitions
Assisted the ACCC in developing its analysis about the competitive effects of two proposed acquisitions in the media sector
- 2010** **Gilbert + Tobin, Australia**
BHPB proposed joint venture with Rio Tinto
Assisted in the preparation of expert statements on the likely impact of the joint venture of the Pilbara iron ore assets of BHP Billiton and Rio Tinto. The legal and economic teams involved were awarded ‘Deal of the year – Asia Pacific’ by Global Competition Review.
- 2009** **Van Bael & Bellis, EU**
Proposed transaction between GSK and Astra Zeneca
Provided market modelling of the effect of a concentration between Glaxo Smith Kline and Astra Zeneca in relation to certain common pharmaceutical product lines.
- 2009** **Gilbert + Tobin, Australia**
Analysis of proposed transaction in relation to small industrial packaging
Provided expert statements and empirical analysis on the substitutability between different types of small industrial packaging.
- 2008** **Gilbert + Tobin, Australia**
BHPB proposed merger with Rio Tinto
Empirical analysis and assisted in the preparation of an expert report on the competitive effect on iron ore prices of the proposed merger between BHP Billiton and Rio Tinto.
- 2006** **Australian Competition and Consumer Commission, Australia**
Proposed merger in electricity generation
Assessed the likely competitive effect of a proposed acquisition by International Power of NRG Flinder’s electricity generation assets in Victoria and South Australia.
- 2006** **Johnson, Winter and Slattery, Australia**
Joint Services Agreement authorisation
Assisted in the finalisation of an expert report assessing the net public benefits of authorising Qantas’ JSA with British Airways in Singapore.

- 2006** **Freehills, Australia**
Access to Foxtel's set-top box
Provided drafting and analytical assistance for an expert report examining the effect of Foxtel's proposed special access undertaking on competition in the market for subscription television services
- 2005** **Economic Development and Labour Bureau, Hong Kong**
Investigation of competition in the retail auto-fuel sector
Conducted benchmarking of retailing margins on auto-fuel as part of a team examining the competitiveness of the sector in Hong Kong.
- 2005** **Australian Competition and Consumer Commission, Australia**
Proposed merger in electricity generation
Developed a modelling framework for the ACCC analysing the effect on the proposed acquisition of Singapore Power's generation assets by China Light & Power and advised on potential divestitures
- 2005** **Phillips Fox, Australia**
Alleged predatory pricing in rail carriage
Assisted in the preparation of advice to Austrac in relation to alleged breaches of section 46 of the Trade Practices Act

Regulatory Analysis and Cost Modelling

- 2017-18** **Gilbert + Tobin, Australia**
Advice on implementing the requirements of Part 23 of the NGR
Prepared advice for a confidential gas pipeline operator setting out the implications of new rules for information disclosure and binding arbitration. We advised on the outcomes of workably competitive markets, reflecting the objective of the new rules, and applied asset valuation methods using the recovered capital method prescribed by the new rules
- 2017-18** **DLA Piper, Australia**
Estimating a recovered capital method asset valuation
Advised a confidential gas pipeline operator on the calculation of a recovered capital method asset valuation complying with section 569(4)(b) of the NGR, including the appropriate approach to estimating a commercial rate of return over time.
- 2017-18** **King & Wood Mallesons, Australia**
Outcomes consistent with a workably competitive market
Prepared an expert report for a confidential gas pipeline operator to be submitted as part an arbitration under Part 23 of the NGR. The report addressed how the objective of Part 23, to reflect the outcomes of a workably competitive market, should be applied by the arbitrator in determining the terms and conditions of access.
- 2017** **Bell Gully/Auckland Transport, New Zealand**
Estimating the efficient costs of providing bus services
Prepared expert advice and testimony in the context of arbitration of the contract price for a bus route in Auckland. The advice implemented data envelopment analysis to assess the efficient rate of costs for providing the service.

- 2017** **Chorus, New Zealand**
Addressing the risks associated with the provision of fibre services
Prepared advice for Chorus examining whether the proposed regulatory frameworks for copper and fibre services address the risks faced in providing services. Our advice suggested corresponding regulatory approaches that could manage these risks.
- 2016-17** **Trustpower, New Zealand**
Electricity Authority's proposed changes to transmission pricing
Prepared two expert report reviewing the Electricity Authority's policy proposals and the cost-benefit analysis supporting them. The Authority proposed to introduce revised arrangements for transmission pricing that would set charges based on the benefits that accrue to network customers.
- 2016** **Port Authority of New South Wales, Australia**
Review of maximum fees and site occupation charges in Sydney Harbour
Assisted the Port Authority in preparing its submissions to IPART's review of maximum fees and site occupation charges for cruise ships in Sydney Harbour. This included assistance with preparing the submission and advice on building block modelling and the cost of capital.
- 2015-2016** **New South Wales Government, Australia**
Review of regulatory modelling
Conducted a peer review of regulatory modelling as part of the partial leases of Ausgrid and Endeavour Energy.
- 2015** **AEMC, Australia**
Regulatory treatment of energy storage
Advised the AEMC in relation to economic principles underpinning the regulatory treatment of both network-level energy storage and behind-the-meter storage.
- 2015** **Optus, Australia**
Benchmarking prices for the domestic transmission capacity service
Advised Optus on the process of benchmarking prices for regulated DTCS on the basis of prices for services that were deemed competitive. The advice included application of stochastic frontier analysis to the data.
- 2010-15** **Australian Amalgamated Terminals, Australia**
Regulatory model of car terminals
Prepared and presented a model of Australian Amalgamated Terminal's costs to estimate efficient cost-recovery prices as part of a regulatory process overseen by a price expert. Regularly maintaining and updating this model for this purpose.
- 2014-15** **Everything Everywhere, United Kingdom**
Estimation of annual licence fees
Assisted Everything Everywhere in relation to Ofcom's review of the annual licence fees charged for 900 MHz and 1800 MHz spectrum.
- 2014** **Australian Energy Market Commission, Australia**
Survey of regulations on bidding in good faith in international jurisdictions
Prepared an expert report for the AEMC surveying the regulations on bidding, and the ability to change bids, in a range of international electricity markets.

- 2013-15** **Chorus, New Zealand**
Modelling the UCLL and UBA prices
Assisted in the preparation of multiple expert reports for Chorus on issues relevant to estimating the TSLRIC costs of providing UCLL and UBA, including in relation to demand, depreciation and price trends.
- 2014** **Australian Broadcasting Commission, Australia**
Estimate of cost-based charge for high frequency transmission
Prepared a report for the ABC demonstrating the likely level of cost-based charges for high frequency transmission under alternative asset valuation approaches.
- 2014** **Everything Everywhere, United Kingdom**
Mobile termination
Reviewed Ofcom's model estimating the costs of mobile termination.
- 2014** **Orion, New Zealand**
WACC percentile
Provided advice to Orion as part of the Commerce Commission's review of the use of the 75th percentile of the WACC range.
- 2014** **SA Power Networks, Australia**
Materials cost escalation factors
Assisted SA Power Networks by estimating materials cost escalation factors for its operating and capital expenditure program. The report also included analysis of the performance of the modelling methodology over time.
- 2013** **Herbert Geer, Australia**
Telecommunications fixed line pricing methodology
Assessed the ACCC's methodology for setting prices for fixed line services. Assisting Herbert Geer (on behalf of iiNet) in formulating questions for the ACCC and Telstra so as to assess the size of potential errors.
- 2013** **Vector, New Zealand**
Default price-quality paths for electricity distribution and gas pipeline businesses
Advised Vector in relation to the Commerce Commission's draft decision on the application of DPPs to electricity and gas pipeline businesses. The focus of the review was on the Commission's application of econometrics in benchmarking the level of operating expenditure for the next regulatory period.
- 2012-13** **Chorus, New Zealand**
Benchmarking the UBA price
Advised Chorus New Zealand on the Commerce Commission's proposed method of determining the UBA price in New Zealand by benchmarking against prices in other jurisdictions.
- 2012-13** **NBN Co, Australia**
Special access undertaking
Assisted NBN Co in assessing aspects of its proposed SAU, including its proposed regulatory model and restrictions on its pricing behaviour. Subsequently advising NBN Co on the ACCC's draft decision in relation to these aspects and others of its undertaking.

- 2012-14** **New South Wales, ACT and Tasmanian electricity network businesses, Australia**
Materials and labour cost escalation factors
Undertook modelling of materials and labour cost escalation factors for the businesses' regulatory proposals. Subsequently providing updates and responding to issues raised by the AER in its response to proposals.
- 2012-13** **Virgin Australia, Australia**
Cost modelling of landing charges
Provided Virgin advice about modelling of landing charges proposed by a number of Australian airports.
- 2012** **T-Mobile, Netherlands**
Mobile termination review
Provided T-Mobile with preliminary advice on OPTA's modelling of mobile termination charges.
- 2012** **ElectraNet, Australia**
Materials cost escalation factors
Estimated materials cost escalation factors for ElectraNet and providing it advice on the use of labour cost escalation factors.
- 2012** **Australian Broadcasting Commission, Australia**
Building block model review
Assisted the ABC by peer reviewing a building block model that it had commissioned. The review focused on the internal consistency of the model, particularly in relation to cashflow timing and the cost of capital.
- 2012** **Everything Everywhere, United Kingdom**
Unbundled local loop appeal
Co-authored an expert witness statement assessing the basis of Ofcom's forecasting of fixed line volumes.
- 2012** **Vector, New Zealand**
Default price quality paths
Analysed the Commerce Commission's draft decisions on its starting price adjustments for electricity and gas network businesses. Preparing two expert reports for Vector responding to these decisions.
- 2011-12** **Western Power, Australia**
Materials and labour cost escalation factors
Prepared two expert reports setting out the basis for and estimating cost escalation factors for Western Power.
- 2011-12** **Chorus, New Zealand**
Benchmarking the UCLL price
Advised Chorus New Zealand on the Commerce Commission's proposed method of determining the UCLL price in New Zealand by benchmarking against prices in other jurisdictions. Testified as an expert on behalf of Chorus at the Commission's conference.

- 2011-12** **TransGrid, Australia**
Cost escalation factors
Provided cost escalation factors to TransGrid as part of its internal budgeting processes.
- 2011-12** **Everything Everywhere, United Kingdom**
Mobile termination modelling and advice
Advised Everything Everywhere UK on its submissions and appeal in respect of Ofcom's decision on mobile termination rates
- 2011** **Chorus, New Zealand**
International benchmarking of sub-national density characteristics
Conducted detailed research of sub-national density characteristics across a range of jurisdictions with potentially comparable UCLL prices.
- 2010-11** **Airservices Australia, Australia**
Pricing of air traffic control services
Assisted Airservices Australia in the development of its regulatory proposal to the ACCC
- 2010-11** **Integral Energy, Australia**
Assessment of credit metrics
Provided an internal report for Integral in relation to whether its existing dividend policy was consistent with maintenance of a credit rating.
- 2010-11** **Digicel, Tahiti**
Mobile cost modelling
Developed a mobile cost model for Digicel Tahiti.
- 2009** **Digicel, Vanuatu and Tonga**
Benchmarking mobile termination charges
Estimated benchmarks for mobile termination prices using econometric analysis on overseas benchmark for Digicel in Vanuatu and Tonga
- 2010-11** **Digicel, Vanuatu and Tonga**
Benchmarking mobile termination charges
Estimated benchmarks for mobile termination prices using econometric analysis on overseas benchmark for Digicel in Vanuatu and Tonga
- 2010** **Digicel, Papua New Guinea**
Mobile cost modelling
Developed a mobile cost model for Digicel PNG.
- 2010** **Integral Energy, Australia**
Indexing ODRC valuation
Estimated of a current ODRC value for Integral Energy's assets on the basis of roll-forward and escalation of previous bottom-up estimate
- 2010** **Optus, Australia**
Fixed line pricing principles
Advised Optus on appropriate principles for fixed line pricing and the formation of a roll-forward regulatory regime. Identifying and responding to a critical error in the proposed pricing principles

- 2009** **Digicel, Samoa**
Mobile cost modelling
Developed a mobile cost model for Digicel Samoa in the context of regulatory proceedings on mobile termination rates. Assisting Digicel in responding to the regulator's model and presenting findings in Apia.
- 2009** **Confidential, Australia**
Telecommunications cost modelling
Produced a high level cost assessment of an Australian telecommunications network on behalf of a confidential client.
- 2009** **Jemena Gas Networks, Australia**
Material and labour escalation factors
Estimated cost escalation factors, including carbon effects, for JGN's regulatory access arrangement.
- 2009** **Competitive Carriers Coalition, Australia**
Steiner improvements to minimum spanning trees
Estimated the potential cost improvements that could be achieved within the ACCC's fixed line cost model by the use of Steiner trees rather than minimum spanning trees on behalf of the Competition Carriers' Coalition
- 2008** **Optus, Australia**
Replacement cost estimate for a FTTP
Undertook adjustments to the ACCC's fixed line cost model to estimate the cost of a fibre to the premise roll out in Australia for Optus
- 2008-09** **New South Wales and Tasmanian electricity network businesses, Australia**
Material and labour escalation factors
Estimated cost escalation factors for the businesses initial and revised regulatory proposals.
- 2008-09** **ETSA, Australia**
Prices for public lighting
Provided ETSA with advice in relation to a dispute with ESCOSA over its proposed prices for public lighting.
- 2008** **Confidential, Australia**
Telecommunications cost modelling
Developed a network model for an Australian telecommunications company, estimating the cost associated with a regulated service.
- 2008** **ElectraNet, Australia**
Material and labour escalation factors
Estimated cost escalation factors for ElectraNet's revised regulatory proposal.
- 2007** **MultiNet, Australia**
Efficient margins on outsourced operating expenditure
Assisted in the preparation of an expert report on the prudence of MultiNet's outsourcing contracts in the context of the National Gas Code

- 2006-07** **GDSE, Macau**
Efficient tariff design
Advised the electricity regulator in Macau about efficient tariff reform using modelling of the short run and long run marginal cost of supply in Macau
- 2006** **Telecom New Zealand, New Zealand**
Universal service obligation replacement cost modelling
Assisted in the preparation of expert reports for Telecom New Zealand on the correct methodology for calculating the cost of providing the TSO (universal service obligation) using new entrant costs
- 2005** **Integral Energy, Australia**
Estimating long run marginal cost
Advised Integral Energy on its LRMC of meeting growing network demand and how to reflect this in efficient tariff design (including design of critical peak pricing)

Cost of Capital and Finance

- 2016** **Powerco, New Zealand**
Review of asset beta and debt raising costs
Prepared expert reports, submitted to the Commerce Commission, assessing whether an asset beta uplift is required for gas distribution businesses relative to electricity network businesses. Further advised on efficient debt raising costs, including estimating the new issue premium and the costs of meeting ratings agencies requirements for debt raising practices.
- 2016** **New South Wales Government, Australia**
Implications of cost of capital litigation
Drafted sections of vendor due diligence document summarising recent developments in the regulatory cost of capital. In particular, the drafting reviewed the implications of the Tribunal's decisions on the return on equity, return on debt and the value of imputation credits
- 2016** **Perth Airport, Australia**
Estimating the weighted average cost of capital
Prepared an expert report estimating the cost of equity, cost of debt and the weighted average cost of capital for Perth Airport in the context of its commercial negotiations with airlines.
- 2015-16** **Australian Government Solicitor / Commonwealth of Australia**
Native title compensation claim
In the context of a claim for compensation for extinguished native title in the Federal Court of Australia, contributed to the calculation of the compensation for the time value of money under a number of scenarios.
- 2015** **Tuas Power Generation, Singapore**
Changes to forward sales contract scheme
Prepared an expert report for submission to the EMA advising on potential changes to the forward sales contract scheme, which underpins the electricity futures market in Singapore.

- 2015** **Jemena Gas Networks and the Victorian electricity distribution businesses, Australia**
Cost of debt
Prepared an expert report providing analysis of the AER's draft determination and recommending approaches for estimating the cost of debt.
- 2014-15** **New South Wales and ACT electricity distribution businesses, Australia**
Advice on the weighted average cost of capital
Preparing expert reports responding to the AER's draft decision and undertaking new analysis of indications of the cost of equity and the cost of debt for regulated electricity network businesses.
- 2014** **ATCO, Australia**
Estimating the debt risk premium
Assisted in the preparation of an expert report for ATCO advising of issues in the estimation of the debt risk premium. Further assistance in response to the ERA's draft decision.
- 2014** **Victorian and South Australian electricity distribution businesses, Australia**
Estimating the new issue premium
Performed analysis of a large sample of bond issues made by Australian domiciled businesses in Australia and overseas to estimate the difference between primary yields and secondary market yields at the time of issue.
- 2013-15** **Chorus, New Zealand**
Providing advice on the WACC
Provided Chorus advice on the WACC, including expert reports, in the context of its Final Pricing Principle for the UCLL and the UBA. This included general WACC advice in relation to estimating the cost of debt and the cost of equity, and also assistance in estimating the optimal mark-up to the cost of capital associated with asymmetric costs to society from mispricing regulated services.
- 2013** **Jemena, Australia**
Replicating the RBA's cost of debt benchmark
Undertook analysis aimed at understanding and replicating the analysis performed by the Reserve Bank of Australia in producing estimates of yields on corporate bonds.
- 2013** **United Energy, Australia**
Cost of debt statistics
Co-authored a report investigating the statistical properties of alternative yield curve estimates for estimating the cost of debt.
- 2013** **Victorian electricity distribution businesses, Australia**
Cost of debt
Estimated the cost of debt for use in the regulation of Victoria's advanced metering infrastructure. The analysis involved collection of bond data and analysis of the Bloomberg fair value curve as well as estimation of alternative yield curves.
- 2013** **Dampier to Bunbury Pipeline, Australia**
Estimating the benchmark credit rating
Assisted in the preparation of an expert report addressing the benchmark credit rating for the purpose of determining the debt risk premium. The report conducted econometric benchmarking of credit ratings against business characteristics.

- 2012-13** **Victorian gas network businesses, Australia**
Debt risk premium
Prepared expert reports estimating the regulatory debt risk premium for four Victorian gas distribution businesses. Assisting these businesses in their appeal of the AER's decision.
- 2012-13** **Victorian gas network businesses, Australia**
Internal consistency in estimating the cost of equity
Prepared expert reports reviewing the internal consistency of the AER's application of the Sharpe-Lintner CAPM for estimating the cost of equity. Advising of alternative and consistent means to estimate the cost of equity.
- 2012** **Western Power, Australia**
Regulatory cost of capital for electricity distribution
Prepared three expert reports for Western Power addressing issues in respect of the estimation of the equity beta, the calculation of debt risk premium and consistency of between CAPM parameters in estimating the cost of equity
- 2012** **Vector, New Zealand**
Appeal of input methodologies WACC decision
Assisted Vector in its appeal of the New Zealand Commerce Commission's WACC input methodology.
- 2011-12** **Vector, New Zealand**
Development of input methodologies
Prepared expert reports for Vector responding to the New Zealand Commerce Commission's proposed input methodologies for estimating the cost of capital
- 2011-12** **Energy Network Association, Australian Pipeline Industry Association, AusGrid, Australia**
AER rule change proposal
Advised the ENA and APIA in relation to the AER's proposed change to the National Electricity Rules and National Gas Rules.
- 2011** **AusGrid, Australia**
Effect of government ownership on the cost of debt
Produced an expert report assessing a rule change proposal based on a claim that government ownership should lower the benchmark cost of debt used for regulated electricity and gas network businesses.
- 2011** **APA, Australia**
Debt risk premium analysis
Prepared expert reports for APA in relation to debt risk premium for APT Allgas and APTPPL. Assisted APA in its successful appeal of the AER's APT Allgas debt risk premium decision.
- 2011** **Vanuatu Government, Vanuatu**
Country risk premium
Provided expert advice to the Vanuatu government in respect of the correct country risk premium to apply in the context of a dispute and arbitration to determine the cost of capital for UNELCO
- 2010-11** **Envestra Queensland and South Australia, Australia**
Cost of capital for gas distribution
Prepared expert reports advising Envestra of the risk-free rate, debt risk premium and equity beta to be used in its original and revised access arrangement proposals. Assisting on the appeal in relation to debt risk premium.

- 2010** **Commercial Radio Australia, Australia**
Cost of capital for multiplexer access
Assisted in the preparation of a report to Commercial Radio Australia advising it of the cost of capital in the context of regulation of access to its multiplexers in capital cities.
- 2010** **Victorian electricity network businesses, Australia**
Debt risk premium estimation and appeal
Advised the Victorian electricity network businesses on estimating the debt risk premium and in the successful appeals of the AER's decision. Responded to expert statistical analysis prepared by the AER's witness in these proceedings.
- 2010** **Jemena Gas Network, Australia**
Debt risk premium estimation and appeal
Advised the Jemena Gas Networks on estimating the debt risk premium and in its successful appeals of the AER's decision.
- 2010** **South East Queensland Water Businesses, Australia**
Cost of capital for water distribution access
Advised the South East Queensland Water Businesses on the risk-free rate, debt premium and equity beta applicable to their regulation by the Queensland Competition Authority
- 2010** **ActewAGL, Australia**
Debt risk premium estimation and appeal
Advised ActewAGL on the AER's methodology for estimating the cost of debt and debt risk premium. Assisted in the subsequently successful appeal on the same issue.
- 2008-09** **Energy Networks Association, Australia**
AER's review of cost of capital parameters
Advised on the appropriate estimation of the cost of capital associated with capital assets used to provide electricity networks services in the context of a five yearly review performed by the Australian Energy Regulator
- 2008-09** **New South Wales and Tasmania electricity network businesses, Australia**
Risk free rate and debt risk premium estimation and appeal
Advised on the appropriate estimation of the regulated cost of capital for distribution and transmission electricity network businesses in New South Wales and Tasmania and assisted in their subsequent appeal to the Australian Competition Tribunal.
- 2008** **ElectraNet and ActewAGL, Australia**
Calculating the real risk free rate
Assisted in the preparation of expert reports for ElectraNet and ActewAGL describing the correct method for deriving a real risk free rate in the CAPM.
- 2005-07** **Rismark, Australia**
Financial products
Assessed the economic assumptions underlying an innovative mortgage product proposed by Rismark.

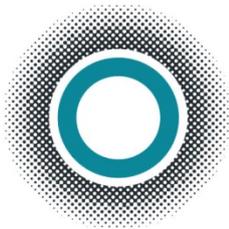
Market Design and Damages

- 2013** **CEZ Shperndarje, Albania**
Economic damages for breach of contract
Estimated economic damages due to alleged conduct of the Albanian government in respect of CEZ's electricity distribution and supply businesses.
- 2013** **Confidential, Australia**
Commercial negotiation of wholesale agreement
Assisted a telecommunications business in its negotiations with a wholesale provider.
- 2012** **Clayton Utz, Australia**
Commercial damages in Australian iron ore
Assessed the potential costs of alternative uses of specific Pilbara iron ore deposits held by Hancock Prospecting and Wright Prospecting.
- 2012** **Australian Government Solicitor, Australia**
Plain packaging of tobacco products
Assisted the government solicitor in understanding the tobacco market in Australia in advance of international litigation due to the government's plain packaging legislation.
- 2011** **Telecom New Zealand, New Zealand**
Estimation of damages
Estimated damages to access seekers caused by non-availability of a service. Assisted Telecom in assessing Commerce Commission modelling and in settling the claim.
- 2010-11** **Mallesons, Australia**
Financial assumptions in tax disputes
Assisted Malleson's to analyse a paper by Giffnock estimating a reasonable level of fees paid by CKI companies to the parent company for credit support.
- 2009** **Commercial Radio Australia, Australia**
Reserve price at auction
Estimated a reserve price in Commercial Radio Australia's auction of unallocated multiplexer capacity
- 2007** **Meerkin & Apel, Australia**
Commercial damages in medical waste disposal
Prepared an expert report and response for Meerkin & Apel examining the reasonableness of economic assumptions underlying the estimation of damages in a commercial arbitration
- 2007** **Freehills, Australia**
Class action damages estimates
Prepared estimates of the potential damages faced by Telstra under a class action lawsuit from its shareholders.
- 2007** **Santos, Australia**
Arbitration of a gas supply contract
Assisted in determining the market gas price on behalf of Santos in arbitration for a major gas supply contract between the Cooper Basin producers and AGL.
- 2006** **Santos, Australia**
Arbitration of a gas supply contract
Assisted in determining the market gas price on behalf of Santos in arbitration for a major gas supply contract between the South West Queensland gas producers and Xstrata.

Policy Analysis

- 2017** **Transport for New South Wales, Australia**
Reviewing the contribution of the cruise industry and implications for pricing
Advised Transpower for New South Wales on the extent of the economic contribution of the cruise industry in New South Wales and the size of subsidies provided. The advice included implications of our findings for prices and price structures.
- 2017** **Infrastructure Australia, Australia**
Assessing projects for inclusion on the infrastructure priority list
Assisted Infrastructure Australia by assessing initiatives for inclusions in the infrastructure priority list. The task includes analysing the economic, social and environmental impacts of the proposed initiatives.
- 2016** **Visy, Australia**
Negotiations in relation to a commercial contract
Advised Visy on assessing potential options in relation to negotiations it was conducting over a commercial contract with a supplier of inputs. Our analysis included reviewing the benefits and costs that the options would have for Visy.
- 2016** **AEMC, Australia**
Arrangements for ensuring reliability of electricity supply
Prepared an internal report for the AEMC that summarised the various arrangements across the electricity supply chain for ensuring the continuity of supply to end-use customers.
- 2015-16** **Climate Change Authority, Australia**
Peer review of modelling of emissions reductions policies
Prepared a peer review for the Climate Change Authority assessing Jacob's modelling of the effects of seven alternative approaches to meeting Australia's emissions reductions commitments. The review included a rigorous evaluation of the assumptions used and approaches adopted by Jacob's analysis.
- 2015** **New South Wales Government, Australia**
Assessment of new business opportunities
Prepared an expert report investigating regulatory barriers to the ability of the New South Wales distribution network businesses to engage in new areas of unregulated activities, as part of the partial lease of these businesses.
- 2007** **Ministerial Council on Energy, Australia**
Demand response of electricity users to smart metering
Estimated the likely response in the demand for electricity to the increased proliferation of time of day and critical peak tariffs as part of the MCE's cost/benefit analysis of the introduction of smart meters
- 2007** **Independent Pricing and Regulatory Authority, Australia**
Household survey analysis
Analysed the results of the 2006 household survey of electricity, gas and water consumption in the Sydney region and preparing a report summarising these on behalf of IPART

- 2006** **Australian Railway Association, Australia**
Comparative charging regimes for road and rail
Assisted in the preparation of reports for the Australian Railway Association on the efficiency of methods for charging for use of road and rail networks. Prepared a critique of an econometric analysis on the benefits of changing the charging methodology
- 2004** **University of Auckland, New Zealand**
Analysis of healthcare outcomes
Conducted statistical modelling of the relationships between socioeconomic variables and healthcare outcomes using census data



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