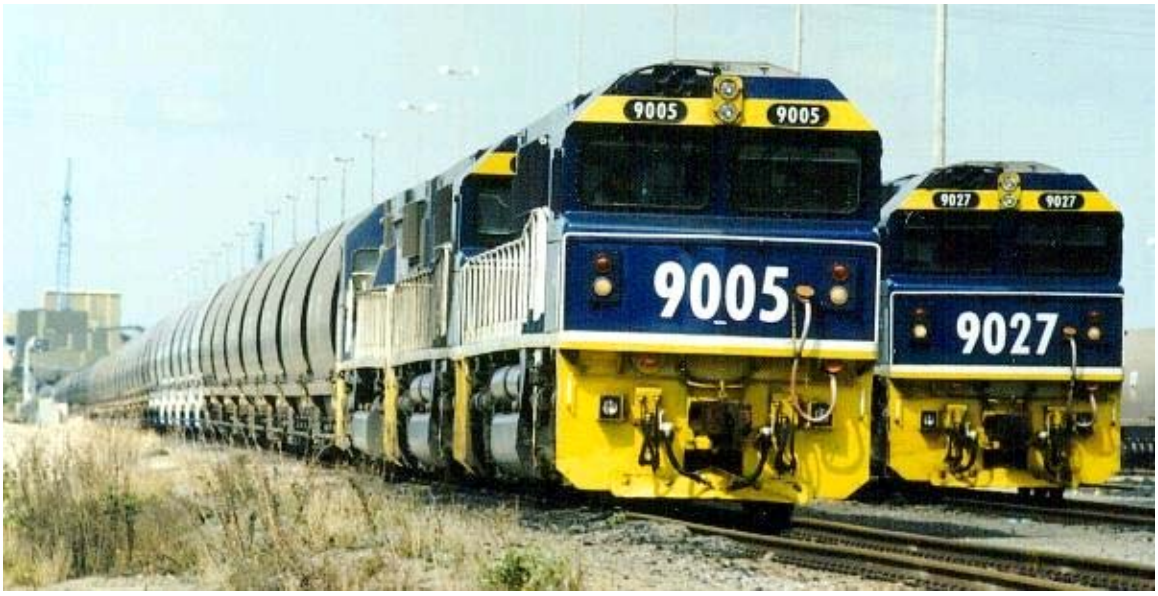
pacificnational

MODEL UNDERTAKING – COAL



EXPLANATORY DOCUMENT

March 2007

TABLE OF CONTENTS

LIST OF ABBREVIATIONS AND TECHNICAL TERMS

Access Holder	Those parties that hold an access contract for the AHVN.
Access Seeker	Those parties either holding an access contract for the AHVN or seeking to obtain one.
AHVN	ARTC leased Hunter Valley network
ACCC	Australian Competition and Consumer Commission
ARG	Australian Railroad Group
ARTC	Australian Rail Track Corporation
ARTC Approved Undertaking	The ARTC Undertaking approved by the ACCC May 200 covering the ARTC Network as it was at that time.
CBS	Capacity Balancing System
Ceiling	The maximum revenue allowed to be recovered from one or more line segments.
Coal Undertaking	The ARTC Coal Access Undertaking applicable to Coal traffic in the Hunter Valley of New South Wales.
constrained network	Those line segments that are able in combination to attract the Ceiling revenue.
CPI	Consumer Price Index
DORC	Depreciated optimised replacement cost
dump station	A dump station is the discharge point for the coal from rail wagons at the export or domestic terminal. The coal is discharged through doors on the bottom of the wagon onto a conveyor belt. The coal is then taken to a stockpile.
Floor	The minimum revenue allowed from any individual train.
HVCC	Hunter Valley Coal Chain
HVN	Hunter Valley Network (which includes the AHVN plus other track not leased by ARTC)
IPART	Independent Pricing And Regulatory Tribunal
Logistics Team	Hunter Valley Coal Chain Logistics Team
Mezzanine	A reference to the second 'intermediate' part of the Floor Limit. This looks to the aggregate avoidable costs for a line segment rather than just the incremental cost of a particular operator.
MUGED	Model Undertaking – General Explanatory Document
NSWRAU	NSW Rail Access Undertaking (September 2004)
PWCS	Port Waratah Coal Services
QCA	Queensland Competition Authority
reclaimer	A machine used to capture coal from a stockpile (usually to move it to a ship-loader or for end-use such as burning in a furnace).
RIC	Rail Infrastructure Corporation of NSW
stacker	A machine used to place coal onto a stockpile.
stacker stream	A series of conveyor belts feeding a stacker.
TPA	*Trade Practices Act 1974 (Cth)*

1 INTRODUCTION AND PURPOSE

1.1 PURPOSE

This document and the accompanying Model Undertaking – Coal (**MUC**)[1] has been prepared to provide a detailed and considered regulatory framework for the provision of rail infrastructure access and ancillary services for coal trains on the Australian Rail Track Corporation Limited (**ARTC**) Hunter Valley network. It is intended that the MUG along with its sister, the Model Undertaking – General (**MUG**) will assist in the discussion surrounding the forthcoming regulation of access to the ARTC network.

The MUC is designed to be complimentary to the MUG which deals with similar matters for the entire ARTC network, including the Hunter Valley network but excluding coal trains on the Hunter Valley network.

The current approved ARTC Access Undertaking is referred to in this document as the **AAU**. The MUC (like the MUG) has used the AAU as a base. However, note that the AAU does not currently apply to any trains in NSW. The current regulatory framework is discussed in Section 1.2.

A substantial part of this Explanatory Document is directed towards explaining the Hunter Valley Coal Chain (**HVCC**) and how the various components interact. It is important that this be understood as context for the MUC. The MUC approaches a number of matters relating to rail infrastructure in a different way from how they are treated in the MUG and these differences are primarily driven by the system nature of the HVCC.

For the purposes of clarity, this paper refers to the document to be approved by the Australian Competition & Consumer Commission (**ACCC**) to succeed the current regulatory arrangements as the **Coal Undertaking** to distinguish it from the MUC, the MUG and existing regulatory arrangements. The MUC has been formulated in a manner such that it could stand as a complete Coal Undertaking for the Hunter Valley, though some aspects of the document have not been completed at this stage either because:

- The relevant part of the document is a matter of detail that is not necessary for consideration of the underlying concept; or
- In several ancillary matters, Pacific National has not formed a firm view as to the principles that should apply.

Given that the MUC and the MUG are intended to work together, issues in common between them that have been fully discussed in the MUG Explanatory Document (**MUGED**) have not been repeated here. Instead, where appropriate, the reader is referred to the relevant section in the MUGED.

1.2 BACKGROUND

See the MUGED section 1.2 for a discussion of ARTC's network and current regulatory arrangements and MUGED section 2 for further general background material.

The rail network in the Hunter Valley forms part of a system that delivers approximately 85 million tonnes of coal annually to the port at Newcastle for export. That system will be described in detail in section 2 below.

In September 2004, control over a significant part of the Hunter Valley network (**HVN**) was transferred from the Rail Infrastructure Corporation of NSW (**RIC**) to ARTC by way of a long

[1] See Appendix B.

term lease. Under an agreement with RIC, ARTC also manages additional track that is used for the transport of some of the coal exported through Newcastle; but effective ownership of that track remains with RIC. Other parts of the HVN are owned and controlled by RailCorp.

Access to the ARTC leased Hunter Valley network (**AHVN**) is currently regulated by the NSW Rail Access Undertaking (September 2004) (**NSWRAU**). The Transport Administration Act 1988 (NSW) s 99C provides for ARTC to submit an Undertaking to the ACCC. Approval of that Undertaking by the ACCC would transfer regulation of access to the AHVN to the Undertaking and the NSWRAU will cease to apply to the AHVN. However, the NSWRAU will continue to apply to those parts of the HVN that are not leased to ARTC ie those parts retained by RIC and RailCorp.

ARTC has indicated that it intends to submit two Undertakings to the ACCC, one covering the Hunter Valley coal region and another covering the remainder of its standard gauge network.

1.3 A REGULATORY STRUCTURE SYMPATHETIC TO THE SYSTEM

Underpinning every aspect of the HVCC is fact that it is a system and that decisions made regarding one aspect of the coal chain (eg the rail infrastructure) affect every other part in some material way. Necessarily, this leads to the inescapable fact that the planning of any activities will have better results if performed on the basis of the system requirements rather than through consideration of only a single facet of the system.

As will be described in section 2.4, in recent years, great strides have been made in bringing the logistics service providers in the HVCC together to plan the provision of services on a cooperative and coordinated basis. This major change in the method of service provision arose through a shared understanding that each component of the HVCC interacts with the others and that efficiency is significantly adversely affected whenever the parties act unilaterally.

Thus a planning and scheduling group known as the Hunter Valley Coal Chain Logistics Team (**Logistics Team**) has been formed to provide the mechanism for the formulation of plans by each service provider in cooperation and coordination with all the others. This process has delivered significant capacity gains and provides the best opportunity for resolving the on-going capacity short-fall for the Hunter Valley over the next several years.

It is important that the regulatory structures underpinning the operation of the HVCC support the cooperative centralised planning arrangements. The interrelationships between the parties are complex and the issues that need to be covered, while common to many regulatory structures, require careful consideration in this wider context. It is with this in mind, that the MUC has been developed to take into account the need for consistency with, and support for, the structures of the HVCC as well as catering for the interaction with other regulatory structures with which the Coal Undertaking must interface (eg the MUG). It is a concern that the alternative of considering the Coal Undertaking in isolation, simply as an arrangement for the provision of rail access in the accustomed manner, would run the risk of placing the emphasis on traditional 'above-rail' and 'below-rail' [2] arrangements to the detriment of the operation of the HVCC as a whole.

1.4 MODEL UNDERTAKING - COAL

The MUC takes into account a number of specific issues. These will be discussed in detail later in this submission:

- The MUC is both traffic based (coal trains) and geographic (the AHVN) to deal adequately with HVCC specific issues.

[2] 'Above-rail' refers to the operation of trains ie those activities occurring on top of the rail whereas 'below-rail' refers to the provision of rail infrastructure and the management of traffic on that infrastructure (eg train control).

- The need for a fundamentally different path allocation mechanism and the part played by the Logistics Team.
- The need for a radically different approach to "access rights" that incorporates the pathing issues.
- Recognition of the interaction of investment decisions between the infrastructure provider and other service providers in the HVCC.
- Recognition of the special position of the infrastructure provider in the revenue and economic return provisions.
- Interaction with other Undertakings.

Many of these issues are complex, the more so when considered in a system context requiring consistency between the various concepts. These concepts are presented as a complete package in the form of the MUC as this demonstrates the cohesiveness of the package and the interrelationship between the various components. When seen in this form, parties will have an opportunity consider the entire arrangement and to critique it as such rather than the more complex task of analysing individual concepts without the benefit of seeing them in relation to the whole.

1.5 WHY SHOULD ARTC CONSIDER THE MUC

Many of the relevant issues for this section are covered in the MUGED (see MUGED section 1.4). The following additional comments are made as to why the approach adopted in the MUC should be considered.

The special circumstances of the AHVN lend themselves to a treatment of an Undertaking different to the processes normally followed. The AHVN is part of a system constructed to deliver coal to ships or domestic customers. The system is complex and consists of a number of components that must interact in a coordinated manner to function effectively. It is important that the Coal Undertaking fit closely into the wider system. It is not sufficient that there is sufficient nominal capacity which can be utilised by trains as operators think fit, as more or less happens for general interstate intermodal movements – rather the entire system requires a high degree of coordination from the mining of coal through to the delivery of coal onto ships (or into domestic furnaces).

It is therefore of significant interest to stakeholders that the Coal Undertaking is consistent with, and supports, the HVCC as a whole. The HVCC delivered 80 million tonnes of coal for export in calendar 2006. At current prices, this equates to nearly $5 billion in export revenue to Australia. By any reckoning, this represents a significant income to Australia and therefore it is not just service users or stakeholders that will benefit from a Coal Undertaking that is fit for purpose, but it is demonstrably in the public interest that this occurs. Many of the arguments that persuaded the ACCC to approve the Capacity Balancing System for the HVCC, through Port Waratah Coal Services (**PWCS**) apply to the need for an efficient and internally consistent series of supplier arrangements, of which the AHVN is one. The MUC has been constructed to fit within this framework while also catering for the important interactions with the non-Hunter Valley rail network.

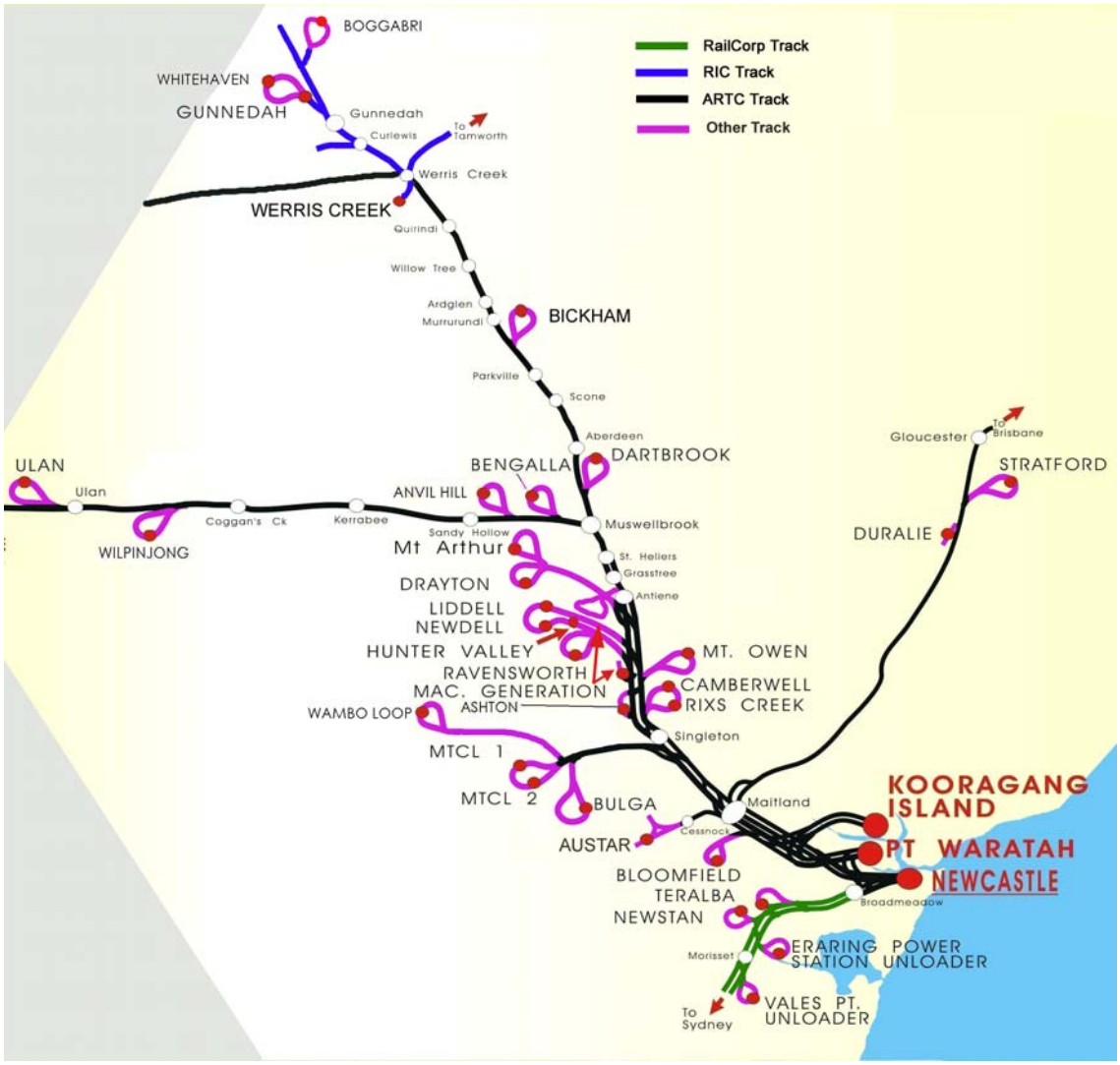
2 DESCRIPTION OF THE HUNTER VALLEY COAL CHAIN & ROLE OF THE UNDERTAKING

As the MUC takes a very different approach on many matters to a 'standard' rail infrastructure undertaking, it is important to understand the nature of the system that the AHVN supports. To this end, this section explains in some detail the various elements of the HVCC and in particular the operation of the Logistics Team.

2.1 PHYSICAL SYSTEM

The HVN currently incorporates all of the rail infrastructure required to haul coal in the northern region of NSW. The AHVN is a subset of this. Figure 2-1 is a schematic of the rail infrastructure.

FIGURE 2-1: HUNTER VALLEY RAIL NETWORK



There are four tracks between Newcastle and Maitland, two of which are ostensibly specifically for coal[3]. A major investment recently completed by ARTC connects these 'coal roads' to the

[3] In practice these lines are also used by other traffics from time to time.

rail receival terminal at Kooragang Island via a grade separated crossing of the 'non-coal roads' thus alleviating a significant capacity constraint to the system.

West of Maitland, there are two tracks nearly to Muswellbrook that are primarily coal related. The Ulan branch west of Muswellbrook is a single track. Several additional mines are planned for this area. These lines service the major existing tonnages.

Small but increasing volumes are received from the Gunnedah Basin north of Werris Creek. This area is undergoing significant investment with new mines having recently commenced and several more planned in the near future. Production of coal will increase substantially. The rail line servicing this area is rapidly moving from being predominantly a grain line to becoming dominated by coal traffic. Investment on both the ARTC and the RIC portions of this line are being contemplated including finding a solution to the current constraints posed by the Liverpool range.[4]

Coal is also sourced from Stratford on the ARTC main North Coast line.

The RailCorp network which joins the AHVN just south of Newcastle also services two coal mines and coal is railed to two power stations in that area. These lines are predominantly passenger lines.

The HVN includes 650 track kilometres and the AHVN 500 track kilometres. The average haul distance is around 120 kilometres. For the main coal lines, the maximum permitted axle load is 30 tonnes, allowing a single coal wagon to carry a payload of around 95 tonnes. Other lines have a maximum axle load of 25 tonnes.

Apart from the movement of coal, the network connects the main North Coast line from Sydney to Brisbane (used primarily by intermodal traffic) and carries grain, intermodal and minerals traffic from the north west region of NSW to the port and Sydney. There is also a level of passenger traffic on the HVN.

2.2 HVCC DESCRIPTION

The purpose of the HVCC is to deliver coal from the load-point to either vessels or domestic stockpiles. The task to date has overwhelmingly been export related and even though domestic movements will increase in the next few years, the export task will remain the dominant task (see Table 2-1).

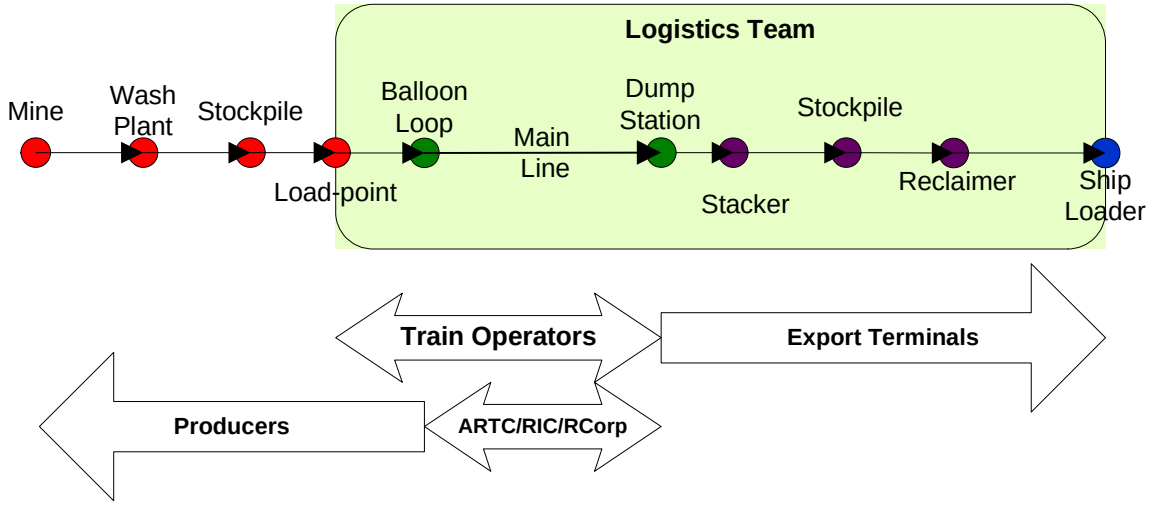
TABLE 2-1: HVCC COAL VOLUMES (MILLION TONNES)

	Export	Domestic	Total
2003/04	77.0	3.4	80.4
2004/05	77.6	5.5	83.1
2005/06	80.0	5.5	85.5
2006/07 F'cast	90.1	5.8	95.9
2007/08 F'cast	92.1	8.3	100.4

The HVCC comprises a number of components. These are shown in Figure 2-2. For the purpose of simplicity, domestic deliveries have been excluded but the process is analogous though there is less volatility in domestic railings.

[4] The Liverpool range currently constrains the productivity of trains due to the steep grades involved. A variety of solutions are being actively considered by ARTC including new tunnels and alignments that reduce the approach grades on the existing tunnel.

FIGURE 2-2: HUNTER VALLEY COAL CHAIN



In more detail, the components include:

- **Cargoes** – these are the focus of the export part of the coal chain. The assembly of cargoes at the port is the primary purpose of the existence of the coal chain. The port is operated on the basis that cargoes will be assembled and loaded onto ships in the order in which the ships arrive at the port. Cargoes have certain constraints such as:
  - the order in which the vessel for which the cargo is destined will arrive
  - the number of different cargoes for a particular vessel
  - the location (sometimes several locations) from which the coal must be accumulated
  - the size of the cargo
  - the availability of the coal to be transported once a stockpile is available
  - the characteristics such as the density of coal (affects the mass that can be loaded into a wagon and hence the number of trains required)
  - the number and size of cargoes in the coal chain at a particular time (affects the allocation of stockpiles, trains etc)
- **Load-points** including associated stockpiles and rail infrastructure where coal is accumulated for transport either directly from the mine or after washing. Load-points have certain technical capabilities such as:
  - the rate at which coal can be loaded into rail wagons
  - the size of train and wagon characteristics that can be accommodated through the load-point
  - the speed at which the load-point can be recharged from stockpiles
  - availability of the load-point to load trains
  - availability of coal when a stockpile is available at port for a particular cargo
- **Trains** comprising locomotives and wagons for transport of coal from the load-point to the port or power station. These have a number of technical constraints including:
  - maximum and/or optimum length of train
  - tare and gross mass of wagons and locomotives

- availability of locomotives and wagons
- cycle times between load-points and discharge points
- volumetric and mass payload capacity of wagons (dependant on rail infrastructure, terminal and load-point infrastructure eg height restrictions)
- maximum and/or optimum mass of train (dependant on locomotive configuration, rail infrastructure, terminal and load-point infrastructure)

- **Rail infrastructure** comprising the track, signalling systems and train control system required to facilitate the running of trains. These have the following major features:
  - capacity of the infrastructure (ie what physical infrastructure is available)
  - connections with other rail infrastructure providers
  - traffic volumes and type (eg the number passenger trains on a line can have a huge impact on the availability of train paths for coal trains)
  - type of safeworking system in place (eg centralised traffic control vs manual systems such as 'staff & ticket')
  - signalling headways (ie the time it takes for a train to clear through a signalled section so that the next train can advance)
  - length constraints because of either crossing loops (so opposing trains can pass each other, typically on single line sections) or signal spacing.
  - maximum axle-loads (ie the maximum mass allowed on each axle on a wagon or locomotive)
  - structure gauge (which determines the maximum allowable dimensions of rollingstock)
- **Export coal terminal** comprising receival facilities (ie dump stations), stockpiles, stacking and reclaiming equipment, berths and ship loaders. These have the following major features[5]:
  - stockyard size (ie what physical area is available for stockpiling coal)
  - number and size of cargoes to be accumulated
  - speed and flexibility of conveyor belts and stacker/reclaimers
  - distribution of cargoes across the stockyard (eg if two trains arrive in sequence with coal for cargoes stockpiled at two extremes of the stockyard, the time to reposition the stacking equipment can be significant).
  - cargo size and location (eg Carrington vs Kooragang)
  - cargo blending requirements
  - berth operations
  - vessel size and loading constraints
- **Road delivery** – a small volume (around 1 million tonnes) of coal is delivered to the port by road. This impacts on the coal chain through:
  - typically forms part of a larger cargo
  - where separate cargo requires separate stockpile
  - only available through Carrington (not Kooragang Is)

[5] Similar features (except berths) apply to domestic coal receival facilities but on a different scale.

- **Port** comprising the marine environment and shipping. These have the following major features:
  - navigational restrictions (eg size of vessel that can be accommodated due to draught)
  - availability of pilots and tugs
  - interaction with other shipping (eg grain and general cargo)
  - weather, tides and other natural events

The nature of the inter-relationship between those components means that close coordination of the components of the coal chain is necessary for the coal chain to operate effectively. For example:

- It would wastefully consume capacity for a stockpile to be allocated for a cargo if the coal is not available to be moved;
- A stockpile must be allocated for a particular cargo before a train can be unloaded – if a train loaded a particular quality of coal without a stockpile, it could not be unloaded hence making that train unavailable for other movements until a stockpile was made available;
- Failure to invest by one party where others had invested to provide a certain level of system capacity thereby creating a choke-point and poor utilisation of the other assets;
- Maintenance of the rail infrastructure causing unavailability of the network, followed by closure of the export coal terminal for maintenance would result in no coal moving at either time;

2.3 SYSTEM PARTICIPANTS

The parties that currently provide significant services to the HVCC include:

- **Producers** – Producers mine and sell the coal. In recent years there has been considerable aggregation of mines so that 2 entities mine approximately 76% of the coal produced in the HVCC. In total there are 14 producers.
- **Traders** – The role of traders is the accumulation and sale of cargoes, typically from multiple sources within the HVCC. Traders acquire their coal as it is loaded onto ships (ie it is the producer that arranges the movement to port) and so, while they clearly have an interest in the performance of the HVCC, they tend not to be significantly involved directly in the provision or consumption of services.
- **PWCS** – PWCS owns and operates the existing export coal terminal at Newcastle. The terminal currently has two locations, at Port Waratah (2 berths) and Kooragang Island (3 berths). PWCS is owned by a group of coal producers and customers and is required by its charter to provide services to any customer seeking to export coal on a set of standard terms and conditions. PWCS has in excess of 100 million tonnes of capacity (annualised) with plans to expand to 120 million tonnes.

  Another group, Newcastle Coal Infrastructure Group (**NCIG**) which is also owned by coal producers won the right to construct an additional coal terminal in 2006 and early feasibility and planning work is proceeding for that terminal's construction. Additional berths and stockpile areas would be required to provide above 120 million tonnes annual capacity whether through the proposed NCIG facility or an expansion of the existing PWCS terminal. The NCIG facility is being planned to have an initial capacity of 30 million tonnes.
- **Load-points** – there are 24 load-points currently in the HVCC. These are owned by either coal producers, or in some cases third-party service providers are consortiums of producers.

- **Rail Infrastructure providers** – there are a number track providers but each has a monopoly on the provision of rail infrastructure services for that particular location. The rail infrastructure providers include:
  - ARTC – leaseholder and manager of the AHVN and the Interstate Rail Network. This includes the rail receival terminals at Pt Waratah and Kooragang Is.
  - RIC – owner of the 'residual' NSW network. This network is managed by ARTC under contract to RIC.
  - RailCorp – owner of the metropolitan rail network which includes some track used by coal traffic south of Newcastle.
  - Private owners of balloon loops - Typically each load-point owns a balloon loop and rail spur to connect to the rail network. In the case of South Maitland Railway this amounts to a substantial private railway line of some 29 kms.
- **Train Operators** – there are a number train operators either operating on the HVN or who could potentially operate on that network. These include:
  - Pacific National – currently the predominant user of the network. Pacific National uses the HVN for coal, grain, intermodal and minerals traffics.
  - QRNational/Interail – currently using parts of the AHVN and parts of the RailCorp portion of the HVN. QRNational is a substantial train operator in the Hunter Valley. QR also transits the HVN with its intermodal services.
  - ARG - (now part of QRNational) operates grain services that transit the HVN.
  - Independent Rail – currently operates some intermodal services out of Newcastle.
  - Patrick Rail – provides intermodal services that transit through the HVN.

2.4 HVCC MANAGEMENT

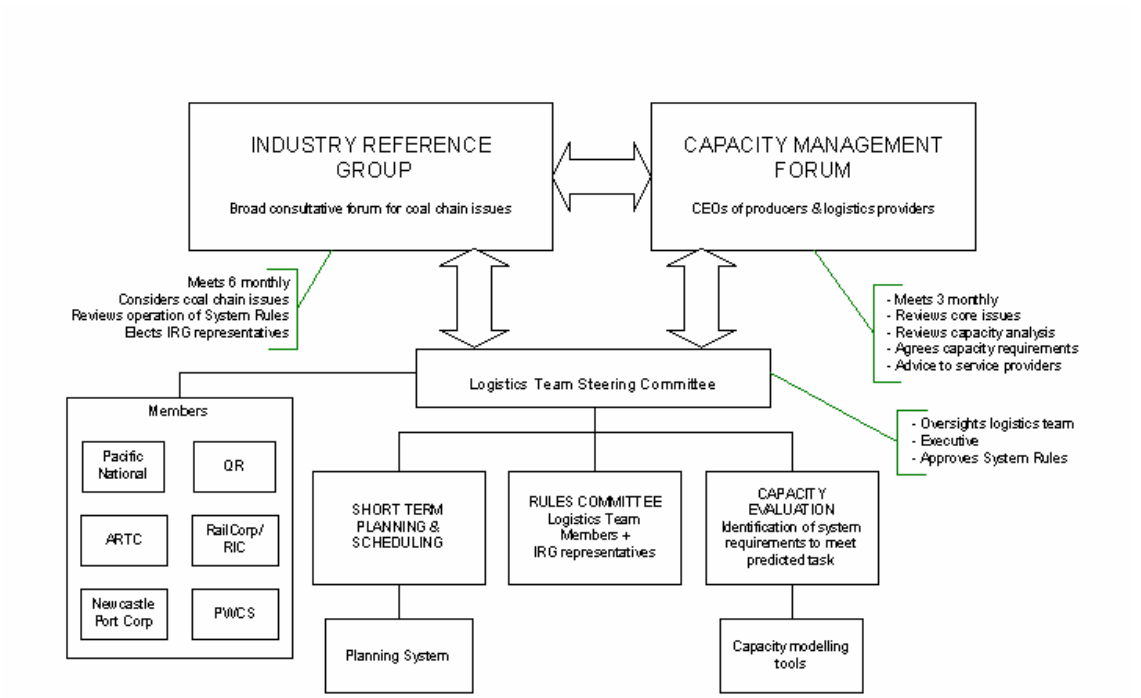
As demonstrated in section 2.3 each of the various elements of the HVCC is owned by a different entity and in some cases several entities providing that type of service eg there are several train operators and a number of load-points. Although there is a need for substantial cooperation, underlying the coal chain the coal producers are in fierce competition with each other as are some of the logistics service providers. Because of this competitive dynamic and the diversity of ownership, management of the HVCC was, until quite recently, characterised by fragmented and independent decision making by each part of the coal chain.

In 2003, after a combined study between the key service providers, the lack of centralised planning was identified as a key cause of inefficiency within the HVCC. As a remedy, the Logistics Team was formed with resources provided by PWCS, Pacific National and RIC (these are now provided by ARTC).

With the changes to various of the service providers (eg the handing over of part of the network from RIC to ARTC and the increased participation by QRNational) and with the problems highlighted by the unpredicted surge in demand leading to the introduction of the Capacity Distribution System, and its successor, the Capacity Balancing System, it was seen that formalisation of the Logistics Team and the introduction of a framework to enhance consultation and centralised management of key logistics activities were critical elements to a stable and effective management of the coal chain.

Figure 2-3 shows in schematic form the structure of the Logistics Team and its relationship to other parts of the HVCC.

FIGURE 2-3: SCHEMATIC OF THE LOGISTICS TEAM.



The Logistics Team and its supporting structures now have the following core elements:

- **Membership** – membership of the Logistics Team is open to any logistics service provider that impacts on the HVCC. All members participate in the management of the Logistics Team and have equal voting rights in decisions eg the System Rules.
- **Coordinated Logistics Planning & Scheduling** – all logistics services from load-point to vessel are planned and scheduled through the Logistics Team. To this end, a sophisticated planning and scheduling system assists what was, until recently, a complex manual task of coordinating the various elements of the HVCC into an efficiently functioning set of operations.

  It is important to note that the Logistics Team has been carefully constructed by its members to separate out those activities that require cooperation (eg planning and scheduling of trains and port stockpiles) from activities where there may be competition. Thus the Logistics Team assiduously avoids any activity associated with the commercial arrangements between competing parties (eg train operators) and their customers. This divide is well respected by the members.

  The Logistics Team is staffed by people seconded from the member organisations, but operates on an independent basis. To enhance the appearance as well as the fact that the Logistics Team operates independently of its members, the General Manager is an independent person who is not employed or otherwise connected to any of the members.
- **System Rules** – these are intended to provide a level of discipline for the operation of the system. A system without rules would be chaotic and the current system does have some 'rules'. Unfortunately the existing rules tend to be informal, built on custom and practice and, in the main, unenforceable. In the longer term there appears to be significant advantage in having a set of formal rules that can be applied in a fair and consistent manner across all service providers and their customers.

The System Rules are created through the Logistics Team structure via a special Rules Committee. This committee has representation from members of the Logistics Team and the Industry Reference Group.

- **Central Capacity Evaluation** – one of the key findings from the successful operation of the Logistics Team is confirmation of the inter-related nature of investment decisions in the coal chain. The previous practices of each player making its own decisions on what investment was required cannot be sustained in the current environment without running real risks of mismatches – where one party might over-invest but another under-invest, leading to unintended bottlenecks in the system.

  To overcome this problem, the evaluation of investment requirements and assessment of system capacity is carried out centrally within the Logistics Team. Without in any way over-riding the ultimate decision making of individual service providers, this structure allows all parties to understand the impact of their investment programmes, overall system capacity and specific requirements to address identified issues. The structure also allows for the formulation of system-wide capacity modelling tools that would not otherwise be available.

- **Capacity Management Forum** – the Capacity Management Forum is a group at Chief Executive level comprising the logistics service providers and coal producers. The purpose of the forum is to provide an opportunity for senior industry leaders to consider the operation of the HVCC and the capacity requirements into the future. While this group is primarily consultative, it is clearly an influential body and provides a forum in which consensus can be achieved for the direction of the management of the HVCC and particularly the level of capacity that producers want provided.

- **Industry Reference Group** – this group is a widely formulated consultation group. It provides an opportunity for all industry participants to consider the current operation of the HVCC with an emphasis on the efficacy or otherwise of the System Rules. This body provides representatives to the Rules Committee and therefore has an active involvement in the setting of the System Rules. The group is deals with the coal chain on a "practitioner" level.

These arrangements are designed to provide a stable environment for logistics service providers and their customers to operate with a high degree of predictability of outcomes and also serves to highlight the need for investments that are coordinated across the entire coal chain. An aspect of the arrangement is that it requires all of the participating logistics service providers to be willing to sacrifice short term self-interest for the greater benefit of the HVCC where system efficiency dictates. Ultimately this benefits all parties through the achievement of increased volumes and greater efficiency, although this may add real cost to a particular service provider in the short term. This enlightened self-interest is a key element to the success of the Logistics Team and requires a sophisticated approach from all service providers.

To date all service providers have recognised the continuing benefits of the Logistics Team and its supporting structures and destructive behaviours have been avoided. However, it must be recognised that voluntary nature of the structure is both a strength and a weakness and unilateral action by any one member remains a risk to the effectiveness of the Logistics Team.

Similarly, it is important that the regulatory structures for the various components of the system are consistent with the requirements of the HVCC. Clearly a rail access undertaking that was inconsistent with the needs of the HVCC could impose an intolerable burden on the system. The MUC has been prepared with this requirement in mind and closely aligns the structures for access to the AHVN with those of the wider coal chain.

2.5 ROLE OF THE CAPACITY BALANCING SYSTEM

An element of the long term management not discussed in so far is the Capacity Balancing System (**CBS**). This system, and its forerunner the Capacity Distribution System[6] were introduced into the HVCC as a mechanism for the fair allocation of capacity where demand had significantly overrun supply.

Prior to the introduction of the CBS, the natural balancing mechanism between supply and demand was the queue of ships off the port. Cargoes would be assembled as quickly as the system would allow, and ships would be loaded in the turn in which they arrived in the queue. In early 2004, the queue ballooned and reached 50 ships, indicating a massive over-demand relative the capacity of the system to fulfil that demand.[7]

The consequence of ships joining a queue is that the ship owners charge demurrage. In the case of the HVCC, these costs are typically passed on to coal producers. Demurrage rates vary but are often of the order of $US20,000 per day. Hence a large queue of ships off the port is highly expensive to the producers in the HVCC.[8] The CBS was introduced to address this cost and, by rationing the supply of stockpile space to producers, was highly effective in matching demand to the available capacity, thereby reducing the queue of ships while at the same time assuring the effective utilisation of the available capacity. During 2006 it was believed that the queuing problems had been overcome and the CBS was discontinued, but the queue of ships has again ballooned and the CBS has been approved by the ACCC to be reintroduced in April 2007.

For the longer term, the management structure put in place with the current Logistics Team and associated consultation mechanisms has been designed to avoid, where possible, a shortage of capacity arising through the provision of accurate forecasts and the coordination of investment requirements and plans between service providers. However, given the long lead times for investment in major infrastructure, it is likely that at various times in the future it may be necessary to reintroduce a CBS type arrangement to allocate capacity in the face of excess demand.

2.6 CURRENT REGULATORY ENVIRONMENT

See the MUGED section 3.2 for a discussion of the current regulatory environment for access to rail infrastructure in NSW.

2.7 ARTC ACQUISITION OF THE NETWORK

See the MUGED section 3.3 for a discussion of the ARTC acquisition of part of the NSW rail network.

2.8 NEED FOR A SEPARATE COAL UNDERTAKING

The approach adopted by ARTC to have a separate access agreement to cover the AHVN has much merit given the complex and unusual characteristics that apply to that part of ARTC's network. The overarching issue is the need, more so than in any other rail environment to ensure an exceptionally close linkage between the provision of rail infrastructure services and the needs of the coal chain as a whole.

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6 The CBS introduced for calendar 2005 represents a refinement of the Capacity Distribution System that operated for much of 2004. For simplicity, the discussion will refer to the CBS when referring to either system as though they were the same.

7 Newcastle loads, on average, 3 ships per day so a queue of 50 ships represents approximately 15 days of queuing.

8 With a 15 day queue, this represents a cost in the order of $US300,000 per ship.

In comparing the HVCC with other bulk haulage rail networks, one can see the substantial differences that give rise to this need:

- **BHP (and other Iron Ore railways in WA)** – the BHP iron ore railway is representative of several railways in that region. These are characterised by the single ownership of the port, above and below rail and mine ie the entire production chain. A key argument and point of distinction for BHP in its case against Fortescue was its ownership of the production chain and how this was used to manage its product.[9] The issues that the Logistics Team attempts to solve through cooperation between organisations are resolved internally within the management structure of BHP and therefore no external regulation or rules need to be imposed.
- **QR Central Queensland Coal Fields** – perhaps more closely analogous to the Hunter Valley are the various central Queensland coal rail networks owned by QR. Many of the issues facing the HVCC could face these QR networks. Due to the existing arrangements, ie the fact that the networks are owned by the predominant (and currently only) above rail operator,[10] the disconnects that might otherwise apply between above and below rail are mitigated.

  Other factors serve to differentiate these Queensland systems from the HVCC. Some of the central Queensland coal ports are "stockpile" ports ie customers are able to purchase specific capacity at the port for the railing of their product and therefore there is a lower requirement for coordination of cargoes, rail programme and port stockpiling than at Newcastle where the port is a "cargo assembly" port and stockpiles are allocated to a particular cargo when space becomes available. However, capacity constraints are moving these ports more towards the Newcastle cargo assembly approach and it is instructive that moves are afoot to implement a Logistics Team style arrangement for those systems to address the disconnects that become more disruptive because of these changes.

Why is a separate Undertaking required? Why not merely make special provision for the AHVN in a general Undertaking?

The requirements of the AHVN are substantially different from those of an Undertaking directed towards other traffics such as intermodal. The key differences are described in the MUGED (see MUGED section 5.2, and Table 5-1). These differences would serve to completely realign much of the current AAU which is based around the assignment of paths to operators on a fixed, long term basis. The allocation of paths to operators in the HVCC would be quite contrary to interests of the coal chain itself, and indeed the operators.

These differences go to the very structure of the undertaking and it is more appropriate to deal with the issues in separate undertakings that allows the different structures to be accommodated without the need for compromise or added complexity.

A consequence of having two different regulatory arrangements raises issues of consistency between the documents and the treatment of different traffics in accordance with different rules. These issues have been addressed in the MUC.

[9] The Federal Court has recently modified its previous position on the production process argument, but the issue is likely to be subject to further curial consideration. Regardless of the outcome, the point is that for heavy haul export rail systems, there are very strong connections with other parts of the production process.

[10] Pacific National operates in competition with QRNational on intermodal routes but is not currently providing coal haulage services in Queensland.

3 DESCRIPTION OF THE MUC

3.1 FORMAT

The MUC has been formulated from the AAU. The reason for taking this approach is two-fold:

- The starting point is an undertaking that the ACCC has previously considered and approved, providing a body of knowledge on which to draw; and
- The AAU provides a framework from which departures can be identified and the reasons for the approach taken contrasted with a previously understood base.

The changes are extensive, reflecting the fundamental differences of both the traffic and the relationship of the traffic to a wider system compared to the general interstate traffic for which the AAU was formulated. For example, the AAU is based around the concept of selling fixed paths to train operators over the long term. The MUC is based around ARTC providing paths on a daily basis through the centralised planning processes of the Logistics Team.

The MUGED section 3.7 provides a discussion on the requirements contained in the Trade Practices Act 1974 for an undertaking. The MUC has been designed to conform with those requirements.

In this section, we consider the various components of the MUC, highlighting the significant differences to the AAU. Where the differences deserve further detailed discussion, those concepts are covered in more detail in subsequent sections.

A feature of the MUC is that it emphasises the relationship between the service provided by ARTC and the HVCC, through ARTC's participation in the Logistics Team and the various planning and scheduling processes that are coordinated through that team. This feature impacts on a number of areas and leads to innovative outcomes in dealing with issues such as path allocation and investment.

In order to provide a more complete package, the MUC also contains a Draft Access Agreement.

An annotated version of the MUC is provided at Appendix B.

3.2 PREAMBLE (MUC SECT. 1)

Many of the existing background statements in the AAU are either irrelevant to coal trains in the Hunter Valley, or have been overtaken by events. The MUC has reworked this section to reflect the different nature of the traffic and system within which it operates and interacts and also to emphasise the systemic nature of the Hunter Valley and ARTC's role within that system.

Like the MUG, the MUC has included a set of fundamental objectives and a section on service objectives. The AAU is silent on the service aspirations of ARTC; by adding these objectives it enables the MUC to clearly state ARTC's relationship to the HVCC as a whole and the part that the rail infrastructure provider will play in furthering the system objectives.

It is also worthy of note that the goal of traffic growth through modal shift from road that is a key objective for ARTC on the interstate network is not relevant to the HVCC where effectively all coal traffic is already transported by rail where this is economically feasible. Rather the ultimate objective is to provide and mange the rail infrastructure in the Hunter Valley to maximise the throughput for the coal chain at the most efficient overall supply chain cost, while also providing for the needs of non-coal traffic.

The objectives also make reference to ARTC's ownership of the coal rail receival terminals at Port Waratah and the requirement that the management of these terminals be consistent with the Integrated Plan prepared by the Logistics Team.

3.3 SCOPE (MUC SECT. 2)

The MUC has been designed to cover;

a) a specific region – bounded by Islington Junction in the south[11] and the ARTC lease as far as Werris Creek and Ulan (but including future expansion to the west on the leased network). This is defined in the MUC in Schedule E; and

b) a specific traffic – coal (both export and domestic).

This was seen as necessary to avoid, where possible, requiring more than one access arrangement for a particular train (at least within ARTC territory). However, care has been taken to ensure that consistency can be achieved between the two undertakings (ie the MUC and the MUG).

The two alternatives considered were to have either:

- a region specific undertaking, or
- a traffic specific undertaking.

A region specific undertaking that would apply to all traffics passing through that region has the problem that traffics seeking paths through multiple areas (eg interstate intermodal trains) would need to deal with an additional undertaking and hence the path allocation processes in the MUC would need to mirror those of the MUG. Taken to its logical conclusion, there would be no benefit in having a separate undertaking for the AHVN as the level of conformity with the rest of the network would need to be substantial. While it would be possible to cater for the differences through a series of schedules to a common undertaking, this would in effect be to duplicate much of the document.

A coal traffic specific undertaking offers little advantage outside the AHVN as the nature, volume and location of coal traffic outside the AHVN is very different. This is because the principle other coal traffic, that originating from the Blue Mountains and Southern Highlands regions of NSW interacts to a large extent with the RailCorp metropolitan network and must therefore conform to the constraints of that network. This factor, combined with the fact that the export terminal at Pt Kembla operates as a "stock-pile" terminal rather than a "turn-of-arrival" terminal means that the southern NSW coal trains operate much more in the fashion of fixed paths like intermodal traffics[12]. While there is a need for close cooperation between the various parties involved in the southern coal chain, there are not the same imperatives for a centralised planning team as in the Hunter Valley.

Thus the conclusion was drawn that a coal traffic **and** region specific Undertaking was required.

This issue is canvassed in more detail in the MUGED section 5.

As with the MUC, the MUG is intended to apply over a 10 year term.

[11] This is the boundary between the ARTC lease and RailCorp.

[12] While these trains run to fixed paths, the operation requires a greater degree of flexibility than is required for Intermodal traffic and this is provided by allocating additional paths than would be needed for a strictly fixed path operation.

3.4 NEGOTIATION OF ACCESS AGREEMENT (MUC SECT. 3)

For the most part, the MUC leaves the existing arrangements for the negotiation of an access agreement intact except for those aspects related to the negotiation of specific paths. These are removed as they are redundant.

As in the MUG, greater emphasis is placed on the ability of any party to enter into an access agreement, provided that the party can secure the services of an accredited train operator to operate the services. Concomitant with that emphasis, the MUG also identifies more closely the various responsibilities of each party.

The dispute resolution processes are substantially unchanged with the exception that provision is made for an alternative arbitrator in the event that the ACCC is not in a position to act as arbitrator.

The MUC also mirrors other changes in the MUG:

- Provision for a standard information fee
- Modifications to the prudential requirements
- Timeframes for negotiations
- Preparation of an IAP, though there are some differences arising due to the different nature of the access rights involved.
- Failure to satisfy prudential requirements
- Parties to an agreement
- Use of other operators
- Dispute resolution criteria

Discussion of these changes is contained in the MUGED section 6.

3.5 PRICING (MUC SECT. 4)

The MUC substantially modifies the AAU approach to pricing. The basis of pricing adopted for the MUC are those principles and practices that applied both prior to and immediately post the ARTC take-over of the network. Those principles and practices have been subject to previous regulatory scrutiny by the Independent Pricing And Regulatory Tribunal (**IPART**)[13] and have become well accepted by industry participants. The intent in the formulation in the MUC is to codify those arrangements to:

- Promote transparency;
- Provide clarity of process; and
- Enshrine these principles for all parties and provide certainty into the future.

Principles underlying the proposed pricing regime include:

- Efficient cost – prices are based on the efficient cost (including the maximum regulated return) of providing the capacity required by the system.
- Asset valuations - made on the basis of depreciated optimised replacement cost (DORC) method. The current asset valuation for the Hunter Valley is rolled over with provision for revaluation each five years. The basis for that evaluation remains the same as previously determined by IPART with the clarification that a Greenfield basis is solely used. This is consistent with the actual valuation carried out and endorsed by IPART.

[13] IPART is regulator under the NSWRAU.

- Every movement needs to cover, as a minimum, its short run incremental cost.
- Every load point to port, in combination with other users, as an objective, needs to cover long term incremental cost. Eg it would be an objective (but not mandatory) that all users of the Ulan Branch cover the cost of the Ulan Branch (while at least meeting any incremental costs they impose on the rest of the journey).
- All load points within the Hunter Valley in combination do not exceed the regulated Ceiling. In this regard it is appropriate that the MUC is constructed so that other segments that might not currently be within the constrained network[14] are included within the constrained network when appropriate (eg traffic on the Ulan Branch within the next couple of years may reach the Ceiling).
- Equity between operators – the price for the movement of a tonne of coal between the same two locations should be the same for all access holders.
- Equity between end-use customers – the pricing should not impose an indefensible or illogical charge on one end-user of the rail system compared to another. To this end, the MUC prices are calculated on a 'distance taper' basis rather than 'segment average' basis[15].

Features of the pricing regime to meet the above principles include:

- Specification of the Floor and Ceiling revenue limits.
- A process for the annual adjustment to prices.
- Price discrimination between operators is generally not available.
- Simple rate per tonne charge for each origin-destination movement.
- Distance taper approach used.
- Safe-guards in pricing movements apply to avoid disruptive price changes from the existing NSWRAU.
- Annual escalation of prices where they are not part of the constrained network is based on a proportion of CPI to recognise on-going productivity improvements while allowing ARTC to capture the benefits of volume growth (similar to the AAU and the MUG).
- Pricing arrangements dovetail well with investment processes to minimise risk to ARTC and provide flexibility for the coal chain.

An alternative to adopting the method chosen would be to have posted prices (such as is proposed in the MUG). The MUC did not adopt this approach because:

- It would increase the risk to ARTC of not achieving Ceiling rate of return for the AHVN and hence increase prices under a Weighted Average Cost of Capital (**WACC**) price determination.
- It would greatly increase the complexity of arrangements required – the closest example of a "posted price" for a minerals traffic is that contained in the QR Rail Access Undertaking. That Undertaking provides for a "reference tariff" rather than a posted price, but the underlaying concept is similar. While the concept has merit, those arrangements require a plethora of modifications to incorporate the complexity of the scheme such that the benefits that might arise under a simple posted price arrangement,

[14] The constrained network is a reference to those segments of the network that are able to earn access revenues that reach the Ceiling (ie the maximum revenue allowed by the regulator for those segments). Conversely the unconstrained network includes those segments that currently do not generate sufficient revenues to meet the Ceiling. As traffic grows on a line, the marginal revenue usually exceeds the marginal cost (ie prices are above the Floor) and therefore other segments may at some point become constrained. The most obvious example of this is the Ulan Branch.

[15] See Appendix A for an explanation of the difference between these two pricing methodologies.

(such as in the AAU), would be entirely lost.[16] That concept also suffers from a need to forecast volumes and costs, including capital expenditure, over a 5 year period, compared to the MUC's 1 year time horizon.

The MUC pricing scheme is considered in more detail in Section 6.

3.6 MANAGEMENT OF CAPACITY (MUC SECT. 5)

This section has been substantially modified. There are two key areas covered by this section, the provision of train paths to access holders (capacity allocation) and investment in the network to provide the capacity required by the HVCC.

3.6.1 CAPACITY ALLOCATION

Typically, rail access undertakings provide access holders with rights use the network through defined train paths. Unfortunately, that approach is counter to the requirements of the HVCC and therefore the MUC has adopted an innovative capacity allocation approach that both meets the needs of the network and is fair to all access seekers[17].

The mechanism in the MUC for the allocation of train paths is to provide access holders with the right to participate in the daily process for the allocation of train paths conducted through the Logistics Team plus a broadly defined commitment to total annual capacity related to agreed system capacity which is transferable between operators according to their rights to move coal within the system. In this way;

- the flexibility of the HVCC is maintained,
- the coordination of planning is achieved, and
- there is no need for complex or cumbersome capacity transfer arrangements between access seekers.

The MUC also recognises the allocation of capacity for through services (ie those trains transiting the AHVN), although these are not directly the subject of the MUC itself.

The capacity allocation mechanism is discussed in more detail in section 4 below.

3.6.2 INVESTMENT

The surge in demand in recent years has highlighted the need for coordinated and comprehensive capacity planning for the AHVN. Several concerns regarding rail infrastructure have been expressed in recent times including:

- Concern by infrastructure owners that they may be required to make uneconomic investments.
- Concern by users of infrastructure that owners will not invest or will delay investment until sufficient certainty is achieved to warrant (from the owner's perspective) the investment.
- Concern that, notwithstanding regulatory mechanisms intended specifically to facilitate investment, decisions on investment have, in the past, stalled due to a variety of reasons, some of which appear on the surface to be economically irrational. Indeed, in recent

[16] For an example of the complexity that this approach generates, refer to QR Draft Access Undertaking Volume 2 - Standard Access Agreement (Operator) For Coal Carrying Train Services Schedule 3 Part 5 which sets out how the monthly invoice for access charges will be determined. This details a complex formula based on a multitude of inputs derived from both operator specific and system-wide performance.

[17] The term "access seeker" in this document reflects its use in the MUC ie it incorporates both those parties that hold an access agreement for the AHVN and those parties that are actively seeking to negotiate such an agreement with ARTC.

years there have been examples where coal producers have been willing to fully fund rail infrastructure investments up-front but have not been able to achieve the actual construction of the needed capacity due to a variety of reasons.

- In the specific case of the HVCC, that rail infrastructure investment decisions need to be taken in coordination with the requirements of the system as a whole and not considered in isolation to the system.

The investment section of the MUC has been constructed to address these concerns.

Accordingly, the MUC provides a mechanism whereby ARTC agrees to build infrastructure that;

- meets a set of criteria (see Figure 5-1 and MUC Schedule H), or
- is otherwise agreed to by the affected access seekers.

The proposal provides that ARTC may include an asset in the regulated asset base where the asset has been constructed in accordance with the criteria or otherwise agreed by affected access seekers, thus providing certainty that the maximum regulated rate of return on the asset can included in subsequent access charges and protecting ARTC from future claims the asset should be "optimised" out of the asset base.

In the circumstance where the conditions are met, but ARTC declines to construct the infrastructure, then the matter may be taken through the dispute resolution process. Where there is a demonstrated high level of access seeker demand for the investment, the arbitrator will require ARTC to construct the infrastructure, unless there are compelling reasons to the contrary. This is a somewhat radical departure from normal commercial practice, but is a reflection of the fact that ARTC is custodian and steward of essential infrastructure vital to an important export industry. This places ARTC in a somewhat different position to a party operating under a normal commercial framework – it is not open to access seekers to build an alternative Hunter Valley rail network in any practical sense unless this was explicitly supported by the NSW State Government.[18] Thus it is appropriate to place an obligation on ARTC to invest where, under other circumstances, this would not be an appropriate approach.

The concerns of ARTC that it is able to achieve appropriate returns for its investment are handled through a combination of the investment and pricing arrangements so that ARTC is virtually guaranteed its returns for investments in the constrained network. For investments outside of the constrained network, ARTC retains greater discretion as the certainty of returns is lower.

The arrangements also cover the requirement to replace life expired assets and for investments other than those specifically for additional capacity.

The MUC contains a process for comprehensive consultation and sign-off by affected access seekers that mirrors those processes currently in place.

Investment is discussed in more detail in section 5.

The pricing proposal contained within the MUC has been designed to complement the investment process. Prices are adjusted each year to incorporate investments coming into operation in the previous year. This avoids having to predict the timing of investment requirements for future volume increments such as occurs in the pricing arrangements under the QR Rail Access Undertaking and also minimises the risk to ARTC.

[18] It would be entirely impractical to attempt to build a rail link without overt government support for issues such as land acquisition and development approvals. In particular for the HVN, significant parts of such a line would need to traverse urban areas that would encounter extensive planning and development approval issues, not to mention actually connecting back into the AHVN at the port.

An alternative risk mitigation would be to require access seekers to enter into rigid take or pay arrangements over the life of the asset. As these assets typically have a life of 30 to 50 years, this would be a particularly unattractive commitment for an access seeker to give. It would also introduce further complexity in that the access seeker will not be in a position to guarantee it will hold the contract to haul the coal for the length of the commitment – to have transferable commitments would be a difficult concept to implement. If the commitment were somehow to be placed on the coal producer this also would be unattractive, not to mention almost impossible from a contractual perspective unless the producer was also the access holder and this is also not without its difficulties. While the MUC provides for parties such as producers to be the access holder, there are other matters that militate against this providing a comprehensive solution. Not the least of these would be the need to apply that solution to all coal access contracts so that producers were forced to take on the responsibilities of an access holder.

It is also open to question how such commitments might be apportioned (and enforced) across coal producers (or operators as access holders) where the investment benefited more than one haul. As most investments in the AHVN would fall into this category, it is a very valid consideration. Indeed the complexity of the approach has every chance of stifling investment. There has been considerable resistance from producers to this approach where it has been proposed to deal with modest investments outside the constrained network.

Given these considerations, the proposition of securing investments through a take or pay scheme would be unduly complex and unattractive. The MUC approach is simpler, more flexible, more palatable and more likely to see investments undertaken when required.

3.7 NETWORK CONNECTIONS (MUC SECT. 6)

Network connections are accounted for in accordance substantially with current arrangements with changes similar to those in the MUG requiring ARTC to provide reasonable assistance.

The additional capacity requirements have been removed as these are now dealt with in the Network Capacity part of the MUC. The matters contained in the MUG regarding investment principles are not included as they are less relevant to the AHVN given that any investments in that network for coal trains will be assumed to be economically justifiable.

The MUC also contains a section on access seeker investments mirroring the one contained in the MUG. This is directed towards ARTC providing support and assistance to access seekers where above rail investments need to be made requiring some input from ARTC, including where this involves the physical location of assets on the ARTC network. See the discussion in the MUGED section 9.4.

3.8 NETWORK TRANSIT MANAGEMENT (MUC SECT. 7)

The provisions for network transit management have been adjusted to recognise that the emphasis for on-time running on the interstate network is inappropriate for the AHVN. The HVCC benefits more from trains arriving at the port in sequence rather than on-time. Trains arriving out of sequence involves the potential for lengthy delays eg the need to reposition a stacker in the terminal to a stockpile different to the one programmed.

However it is recognised that the two paradigms, on-time running and in-sequence running, are mutually exclusive and therefore neither can be used as a single principle for the operation of the network.

It is also clear that those trains that traverse and exit the AHVN, typically interstate trains, have a high imperative to meet the constraints imposed by other networks (principally access through the RailCorp metropolitan network).

A further issue that Pacific National is keen to enhance is ARTC's initiative in consulting with access holders regarding the disposition of trains and their relative priorities. By consulting with access holders regarding the priorities of their own trains, benefit can be gained through greater flexibility. For example if Pacific National has a coal train and a grain traversing the network and in conflict, Pacific National is in a position to advise ARTC on a "real time" basis which of these it prefers to be given preference eg if the coal train is "on time" and "in sequence" yet it is running to join the back of a queue at port, it may be preferable to advance the grain train if the train needs to reach port prior to the closure of the unloading terminal – it is unlikely that ARTC will be the party best positioned to make this decision. If this is left to a rigid code, opportunities may be lost that can easily be gained through a cooperative and consultative approach.

The Network Management Principles are set out in Schedule F of the MUC. Like the MUG, the MUC provides some minor alterations to the existing Traffic Decision Matrix but this is not proposed as necessarily the best solution. Rather this is a matter best resolved through a collegiate approach from the those directly involved in the issue ie the track providers and train operators.

The MUC also mirrors the provisions for recovery from operational failures – see the MUGED section 10.2 for a description.

3.9 PERFORMANCE INDICATORS (MUC SECT. 8)

Unlike the MUG, the MUC does not specify any performance indicators. Instead it provides a set of criteria to which an agreed set of performance indicators should conform. The reason for adopting this approach is that a series of performance indicators for the provision of rail infrastructure for coal train services that are sufficiently robust and useful yet simple to measure and interpret has not yet been discovered.

The performance measures in the AAU are mainly focussed on on-time running. As noted elsewhere, on-time running is not a particularly important attribute for trains in the HVCC and it would be counterproductive to set up measures that drove behaviour as though on-time running was the most important criteria.

The only analogous service, that of QR's Network Access Group has been preparing a set of performance criteria for the last several years. Indications are that these are fraught with the sorts of definitional and practical issues that one would expect from a highly integrated process and the benefits that arise from these measures is hard to articulate.

It is clear that the systemic nature of the HVCC means that it becomes exceedingly difficult to attribute performance (be it good or ill) to one party in isolation from all others. While individual issues (eg a signal or locomotive failure) might be easily identifiable, the consequence of such failures reverberate throughout the system with impacts often far removed from the initial cause. In a system of any size (such as the AHVN) the number of incidents soon makes fault attribution pointless. While various parties, at various times have struggled valiantly for a number of years to compose a set of mutually beneficial performance measures for the Hunter Valley network this has never been satisfactorily achieved. Indeed, focussing on just two parts of the system, the above and below rail components is an indication of too narrow a focus. The focus needs to be on the performance of all of the components of the system, not just two in isolation. A rail system that is functioning brilliantly at the expense of other parts of the system will not achieve a great deal.

An example will serve to illustrate why it is so difficult. If a Pacific National coal train (one of approx. 30 coal train sets operating in the Hunter Valley) has a locomotive failure, it delays that train and say 5 others directly on the network. Those 5 others all are then potentially interacting with other trains such that further delays may result. Does one attempt to capture those subsequent delays? If not, what does the measure provide? Also, the subsequent cycles

of all 6 trains are likely to run late until they reach a point in the plan where they have some buffer time. Does one count those subsequent delays in a performance measure? Typically the situation will be rectified at some future point in time by the cancellation of one or more trains and a realignment of the train programme. Should these processes figure in the measure, and if so how? What if there was a signal failure as well at some time during the passage of those trains? To what would we then attribute the delays and how would the delays be proportioned in a way that was meaningful. What if the initial cause was not an above or below rail failure but instead a stacker at the port failed leading to increased queuing at the port?

Recognising that this is an area of significant complexity, while the MUC provides a mechanism for the parties to jointly seek appropriate performance measures, it does not seek to incorporate any measures initially.

See also an extended discussion of performance measures in the MUGED section 11.

3.10 DEFINITIONS

A number of the definitions in the AAU have been modified in the MUG to accommodate the changes elsewhere in the document. Some of these are merely remedying typographical errors or minor word changes for the sake of improving clarity. The changes are identified in the MUG with comments where appropriate.

3.11 SCHEDULES

The MUG contains a number of schedules. In the main these mirror those contained in the AAU but there are also a number of new ones to cater for additional matters contained within the MUG. Table 3-1 sets out the schedules and notes where these have been substantially modified.

Like the MUG, the MUC includes a standard access contract that incorporates the principles contained in the main document. Again the approach has been to retain as much of the AAU Indicative Access Agreement as appropriate.

Schedules A and G have been deleted. Schedule A has been made redundant by modest changes to the definition of an access application. Schedule G contained only a modest amount of information and did not appear to add any specific value. The information formerly contained in Schedule G has been moved into Schedule E so that all network definitional information is now in the one schedule.

Apart from the addition of new schedules (H, I, J, K and L) the largest changes are to Schedules D and E and F.

The changes to Schedule D are a consequence of the adoption of different principles in the MUG and the interaction with the MUC. Schedule D also includes an additional schedule containing a Terminal Management Protocol. This has been added to specifically address the interfaces between the train operators and the terminal management at ARTC's terminals. Currently this is not covered by any regulatory instrument, nor is it well covered by any access contract and the new protocol seeks to fill that gap.

Schedule F has been modified to incorporate principles for the modification and allocation of train paths and specification of a possessions planning process.

TABLE 3-1: SCHEDULES CONTAINED IN THE MUG

Schedule	Matter Addressed	Comment
Schedule A	Access application	Deleted as redundant (but retained as a placeholder to aid comparison with the AAU).
Schedule B	Information to accompany access application	Substantial changes to reflect the different form of access under the MUC.
Schedule C	Essential elements of access agreement	Substantial changes to reflect changes in the MUC.
Schedule D	Indicative access agreement	Substantial changes to reflect changes in the MUC
Schedule E	Network	A new structure is provided, but this is not intended to be definitive. It will be up to ARTC to define the Segments it wishes to use. Includes Segments that were previously contained in Schedule G.
Schedule F	Network management principles	Substantial amendment to principles – processes added for allocation of train paths and possessions planning. Matrix not amended, but Pacific National recommends that this should be subject to industry agreement.
Schedule G	Segments	This schedule is deleted in the MUC. The Segment information that this schedule formerly contained should be included in Schedule E. (Retained as a placeholder to aid comparison with the AAU.)
Schedule H	Investment criteria	New schedule setting out the criteria for consideration of investments.
Schedule I	Investment consultation process	New schedule setting out a process for consultation and sign-off for new investments in the HVRN.
Schedule J	Terminal Operations Protocol	Provision for inclusion of a set of terminal operating protocols.
Schedule L	Prescribed Fees	Provision for inclusion of fees for services other than provision of train paths eg storage, assistance to other operators.

4 SPECIFIC ISSUES – CAPACITY ALLOCATION

4.1 THE PROBLEM OF ALLOCATING COAL TRAIN PATHS

The AAU is based around the allocation of capacity through the medium of assigning long term fixed train paths to access holders. This is a typical way of providing capacity to access seekers and, for some traffic types, provides access seekers with the certainty that they need to be able to carry on their business. This is particularly so for passenger, intermodal and other traffics that run to a fixed and regular schedule.

The Hunter Valley requires paths for coal trains to be allocated in a fundamentally different way because the nature of the logistics task is very different. Which trains service which mines on any particular day will be dependent on:

- what cargoes need to be assembled (both export and domestic) and in what order to meet ship arrivals,
- what load points (and coal types) are available,
- the effect of any maintenance shutdowns by any of the service providers,
- what train paths can made available (taking into account other commitments),
- which train operator can service which load-points and what trains that operator has available,
- what dump stations and stacker streams are the most efficient in combination to use.

The various possible types of train service based on planning requirements is described in Figure 4-1.

FIGURE 4-1: TYPE OF TRAIN SERVICE

Type Of Path	Description	Example
Timetabled	Train runs to a fixed regular pattern that is reflected in a long term timetable. Train waits for pre-planned path.	Passenger and Intermodal trains
Semi-timetabled	Train runs intermittently on a fixed path that is reflected in a long term timetable. Train waits for pre-planned path. Train may have variable origin or destination fixed at time of final planning. These are the semi-scheduled train paths and traffic specific capacity described in the MUG.	Grain and minerals trains Southern highlands coal trains
Planned cyclic	Train runs to paths determined in the short term (eg less than a week) and pattern of running is variable with respect to origin, destination and times. Train may wait for a pre-planned path but usually only for a short time. Reasonable likelihood of reassignment of origin or destination compared to original plan.	Hunter Valley coal trains
Continuous cyclic	Train cycles continuously, paths are taken as they are required and available and no prior path planning takes place. Train does not wait for a pre-planned path. Assignment of destination at time train is ready to depart.	No true examples on ARTC network. US Powder River Basin operates on this basis.

Coal trains in the HVCC operate as planned cyclic services. A feature of planned cyclic services is that they run more or less continually. While a train may wait a for a path to be available, typically the train would take the next available path rather than waiting for its planned path if the order of services has deviated from the original plan. This may or may not entail a change in destination. Indeed, one of the efficiencies introduced into the Hunter Valley in recent years

is the introduction of standard size trains that are able to service most load-points, thus enhancing the flexibility of the system. [19]

In this environment, the allocation of train paths in the "normal" way, by means of a long term fixed path commitment would not work. It would mean that paths going to mines might be used on some days and not on others because a particular mine had no coal or no stockpile was allocated at the export terminal. There would be no opportunity to optimise stockyard operations at the port, train utilisation would diminish and generally a large efficiency loss would result.

However this raises a problem of how to reserve sufficient capacity for the requirements of coal trains. In a system where there are only coal trains, this does not have to be addressed because whatever the methodology chosen for path distribution, presumably the mechanism would be the same for all paths. But where the network is shared between cyclic traffics and timetabled traffics it is essential to find a suitable mechanism that accommodates both requirements. The problems arise in two areas:

- cyclic traffics require more capacity to be reserved than is actually consumed on any given day[20], and
- timetabled traffics are afforded priority choice of paths (unless mechanisms are otherwise put in place) because of the nature of the timetabling process and the interaction with adjoining networks.

In passing, it is noted that the problem of coal traffic requiring a larger level of capacity than strictly required for a single coal train is one reason why adopting a path based charging approach is difficult. The capacity required by a single train on any day is, of course, the path that it consumes. The problem lies in the level of capacity required to efficiently plan a full suite of coal services on any day. Because it cannot be determined prior to planning where the train is going it cannot be determined what path is required to return. So a number of possible return options must be at least possible until the actual journey has been planned. To unduly restrict the option to return (or go forward in the first place) would be inefficient because trains would have to wait for those restricted opportunities to move. Thus the level of capacity a single service "consumes" prior to being planned is indeterminate[21]. The problem is exacerbated by the fact that the choices made for a particular day will impact on the available choices on each subsequent day eg if a train set does not complete its first cycle in time for a desired subsequent cycle, unless alternative resources (ie train sets) are available, that subsequent cycle cannot be run and it would therefore be pointless to schedule it to run at that time. This problem is substantially mitigated by scale where a number of trains are in the system and therefore it is more likely that a train set will be available to use an opportunity that a single train set could not.

4.2 RESERVING CAPACITY IN A COAL SYSTEM

The MUC recognises the dilemma and provides a process for the allocation of capacity on the AHVN. While it is not perfect (no perfect solution exists that does not require total separation of traffics), it does have the virtue of recognising both the problem and the realities that need to be grappled with. The process is contained in Schedule F of the MUC.

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[19] This flexibility is constrained to those load-points for which the particular operator has a contract to service that customer.

[20] This arises because of the need for flexibility. Flexibility necessarily increases the capacity required to achieve a certain task, because capacity needs to be provided to accommodate the various alternative outcomes contemplated.

[21] A related issue is the consumption of paths by timetabled trains where, due to the particular path allocated, the path may actually "quarantine" other possible paths thereby reducing capacity that could otherwise be allocated to another party.

The proposed process recognises that passenger trains have statutory priority. This is followed by a tentative allocation of paths to trains that traverse the AHVN and therefore need to connect with paths provided by other infrastructure service providers. In this context, the "tentative allocation" of fixed paths already contracted by ARTC reserves those rights and does not imply that the access holder is obliged to surrender them. Capacity is then reserved for coal trains. The tentative path allocations are then reviewed to determine whether a more efficient allocation of paths is available. Where there is a previously contracted path that ARTC would seek to modify to enhance network efficiency, this can only be done with the agreement of the path holder. The suggested process is iterative and is essential to avoid the problems that arise through a rigid allocation of paths early in the process, thereby making otherwise workable options unavailable.

To this end, an inclusive process that allows above and below rail train planners to work together to define the optimal set of train paths is almost certainly going to produce a superior result to the current 'black box' approach where above rail operators make requests for train paths and can only hope that their guesses will result in usable outcomes.

The current process for the allocation of capacity to coal trains through the psuedo allocation of coal train paths[22] is one mechanism of reserving capacity, however, this is not necessarily the only method, and the precise method is of less importance than the outcome that sufficient capacity is reserved for coal trains to deliver the required volume of coal to port efficiently.

4.3 ALLOCATION OF COAL PATHS

The current process for the allocation of coal train paths on a particular day is that the availability of paths is identified by ARTC to the Logistics Team from the pool of reserved capacity (ie the pseudo paths) and actual paths are then allocated to operators in accordance with the integrated plan produced by the Logistics Team.

FIGURE 4-2: EXAMPLE - PROBLEM OF ALLOCATING PATHS ON A PROPORTIONAL BASIS

Operator A has 75% of the tonnes and Operator B has 25% of the tonnes in the system.

Operator A is allocated 75% of the paths and Operator B, 25% of paths.

At its worst, if the allocation is of a fixed nature (ie A and B each are allocated certain specific paths on a permanent basis), then the ability to service different mines is constrained (ie unless all paths are set for the longest journey then there is a likelihood that shorter paths won't be appropriate for when longer paths are required, but if set for the longest journey, then this is wasteful of capacity. A further problem arises that the return paths are also wasteful if aligned to the longest path but potentially unviable if not.

If the paths are allocated on some form of proportional but variable method, on any day, if the export terminal has allocated cargoes requiring Operator B to run on 30% of the paths, unless a mechanism for reallocation of paths is available, and Operator A has an incentive to do so, the system will be under-utilised by 5% (assuming that there is not enough capacity at the stockpile for Operator A to use its 75% of paths and that Operator B otherwise had sufficient trains to carry the full 30%).

Any allocation mechanism that is more variable than this takes on the character of the proposed MUC method.

It is difficult to conceive a better alternative to this approach using the standard path allocation paradigm. The standard paradigm becomes particularly problematic where there is more than

[22] The arrangement does not provide a complete train path in the conventional sense, but provides paths from a common point of departure from the Newcastle area to a point where the real paths would diverge to the different load-points and the same in reverse. They are therefore only partial paths having neither the real origin nor destination.

one coal train operator. In that circumstance, there is a significant likelihood of building inefficiency into the system even if one adjusts the allocation from a fixed path to some form of proportional allocation. An example of the problem that arises is shown in Figure 4-2.

To avoid this class of problem shown in Figure 4-2, the MUC proposes a flexible arrangement mirroring the current practical approach, built around coordinated planning, allocating paths to operators (from the pool of available capacity previously reserved for coal trains) on the basis of their ability to use them to fulfil the delivery of coal in accordance with the requirements of the integrated plan created by the Logistics Team.

Under this arrangement it is critical that ARTC provides paths for coal trains in accordance with the requirements of the Logistics Team and the System Rules. The MUC has been couched in these terms.

4.4 CAPACITY COMMITMENT

Though mentioned throughout this document, it is important to reinforce that the nature of the HVCC is that of a system. It is therefore important that the components of the system are well aligned. One of the issues that needs to be considered in light of that need is that of the commitment that ARTC provides to individual access seekers with regard to capacity.

Usually an Undertaking would provide some level of specific obligation on the part of the service provider to provide the contracted service. For example, the Indicative Access Agreement in the AAU places certain obligations on ARTC to provide paths that it has contracted to provide. In the absence of specific paths, and with the need for the system to retain a high degree of flexibility, it becomes extremely difficult to make any such commitments because the focus is on providing capacity to the system not to an individual operator, except on the widest of measures.

The Indicative Access Agreement contained in the MUC therefore provides for ARTC to commit to provide an access holder with a level of capacity over a year based on the capacity allocated to each mine by the Logistics Team at the commencement of each period.[23]

This requires (and the MUC incorporates) a process of determining the capacity of the system and allocation to mines. This is effectively part of the process that is currently fulfilled through the CBS. Regardless of how successful the Logistics Team and service providers are in the future in determining the capacity required and providing that capacity, there will always be a need to measure demand against available capacity whether that then leads to a CBS type reduction in allocations to each mine or not. It is therefore a useful mechanism for aligning the capacity obligations of ARTC to those which it has committed to the system as a whole through its participation on the initial determination of the system capacity.

By adopting this approach, a high degree of flexibility is retained and there is no need for complex and cumbersome capacity transfer or anti-hoarding mechanisms[24]. An example will help to demonstrate the utility of the proposed method (see Figure 4-3).

[23] The access agreement provides for this obligation to be modified to the extent that there are changes to the mix of volumes actually railed or changes to the identity of the operator involved in a particular haul such that ARTC is never obliged to provide capacity greater than that which it has agreed to with the Logistics Team at the commencement of the period..

[24] For example see the QR 2006 Rail Access Undertaking which has such mechanisms. A significant level of stakeholder comment and concern was directed at these mechanisms due to the complexity that arises when trying to safeguard the “rights” of each stakeholder, modify charging mechanisms etc.

FIGURE 4-3: EXAMPLE – FLEXIBILITY IN CAPACITY ALLOCATION TO OPERATORS

Mines A and B each have an annual allocation of 5 million tonnes (mt). Each mine has contracted with a separate train operator to haul its allocation to port. The system has a total capacity of 10 mt as agreed by ARTC with the Logistics Team.

Due to market conditions, Mine A needs to transport 6 mt and Mine B 4 mt over the period.

If ARTC is required to provide paths on a fixed basis to Operators A and B, then the system could only rail 9 mt (ie 5 mt to Operator A and 4 mt to Operator B) unless a mechanism is put in place for Operator B to transfer its path entitlements to Operator A. Without flexibility or an efficient transfer system, 1 mt of capacity would be wasted.

Under the flexible pathing arrangements in the MUC, ARTC would make paths automatically available to Operator A for 6 mt and Operator B 4 mt and the system would operate at maximum capacity. ARTC would have fulfilled its obligation to provide 10 mt capacity and no overt transfer of track capacity is required between Operator B and Operator A. Were 'take or pay' obligations in place, formal transfer arrangements would be necessary to off-set the take-or-pay amounts (bearing in mind that ARTC cannot earn revenue above the Ceiling).

At the more detailed level, if at some time during the year Operator B needed to rail coal at an annualised rate of 7 mt, provided that this is consistent with the integrated plan prepared by the Logistics Team, the path allocation mechanism will automatically cater for this also without the need for capacity swaps or other adjustments between operators.

Note that the current CBS does provide a mechanism between mines for transfer of tonnage allocation. However, the transfer is more manageable than for the rail system as coal can be retained in inventory whereas train paths cannot (a path is consumed once the opportunity to use it has passed whether or not it has been used).

4.5 LOGISTICS TEAM PATH ALLOCATION PROCESS

The MUC provides for the allocation of train paths by ARTC to be in accordance with the planning and scheduling processes of the Logistics Team, ie the integrated plan. This is what happens in practice today and the MUC is merely codifying this process. A brief description of the daily allocation process follows:

- The Logistics Team determines what cargoes need to be assembled to meet the shipping (either in a queue to load or planned to arrive) and domestic terminal requirements.
- Each service provider identifies what resources are available for deployment over the ensuing 36 hours (ie commencing at midnight on the day of planning). This would include, what train paths can be made available, what trains, stockpiles etc. including planned maintenance outages.
- The Logistics Team determines the priority for domestic deliveries and the assembly of export cargoes given the different factors pertaining on the day, in accordance with the System Rules.
- Train paths (and other resources) are allocated to specific tasks and the plan is set.
- Each service provider arranges the resources at its disposal in accordance with the plan.

Key points to note about the planning process are:

- Each service provider identifies the resources that it can make available for that particular plan. Thus, for example, if ARTC has to take a track out of service for a particular day, then this will be taken into consideration in the formulation of the plan[25].

[25] Note that a separate process is carried out over a longer term for the coordination of planned maintenance outages between service providers to minimise the total disruption to the system.

- The objective of the plan is clear - to maximise the throughput of the system. At times, this means that individual members may need to subordinate short term self-interest for the overall benefit of the HVCC. The Logistics Team has been carefully formulated to ensure that this cannot lead to longer term imposition of an unfair outcome for a particular service provider.
- Each service provider remains responsible for the actual delivery of its part of the plan.
- It would clearly defeat the purpose of the planning process if individual service providers subsequently acted unilaterally in the allocation of resources.

The allocation process in the MUC will not affect paths already allocated to non-coal trains as these paths will already have been "locked-in" through an earlier process.

4.6 WHY IS A COORDINATED APPROACH SO IMPORTANT?

The impact of a coordinated approach has been shown to have a significant and measurable effect. In 2002, the HVCC delivered around 68 million tonnes with only the most rudimentary cooperation, at which point there was a general belief that the system was operating at capacity. Yet with the introduction of the Logistics Team and coordinated planning for logistics services in the coal chain, in calendar 2004 the system was able to deliver 79 million tonnes, giving around 15% improvement in overall system productivity. No additional capital expenditure was involved in delivering the increased task.

With the continued expansion of the system, additional port and rail infrastructure capacity and new train sets have been brought on-line to bring capacity at close to 95 million tonnes. Failure on the part of any service provider to participate in the cooperative planning process for the coordination of the disposition of resources will inevitably reduce the effectiveness of this new system capacity. Apart from the actual loss of productivity, it is also likely that Australia would suffer a substantial loss of reputation with foreign buyers on the basis that we were unable to deliver outcomes that were demonstrably achievable.

It is clear therefore that the regulatory framework that supports the coal chain must be complimentary to the requirements of the system. This includes the regulation of access.

5 SPECIFIC ISSUES – INVESTMENT

5.1 NEED FOR INVESTMENT

Forecasts for the future volumes in the Hunter Valley over the next 5 to 10 years vary, but are all within the range of 120 – 140 million tonnes per annum. Even if only the most pessimistic levels are achieved, it is certain that the system will need to have capacity to at least peak at these levels – existing ship queues indicate peaking of this nature already. This volume represents a substantial increase on the expected 2006/07 total volume of 84 million tonnes.

To meet these substantial increases in volumes, additional investment in capacity will be required from the port, above rail operators and the track provider. ARTC has already produced an investment strategy that looks to provide capacity up to 140 million tonnes per annum. The port has recently increased capacity to 105 million tonnes and further expansion plans are being prepared.

A significant part of the Logistics Team's brief is to coordinate the investment requirements between the different parts of the HVCC. The Logistic Team determines the quantum of capacity required in each part of the chain and, in consultation with the logistics services providers identifies, in broad concept, the assets required to provide that capacity. The process provides considerable consultation with producers and other parts of the coal chain. It is then up to the particular party to undertake the investment and formulate the appropriate commercial arrangements with its customers.

It is critical that investments are carried out expeditiously to provide the capacity in accordance with the plan to avoid bottle-necks occurring in the chain. Past experience in the Hunter Valley has shown that it can be difficult for the rail infrastructure owner to make investments in a timely manner for a variety of reasons. It appears that normal commercial self-interest is insufficient to achieve the desired result and that other factors drive these decisions – an example of this is the reluctance of the previous owner of the Hunter Valley network, RIC, to invest even when the risk of it not achieving its Ceiling rate of return was minimal. There is the appearance that infrastructure owners seek higher returns than regulators appear willing to give them and are, at least in some cases, willing to force a regulator's hand to extract those extra returns.

The HVCC requires a more robust process that delivers investment if appropriate criteria are met. The MUC has been constructed to remove, as much as possible the intrusion of extraneous issues into investment decisions and provide clear criteria for investment.

5.2 INVESTMENT UNDER THE MUC

The approach to investment in the MUC is substantially different to that taken in the MUG. This reflects the fundamentally different economic circumstances that apply between the traffics covered by the different regulatory documents. In the MUG, the emphasis is on Customers participating in the planning processes and having the opportunity to influence the investment process while leaving decision making mostly in the hands of ARTC. In the MUC, the participation by Customers and the Logistics Team is spelt out in some detail with explicit approval processes reflecting the integrated nature of the coal chain and the fact that Customers will ultimately fully shoulder the burden of investments through their access charges.

To address the investment needs for the Hunter Valley, the MUC has been specifically constructed so that ARTC provides a commitment to invest in the network if certain criteria are met. These criteria are:

- That a project meets a set of explicit investment criteria, or

- Notwithstanding that the project does not meet the criteria, affected access seekers agree to underwrite the project through their access charges.

The investment criteria are contained in the MUC at Schedule H. These are shown in summary in Figure 5-1.

FIGURE 5-1: INVESTMENT CRITERIA

Criteria	Comment
Safety & technical requirements	The investment meets the relevant safety and technical standards.
Demand	There is an identified level of additional capacity required to provide for a level of traffic task forecast by the Logistics Team.
Capacity created	The investment will provide sufficient additional capacity to meet the additional demand for which it is designed.
Efficiency	The investment is the most efficient method of providing the additional capacity considering timeliness, cost etc. or, if it is not the most efficient, is the most desirable method taking into account the circumstances.
Standards	As a minimum, meets the standards for rail infrastructure in the HVCC where such standards are set by ARTC in accordance with the System Rules.
Maintenance of existing capacity	The investment does not reduce existing capacity.
Return on investment	ARTC can reasonably expect to earn a return on the investment at the Ceiling Limit (for that investment) over the life of the asset created.

Where the criteria are met or the affected access seekers otherwise agree the MUC provides for ARTC to construct the capacity. In return, ARTC may include an asset in the regulated asset base and adjust its charges accordingly. A protection is built in to prevent access seekers from agreeing to an investment and later seeking to have that investment excluded from the regulated asset base. The process provides improved clarity over the current NSWRAU as to the parties between whom consultation takes place and the process to be followed.

If the circumstances arise where the criteria are met, but ARTC does not wish to undertake the investment, there is a mechanism for the matter to undergo dispute resolution.

For the constrained network, the annual price setting mechanism has been devised to allow for the inclusion of new investment into the regulated asset base once the asset becomes operational so that ARTC is able earn its Ceiling rate of return.

For the unconstrained network (segments where revenue is below the Ceiling), a less prescriptive mechanism applies, although if a particular project can generate Ceiling returns it would automatically qualify under the more prescriptive rules.

While the concept of obligating a party to invest may seem an extraordinary step, it is really only attempting to achieve that which a normal commercial incentive is intended to achieve ie where an investment meets the party's hurdle rate of return, the party would *ceteris paribus* invest – the investment criteria are designed to ensure that those other relevant matters are appropriately taken into account. One might ask the question, why the track owner would not be willing to make such a commitment in the circumstances.

5.3 CONSULTATION PROCESS

The MUC contains a process (at Schedule I) for consultation with access seekers who would be affected by an investment project and includes formal sign-off. This mirrors the current processes which have worked well. Not only does this inform users about projects, but allows

all parties to understand the detailed ramifications of the various options that may be available to solve a particular capacity issue. The inter-related nature of below and above rail operations means that both train operators and infrastructure providers need to work closely together to realise the potential from investments.

The consultation process also promotes transparent outcomes with regard to the cost of each project. As ARTC will be allowed to automatically include the agreed cost of an investment in its asset base and hence subsequent access charges, it is appropriate that affected access seekers have a mechanism for approving such expenditure. The proposed consultation process provides such a mechanism and this is to the advantage of both access seekers and ARTC.

The formal sign-off protects ARTC against a later challenge that the project (up to the value agreed between the parties) should not be included in the regulated asset base. The sign-off process is not obligatory and ARTC may invest on its own initiative without obtaining endorsement from affected access seekers, but if it does so, it is not protected against a future challenge.

FIGURE 5-2: EXAMPLE OF POSITIVE CONSULTATION OUTCOME

Consultation processes can sometimes be seen as onerous and mere barriers to achieving outcomes. However the examples below from the process currently followed in the Hunter Valley show how real value can be extracted where the process is entered into positively with a bona fide intent to achieve the best outcome.

Example 1:
A project to provide walkways on two bridges in the Hunter Valley was deemed necessary by the infrastructure owner to meet safety standards. The walkways were forecast to cost $919,000. However, after doubt for the need for this investment was raised by a train operator through the consultation process, a risk management process was conducted jointly that ascertained that there were other management and procedural options available as a workable substitute to an infrastructure solution.

Example 2:
Singleton yard was being upgraded as part of a refurbishment program. An analysis of the proposed changes by the consultation participants revealed that the business case for the upgrade was affected as a result of unnecessary additions to satisfy unsubstantiated operational concerns. The consultation process was able to reveal these issues and ensure a more cost effective and timely outcome.

6.1 RATIONALE FOR APPROACH

The MUC contains extensive provisions to deal with pricing. Two alternative schemes were considered:

- A posted pricing arrangement, or
- A codification of the process for the calculation of prices.

ARTC has adopted a posted price framework for the AAU. This has several advantages:

- Transparency – access holders will have confidence that all parties are paying the same price.
- Ease of calculation – an access seeker can easily calculate the cost of access, even prior to entering into negotiations with ARTC.
- Simplicity – use in practice is simple.

The posted price mechanism works well when the following conditions apply:

- Prices are stable and do not require adjusting to accommodate changes in the Ceiling, for example when a simple formulaic escalation approach is appropriate.
- There is no available alternative mechanism to reduce volume risk.

Note that adoption of a posted price does not necessarily require the adoption of a single price structure and it would be quite simple to have posted prices for different traffics under different structures.

Unfortunately, these conditions do not apply to the majority of coal traffics operating on the constrained part of the AHVN and therefore the advantages are compromised. Figure 6-1 provides a comparison of key criteria. In short, while a posted price arrangement works well for the general interstate network, it is inappropriate for the AHVN.

FIGURE 6-1: DIFFERENCES IN KEY CRITERIA

Criteria	ARTC Interstate Business	AHVN
Price stability	Prices for the AAU are based on Ramsey pricing (ie what the market will bear) and are relatively stable with a simple inflation (CPI based) adjustment.	Prices for the constrained part of the AHVN are set at the Ceiling and therefore need to adjust each year to account for a complex mix of changes in volume, maintenance expenditure and value of the regulated asset base.
Volume risk mitigation	Volume risk partially off-set by capacity reservation fee (path charge), where this applies, but mostly remains with the access provider.	3 mechanisms available for the annual reduction of volume risk: ▪ Cusp tonnage pricing ▪ Annual price adjustment for forecast volumes ▪ Overs/unders account

The MUC has instead adopted an approach that codifies the process for determining prices rather than specifying actual prices for the majority of coal traffic that operates in the constrained network. The code is based on the current pricing arrangements and documents a number of processes and pricing determinants that have resulted from previous regulatory

consideration[26] and custom and practice that have evolved to give life to those regulatory decisions. Incorporating these into the MUC provides them with an appropriate status and transparency and obviates areas of possible misunderstanding.

6.2 PRICING PRINCIPLES

The principles underlying MUC pricing code were noted in Section 3.5. These are discussed in further detail below.

Efficient cost

Prices are based on the efficient cost (including the regulated return) of providing the capacity required by the system. The basis for requiring an Undertaking in the first instance is that the rail infrastructure is a natural monopoly and is therefore not subject to the discipline of the competition. Pricing must therefore be regulated to avoid the potential for unconstrained monopoly pricing behaviour. Part of that regulation applies to the level of costs that the service provider is allowed to include in the pricing equation.

IPART, in its pricing decisions in its 1999 report determined that it was appropriate that prices for access under the NSW Rail Access Regime (and carried forward into the NSWRAU) should be based on efficient costs[27]. Similarly the Queensland Competition Authority (**QCA**) in its consideration of the QR 2005 Draft Undertaking found that pricing should be based on efficient costs[28].

See also the MUGED at section 4.1 for further discussion regarding efficient costs.

As with the MUG, the MUC provides specifically for the use of efficient costs and offers guidance as to how such costs would be determined (see MUC clause 4.9).

Asset valuations

The MUC uses the depreciated optimised replacement cost (**DORC**) method for the valuation of assets. IPART conducted a substantial review of asset values in 2001. The MUC provides for the current asset valuation for the Hunter Valley to be rolled over with provision for revaluation each 5 years.

The asset valuation methodology is common to the NSWRAU, the QR Undertaking and the AAU. The MUG has also adopted this method.

In 2006, IPART conducted an inquiry into the life of the coal mines that underpins the depreciation rate applied to the regulated asset base. It also reviewed the maximum allowable rate of return that should apply. While it is expected that the ACCC in its consideration of the Coal Undertaking will review these matters independently, it is anticipated that the IPART review on these matters will be given substantial weight, having been the subject of both a public consultation process and informed regulatory scrutiny.

The MUC also adopts the scope of the assets to be included in the valuation. The IPART 1999 decision endorsed and clarified the position taken in the initial NSW Rail Access Regime that non-replaceable assets such as the land, formation and tunnels, termed 'Corridor Formation Assets' should be valued at zero for the purposes of the DORC valuation.[29]

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[26] Eg the report by the Independent Pricing And Regulatory Tribunal (**IPART**) "Aspects Of The NSW Rail Access Regime, Final Report" April 1999.

[27] Op. cit. IPART April 1999 p.15

[28] Queensland Competition Authority "Decision - QR's 2005 Draft Access Undertaking" December 2005, p.1

[29] Op. cit. IPART April 1999 p.30

Minimum Price And Revenue

The MUC adopts the approach in the NSWRAU and also the MUG for the minimum prices that should be offered. Every train movement[30] needs to cover, as a minimum, its short run incremental cost. This is termed the 'Floor Limit' in the MUC. Setting a Floor price[31] at this level ensures that no party gets a 'free ride' and at least contributes to the extent that it imposes a cost on the system. Anything above the Floor contributes to the common costs of the system.

For practical purposes the Floor Limit is defined by reference to all coal trains travelling between a particular origin and destination over a year – as these are incremental costs they would nominally be proportional to the number of individual movements and so can be referenced back to the cost of a notional single train. By formulating the cost in this way, one avoids any potential arguments of costs 'disappearing' due to being *de minimus* when measured on the scale of an individual movement.

The MUC recognises the approach from the NSWRAU (also in the MUG) that it is appropriate that the track owner should, as an objective, at least achieve revenue equal to the combined long run avoidable cost of the line segments that it provides. This is termed the "Mezzanine Limit". This provides an economic signal to an owner that, *ceteris paribus*, it should exit from a line segment (or group of line segments) that does not cover its long run avoidable cost.

The requirement is expressed as an objective rather than as a strict requirement to avoid the potential for unintended outcomes where traffic that covers its incremental cost and contributes to common costs but cannot sustain its 'share' of the Mezzanine Limit would be forced to exit the system – were this to happen it would increase the burden on the remaining traffics which might themselves them be unable to afford the resulting increased price and also exit the system. In the extreme this could lead to the point where no traffic is able to afford to pay the prices required to achieve the Mezzanine, leading to abandonment of a line that ARTC might wish to retain for reasons other than economics eg strategy or public interest.[32]

Again this is consistent with the NSWRAU[33].

Maximum Revenue And Price

Also consistent with the NSWRAU and the MUG, the MUC contains two maximum revenue limits; the Combinatorial Ceiling Limit and the Stand Alone Ceiling Limit.

In practice, the maximum revenue allowed to be earned is based on the combinatorial Ceiling model which considers the revenue that can be derived from each group of line segments in combination. This is termed the 'Combinatorial Ceiling Limit' in the MUC. As this represents the practical maximum revenue limit for the 'system' as a whole it is normally referred to more simply as the 'Ceiling'.

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30 In some instances, such as light engine, workshops and wagon repositioning movements, the access charge is included in the aggregate output charge based on net tonnes of product moved – in this sense, these movements are not 'free' and would cover their incremental costs even though there is no explicit and separate charge for such movements.

31 The terminology in this area is used somewhat loosely with regard to differentiating between price and revenue. The two concepts are closely related but distinct. In most cases there is no harm in not clarifying which is intended as normally the meaning can be determined from the context.

32 This was precisely the issue in an arbitration between National Rail and the Rail Access Corporation in 1996 under a previous NSW Rail Access Regime where the Mezzanine Limit was expressed as an absolute minimum. The arbitration led to the adoption of the current formulation where the limit is expressed as an objective.

33 NSW Rail Access Undertaking Schedule 3 clause 1(a)

The Ceiling Limit for each line segment is the economic cost (including the regulated rate of return) of providing each line segment and is therefore a calculable number. Ceiling prices for any individual traffic are not determinable by the model as it can sustain a large number of combination of prices for traffics that utilise the relevant to relevant line segments. However, regulation arises through the imposition of the Ceiling Limit on revenue generated by the relevant line segments. Within that boundary, other factors such as pricing policy (in the case of the MUC this is codified in the Undertaking itself) are used to determine prices.

In the MUC, those line segments that can provide revenue at the Ceiling are termed the "Constrained Network", as prices and therefore the revenue capable of being earned is constrained by the Ceiling.

As a natural consequence of the Ceiling Limit, a second Ceiling test arises that applies to any individual movement. The test is that no individual price exceeds the stand alone cost of providing the network for that haul[34] - hence it is termed the Stand Alone Ceiling. In practice, this cost is so high (by corollary from the fact that economies of scale for a rail network are generally large) that the test would not normally be relevant for the main network, though it might have relevance to a spur line supporting a single mine as part of a wider combinatorial cost calculation[35].

This approach again adopts the current practice from the NSWRAU[36]. The MUC also provides that traffics that are not paying at the Ceiling price and travelling outside of the constrained network are to be charged at the Floor for those line segments of the constrained network that they traverse. This maximises the revenue to ARTC and is a logical position for it to adopt. While this requirement is not explicitly provided for in the current NSWRAU, it is a reflection of current pricing practice.

Equity between access holders

The MUC enshrines that the price for the movement of a tonne of coal between two locations should be the same for all access holders. This follows the current pricing arrangements but is somewhat different to arrangements followed in Queensland for the QR coal access prices.

The reason for seeking to continue the current approach is consistent with several of the principles, but is particularly applicable to the maintenance of equity between access holders. By removing price differentiation on the basis of service characteristics and restricting the cost to an access holder to the volume of end product moved, access holders are free to consider a variety of potential service outcomes. Arguments that this might lead to inefficient use of the network are mitigated by the participation of service providers in the Logistics Team and their agreement to abide by the System Rules that will determine, inter alia, any critical interface issues that an access pricing signal might otherwise address. A practical example of the benefit of this approach is the decision by QR for its Mt Arthur North haul to use a new type of locomotive that has different (but compatible) service characteristics to those currently in use in the HVCC leading to a different train size from the 'standard' in place at the time.

The alternative of allowing for price variation between access holders on the basis of operating characteristics is fraught with difficulty. Several examples are available. In NSW, the forerunner to RIC, Rail Access Corporation originally intended to allow for differential access

[34] Under the combinatorial model, if only one traffic uses a series of line segments, then the maximum revenue (and the related price) is the stand alone cost of providing that network, providing the network is the minimum infrastructure required to facilitate the movement.

[35] The stand alone price might be more relevant if there were no other restrictions placed on price determination requiring a level of uniformity according to specified criteria. Were such restrictions not included, the network owner would be able to price discriminate according to its own dictates.

[36] Op.cit Schedule 3 clause 1(l),(m) [sic]

pricing on the basis of technical differences in the bogies of wagons used by operators.[37] This attempt, though logical in concept and technically sound, floundered for lack of ability to practically measure the difference in track wear occasioned by the various bogie types and hence could not be put into effect. QR has implemented a differential component in its access charges based around a 'reference train' concept that takes into account the relative consumption of capacity. Again, while intuitively reasonable, the practical means of measuring the incremental capacity consumption by a train (or a hypothetically proposed train) involves significant difficulty.[38] While the mechanism is in place, it is subject to on-going criticism in that the measurement is carried out in a non-transparent way that does not lend itself to independent calculation or verification. This is not a satisfactory outcome and reduces competitor confidence in the equity of access charges between operators.

Another issue associated with pricing on the basis of service characteristics is that trains of different specification may be used to service a particular mine due to operational efficiency. For example, if an operator has several different size trains, necessary in order to meet various technical requirements of different customers, then using those different trains would lead to different access charges arising even though not to use those trains might lead to inefficient use of overall coal chain resources. The imposition of differential access charges might lead to a reluctance on the part of the train operator (or mine if the charges are passed through) to use one or other train types on the basis that it increases its cost. Further, the train type that might result in the least access charges might not be the most efficient train for the system as a whole. A practical example of this is the use of 'long' trains in the Hunter Valley. For a variety of reasons, it was found that the use of a 91 wagon train, though it consumed the least number of paths and therefore might be deemed the most efficient from a rail network perspective (presumably leading to the lowest charge). reduced the overall capacity of the Hunter Valley Coal Chain compared to the use of shorter 60 wagon trains. For the benefit of overall system efficiency, the shorter train was adopted. Under a differential pricing model this might not have been economically rational for the train operator.

As a further complication, where prices are constrained by the Ceiling, the adoption of pricing for the purposes of sending signals becomes self-defeating. If all operators adopt the most cost efficient outcomes (from the perspective of access charges) then the access price would almost certainly need to rise to allow the track owner to achieve the Ceiling revenue. This result occurs because the marginal cost saving to the track owner is unlikely to match the revenue drop that would accrue from any meaningful price signal.

As a result of these considerations, the MUC has retained the existing 'output' based pricing mechanism of setting prices on a net tonne hauled basis, set according to distance travelled.

Equity between end-use customers

Under the MUC, the access provider cannot take revenue for any one line segment greater than the full economic cost to provide that segment. It is also restricted to the stand alone cost of any group of line segments. The mathematics for a combination of traffics travelling over more than one segment allows for a number of possible solutions and as the number of movements increases the number of possible solutions increases exponentially.

The MUC adopts the principle that access pricing should not impose an indefensible or illogical charge on one customer compared to another. To this end, prices are calculated on a 'Distance Taper' basis rather than a 'Segment Average' basis.

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[37] In concept, the use of a more expensive 'track friendly' bogie results in a lower level of wear on the track. This is typical of the types of investment decisions that, under a vertically integrated railway, can be made through a holistic view of the costs and benefits but it becomes difficult to provide the right pricing signals in a vertically separated environment to achieve the same outcome.

[38] Not the least of the difficulties is that it is not obvious that the reference train is in fact the most efficient train for the system – no evidence has ever been offered to support the assumption that it.

In brief, the 'Segment Average' method allocates prices by determining an average price for each segment traversed and summing those for each movement to give a total price. Such a method, in a system where traffics converge such as the HVCC, tends to reduce prices for those parties close to the point of convergence (ie those mines closer to port) and increase prices for those mines more distant and on lower volume lines. By contrast, the "Distance Taper" method determines prices so that the overall price per unit (typically net tonne kilometres) declines as distance increases although the price will be higher on a non-distance related measure (eg net tonnes). These two methods and the difference between them are discussed in more detail at Appendix A.

Current pricing for the AHVN is by the Distance Taper method. This is also the method used by QR (and endorsed by the QCA) for its coal access pricing. The MUC has adopted this method. The method seeks to mitigate the cost impact of distance and in doing so seeks a greater contribution from those parties that are most likely to be able to support this (noting that this is likely to still be substantially below that mine's stand alone cost and therefore conforming with the pricing criteria). By reducing the cost to more distant mines (proportionally, though not on a price per tonne basis), this encourages the development (or continued production) of more distant mines. So long as the price for closer mines remains below the stand alone cost for those mines, it does not result in a cross-subsidy but merely reflects different levels of contribution to common costs.

6.3 PRICING ISSUES

Building upon the principles discussed in Section 6.2 the MUC provides a comprehensive pricing scheme. Some of the aspects of the pricing scheme require additional comment.

Price Structure

In adopting existing pricing principles, the MUC retains the 'Cusp' mechanism. This mechanism has operated since access pricing in the Hunter Valley commenced and operates as follows:

- Each year the track provider determines prices based on the ceiling revenue and traffic forecasts.
- Prices are then split into two:
  - a 'pre-cusp' price that incorporates the variable and all of the fixed costs of the network. Including the rate of return, and
  - a 'post-cusp' price that includes only the variable costs of providing access.
- A system threshold tonnage is determined at which prices change between pre- and post-cusp. Over the years this has varied between 75% and 90% but has generally been intended to be at around 85% of forecast tonnages for the 'constrained network'.

This mechanism provides a significant reduction in volume risk to network owner so that, if volumes under-shoot forecasts, the network owner will have already recovered all fixed costs and profits plus the actual variable costs incurred unless a significant force majeure type event were to occur such that forecasts are dramatically under-achieved. To date, this has not occurred in the Hunter Valley and the mechanism has proved to be very robust. A particular strength is that the mechanism only relies on forecasts for one year and many of the parameters for that period will already be well known (eg mine production targets and the capacities of the various system components).

For the MUC, the level of the threshold has been set at 85% of volume forecast.

Annual adjustment of prices

For the constrained network, prices are adjusted annually taking into account:

- Changes in the regulated asset base
- Movements in forecast volumes
- Efficient maintenance costs
- Adjustments to the overs/unders account from the previous year

The cusp tonnage level would also be adjusted annually in line with volume changes. Providing for annual changes in this way safeguards ARTC's revenue stream and hence returns for the constrained network.

For unconstrained hauls, price adjustments are by way of standard a CPI - x formula. This is identical to the provisions under the AAU. If, at some point in time, a line segment reaches the Ceiling revenue and therefore becomes part of the constrained network, the method of price adjustment can simply change to that adopted for the constrained network. There is no need for any particular transition arrangements or regulatory review.

Links to investment arrangements

A key benefit from the proposed pricing arrangements is that it accommodates changes to the regulated asset base through the annual price review mechanism. This serves to reduce the risk to ARTC of making investments in the constrained portion of the AHVN. This can be contrasted against the more complex mechanisms required, for example, in the QR 2006 Access Undertaking to take into account the mix of future volumes and investment to derive reference prices. Such calculations necessarily involve a high level of judgement by the regulator that the MUC makes unnecessary and therefore reduces the risk of both under- and over-recovery.

The proposed arrangement is more flexible in that it does not commit forward investment programmes nor does it constrain them; rather, prices are adjusted after the investment is completed, obviating any need for judgement. This, coupled with the proposed consultation process provide a high level of understanding and consent by access holders so that investments and the pricing consequences should be uncontroversial.

Verification Of Prices

A concern expressed among stakeholders with regard to the constrained network has been the lack of transparency that access prices are a genuine reflection of the allowable components. A similar concern is expressed in Queensland which is the other jurisdiction where Ceiling rates are charged. Access providers are typically unwilling to provide data to their customers regarding costs sufficient to allow users to perform independent checks.

The MUC provides a mechanism that seeks to provide access holders with comfort that the Coal Undertaking has been complied with through ARTC providing access holders with a certificate from an independent auditor to that effect. This approach safeguards ARTC's confidential information, but provides a level of independent verification that should satisfy all parties. Should an access seeker consider that, despite the certificate, there is cause to challenge ARTC's access prices, the Undertaking provides a suitable dispute resolution mechanism to pursue this.

Limitation On Variation Of Current Prices

Pricing for coal trains operating solely within the constrained network (ie constrained trains) will be priced according to an annual review of the Combinatorial Ceiling. However unconstrained trains will not be subject to this process and it is necessary to consider how such trains would be priced in the MUC.

This issue was considered from two aspects:

- the need for consistency for prices between the old and new regulatory arrangements; and
- the fact that a mere change of ownership of the network is not a compelling reason to disrupt existing pricing where such prices are not causing significant market distortion.

The adoption of the Coal Undertaking will not stand in isolation from past history and current practice. Most of the unconstrained traffics that will operate under the new Coal Undertaking currently operate today and there are prices and price structures currently in place for these. It would be possible that any changes that are made to prices and price structures could be quarantined to new access agreements, and the existing arrangements could be allowed to carry on unchanged. However, this would have potential impacts on competition if the price for the haulage of coal from one mine to the port calculated under the current contractual arrangements was allowed to remain while a different price was calculated under the new Coal Undertaking for any competitor to the incumbent. An access seeker may be advantaged or disadvantaged as against the incumbent and this would contravene concepts of equity and the facilitation of competition in the down-stream market.

Also, it would be a strange outcome for the mere change of management (and effectively ownership) from one government owner to another to result in a significant increase in charges. It cannot be an expected outcome that the acquisition of the network by ARTC would result in increases in access charges, particularly when ARTC has publicly stated that access charges in the Hunter Valley could be expected to reduce by 20%.[39]

For these reasons, the MUC contains provisions that limit the changes that ARTC will make to existing prices. Apart from the equity consideration, this will ensure that the change from one regulatory framework to another is accomplished without undue price distortion or price shocks to access holders. The MUC recognises that there may be a valid reason for ARTC to seek a price increase outside of the limitations and provision is made for this to be achieved through agreement between the parties or for ARTC to apply to the ACCC for approval for such a variation.

[39] ARTC Newsletter "Links No.4" October 2002 p.3 See also ARTC press release at http://www.artc.com.au/docs/news/press-release/pdf/Hunter_Valley_Rai_Network.pdf

7 SPECIFIC ISSUES – RELATIONSHIP WITH OTHER UNDERTAKINGS

7.1 INTRODUCTION

The MUC is unusual in that it covers only part of the potential service provided by a particular piece of infrastructure. As noted in section 3.3, there are good reasons to adopt this approach. However, it is necessary to ensure that the Coal Undertaking does not then become dysfunctional through inconsistency with other Undertakings or access regimes which may impact on it.

7.2 PRIMACY

The expected areas where inconsistency may arise include:

- Pricing,
- Pathing allocation and train management
- Safety and technical standards

The MUC provides that where there is an inconsistency between it and another ARTC Undertaking, the MUC will prevail, to the extent necessary to overcome the inconsistency.

It is assumed that ARTC will take care to ensure that its two Undertakings will be as consistent as possible and provide mechanisms to mitigate any inconsistency that does arise. The MUC primacy is built on the view that this can most easily be achieved by providing for one or other of the Undertakings to take precedence. Provided that sufficient care is taken, it should not be a matter of great import which Undertaking takes precedence, provided clear rules are established. The MUC seeks to do this both through establishing its primacy and addressing specific areas where inconsistency might foreseeably arise in this way a circuit-breaker is provided if unexpected inconsistencies do occur.

7.3 PRICING

The MUC provides that, where a coal train operates beyond the geographical scope of the Coal Undertaking, for the purposes of determining prices to apply to the Coal Undertaking only, pricing is determined as though the entire journey was within the geographic scope of the Undertaking and then pro-rated on the basis of distance back to the geographic boundaries of the Coal Undertaking. In this way, prices take into account a true distance taper not just that which might apply if taken to the boundaries of the Coal Undertaking.

For example, the haul from Gunnedah to Newcastle originates outside of the AHVN and would be subject to this rule. Use of this approach allows (though it does not obligate) ARTC to apply a lower distance based charge (allowing the charge to taper over the greater distance) than would apply to a mine at the boundary of the AHVN at Werris Creek. Were this rule not to apply, the charges for the two mines would be the same for use of the AHVN but the Gunnedah traffic would attract an additional charge for the Werris Ck to Gunnedah portion of the journey without the benefit that might accrue from the additional distance taper.

This is analogous to a situation in Queensland which involved the construction of a private spur line from a proposed mine at Rolleston to join the existing QR network. That situation had an additional complication in that the resulting access charge would be materially different dependant on whether QR built the spur (and added it to its network) or the line was privately built and owned. However, even without that complication, the principle remains that coal trains crossing into other jurisdictions face the unattractive prospect of adverse access pricing

outcomes merely because of jurisdictional boundaries.[40] The MUC recognises this as undesirable and, to the limited extent possible within the confines of a single regulatory instrument, seeks to mitigate the problem by applying a distance taper to access charges as though the whole journey was within the network and then pro-rating the charge back to the portion of the journey that is within ARTC's network. It is recognised, of course, that an ARTC Undertaking cannot influence pricing for access to infrastructure owned by another party but it should recognise the issue to the extent of its own borders.

7.4 NETWORK MANAGEMENT

While the major traffic in the AHVN is coal, many trains traverse the network on more distant journeys. These 'through' trains typically interact with networks owned by parties other than ARTC as well as the wider ARTC network. It is therefore important that both train planning and train control are managed consistently across jurisdictions to the greatest extent possible. For example, it is important that an intermodal train bound for Sydney retain its path or it may suffer significant delays waiting for a later slot amongst the suburban traffic. A train running a few minutes late may, if it hits the curfew, be delayed up to four hours waiting for the next opportunity to enter the city. Similarly, the paucity of long crossing loops on the North Coast line means that delays to one north-bound train might cause delays to many others in both directions. In both examples there would inevitably be significant flow-on effects.

The need for a comprehensive process for managing train conflicts and in particular the effects of interactions between operations in different networks is particularly acute in the Hunter Valley region where three different network owners interact. As in the MUG, the MUC has included various processes (eg in clauses 2.4, 5.5 and Schedule F) for the management of train and maintenance planning that recognise the need for cooperation between adjoining network owners and train operators but has not proposed a specific set of train management criteria different from those currently within the AAU – with one exception – that conflicts between coal trains be managed to arrive trains at the port in their planned sequence rather than preferring 'on time' trains. Rather it is noted that this is an area where there is a need for a genuine collegiate approach to crafting a uniform set of rules for the management of trains that recognises the different requirements of the various stakeholders.

7.5 SAFETY AND TECHNICAL STANDARDS

It is highly desirable that technical and safety standards, operating practices, rules and systems are consistent across regulatory jurisdictions. Governments and industry throughout Australia have recognised this and a number of National Codes Of Practice are being devised to provide a common platform for railway practice.

Clearly, there will always be some differences. For example, the legacy of different track and structure gauges in Australia is likely to remain into the foreseeable future. However, a number of areas of common practice can and have been identified and documented.

The MUC refers matters of standards to those of ARTC. To the extent that ARTC has differing standards applying to different parts of its network, it is desirable to minimise the differences where this is practical and has merit. In some instances the differences are for rational economic or technical reasons and should be maintained. An example of such a difference would be that portions of the AHVN allow maximum axle loads of 30 tonnes per axle whilst other parts are restricted to 25 tonnes. Other parts of the HVN are restricted 20 tonnes. Whilst it would be desirable to have all lines available for the highest axle load, this is neither economically viable nor is it a practical necessity.

[40] Pacific National has already seen the negative effects of this beginning to occur in the pricing of traffics that were previously within a single jurisdiction but are now in two or sometimes three different networks due purely to the change in the institutional arrangements with the take up of parts of the NSW network by ARTC.

To the extent that there differences between the standards applicable to the AHVN and networks of other owners eg RailCorp, it is similarly desirable to minimise such differences where they have a material effect on the operation of the AHVN. An example of such a difference might be that ARTC allows 'driver only operation' for freight trains on its part of the HVN, but RailCorp or RIC does not. It is not within the scope of the Coal Undertaking to impose an obligation on ARTC to minimise such differences nor is it necessarily always desirable. However it is clearly in the interests of access seekers that, where they traverse networks under different ownership, the owners seek to minimise such differences to the largest extent possible within reasonable economic and technical constraints. The MUC has not attempted to address this issue in any comprehensive way but does recognise its importance by inclusion in the service objectives of the MUC in clause 1.3(g) and also in reference to any investments or connections to the AHVN (eg clause 6.1(a)(v)).

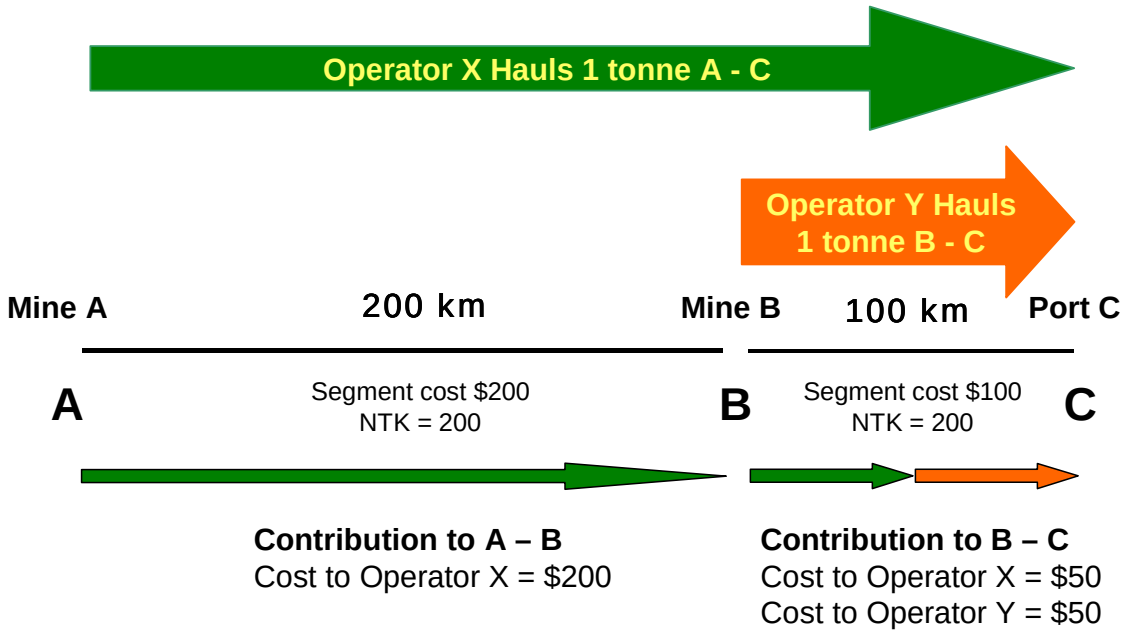
APPENDIX A DESCRIPTION OF SEGMENT AVERAGE AND DISTANCE TAPER PRICING

In Section 6.2 two methods of formulating prices were discussed. This appendix explains the methods and provides a simple example of their application.

In the two examples in this appendix, the common parameters are:

- There are two mines A and B with the port at C.
- The stand alone costs for each section are:
  - Segment A - B $200, and
  - Segment B - C $100.
- Operator X transports 1 tonne from Mine A to Port C.
- Operator Y transports 1 tonne from Mine B to Port C.
- The total regulated access charges for the sections are:
  - A – B $200 (total NTK = 1 tonne x 200 km = 200)
  - B – C $100 (total NTK = 2 tonnes x 100 km = 200)

FIGURE C1: EXAMPLE PRICING USING SEGMENT AVERAGE METHOD

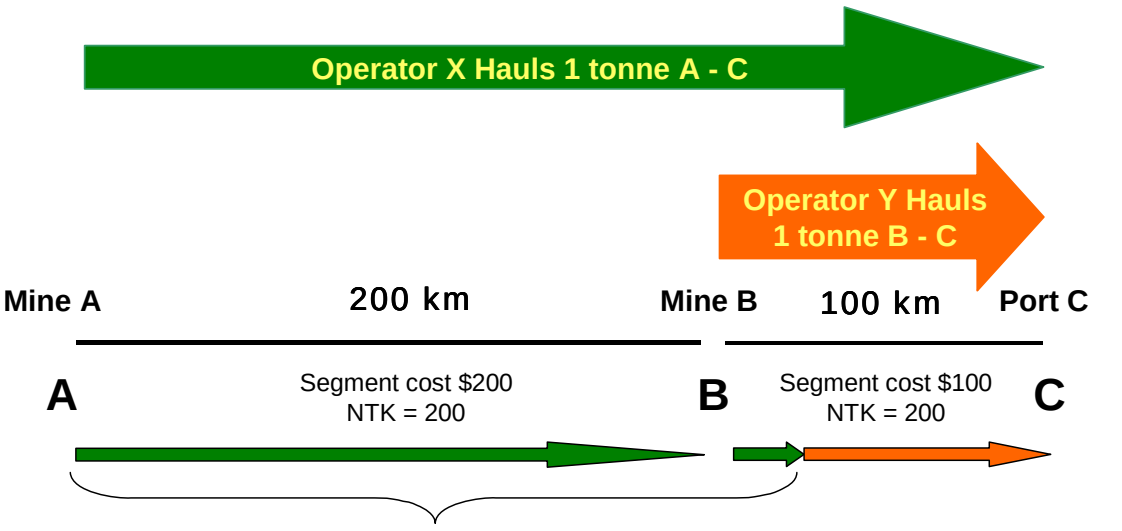


The Segment Average method is shown in Figure C1. In this method, customers are charged the average cost of each segment that they traverse. The regulated charge for each segment is divided by the unit of charging (say tonnes, GTK or NTK) and assigned to the operators in accordance with their consumption of the unit. In the example, because the two customers are

making equal usage of Segment B – C, they pay equally for this section. Operator X (and ultimately Mine A) must bear the full cost of Segment A – B because it is the sole user of that section.

One of the problems with this method is that Mine A's cost in getting product to market may be so high it fails (or may not be commissioned in the first place). It's ability to attract market share may also be compromised, increasing the risk to the access provider (and hence other system users) that volumes will not be met with the consequent loss of revenue. The failure of Mine A to send volumes down the line would lead to Operator Y (and ultimately Mine B) paying the full cost for the segment it requires (ie $100). An alternative is that the access provider reduces the charge for Segment A - B. As the access provider is prohibited from raising the charge for Segment B – C (because that would breach the Ceiling for that segment), the access provider will under-recover compared to what it might have been able to achieve.

FIGURE C2: EXAMPLE PRICING USING DISTANCE TAPER METHOD



Distance Taper Method
Maximum regulated revenue = $300
Total NTK = 400 NTK
Price A – C = $0.70/NTK; Total contribution = $210
Price B – C = $0.90/NTK; Total contribution = $ 90

In contrast, the Distance Taper method (see Figure C2) takes advantage of the combinatorial model provided in the MUC. Under this method, the emphasis is on smoothing out the access charge across all parties based on distance. Operator Y pays more per NTK than Operator X, but pays significantly less per tonne. The result is intuitive while mitigating the effects of distance to some extent[41]. Those that are in a position to pay relatively more per unit of

[41] This is very important in a situation like the Hunter Valley where a few mines are significantly further from the port than most of the others. In the case of Ulan, this pricing method provides a significant benefit to Ulan and other mines on that branch without which, the mines would probably be uneconomic. The case is even more extreme for Gunnedah.

distance do so even though their overall price per tonne is less.[42] The total revenue collected is still the regulated maximum amount ($300), so the access provider is fully compensated. Note that in the example in Figure C2 Operator X covers the full amount of the cost of the line section A – B plus contributes to Segment B – C to the tune of $10 (ie at least the margin cost of using that segment).

Some parties argue that Distance Taper method is unfair because Operator Y (and thus Mine B) is paying more for use of Segment B – C than Operator X. The argument is that it is not appropriate for access pricing to take into account the relative cost to the coal producer of getting product to market as that is part of the over competitive environment in which each miner operates. While the argument is correct as far as it goes, it is important to realise that Mine A contributes something towards the cost of Segment B – C. If the Mine A haul did not exist, then Operator Y's price for the Mine B haul would need to increase to cover the shortfall (ie $100 instead of $90). So Operator Y and Mine B are better off than if the Mine A haul does not exist. To some extent, the attractiveness of average segment pricing is illusory if its implementation reduces the overall usage of the system.

[42] An assumption is that mines are competing in the same market and therefore for the same revenue per unit of coal produced. The assumption ignores the impact of differential mining costs and coal qualities.

APPENDIX B MODEL UNDERTAKING – COAL (ANNOTATED)

[See separate file.]