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Comparative assessment of road and rail infrastructure charging regimes in Australia

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1. Introduction

NERA Economic Consulting was engaged by the Australasian Railway Association ('ARA') to undertake a comparative assessment of existing road and rail infrastructure charging regimes in Australia. The focus of the assessment is on any inconsistencies in the institutional and regulatory regimes adopted for each regime. The jurisdictions covered in the report include Western Australia, South Australia, Victoria, New South Wales, Queensland and the national road and intercity rail regimes. This report will assist the ARA and its members in the development of submissions to the Productivity Commission review of road and rail freight infrastructure pricing.

This study is the first of two studies undertaken by NERA for the ARA. The second study draws upon the analysis in this study to discuss principles for an efficient road and rail infrastructure charging regime. In that study we consider the importance of developing a clear regulatory objective of efficiency in the use, provision of, and investment in, both road and rail infrastructure while being mindful of implications of the regulatory approach on competition in the freight transport market. The discussion highlights the implications of differences in the road and rail charging regimes for competition in the freight transport market and identifies areas where future charging reform may be most desirable.

In this report we provide a comprehensive overview of the rail regulatory regimes in each of the key rail jurisdictions. We focus on the regulatory objectives underlying each regime, the institutional framework and regulatory methodologies. When considering the regulatory methodologies, we examine the costs included in current charges within the negotiate and arbitrate form of regulation that is widely used. We also provide a general overview of the rail industry in each jurisdiction including identifying the main freight operators and infrastructure providers, the network and commodities transported. Finally, we provide some discussion of the approaches to new rail investment including identification of priorities and funding arrangements.

Similarly for the national road infrastructure charging regime, we discuss the regulatory objectives, institutional framework and regulatory methodologies. This includes a discussion of the role of the National Transport Commission ('NTC') and the Australian Transport Council ('ATC') in formulating heavy vehicle charges, and the costs included in those charges. As for the rail charging regimes, we also provide a general overview of the road infrastructure network, road freight operators, commodities transported and approach to new infrastructure investment.

A key focus of this report is a comparative assessment of the national road infrastructure charging regime and the various rail regimes, for the purpose of identifying differences in the underlying approaches. The main differences appear to be in the approach to capital expenditure recovery, regulatory institutional framework and methodologies used. We discuss the implication of these differences in more detail as part of report on principles for an efficient road and rail charging regime.

Finally, we provide a brief overview of recent reforms in the energy industry. This focuses on changes from state-based regulators implementing national codes for electricity and gas regulation, to the development of a single national energy regulator, the Australian Energy Regulator ('AER'), which implements regulatory rules developed by the Australian Energy

Market Commission ('AEMC'). The motivations for these reforms may be useful when considering further reforms for the road and rail infrastructure charging regimes.

The remainder of this report considers these issues in more detail:

- Chapter 2 provides an overview of the road and rail networks.
- Chapter 3 brings together our detailed jurisdictional analysis and provides an overview of the current road and rail infrastructure charging regimes in Australia as well as the historic reforms implemented across the two infrastructure industries.
- Chapter 4 outlines the process for determining charges for road and rail infrastructure and includes a comparison of the costs included in infrastructure charges; and a discussion on approaches to new road and rail infrastructure investment.
- Chapter 5 compares the road and rail regulatory institutional structures and includes a discussion of the recent energy regulatory reforms. The implications from the energy reforms are identified for consideration in the design of road and rail infrastructure charging reforms.
- Chapter 6 provides our conclusions and identifies further issues for consideration.

Appendices A to F provide a detailed discussion of each of the jurisdictional-based rail regimes operating along the ARTC Network, in New South Wales, Queensland, South Australia, along the Tarcoola to Darwin Network, in Victoria and in Western Australia. It also includes an appendix detailing the national road infrastructure charging regime involving the NTC and the ATC.

2. Nature of the road and below rail networks

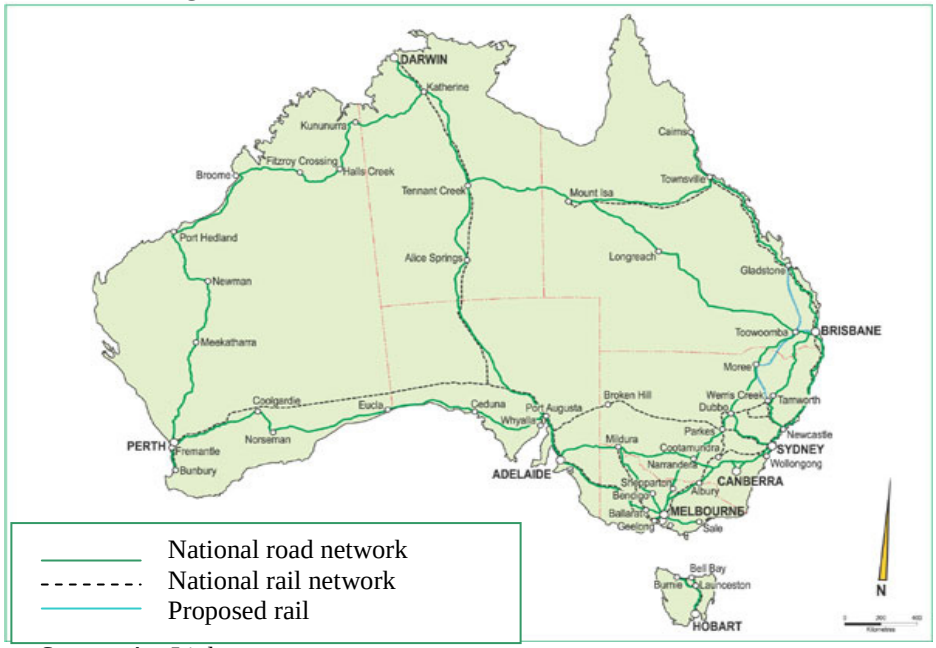
2.1. Introduction

According to the Bureau of Transport and Regional Economics ('BTRE'), rail accounted for 20% of annual tonnages hauled across the seven major corridors while road accounted for 77% in 2001. [1] Breaking this down across the corridors, the BTRE has estimated that:

- along the Melbourne to Sydney corridor road accounted for 88% of annual tonnage shipped while rail accounted for 12%;
- along the Brisbane to Sydney corridor road accounted for 84% of annual tonnage shipped while rail accounted for 15%;
- along the Melbourne to Brisbane corridor road accounted for 68% of annual tonnage shipped while rail accounted for 30%;
- along the Sydney to Adelaide corridor road accounted for 81% of annual tonnage shipped while rail accounted for 18%;
- along the Melbourne to Adelaide corridor road accounted for 85% of annual tonnage shipped while rail accounted for 15%;
- along the eastern states to Perth corridor road accounted for 24% of annual tonnage shipped while rail accounted for 60%; and
- along the Sydney to Canberra corridor road accounted for 100% of annual tonnage.

The major national and interstate corridors serviced by road and rail are set out in Figure 2.1.

Figure 2.1: National rail and road network



Source: AusLink

[1] Bureau of Transport Economics, Freight Between Australian Cities 2001, September 2003, pg. 4.

2.2. Road network and infrastructure providers

The Australian road network comprises national highways, arterials and local roads in both rural and urban areas and in 2003 exceeded 810,000 km.[2]

In its 2003 *Overview of the Australian Road Freight Transport Industry*, the BTRE estimated that there were over 400,000 freight trucks on the road in 2001,[3] which transported approximately 1.4 billion tonnes of freight (146 billion tonne kms). Approximately 84% of these freight trucks were rigid trucks while the remaining 16% were articulated vehicles.[4] The BTRE has also estimated that there were over 46,000 road freight operators in 2002. The top five commodities transported by road include crude materials (excluding fuels), food and live animals, manufactured goods, mineral fuels and lubricants, and other commodities.

Publicly owned road infrastructure is currently maintained and operated by the relevant State, Territory and Commonwealth government departments. Recommended road infrastructure charges for vehicles over 4.5 tonnes are developed by the NTC, which must be accepted by the ATC prior to implementation. For vehicles less than 4.5 tonnes, road infrastructure charges are set by the relevant state and territory governments.

In recent years, governments have engaged in public-private partnerships for the provision of road infrastructure. These have resulted in the construction and operation of a number of toll roads by private companies. The tolls charged to use these private roads are based on contractual arrangements between the toll company and the relevant state government and are not considered in decisions by the NTC on heavy vehicle charges.

Significant new investment in the national road network is currently being undertaken. According to AusLink, approximately $5.5 billion is expected to be spent on road projects over the period 2004-05 to 2008-09. $1.5 billion has also been set aside by AusLink for road maintenance in the states and territories.

2.3. Rail network and infrastructure providers

The rail freight network in mainland Australia comprises standard gauge, narrow gauge, broad gauge and interstate standard gauge tracks. These tracks provide for haulage of freight between all capital cities and from regional areas to the major ports.

Access by freight rail operators to below rail infrastructure is currently provided by both publicly and privately owned service providers (see Table 2.1). Based on publicly available information it appears that there are currently nine major freight rail operators shipping freight in Australia.

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2 Bureau of Transport Economics, Australian Transport Statistics 2005, Table 9.

3 The average number of vehicles registered over 12 months to 31 October 2003 was 409,000.

4 BTRE, *Australian Transport Statistics 2005.*

Table 2.1 Rail infrastructure providers

State	Government owned	Private company
NSW	RIC and RailCorp	
Qld	QR Network Access	
SA	TransAdelaide	NRG Flinders American Rail Company and Genesee & Wyoming (formerly Australian Southern Railroad)
Vic	VicTrack	Connex Melbourne Pacific National Network and Access
WA	Public Transport Authority	Babcock & Brown (formerly WestNet Rail)
Tarcoola-Darwin		Asia Pacific Transport
ARTC Network	ARTC	

According to the Australasian Railway Association's *2004 Productivity Report*, 594.7 million tonnes of freight were carried by its survey respondents in 2003/04 (168.1 billion net tonne-km). The top five bulk commodities transported in 2003/04 were ore, coal, grain, steel and copper.[5]

Based upon publicly available information, it appears that some substantial investment is to be undertaken in the below rail industry in the medium term. For instance, the ARTC has announced that $1.4 billion will be invested over the next four years in the North South Corridor rail network which links Melbourne to the Queensland border and the Hunter Valley Coal Rail Network.[6] The AusLink investment programme has also identified the following investments that will be undertaken in the coming years:

- Northern Sydney and Port Botany rail corridors ($110 million);
- Port Links - Dynon intermodal precinct and the Port of Melbourne ($110 million);
- Port River Expressway Stages 2 and 3 and associated rail/road works ($80 million);
- Tottenham to West Footscray rail link ($40 million);
- Melbourne to Albury rail standardisation ($25 million);
- Geelong to Mildura rail standardisation ($20 million);
- Port Links - North Quay rail loop and new access road to Fremantle Port Gate 3 ($14 million); and
- Network wide investments ($145 million) consisting of:
  - rail communications upgrade ($42 million);
  - advanced Train Management System ($21 million);
  - minor bridge and track upgrading on the AusLink Network ($20.6 million); and

[5] Australasian Railway Association, Australian Rail -The 2004 Productivity Report, 2005, Table 3.

[6] ARTC, Annual Report, pg. 6, 2005.

- other rail projects subject to a competitive process, ($61.4 million).

2.4. Conclusion

Based on the foregoing a number of observations can be drawn. The first is that competition between road and rail infrastructure occurs primarily across the long distance interstate freight corridors due to the line haul efficiency that rail is able to achieve along these distances. While road accounts for more than 77% of annual tonnage shipped across the major corridors in 2001, along the east-west corridor rail has a distinct advantage accounting for more than 60% of freight transported along this corridor. Rail also appears to have a higher than average share of freight transport along the Melbourne to Brisbane corridor where it accounts for 30% of the annual tonnage shipped along this corridor.

Second, while there is some commonality in the commodities transported by road and rail, in general rail has an advantage in the transportation of bulk commodities to port facilities. Significant direct competition occurs between the road and rail infrastructure industries in the transportation of grain and containers along the major corridors.

Finally the significant difference in the number of users of road and below rail infrastructure would appear to support the adoption of distinct regulatory models across the two infrastructure industries. That is, while the negotiate-arbitrate model can facilitate access when there are a small number of users (ie. approximately ten above rail operators) it's operational ability is significantly limited where there are a large number of users seeking access as is the case with road (ie. 46,000 heavy vehicles). Such limitations arise because negotiating access with a large number of users would be inefficient and would impose substantial transaction costs on the provider. Thus where there are a large number of users, as is the case in road, it would appear appropriate to adopt a different infrastructure charging regime to that adopted in rail (see chapter 3).

3. Institutional characteristics of the road and rail access pricing regimes in Australia

3.1. Introduction

Over the last fifteen years the Australian rail and road infrastructure industries have undergone significant restructuring brought about by the implementation of a series of microeconomic reforms by successive governments. Designed to improve efficiency and to remove impediments to competition, the reforms implemented in the two industries have followed very different paths and as a consequence have resulted in the evolution of two very distinctive regulatory frameworks.

In road, the path to reform has resulted in the implementation of a national uniform heavy vehicle charging system. This national approach has been facilitated by the development of an independent statutory body responsible for developing charges and a decision making body responsible for approving the recommended charges. In contrast, the path to reform in rail has resulted in the adoption of the negotiate-arbitrate model for access to below rail infrastructure. The adoption of this model has been implemented through the enactment of a number of jurisdictional specific access regimes overseen by six regulators.

The divergence in these regulatory approaches reflects the underlying nature of the two industries, where rail is characterised by a small number of operators and infrastructure providers, while road is characterised by a large number of heavy vehicle operators and infrastructure providers. Given these characteristics it is clear that a negotiate-arbitrate model would not be feasible, nor sensible for establishing heavy vehicle charges.

The distinctive regulatory approaches adopted in the road and below rail industries have produced significant differences in the infrastructure charging regimes and the level of regulatory involvement. Clear differences have also emerged in the approach to access regulation of rail infrastructure across jurisdictions. Accordingly, it is difficult to make any direct comparison of the road and rail access pricing regimes.

In the remainder of this chapter we provide an overview of the historic reforms implemented in the road and below rail industries before moving on to examine the regulatory regimes currently in place across the two industries.

3.2. Road infrastructure charging regime

3.2.1. Path of reform

The path to reform for road infrastructure commenced in 1991 following the Special Premiers' Conferences. At this time the Premiers agreed to implement a national approach to road transport regulation, to be developed by an independent statutory body overseen by a body comprised of transport ministers from the Commonwealth, States and Territories. The decision to implement a national uniform approach to road transport regulation followed an enquiry by the Inter-State Commission which found that there were significant variations across jurisdictions in relation to the regulation of road transport.

These variations stemmed from the historical manner in which vehicle charges had been set by the jurisdictions. Prior to 1954 there were a number of restrictions placed on interstate freight by the various jurisdictions through the imposition of registration fees and strict license conditions. The ability of the States to impose these restrictions was appealed and in a decision by the Privy Council the legislation was found to be invalid. The States then sought to apply charges which recovered the maintenance costs imposed by vehicle use through a ton-per mile tax. According to commentators, these charges were relatively easy to avoid and thus in 1979 they were replaced with fees recovered through the sale of petrol and diesel. In 1984, the Commonwealth also sought to introduce charges on heavy vehicles travelling interstate through the enactment of the Federal Interstate Registration Scheme. In 1990 the Inter-State Commission reviewed these arrangements and made a number of recommendations relating to vehicle charges, road funding and the development of a national body to establish a uniform approach to the regulation of road transport.

In 2003, State, Territory and Commonwealth government ministers confirmed their commitment to the national approach to road transport regulation. Another key element of this agreement was the decision to extend the national approach to regulatory and operational reform, to the rail infrastructure and inter-modal freight sectors.

3.2.2. Regulatory regime currently in place in the road infrastructure industry

The national approach to developing and implementing heavy vehicle charges has been facilitated by the *Inter-Governmental Agreement for Regulatory and Operational Reform in Road, Rail and Intermodal Transport 2003* and the *National Transport Commission Act 2003*. A fundamental component of these legislative instruments was the recognition of the roles of:

- an independent statutory body called NTC, which was accorded the role of establishing uniform arrangements for heavy vehicle (4.5 tonnes and over) regulation and for developing consistent heavy vehicle charging principles; and
- a decision making oversight body called the ATC, which consist of transport ministers from the Commonwealth, State and Territory levels with responsibility for, amongst other things, the approval of heavy vehicle road charges and charging principles recommended by the NTC.

A key element of the NTC's role is the development of uniform heavy vehicle charges. In carrying out this role, the NTC undertakes extensive consultation with governments and industry participants. The NTC is also bound by the *Road Use Pricing Principles* which were approved by the ATC in 2004. In accordance with these principles heavy vehicle road use prices should promote optimal use of infrastructure, vehicles and transport modes subject to the following:

- full recovery of allocated infrastructure costs while minimising both the over and under recovery from any class of vehicle
- cost effectiveness of pricing instruments
- transparency
- the need to balance administrative simplicity, efficiency and equity (eg impact on regional and remote communities/access)

- the need to have regard to other pricing applications such as light vehicle charges, tolling and congestion.

Note: These principles allow for the inclusion of variable mass distance charges and externality charges relating to noise and air emissions where:

- there are clear net economic gains;
- the extent of effort is recognised; and
- transparency and more accurate pricing within the road mode are ensured.

The 'subject to' provisions of these pricing principles in effect constrain the optimal use objective. Accordingly, the NTC must ensure that these constraints are satisfied prior to, or in conjunction with, considering the efficiency question. Of particular importance in this context is the emphasis placed on cost recovery. Notably there is no requirement that the costs incurred be efficient, which is in direct contrast to the below rail industry. The potential for conflict also exists among these pricing principles, and as such the NTC and the ATC must exercise some discretion when weighing the relative importance of each constraint.

The calculation of heavy vehicle charges is based on the NTC's estimate of the share of total expenditure on roads that can be attributed to each heavy vehicle type. The share of costs attributable to heavy vehicles are then recovered through a fixed annual registration charge for each vehicle type and a variable charge which is recovered through the diesel fuel excise charged per litre.

The NTC (formerly the National Road Transport Commission) has conducted three reviews of heavy vehicle charges to date. The most recent review is awaiting approval by the ATC prior to implementation.

3.3. Rail infrastructure charging regime

3.3.1. Path of reform

The path of reform of the below rail industry began in 1991 following an inquiry by the Industry Commission. As a part of this inquiry, the Industry Commission developed a number of recommendations[7] relating to the need to:

- unwind any cross subsidisation of other rail services by freight transport;
- reduce the level of government intervention through the corporatisation of railways;
- ensure competitive neutrality between transport modes;
- vertically separate rail operations into their below and above rail components; and
- enable third party access to below rail infrastructure.

Some governments instituted reforms in response to these recommendations, however, the main impetus for reform was the Hilmer review of National Competition Policy.[8] The Hilmer report was released in 1993 and made a number of recommendations in relation to:

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[7] Industry Commission, Rail Transport, April 1991.

- the application of competitive neutrality principles so that government businesses do not enjoy a competitive advantage simply as a result of public sector ownership;
- the restructuring of public sector monopoly businesses; and
- the provision of third party access to nationally significant infrastructure.

In April 1995, the key recommendations of the report were adopted by the Council of Australian Governments ('COAG') and implemented through the Competition Principles Agreement ('CPA') and the *Competition Policy Reform Act 1995*. Although there were no rail specific provisions incorporated into the CPA, there were a number of general principles relating to access to services provided by significant infrastructure contained in this agreement. These principles were used as the framework for facilitating competition in the above rail sector and in the development of a regime to improve overall efficiency in the rail industry.

In the first phase of reform a number of vertically integrated government owned railway businesses were separated into their natural monopoly (below rail) and potentially competitive (above rail) components. In some cases, the below rail infrastructure was wholly privatised or leased to a private company, while in other cases ownership of the infrastructure was retained by the government. Where governments retained ownership of rail infrastructure, a commercial or corporatised entity was formed in an attempt to ensure that the entity had the same commercial objectives as those that a private sector provider would have.

The second phase of the reform process involved making provision for third party access to the below rail facilities which were nationally significant. At the Commonwealth level, provision for such access was enacted through the introduction of Part IIIA into the TPA. These provisions were modelled on the negotiate-arbitrate model as proposed in the Hilmer report.

Given its national and generalised application, Part IIIA of the TPA could have been utilised by all jurisdictions to effect third party access. This avenue has, however, only been used to provide third party access on the main interstate rail network managed by the ARTC[9] and the Tarcoola to Darwin network.[10] In New South Wales the state based access regime was certified as effective on a limited basis under the TPA through to 31 December 2000. Certification has not since been sought for the revised access regime. In the remaining jurisdictions, legislators have opted to implement their own state-based rail access regimes resulting in a number of legislative instruments which apply across jurisdictions. These state-based rail access regimes have not been certified by the National Competition Council ('NCC').

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8 Independent Committee of Inquiry into Competition Policy in Australia 1993, National Competition Policy: Report by the Independent Committee of Inquiry into Competition Policy in Australia, (Professor F. Hilmer, Chairman).

9 In the form of an undertaking under section 44ZZA.

10 In the form of a state based regime which was certified as effective under Part IIIA.

As a consequence of these structural and legislative reforms, third parties seeking access to below rail infrastructure can now either do so through:

- private agreements with the infrastructure provider;
- the national access regime as provided for in Part IIIA of the TPA; or
- state-based access regimes as provided for in the relevant state-based legislation.

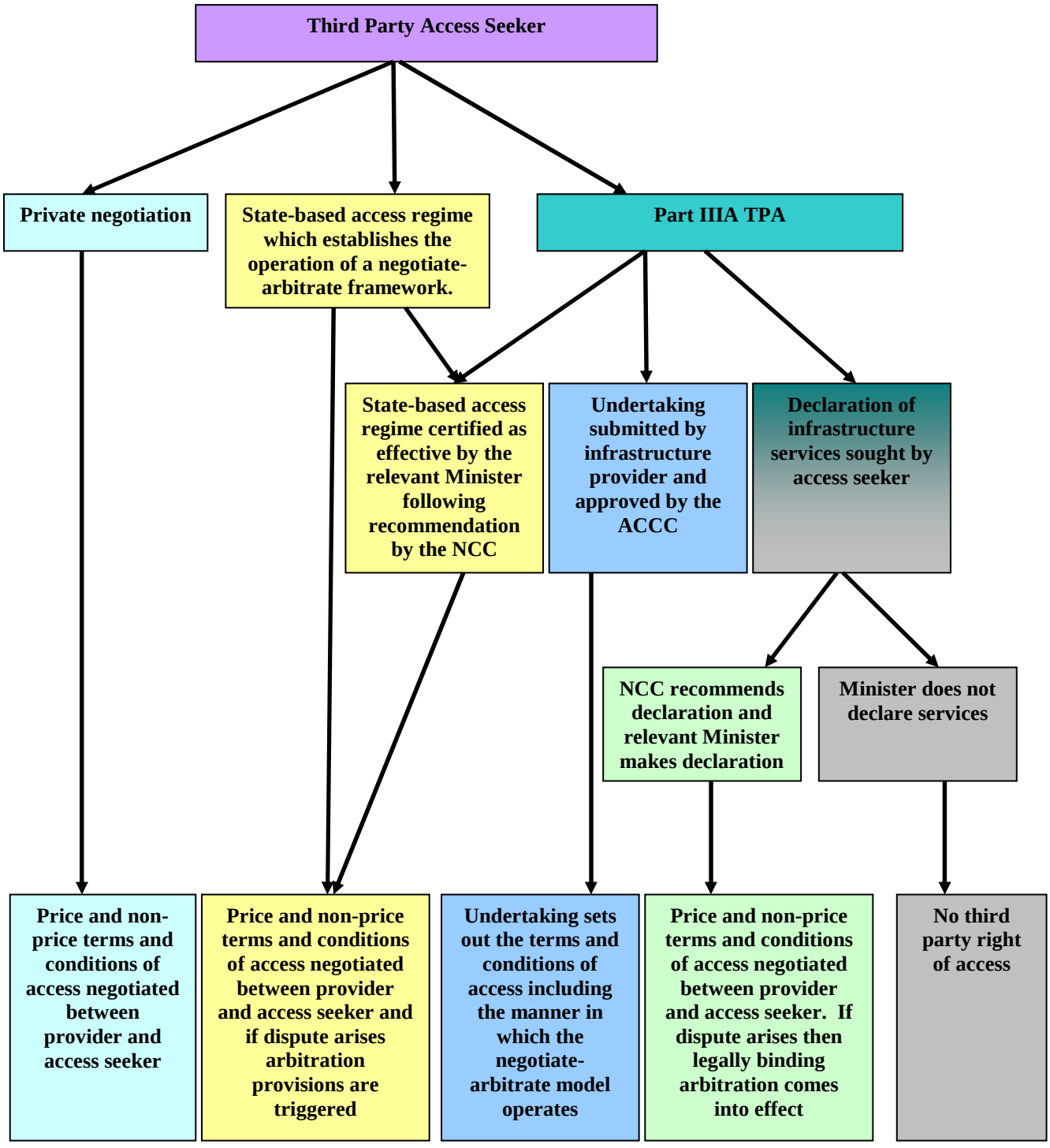
Where a state-based access regime is certified by the relevant Minister, following a recommendation by the NCC, then an access seeker loses the ability to seek access via the national access regime provided in Part IIIA.

Figure 3.1 sets out the manner by which third parties can currently seek to obtain access to below rail infrastructure.

In what appears to be a third phase of the reform process, Victoria has recently moved away from the strict application of the negotiate-arbitrate model and has adopted a hybrid model which establishes both a reference and non-reference service. The adoption of this hybrid model by the Victorian Government stemmed from the recognition that the standard negotiate-arbitrate model had been ineffective in promoting above rail competition. It was further recognised that the pure negotiate-arbitrate (ex post) model had a number of deficiencies including the limited guidance, prior to a determination by a regulator, of the terms of access that may be obtained, the potential for protracted negotiations and costly arbitrations and the uncertainty surrounding determinations.

The culmination of these factors was the development of a hybrid ex ante and ex post model to apply to reference and non-reference services respectively. In accordance with the ex ante component of this model below rail providers are now required to maintain an approved access arrangement which specifies the price and non-price terms and conditions of access for reference services. For services other than a reference service, recourse is had to the negotiate-arbitrate model (ex post model) to establish the price and non-price terms and conditions of access.

Figure 3.1: Third party access alternatives



3.3.2. Regulatory regime currently in place in the below rail industry

As set out in the preceding section, access to the below rail industry has been facilitated by the enactment of a number of jurisdictional access regimes which are based largely on the negotiate-arbitrate model and overseen by six jurisdictional regulators. These jurisdictionally based access regimes have a common purpose of providing third party access to nationally significant below rail infrastructure, they differ in:

- the manner by which access is established;
- the stated objectives and principles of the regime;
- the roles and responsibilities accorded to the regulator; and
- the scope of the pricing principles used to establish the price of access.

Table 3.1
Third party access to rail – legislative instruments and the role of the regulator

State & ***Regulator***	**Legislation and** ***Manner in which Access is Established***	**Role of Regulator**
NSW	Transport Administration Act 1988	Consider access undertakings submitted by infrastructure providers including approval of reference tariffs and other terms and conditions of access
IPART	*Access undertaking*	Arbitrate disputes or appoint a party to arbitrate.
Qld	Queensland Competition Authority Act 1998	Consider access undertakings submitted by infrastructure providers including approval of reference tariffs and other terms and conditions of access
QCA	*Access undertaking*	Arbitrate disputes
SA	Railways (Operations and Access) Act 1997	Establish principles for calculation of floor and ceiling prices Establish information requirements Discretion to establish reporting requirements to enable ESCOSA to monitor costs of access provider
ESCOSA	*Non-Certified Legislated Access Regime*	Appoint a party to arbitrate disputes.
Tarcoola-Darwin	AustralAsia Railway (Third Party Access) Act 1999 (SA & NT)	Publish guidelines on procedures to establish reference price, arbitrated price, information disclosure, compliance, reporting
ESCOSA	*Certified Legislated Access Regime*	Appoint a party to arbitrate disputes.
Vic	Rail Corporations Act 1996 Freight Network Declaration Order 2005 Dynon Terminal Order 2005 Rail Network Pricing Order 2006	Publish guidelines on regulatory accounting, ring fencing, capacity use, network management and negotiation of access Determine rail access pricing methodology Assess proposed access arrangements
ESC	*Declaration and Access Arrangement*	Arbitrate disputes for reference and non-reference services.
WA	Railways (Access) Act 1998 Railways (Access) Code 2000	Approve pricing principles Review proposed floor and ceiling costs.
ERA	*Non-Certified Legislated Access Regime*	Commercial arbitration.
ARTC Network	Trade Practices Act 1974	Consider access undertakings submitted by infrastructure providers including approval of reference tariffs and other terms and conditions of access
ACCC	*Access Undertaking*	Arbitrate disputes.

Notwithstanding these differences, some observations can be made about the general operation of these regimes.

First, the negotiate-arbitrate model has provided the foundation for development of these jurisdictional based access regimes. Under the negotiate-arbitrate model, infrastructure providers and third parties in the first instance seek to reach a commercially negotiated agreement on the price and non-price terms and conditions of access. If the negotiations are unsuccessful or if a dispute arises, then provision is made for arbitration with the arbitrator accorded the role of establishing the legally binding terms and conditions of access.

Second, in most jurisdictions the pricing principles establish the floor and ceiling bounds for the negotiation and arbitration of access charges. The adoption of a floor-ceiling bound in rail has been designed to prevent providers generating monopoly profits while at the same time ensuring that users at a minimum pay the cost of utilising the service. The ceiling price in this context is generally defined as the full economic cost of providing the service while the floor price is defined as the marginal or incremental cost of providing the service on a particular line segment.

Third, the matters to be taken into account by the regulators and/or arbitrator are for the most part based on the principles set out in section 6(1)(i) of the CPA, which states that:

> In deciding on the terms and conditions for access, the dispute resolution body should take into account:
>
> - the owner's legitimate business interests and investment in the facility;
> - the costs to the owner of providing access, including any costs of extending the facility but not costs associated with losses arising from increased competition in upstream or downstream markets;
> - the economic value to the owner of any additional investment that the person seeking access or the owner has agreed to undertake;
> - the interests of all persons holding contracts for use of the facility;
> - firm and binding contractual obligations of the owner or other persons (or both) already using the facility
> - the operational and technical requirements necessary for the safe and reliable operation of the facility;
> - the economically efficient operation of the facility; and
> - the benefit to the public from having competitive markets.

The pursuit of this wide ranging set of objectives stands in contrast to road where the principal objective appears to be the recovery of expenditure across jurisdictions attributable to heavy vehicles.

The remainder of this section provides an overview of the specific regulatory regimes in place across the jurisdictions. A detailed examination of the approaches in each regime is provided in appendices A to F.

ARTC Network

The ARTC was established following an Inter-Governmental Agreement reached in November 1997. A key element of this agreement was the requirement for the ARTC to

submit an access undertaking to the Australian Competition and Consumer Commission ('ACCC') for approval under Part IIIA of the TPA. The form of the undertaking submitted by the ARTC included the proposed terms and conditions of access, the negotiation and arbitration procedures, the identification of the ACCC as the arbitrator of disputes, the pricing principles used to derive the price of access and the indicative tariffs that would apply.

The pricing principles incorporated within this undertaking specify the development of floor and ceiling bounds on revenue which may only be breached if agreed to by the ARTC (in cases where the floor limit is breached) or the user (in cases where the ceiling limit is breached). In addition to the establishment of floor and ceiling bounds, the pricing principles provide for the development of an indicative tariff which is designed to enhance transparency and reduce the costs and time associated with negotiating a price.

Additional pricing principles included within the undertaking state that access charges will be set to:

- enable the ARTC to recover the reasonable costs incurred in providing access including a fair return on investment which is commensurate with the risks and competitive environment in which the ARTC is involved;
- promote efficient use and investment in the network; and
- stimulate customer confidence and growth of the rail industry.

The principal role of the ACCC in this regulatory regime is to assess the proposed undertaking having regard to the views of interested parties and:

- the legitimate business interests of the provider;
- the public interest, including the public interest in having competition in markets (whether or not in Australia);
- the interest of the persons who might want access to the service;
- whether access to the service is already the subject of an access regime; and
- any other matters that the ACCC thinks are relevant.

New South Wales

In New South Wales, access to below rail infrastructure has been established through an access undertaking (the NSW Rail Access Undertaking) submitted by Rail Infrastructure Corporation ('RIC') and the Rail Corporation of NSW under Schedule 6AA of the *Transport Administration Act 1988*.[11] The form of the undertaking submitted by RIC includes the proposed terms and conditions of access, the negotiation and arbitration procedures and the pricing principles used to derive the price of access. The undertaking also identifies the Independent Pricing and Regulatory Tribunal ('IPART') as the arbitrator.

[11] In 2004 the ARTC obtained a lease from the New South Wales Government to manage the Hunter Valley coal rail network and a number of regional rail network corridors. Access to these assets is currently provided in accordance with the NSW Rail Access Undertaking.

The pricing principles specified in the undertaking require that access charges be set so that access revenue is within the range set by the floor and ceiling costs, which are determined by examining the full incremental and full economic costs. Total access revenues plus any line sector Community Service Obligations are also not allowed to exceed the full economic costs of provision for the part of the New South Wales network controlled by the access provider. In contrast to regulations in some other jurisdictions, there is no allowance for negotiated access charges to fall outside the floor and ceiling levels.

In addition to these rules, access providers are required to keep an under and over account with access seekers where the ceiling test may be exceeded. The aim of this account is to ensure that any revenues temporarily earned above the ceiling price will be compensated for in the following year.

Under the undertaking, the IPART is given responsibility for approving the rate of return for the purposes of access pricing, determining whether the access provider has complied with the appropriate asset valuation principles, scrutinising the access provider's compliance with the ceiling test, and ensuring correct operation of the under and over accounts. IPART must also be notified of all agreements.

Queensland

In Queensland, access to below rail infrastructure[12] is provided through an access undertaking submitted by QR under Division 7 of the *Queensland Competition Authority Act 1998*. The form of the undertaking includes proposed terms and conditions of access, the negotiation and arbitration procedures and the pricing principles used to derive the price of access. Within the undertaking, the Queensland Competition Authority ('QCA') is identified as the relevant arbitrator if a dispute arises in relation to access.

In relation to pricing principles, QR's undertaking sets out the floor-ceiling band that will apply to access charges and states that the upper and lower limits for access charges must be established to ensure there is no cross subsidy between services. The undertaking also provides for a revenue limit which is the maximum amount of expected revenue that may be earned from access charges over the evaluation period. The limit requires that the net present value of the cash flows associated with providing access is zero over the evaluation period. In addition to these factors the undertaking also makes provision for the development of reference tariffs which are designed to facilitate negotiations.

In accordance with Division 7 of the *Queensland Competition Authority Act 1998*, the QCA is required to consider the proposed access undertaking and either approve it or not approve it.[13] In undertaking this role, the QCA must have regard to the following factors:[14]

a) the legitimate business interests of the owner or operator of the service;

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[12] According to industry participants this infrastructure excludes the rail between the New South Wales border and Brisbane.

[13] Division 7 subdivision 1, 138(2) also provides the QCA with the power to prepare and approve draft undertakings for declared services where the owner or operator does not comply with its responsibilities to prepare a draft undertaking that meets the requirements set out in the QCA Act.

[14] *Queensland Competition Authority Act 1997*, Part 5, Division 7, Subdivision 1, section 138 (2).

b) if the owner and operator of the service are different entities—the legitimate business interests of the operator of the service are protected;
c) the public interest, including the public interest in having competition in markets (whether or not in Australia);
d) the interests of persons who may seek access to the service, including whether adequate provision has been made for compensation if the rights of users of the service are adversely affected;
e) any other issues the authority considers relevant.

The undertaking also provides for the QCA to approve reference tariffs and determine several of the key parameters used to calculate the incremental and stand alone costs, including the maximum allowable rate of return.

South Australia

In South Australia, access to the below rail network is provided for in the South Australia Access Regime as enacted in the *Railways (Operations and Access) Act 1997*. The overarching objectives of this regime are set out in section 3 of the Act:

a) to promote a system of rail transport in South Australia that is efficient and responsive to the needs of industry and the public; and
b) to provide for the operation of railways; and
c) to facilitate competitive markets in the provision of railway services; and
d) to promote the efficient allocation of resources in the rail transport segment of the transport industry; and
e) to provide access to railway services on fair commercial terms and on a non-discriminatory basis.

The Act specifies the information provision requirements, the manner in which the negotiate-arbitrate model will operate, the principles to be taken into account during an arbitration and the pricing principles to be applied. Rather than the Essential Services Commission of South Australia ('ESCOSA') being the arbitrator in event of any disputes, the Act specifies that it should appoint an independent party for the role.

In relation to pricing principles section 27 of the *Rail (Operations and Access) Act* 1997 states that if an arbitration arises, the arbitrated price cannot be less than the floor price and cannot exceed the ceiling price. In this context, the Act defines the floor price as the lowest price at which the operator could provide the relevant services without incurring a loss. The ceiling price is defined as the highest price that could fairly be asked by an operator for provision of the relevant services. Notwithstanding the requirement that the arbitrated price lie between the floor and ceiling price, the negotiated price does not have to lie within this range.

The Act also vests in ESCOSA a monitoring and enforcement role. The Act requires ESCOSA to develop information brochure requirements, but gives it the discretion to establish reporting requirements and pricing principles for the calculation of floor and ceiling prices.

Tarcoola to Darwin Network

Access to the Tarcoola to Darwin railway is governed by the AustralAsia Railway (Third Party Access) Code, a schedule in the *AustralAsia Railway (Third Party Access) Act 1999 (SA & NT)*. The objective of the Code is to provide for the regulation of third party access to the AustralAsia Railway. The access regime currently applying to the Tarcoola to Darwin railway has been certified as an effective state regime by the NCC under Part IIIA of the TPA.

The Code sets out the procedures for negotiating access, arbitration and the pricing principles to apply. Under the Code any arbitrator that is appointed should not be a party to the dispute, be subject to the control of the South Australian or Northern Territory governments or have an interest in the outcome of the arbitration. This would not appear to preclude ESCOSA from acting as an arbitrator.

In accordance with the pricing principle provisions set out in the Code, the price of access will lie between the floor and ceiling levels and cannot be set below the economic cost. The pricing principles also draw a distinction for access prices which are established in cases where there is sustainable competition that is sufficient to discipline rail operators and prevent the exercise of monopoly power. In such cases the regime specifies that the access price payable will be set equal to the competitive rail-line haul price[15] less the incremental cost (above-rail) of providing the relevant freight service.

The Code applying to the Tarcoola to Darwin network is relatively prescriptive and as a consequence very little discretion is given to ESCOSA as the relevant regulator. Specifically, ESCOSA's role in this process relates primarily to the publication of guidelines outlining its approved approach to:

- valuing capital assets;
- establishing an appropriate return on capital; and
- establishing the timeframe over which costs may be avoided in the calculation of floor and ceiling prices.

ESCOSA currently applies the same approach to monitoring and enforcement as it does in the South Australian rail access regime.

Victoria

As mentioned previously, the Victorian rail access pricing regime has recently undergone significant reform, designed to ensure fair and reasonable access to below rail services and to promote competition in the above rail freight service segment. On 1 January 2006 the new Victorian Rail Access Regime came into effect through amendments made to the *Rail Corporations Act 1996*. This access regime applies only to those rail infrastructure services

[15] The competitive rail-line haul price is defined as the maximum competitive price that the access provider could charge for the transport of freight between one point (point A) and another point (point B) on the railway having regard to the nature of the railway infrastructure service being sought.

that have been declared through the three *Declaration Orders*.[16] The implementation of this new access regime represents a movement away from the pure negotiate-arbitrate model toward a hybrid model which establishes a reference service[17] and an access arrangement to apply to that service. For services other than a reference service, the access regime sets out the negotiate-arbitrate procedures to be followed and provides for the Essential Services Commission ('ESC') to act as the relevant arbitrator if required.

This new regulatory framework requires infrastructure providers to prepare an access arrangement. This access arrangement must set out a description of the service, the terms and conditions for the provision of that service and the reference price, or methodology for the calculation of that price, to be charged for the provision of that service, including reference tariffs. The proposed access arrangement must also identify the ESC as the relevant arbitrator of disputes.

The *Rail Corporations Act 1996* also specifies the use of a revenue cap framework. In effect this requires the reference tariff be set with the objective of generating revenue such that, across all declared rail transport services, the expected revenue is equal to a reasonable forecast of the access provider's efficient cost of providing those services (taking account of the amount of any capital contributions from third parties). In forecasting efficient costs, the access provider is to have regard to the standard and quality of the provided services, and can include a reasonable estimate of financing costs associated with efficient capital expenditure incurred by that access provider since 30 April 1999.

Included within this revenue cap is an under and over recovery mechanism, an efficient carry-over mechanism, a cost pass-through mechanism, a Government contribution pass-through mechanism and a service and quality standard adjustment mechanism. Other pricing principles are set out in the *Rail Network Pricing Order 2005*.

Under the hybrid model, the role of the ESC includes:

- the development of regulatory instruments relating to account keeping, ring fencing, capacity use and network management, as well as guidelines for the negotiation of access;
- the discretion to determine a pricing methodology consistent with the *Rail Network Pricing Order 2005*;
- the approval of access arrangements (and the ability to impose access arrangements if required); and
- arbitrating disputes notified to it in relation to non-reference services.

In relation to the approval of access arrangements for reference services, the ESC is required to have regard to a range of factors as set out in the *Rail Corporations Act 1996* and the

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[16] See: *Freight Network Declaration Order 2005*, the *Passenger Network Declaration Order 2005*, and the *Dynon Terminal Order 2005*. The Orders (together, the "Declaration Orders") came into effect on 1 January 2006 and were published in the Victorian Government Gazette, No S 259.

[17] Under the *Rail Corporation Act 1996* reference services are defined as a declared rail transport service that: (a) is provided by an access provider to itself or a related body corporate; or (b) is likely to represent a significant proportion of demand by access seekers for declared rail transport services; or (c) is provided by means of a terminal.

Essential Services Commission Act 2001 including those set out in section 38ZI of the Rail Corporations Act 1996:

- the access provider's legitimate business interests and investment in the rail network owned or operated by that access provider;
- the costs to the access provider of providing access, including any costs of extending the rail network owned or operated by that access provider but not including costs associated with losses arising from increased competition in upstream or downstream markets;
- the economic value to the access provider of any additional investment that an access seeker or the access provider has agreed to undertake;
- the interests of users;
- existing contractual obligations of the access provider and users of the rail network owned or operated by that access provider;
- the operational and technical requirements necessary for the safe and reliable operation of the rail network owned or operated by the access provider;
- the economically efficient operation of the rail network owned or operated by the access provider;
- the benefit to the public in having competitive markets; and
- any other matters that the ESC considers relevant.

Western Australia

In Western Australia, access to below rail infrastructure is provided through the rail access regime established in the *Railways (Access) Act 1998 (WA)* and the *Railways (Access) Code 2000 (WA).* The object of the *Railways (Access) Act 1998* is set out in section 2A which states:

> The main object of this Act is to establish a rail access regime that encourages the efficient use of, and investment in, railway facilities by facilitating a contestable market for rail operations.

The Code in its current form sets out the obligations of the rail infrastructure provider, the duty to negotiate, the matters that must be covered in negotiation, the mediation and arbitration process and the role of the regulator. The Code also requires that disputes be resolved through commercial arbitration, pursuant to the *Commercial Arbitration Act (1985) (WA).*

The Code states that access prices and the associated revenue must lie within the floor-ceiling band. The Code also requires rail providers to submit costing principles to the Economic Regulatory Authority ('ERA') for approval which set out the rules and practices that are to be applied in relation to determining the floor and ceiling price, cost allocation and the useful life of assets.

The jurisdictional regulator in this case is the ERA who is required to:

- review the costs included in floor and ceiling prices where there is a reasonable expectation that there may be access seekers on those routes;
- determine the rate of return to apply;

- agree to proposals from infrastructure providers for cost principles, train management guidelines and segregation arrangements;
- investigate matters related to the operation of the regime and propose amendments to the regime;
- disseminate information regarding access agreements required by the regime; and
- review the Code after three years of its commencement and every subsequent five years to assess the suitability of the Code to the achievement of the CPA.

When performing its functions under this access regime, the ERA is required to take into account:

a) the railway owner's legitimate business interests and investment in railway infrastructure;
b) the railway owner's costs of providing access, including any costs of extending or expanding the railway infrastructure, but not including costs associated with losses arising from increased competition in upstream or downstream markets;
c) the economic value to the railway owner of any additional investment that a person seeking access or the railway owner has agreed to undertake;
d) the interests of all persons holding contracts for the use of the railway infrastructure;
e) firm and binding contractual obligations of the railway owner and any other person already using the railway infrastructure;
f) the operational and technical requirements necessary for the safe and reliable use of the railway infrastructure;
g) the economically efficient use of the railway infrastructure; and
h) the benefits to the public from having competitive markets.

Differences across the jurisdictions

Based on the foregoing discussion it is clear that the evolution of a number of regulatory regimes across the seven jurisdictions has resulted in a divergence in the regulatory approach for rail infrastructure. Moreover, the diversity of complex legislative instruments and regulators has paved the way for inconsistencies in the manner by which the price of access to below rail infrastructure is established (see chapter 4). In a market characterised by a small number of above rail operators shipping freight over a number of jurisdictional bounds, there are a number of possible implications arising from this diversity.

First, the transaction costs incurred by operators dealing with a number of different regulatory regimes have the potential to be significant and as a consequence act as a potential barrier to entry in the above rail freight market.

Second, inconsistencies in the manner by which the price of access is established across the regimes may give rise to inefficient use of, and investment in, the below rail industry. This in turn will result in distortions in the above rail freight market and other downstream markets.

In view of these issues, some consideration should be given to harmonising the regulatory regimes currently in place across the various jurisdictions. As we outline in chapter 5, concerns about regulatory consistency and uncertainty has led to the formation of a single regulator for the energy industry, the Australian Energy Regulator. The potential efficiency benefits associated with consistency may be significant.

In addition to these harmonisation issues, a number of criticisms of the existing regulatory approach in rail have been raised in relation to the timeliness and cost effectiveness of the negotiate-arbitrate model. While provisions are generally made for strict timelines within the access regime, in some cases negotiations may be protracted. In addition, if the arbitration provisions are triggered, then there is the potential for significant costs to be incurred through the arbitration phase. Combined, these two factors have the potential to limit the bargaining power of above rail operators, with subsequent implications for the efficiency of the regulatory regime. The bargaining power of above rail operators may also be limited in cases where the infrastructure is operated by vertically integrated entities.

Other criticisms of the regulatory approach adopted in the below rail industry relates to the use of floor and ceiling bounds. One such criticism is that the bounds used for negotiating access are too broad. This issue has been overcome in some jurisdictions through the provision of indicative or reference tariffs, however, this approach has not been adopted across all jurisdictions.

Another criticism is that by pricing below the ceiling level (ie. below full economic cost), below rail providers fail to recover their investment in the asset and as a result there are few incentives to engage in efficient investment in the infrastructure. Similarly, pricing above the floor level (ie. above marginal cost) means that there are insufficient incentives for users to utilise the infrastructure efficiently.

3.4. Conclusion

The implementation of the reform agenda in both the road and below rail industries have followed very different paths which has in turn given rise to a divergence in the regulatory frameworks adopted in the two industries. The distinctive regulatory approaches adopted in the road and below rail industries have resulted in differences in the manner by which infrastructure charges are established (see chapter 4).

The implication is, to the extent differences are significant, there is potential for competitive neutrality between the two industries to be undermined. This can distort efficiency in the use of, and investment in, road and below rail infrastructure as well as competition in up and downstream markets. Given these potential implications, consideration should be given to ensuring that competitive neutrality is established and maintained across the two industries.

In addition to the differences which have emerged across the two industries, clear differences have also emerged in the approach to access regulation of rail infrastructure across jurisdictions. These jurisdictional differences have also resulted in differences in the manner by which below rail charges are established (see chapter 4) and as a consequence have paved the way for inefficient use of, and investment in, the below rail industry and the above rail freight market. In view of the foregoing, consideration should be given to harmonising the regulatory regimes currently in place across the various jurisdictions.

4. Determining infrastructure charges for road and rail

4.1. Introduction

The process for determining charges for road and rail infrastructure is influenced by the characteristics of the two industries, and differences in the institutional arrangements, legislative frameworks and objectives for the regimes as we outline in chapters 2 and 3. The result of these differences is quite distinct approaches to determining infrastructure charges for road and rail.

In the remainder of this section we set out the approaches used to determine infrastructure charges for road and rail. This involves a detailed discussion of the methodologies used including the various objectives and pricing principles adopted, and an examination of differences in the regulatory methodologies and cost items.

4.2. Method used to calculate infrastructure charges

4.2.1. Road

The charges paid by heavy vehicle operators for using road infrastructure are an annual fixed registration charge per vehicle, and a variable levy included in the diesel fuel price paid on a per litre basis, known as the diesel fuel excise.[18]

To calculate registration charges and the fuel excise, the NTC starts by reviewing information provided to it by state governments on the historical costs incurred for the provision of road infrastructure within each state. We discuss in detail the specifics of the costs included in charges in section 4.3 below, however, in general it includes the operating costs associated with road provision, repairs and maintenance costs and land acquisition costs. It does not include costs such as for road side curbs and police traffic enforcement. In estimating total road infrastructure costs, the NTC assumes that they are equal to the average level of road expenditure (the 'PAYGO' approach). The average in this context is based on a three year average which includes the expenditure of the preceding two years and forecast expenditure for the coming year.[19]

Given that roads are used by both heavy vehicles and passenger vehicles, these costs are then allocated to each vehicle type. The cost allocation methodology is based on an estimate by the NTC of the relative impact on road infrastructure costs that each vehicle type contributes. For example, in general heavy vehicles are expected to have a greater impact on annual road costs than passenger vehicles and therefore have more costs allocated to their charges.

To determine its recommended heavy vehicle charges, the NTC uses a two stage process. In the first stage, a minimum annual registration charge per vehicle type and a diesel fuel excise are selected. These minimum charges are determined such that that revenue generated from

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[18] In practice, the diesel fuel excise is treated more like a tax than a user charge and is a component of the Federal budget.

[19] NTC, *Third Heavy Vehicle Road Pricing Determination, Draft Technical Report*, July 2005: The NTC believes that, providing the network is not deteriorating over time and optimal investment decisions are taken, an accounting approach and the PAYGO approach will arrive at the same result. A three–year average of expenditure is used to smooth out any major fluctuations, particularly in the split of expenditure between categories.

charges is sufficient to recover the smallest truck[20] type's share of total expenditure. These minimum charges are intended to ensure that heavy vehicle registration charges are consistent with light vehicle charges, which are currently determined by state-governments outside of the heavy vehicle charging regime.

The second stage involves calculating revenue from these minimum charges which is then deducted from the expenditure allocated to each of the vehicle classes. Where revenue from the minimum charges exceeds the allocated expenditure, then the minimum charge is set as the registration charge for that vehicle type. For all other vehicle types, the annual registration charge is set to recover the remaining target costs for each vehicle type.

Once the charges have been set and the determination approved by the ATC, an annual adjustment procedure applies. This is based on actual changes in road expenditure and expected changes in road use. The rate of change in charges is capped at the rate of change in inflation between periods.

There are two potential problems with the existing infrastructure charging approach, as adopted by the NTC. The first, is that the NTC does not appear to review the cost information provided to it, to determine whether costs are efficiently or appropriately incurred by each state. The current approach therefore passes through the actual costs incurred by state road organisations into registration charges. This means there are no incentives for state-governments to seek more efficient ways of providing road infrastructure services.

Second, the cost allocation methodology used by the NTC means that revenue from annual fixed registration charges is not based on the proportion of total costs which are fixed. This has implications for the efficiency of the pricing structure, which we discuss further in our study on principles for an efficient road and rail infrastructure charging regime.

4.2.2. Rail

In contrast to the road infrastructure charges, charges for rail infrastructure are, in general, based on the forecast costs to be incurred over an access period and are generally set between a floor and ceiling price level.[21] The adoption of a floor-ceiling band in rail has been designed to prevent infrastructure providers from generating monopoly profits while at the same time ensuring that users at a minimum pay the cost of utilising the service. The ceiling price in this context is generally defined as the full economic cost of providing the service while the floor price is defined as the marginal or incremental cost of providing the service on a particular line segment. While one would expect the incremental and full economic cost tests to be well defined, differences have emerged across the jurisdictions in relation to the setting of floor and ceiling prices (see Table 4.1).

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[20] a 2 axle 4.5-7.0t rigid truck.

[21] The exception to this general approach is Victoria which has recently adopted a revenue cap for establishing prices. Under this cap revenue must not exceed the forecast efficient cost of providing the services. The ARTC undertaking also provides for prices which are outside the band if agreed to by the ARTC (for prices below the floor level) and the user (for prices above the ceiling level).

As Table 4.1 demonstrates there are currently a number of different definitions of floor and ceiling prices. In relation to floor prices these differences stem from:

- Differences in the costs included in the floor price. For example in New South Wales and the ARTC undertakings the floor price excludes depreciation while in Western Australia, Queensland and Tarcoola to Darwin an allowance is made for depreciation. An allowance for a return on assets is also included in the floor price definition in the Tarcoola to Darwin access regime, however, it is excluded in the ARTC undertaking;
- Differences in the time over which incremental costs should be measured. In New South Wales and Western Australia a time limit of 12 months is used to estimate the incremental costs while in the other jurisdictions there is no specified time limit for the inclusion of forecast costs; and
- Differences in the inclusion of common costs and the methods by which common costs are allocated.

The revenue requirements are in many jurisdictions determined by applying an efficiency or prudence test on forecast costs. Infrastructure charges are then typically structured with a fixed and a variable component. In this context the fixed charge is usually based on a per train service or per train service per kilometre basis, and is designed to recover the fixed costs and to reflect the opportunity cost of capacity. That said, it is important to recognise that the floor to ceiling bounds in effect mean that the fixed charge may not recover the total fixed costs. The variable cost in contrast, is designed to recover the variable or incremental cost of providing rail infrastructure services.

In Western Australia, Victoria and across the ARTC network, the indicative tariff takes the form of a two part tariff with the fixed charge designed to reflect the cost of occupying capacity irrespective of actual usage and the variable charge reflecting the actual load and distance travelled on the network . While the ARTC and providers in Victoria and Western Australia have both adopted a two-part tariff, the fixed charge component varies in its application. That is, in Western Australia the fixed charge is recovered as a fee per service while the ARTC's fixed charge is also a function of the train service but incorporates a per km measure.

In Victoria, Pacific National also proposed the use of a fee per service fixed charge in its access arrangement submitted to the ESC. The ESC was critical of this form of fixed charge and has required an amendment to incorporate a distance based measure in the fixed charge. In requiring this amendment the ESC noted that the exclusion of a distance based measure would result in long haul operators being favoured over short haul operators.[22] The ESC also expressed some concern about the potential for high fixed charges to "deter efficient usage of the network"[23] and required an amendment preventing the fixed component exceeding 30% of total charges. Within its consideration of the ARTC's undertaking the ACCC also noted the potential for a high fixed charge to "act as a deterrent to new entry in the above-rail market".[24]

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[22] ESC, Proposed Rail Access Arrangements – Draft Decision, April 2006, pg. 121.

[23] ESC, Proposed Rail Access Arrangements – Draft Decision, April 2006, pg. 122.

[24] ACCC, pg. xviii

Table 4.1 Floor and ceiling price definitions

Network	Floor Price	Ceiling Price
NSW	Efficient forward looking direct costs which vary with usage of a single operator within a 12 month period plus a levellised charge for variable major periodic maintenance costs but excluding depreciation.	Sector specific costs including depreciation, a return on assets, and an allocation of non-sector specific costs including an allowance for a return on and return of non-sector specific assets. Asset value based on DORC and return on assets based on WACC.
Qld	Incremental cost of providing service including capital costs (renewal and expansion) where those costs are assessed as the efficient costs and based on the assets reasonably required for the provision of access.	Stand alone costs that would be incurred if the relevant service was the only service provided access by QR, and where those costs are assessed as the efficient costs and on the basis of the assets reasonably required for the provision of access. Asset value based on DORC and return on assets based on WACC.
SA	Defined by access regime as the lowest price at which manager could provide service. ESCOSA has defined the floor price as the incremental cost of providing service prudently including an allocation of overhead costs and a proportion of capital costs arising from prudent replacement of infrastructure brought forward by provision of relevant service and incurred by providing specific infrastructure enhancements attributable to the period for which access is sought.	Defined by the access regime as the price that is equal to the full economic cost of the minimum services and facilities required, net of other actual or notional sources of access revenue. ESCOSA has defined the ceiling price as the full economic cost of providing service prudently including an allocation of overhead costs and capital costs including new capital, depreciation and return on investment. Asset value based on DORC and return on assets based on WACC.
Tarcoola-Darwin	Forward looking and efficient incremental cost of providing service including an allocation of overhead costs and a proportion of capital costs arising from prudent replacement of infrastructure brought forward by provision of relevant service and incurred by providing specific infrastructure enhancements attributable to the period for which access is sought.	For freight services involving sustainable competitive price the ceiling price is based on stand alone costs. For freight services where there is no sustainable competitive price the access seeker pays a share of costs that they could reasonably bear. Asset value based on DORC and return on assets based on WACC.
Vic	n.a.	n.a.
	Revenue cap requires that forecast revenue not exceed forecast efficient costs.	Revenue cap requires that forecast revenue not exceed forecast efficient costs.
WA	Incremental cost of providing service including where applicable an allocation of overheads, depreciation and return on assets avoidable in the twelve months following access.	Total cost of providing service including an allocation of overheads, depreciation and return on assets. Asset value based on gross replacement value and return on assets based on WACC.
ARTC Network	Incremental cost of providing service including an allocation of overheads but excluding return on and return of capital.	Full economic cost of providing service including an allocation of overheads, depreciation and return on assets. Asset value based on DORC and return on assets based on WACC.

In Queensland users are subject to a number of additional charges such as a QCA levy, electric energy and access charges which are recovered individually as separate charges resulting in a multi-part tariff across the QR network. A multi-part tariff has also been adopted along the Tarcoola to Darwin network.

In New South Wales there is no requirement for the infrastructure provider to publish its tariff structure but it is understood that a two-part tariff is commonly adopted for mainline traffic but for coal and minerals it is understood that charges are based on output (for example a $/net tonne delivered for each origin to destination pair). As with New South Wales, the South Australian access regime does not specify a tariff structure.

4.3. Cost components included in the derivation of infrastructure charges

In both the determination of road infrastructure charges by the NTC, and in the approaches to determining rail infrastructure charges across the rail jurisdictions, a cost based pricing methodology has been adopted. In this section we discuss the cost components included in the derivation of road and rail infrastructure charges.

4.3.1. Road

The approach to determining heavy vehicle charges by the NTC, as outlined in section 4.2 above, involves the examination of cost information provided by each of the state road organisations. The cost information collected and included in charges are as follows:

- road surface[25] maintenance, rehabilitation and new construction costs;
- servicing and operating expenses (cleaning and repairs to drains, maintenance of street lighting, line markings and traffic signals, grass mowing, and pavement sweeping);
- bridge maintenance and rehabilitation costs;
- low cost safety/traffic improvements costs (eg. installation of traffic signals, roundabouts and pedestrian crossings);
- non-pavement asset extensions/improvements costs (eg. land acquisition costs associated with road improvements); and
- costs incurred in other miscellaneous activities (for arterial roads only) such as:
  - corporate services; and
  - enforcement of heavy vehicle regulations.

In determining the attributable costs the NTC excludes 75 per cent of urban local road expenditure and 50 per cent of rural local road expenditure on the basis that it is not related to motorise road use but rather is used for the provision of access, amenity and non-motorised road use. In the draft Third Determination these costs amounted to $2.87 billion or a 27% reduction in total costs.[26]

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[25] The NTC refers to this as pavement but this does not include footpaths, curbing or guttering.

[26] NTC, Third Heavy Vehicle Road Pricing Determination, Draft Technical Report, July 2005, pg. 15.

The costs included in the NTC's assessment could in an accounting sense be treated as operating costs, and others as capital costs, however, the NTC approach is to classify all of these costs as non-capital expenditure. The NTC further assumes that:

- all costs (including both capital and non-capital costs) should be entirely recovered during the period of a determination;
- there should be no recovery for historically provided assets; and
- financing costs associated with the source of financial capital should not be recovered, meaning that there is no return on assets.

These assumptions have important implications for the incentives underlying the road infrastructure charging regime. We discuss these implications in further detail in our report on the principles for an efficient road and rail infrastructure charging regime.

4.3.2. Rail

In the rail industry, the cost items included in the floor and ceiling charges in the various jurisdictions differ. In general however, ceiling costs are normally determined with reference to the building block methodology. The building block methodology is widely used for the determination of costs to be included in regulated charges in the energy and water industries and involves the addition of various 'building blocks' including an allowance for operating costs, the return of capital (commonly referred to as depreciation) and a return on capital (calculated by multiplying an assumed rate of return by the value of the assets).

Ceiling costs are therefore calculated by considering the operating costs of the rail infrastructure provider, and valuing the asset base using a methodology such as the depreciated optimised replacement cost ('DORC') to calculate an allowance for a return on assets and depreciation. This basic framework for establishing revenue requirements is generally the same across the various rail jurisdictions, however, variations exist in the treatment of capital costs. These differences include:

- the approach to valuing historical assets; and
- the capital cost items included in the asset valuation methodology.

In the majority of jurisdictions the initial asset base value has been estimated using the DORC methodology. Valuing assets using the DORC methodology involves two stages. The first stage involves estimating the optimised replacement cost of the asset which is the efficient cost of replacing the existing asset assuming optimal configuration and size and using the modern engineering equivalent materials to construct the asset. A key element of this stage is the optimisation process which in effect may result in the exclusion of certain infrastructure assets from the asset value. The second stage involves depreciating the optimised replacement cost to take account of the existing asset's reduced service potential relative to the optimised replacement asset.

While DORC has generally been used by the various jurisdictions, Western Australia and Victoria have adopted alternative asset valuation models. In Western Australia the assets have been valued using the gross replacement value which requires the calculation of an

annuity based on the gross replacement value of the railway infrastructure, with the annuity using the weighted average cost of capital ('WACC') as the required rate of return. The value of the infrastructure is required to be based on modern equivalents rather than historic costs. The key difference between this approach and the DORC methodology is that the optimisation component of the asset base valuation has been excluded. In Victoria the regulatory asset base is based on the capital expenditure that has been incurred since 30 April 1999 valued at the original cost with an allowance made for inflation, depreciation and disposals over the intervening period. As this brief description suggests the differences in valuation techniques in place across the jurisdictions are significant.

The capital cost items generally included in the asset base for the rail jurisdictions include:

- railway track, associated structures and supports;
- turnouts;
- tunnels and structures including rail bridges, footbridges and culverts;
- earthworks;
- signalling, train control and safe working systems;
- communications systems;
- fences and level crossings; and
- stations and platforms (where relevant).

There are, however, diverging approaches to the inclusion of land assets in the initial asset base value. In the case of the ARTC network the DORC estimate makes no allowance for land. Similarly, in NSW no allowance is made for the value of land and corridor formation assets. In South Australia land and formation works are valued at historical cost except land leased from government at nominal rent, which is valued at zero. In Queensland, the QCA explicitly argued that land should be valued at DORC expressing the view that it was:[27]

> …not appropriate to value land at zero nor historical cost. Any attempt to value land in this way would undermine the incentives to invest in the network. Historical cost assessments would substantially understate the opportunity costs imposed on society of the existence of the network, particularly as some of the land that comprises QR's network was acquired over a century ago.

Given the potentially high value that can be attributed to land, this difference in the treatment is not inconsequential.

4.4. Approaches to new infrastructure investment

4.4.1. Road

Road infrastructure investment in Australia is undertaken primarily by the relevant governments, although some private infrastructure investors are involved in building toll

[27] Queensland Competition Authority, Final Decision on QR's 1999 Draft Undertaking, July 2001, pg. 366.

roads and tunnels. The NTC has no role in road funding arrangements, or infrastructure provision or maintenance decisions.

A national approach to infrastructure investment has, however, been adopted through the establishment of AusLink by the Commonwealth government. In establishing AusLink, the Commonwealth government sought to centralise responsibility for planning, funding and investment decision-making in land transport. Responsibility for the AusLink investment program is jointly shared by the States, Territories and Commonwealth governments.

4.4.2. Rail

Investment in the existing rail network infrastructure to provide access or additional infrastructure capacity is typically undertaken by rail infrastructure providers, and the costs will generally be recovered through tariffs or a user specific capital contribution. In addition to investing in the existing road network, AusLink is also responsible for government directed planning, funding and investment decision-making across the rail network.

The treatment of government funding differs across each jurisdiction, with some excluding the government funded assets from the asset base while others recognise the funding as a source of revenue which is then deducted from the overall revenue requirements. In Victoria, the ESC has recently developed a Government expenditure pass-through mechanism which requires access providers to pass through any reductions in their cost base which arise as a result of government funding and direct investments in the infrastructure.

4.4.3. Differences in the approach and cost components included in charges for road and rail infrastructure

In general, the cost components used for road and rail infrastructure charges are broadly similar. Both regimes purport to include in infrastructure charges the costs of operating the infrastructure, and any payments for capital expenditure. Upon examination however, the actual cost items included in these definitions vary significantly.

In general, all of the rail infrastructure charging regimes and the road infrastructure charging regime include the costs associated with operating the infrastructure although access and amenity based costs amounting to 27% of total costs are excluded by the NTC. In the case of rail, these include costs associated with train operations, management of the infrastructure and repairs and maintenance. Similarly, for road, the costs of operating the main road departments are also included in charges. These include the costs for repairs and maintenance, general servicing and operating costs and corporate related costs.

The main differences arise upon examining the approaches to the recovery of capital expenditure for each regime. For new infrastructure investment, the approach undertaken by the NTC involves the recovery of actual capital costs. These are fully recovered within the period they are incurred, and therefore include no allowance for the financing costs associated with the road infrastructure investment. In contrast, new investment in the rail industry is generally included in the ceiling costs and therefore reflected in the ceiling charges. However, in practice, these costs are not generally passed onto rail operators, because actual charges are often below the charges that would result if ceiling costs are recovered.

For existing assets, the approaches also diverge significantly between the road and rail infrastructure charging regimes. The road regime does not include any costs for historical assets whatsoever in current charges. This reflects the full cost recovery for new infrastructure, and assumes that earlier assets should be valued at zero. In contrast, the rail regime ceiling prices are generally based on a value of historic assets, predominately calculated based on the DORC valuation methodology. In practice, however, many routes are unable to support infrastructure charges based on the implied charges resulting from the use of ceiling costs. This means that there is not full recovery of historic asset costs implied by the ceiling charges, although the recovery is likely to be greater than zero.

Finally, there are also differences in approach for the recovery of government contributions for capital costs within each industry. The capital recovery approach in the road regime means that the government contributes a lost return on capital invested in the industry. Effectively, the road industry receives capital investment funds on a no interest basis. In contrast, however, government rail infrastructure capital contributions are normally netted out of charges recovered from users, although this presumes that charges are based on the ceiling costs. In this way, rail operators do not pay either a return on rail capital invested by government, or the actual cost of the investment, in their charges. Having said that, we note that there has been very little government funded investment in the expansion of capacity on dedicated freight networks and thus any apparent difference in the treatment of government funding across the two modes may be insignificant.

Whether the recovery of capital charges for historic assets implied by the DORC valuation methodology outweighs the benefit associated with not paying a return on and of rail government infrastructure contributions is indeterminate.

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5. The relevance of reforms of the energy industry to the regulation of road and rail infrastructure

Since the Hilmer report and the introduction of National Competition Policy ('NCP') in the early 1990's, there have been extensive reforms in a number of infrastructure industries including electricity, gas, water and rail. Although these reforms have all had a common purpose, that is increased efficiency through the promotion of competition, each of these industries have followed different paths of reform which has given rise to different institutional designs within each of these industries.

Of particular relevance to this consideration are the reforms that have been implemented in the energy industry. As with the rail industry, the gas and electricity industries underwent significant reform in response to the introduction of NCP with the development of industry specific nationally consistent access regimes to apply to the natural monopoly components of these industries. Oversight of these nationally consistent regimes was accorded to a number of jurisdictional regulators which gave rise to perceived inconsistencies in the application of the regimes. These apparent inadequacies provided the stimulus for a further round of reform, which has resulted in the development of a single national regulator and rule making body. Consideration is now also being given to a further wave of reform to establish some consistency in regulation across the energy industry.

Given the extensive work that has been undertaken in the energy industry on institutional design in recent years, the energy industry is instructional when considering the future reforms required in the rail and road infrastructure industries. There are a number of useful lessons and principles that arise from the approaches used, particularly for regulatory and institutional structures and the proposed new reforms currently under consideration.

In the remainder of this chapter we provide a discussion of the motivations for the recent energy institutional structure reforms and draw conclusions for any consideration of institutional structure design for a road and rail charging regime.

5.1. First phase of reform of the energy industry

Similar to the rail industry, prior to the introduction of NCP, the electricity and gas industries were dominated by large, predominately government owned, vertically integrated enterprises. They provided a complete service to customers from electricity generation, transmission, distribution and subsequent retail. For the gas industry, they provided transmission, distribution and retail services.

The main impetus for the adoption of NCP was the Hilmer review of NCP.[28] The Hilmer report was released in 1993 and made a number of recommendations in relation to:

- the application of competitive neutrality principles so that government businesses do not enjoy a competitive advantage simply as a result of public sector ownership;

[28] Independent Committee of Inquiry into Competition Policy in Australia 1993, National Competition Policy: Report by the Independent Committee of Inquiry into Competition Policy in Australia, (Professor F. Hilmer, Chairman).

- the restructuring of public sector monopoly businesses; and
- the provision of third party access to nationally significant infrastructure.

In April 1995, the key recommendations of the Hilmer report were adopted and implemented through the CPA. Within this agreement there were a number of general principles relating to the structural reform of Government Business Enterprises to place them on an equal footing with potential private business competitive entrants. These reforms included the corporatisation of the businesses, the payment of tax equivalents, and the removal of legislative restrictions to competition for the services they provided. Additionally, the structural reforms included the separation of potentially competitive services elements from the natural monopoly elements.

The second key element of the CPA was the introduction of competition into those areas where there was potential for competition. The structural separation of potentially competitive services from natural monopoly services and the corporatisation of these businesses were therefore necessary precursors to the introduction of competition in up and downstream markets.

For the non-competitive natural monopoly elements, there were reforms to the approach to pricing oversight. Independent pricing regulators were formed and encouraged as a means of regulatory control for the market power of these elements. These regulators were also tasked with the responsibility for providing incentives for improvements to the efficiency of these businesses, which was a particular focus of NCP. In up and downstream markets where competition could be further developed through access to essential infrastructure facilities access regimes were developed.

One of the main motivations behind the NCP was to develop a National Electricity Market ('NEM') within Australia, because of the anticipated benefits from efficiency and trade. There were similar inter-state benefits anticipated from an integrated national gas market. The approach therefore adopted for developing access to electricity and gas infrastructure was through the enactment of a national industry specific regime in the electricity (the National Electricity Code) and gas industries (the National Third-Party Access Code for Gas Infrastructure) which would be overseen by jurisdictional regulators.

The National Electricity Code was drafted to set out the rules for the operation of the new NEM and for the subsequent regulation of monopoly transmission and distribution elements of the electricity industry. The Electricity Code was certified under Part IIIA of the TPA in November 1998, prior to the NEM being launched in December 1998.The National Electricity Code provided detailed processes and requirements for the economic regulation of transmission and distribution services.

As with electricity, the National Gas Code, was drafted in a prescriptive manner to set out the framework within which access arrangements could be developed between third party gas access seekers and infrastructure providers. This was also certified by the NCC under Part IIIA of the TPA.

To provide the legislative support for the electricity and gas Codes, the National Electricity Law and National Gas Law was developed and enacted in each state jurisdiction. Responsibility for transmission regulation was accorded to the ACCC, while state based jurisdictional regulators were responsible for distribution and retail regulation.

At the completion of this first phase of reform, regulation of the gas and electricity industries had been achieved through the implementation of nationally consistent industry specific access regimes which were overseen by a number of jurisdictional regulators. This latter characteristic, however, became the source of much contention with industry participants citing inconsistent applications of the regimes by the various regulators. Some of the perceived inconsistencies included, amongst others, difference in:

- the approaches adopted to encourage productive and dynamic efficiency through the use of various incentive mechanisms;
- the assumptions made when determining the required rate of return;
- the approaches adopted to establish the value of the asset base of regulated assets; and
- the weight placed on the various factors that regulators were required to take into consideration.

5.2. Second phase of reform of the energy industry

By the start of 2000, the perceived inconsistencies emerging across regulators led the COAG to undertake a review of the energy market reforms, for the purpose of evaluating progress with the reforms.[29] The COAG review identified a number of outstanding policy issues including:

- governance arrangements to improve the investment climate; and
- streamlining economic regulation to reduce the barriers to competition inherent in the state-based approach.

To resolve governance arrangements, COAG formed the Ministerial Council on Energy ('MCE') that included each of the state government Energy Ministers in 2004. The MCE subsequently investigated approaches to streamlining the economic regulatory aspects of the gas and electricity industries. The result of this investigation was the establishment of two new statutory commissions – the Australian Energy Market Commission ('AEMC') and the Australian Energy Regulator ('AER').

The AEMC was established as the rule making body, responsible for the operations of the NEM and the rules used for economic regulation for both gas and electricity. The establishment of a separate rule making body was viewed as providing greater certainty and stability in the rules, whilst maintaining the flexibility for the rules to evolve as circumstances change.

[29] COAG, Towards a Truly National and Efficient Energy Market, Final Report of the Council of Australian Governments' Independent Review of Energy Market Directions, December 2002.

The AER was established as a separate entity within the ACCC, to be the market regulator. Its role is to apply the rules developed by the AEMC. Initially it has taken over the regulatory powers previously held by the ACCC for electricity and gas transmission regulation and is expected to take on responsibility for distribution regulation from the state-based regulators in the coming years.

5.3. Future reforms

The MCE has now commenced considering the national framework for regulating gas and electricity, transmission and distribution businesses. To this end, it established an Expert Panel[30] to investigate issues associated with the development of a national framework for energy regulation. This review follows earlier investigations by the Productivity Commission reviewing the application of the third-party gas access arrangements[31] but is the first to consider issues surrounding the extent of consistency between gas and electricity regulation.

In its report the Expert Panel indicates:

> A central goal of energy policy is to ensure that the regulatory, institutional and governance arrangements are designed to facilitate efficient investment operation and usage decisions in the sector in order to improve the efficiency, price and reliability of energy services outcomes for the benefit of the Australian economy and the wellbeing of all Australians. The significance to the Australian economy of a reliable energy supply at the lowest sustainable prices, and the importance more generally of a reliable and affordable energy supply for modern life, underscore the importance of ensuring an efficient, efficiently priced and reliable supply of energy.[32]

The key point of this statement is the importance of having a regulatory, institutional and governance arrangements that improve the efficiency of energy services, both gas and electricity, for the benefit of the Australian economy.

This is further identified by the Panel where they indicate that:

> effective competition in each of the energy sectors has synergistic benefits for the other.[33]

In this way, any abuse of monopoly power in one market, because of the partial substitutability of gas and electricity can have implications for overall efficiency of the energy market when considered as a whole.

A central issue of the Expert Panel review is to what extent regulatory regimes for access pricing should be common across gas and electricity and transmission and distribution

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[30] The panel members include: Roger Beale (Chairperson and Senior Associate, Allen Consulting Group), Greg Houston (Director, NERA Economic Consulting), Paul Kenny (Partner, Allens Arthur Robinson), Euan Morton (Principal, Synergies Economic Solutions) and John Tamblyn (Observer and Chairperson of the AEMC).

[31] Productivity Commission, Review of the Gas Access Regime, June 2004.

[32] Expert Panel on Energy Access Pricing, Report to the Ministerial Council on Energy, April 2006, pg. 10.

[33] Op. cit. pg. 11.

services. This is a similarly important question when examining an efficient road and rail charging regime.

The Panel believes that the high level principles for gas and electricity regulation should be consistent to provide certainty to participants in the energy market. They believed however, that there may be particular characteristics of each industry that warranted a different application of the principles in certain circumstances.

These identified characteristics include:

- the function of the infrastructure;
- the extent of independencies across the network; and
- the nature of capital investment, for example transmission asset investment is relatively lumpy compared with distribution asset investment potentially warranting different approaches to capital efficiency incentives.

Most of the identified characteristics relate to the differences between distribution and transmission assets, rather than between the characteristics of gas and electricity. This suggests that a similar regulatory approach should be adopted to the extent that the characteristics between electricity and gas industries are similar.

In summary, the energy industry reforms are evolving from a focus on introducing competition into each state jurisdiction for gas and electricity separately, to addressing problems of national consistency and efficiency in the energy market as a whole. The early effort on structural reforms of existing businesses and the establishment of the national electricity and gas markets is now effectively complete. The historical division of regulatory oversight between the states and the Commonwealth is now being resolved to provide greater certainty and consistency for industry participants. This is expected to result in further efficiency improvements through the reduction of regulatory barriers to competition and greater competition between energy sources.

5.4. Implications of the energy institutional design for road and rail

The issues facing road and rail charging regime reform in Australia are similar to the issues being considered in the current energy reforms. In both instances there is an overarching objective to promote competition in up and downstream markets, either freight transport or energy and both are integral industries in the Australian economy. Efficiency improvements in both sectors are therefore expected to result in widespread benefits for other industries and Australians more generally.

The reasons for seeking a single, consistent overarching regulatory objective in energy is to eliminate inconsistencies and any regulatory uncertainty that may arise when a number of regulators are charged with overseeing the access regime. Given the substitutable nature of gas and electricity, a single efficiency objective has been considered appropriate, clarified through the adoption of a series of regulatory principles.

Given the potential benefits from improved efficiency through competition between rail and road freight transport, the arguments for a single objective in the energy industries also applies to regulation of the road and rail industries. Consistency in the objectives will ensure

that the application of regulatory approaches for both road and rail do not lead to anti-competitive outcomes. We consider these issues further in our study on principles for an efficient road and rail infrastructure charging regime.

Finally, the energy industry has adopted a national approach to rule setting and regulation, given the benefits from interconnection of the electricity and gas market between states and the problems arising from different applications of the codes by state-based regulators. This approach is also consistent with energy businesses operating within and between a number of state jurisdictions and is likely to decrease their regulatory costs, improve transparency and certainty in their operations. These are all expected to bring further competitive and efficiency benefits to the sector.

6. Conclusion

In this study, we have undertaken a comprehensive assessment of the road and rail infrastructure charging regimes that currently operate in Australia. Our focus has been on identifying differences in the regulatory approaches used to determine infrastructure charges, and differences in the regulatory institutions and legislative arrangements, particularly between the road and rail infrastructure charging regimes. In general, differences between the various regulatory regimes in the road and rail infrastructure industries have arisen as a result of the different paths of reform taken across the two industries. While some difference in approach may be warranted given the distinctive characteristics of the road and rail industries, there has been little consideration to date of the impact of the differences in regulatory approaches on competition, and therefore efficiency, in the freight transport market.

Based on our comparative assessment, we can characterise the road and rail industries as follows:

- the rail industry has:
  - a relatively small number of operators and infrastructure providers;
  - inter-state, regional and bulk commodity rail networks;
  - five state-based regulatory regimes based on the negotiate-arbitrate framework and overseen by five state-based regulators;
  - two inter-state rail networks with separate regulatory regimes based on the negotiate-arbitrate framework and overseen by the ACCC and a state-based regulator;
  - some major corridors are regulated by a number of different regimes for example on the East West corridor a rail operator would need to gain access through the ARTC undertaking, the NSW Rail Access Regime and the WA Rail Access Regime.
- the road industry has:
  - a large number of operators, with infrastructure being provided by the Commonwealth, State and Territory governments;
  - competes with rail freight transport primarily on the inter-state routes, and some regional networks, particularly for grain transport;
  - a national heavy vehicle road charging regime based on a direct price setting framework with decisions made by a body comprising ministers from the Commonwealth, States and Territories.

We also identify a number of key differences in the regulatory approach, legislative frameworks and regulatory institutional arrangements that are relevant to a consideration of a new, efficient, infrastructure charging regime for road and rail. These differences relate to:

- The objectives of the regulatory regimes – the focus for the rail regimes is efficiency in the use and provision of rail infrastructure, while the road regime focus is on efficiency in the use of infrastructure, subject to a requirement for full cost recovery;

- The institutional frameworks for road and rail regulation – the road regime involves Commonwealth, State and Territory ministers in the decision making process, within a single national framework. The rail regime has multiple regulators and legislative arrangements for each state-based and national regulatory regime;

- The approach to incorporating costs into charges – for rail charges, ceiling prices include an allowance to recover the capital costs associated with the present value of historical assets, while for road charges historical assets are valued at zero and no capital costs are recovered;

- Treatment of government infrastructure contributions in charges – for rail charges, government capital contributions are netted out of charges for operators. For road charges, actual government capital contributions are recovered from operators, but there is no allowance for any financing costs for the infrastructure.

Each of these issues will require further consideration to determine whether they impact on the underlying incentives for efficiency improvements in the road and rail infrastructure industries, and in the freight transport market. We consider some of these issues in further detail in our study on principles for an efficient road and rail infrastructure charging regime.

Finally, we examine the reforms that are occurring in the energy sector, with the establishment of the AER and the AEMC. These reforms are seeking to address concerns about the inconsistency of the implementation of the national electricity and gas codes by a number of jurisdictionally -based regulators. The problems of inconsistency and uncertainty are also a concern with the existing jurisdictionally-based rail regulatory regimes, particularly as many operators undertake operations in more than one jurisdiction. The issues, and solutions adopted, in the energy reforms are therefore relevant when considering reforms to the road and rail infrastructure charging regimes.

Appendix A. Commonwealth – Rail[34]

Until the 1970s there was no nationally consistent approach to the development of rail infrastructure. Investment and the operation of rail were controlled entirely by individual states, resulting in different gauges and operating standards across the country. These inconsistencies imposed inefficiencies on those entities operating across more than one state. Following several decades of reform, one entity, the Australian Rail Track Corporation ('ARTC'), now manages the infrastructure and provides access to the standard gauge rail network that links the capital cities.

In the following section we provide a brief overview of the interstate rail system. The overview includes a description of the industry participants, rail network and commodities carried. Section A.2 provides a description of the regulatory regimes currently in place. Sections A.3 summarises the current access charges and section A.4 discuss the costs that make up those charges. Section A.5 briefly discusses approaches to new investment.

A.1. Rail industry overview

A.1.1. Below rail providers and above rail operators

In the 1970s the Commonwealth Government sought to eliminate inefficiencies that had arisen in the rail network, by creating a single national rail operator. At this time only South Australia and Tasmania agreed to the creation, resulting in their assets being combined with the existing Commonwealth Railways operations to establish a rail network that extended from Broken Hill to Kalgoorlie. This network was initially operated by Australian National Railways.

While the remaining states retained control of their respective networks, they did work towards establishing a standard gauge interstate route linking all the state capitals. By 1995, all states were linked by this standard gauge network, however there were still problems associated with having a number of rail authorities controlling the network. The implementation of National Competition Policy led the State and Commonwealth governments to once again work toward establishing a single national track authority, primarily for the interstate standard gauge network.

In November 1997, an Inter-Governmental Agreement was signed which laid the foundation for the establishment of a national rail track access company. The ARTC commenced operations on 1 July 1998 and now manages the infrastructure and provides access to the standard gauge rail network linking the capital cities, with the exception of Brisbane.[35] With

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[34] This appendix has been drafted using the following material:
ACCC, Decision – Australian Rail Track Corporation Access Undertaking, May 2002.
ACCC, Decision – Australian Rail Track Corporation Amendment to Access Undertaking, May 2003.
ARTC, Access Undertaking, 30 April 2002.
ARTC, Access Undertaking Explanatory Guide, February 2001.
ARTC website http://www.artc.com.au
ARTC, Annual Report, 2005.
Booz Allen Hamilton, ARTC Standard Gauge Rail Network DORC, February 2001.

[35] ARTC currently has responsibility as track owner for management of access and track maintenance for the track from Kalgoorlie (WA) to Broken Hill (NSW) and Wolseley (SA). In Victoria, ARTC manages the interstate standard gauge rail network under a fifteen year lease. ARTC has a 60 year lease for the NSW interstate and Hunter Valley rail

the commencement of its operations, ARTC acquired the old Australian National Railways interstate standard gauge track and a lease of the Victorian interstate standard gauge network.

ARTC is a government-owned corporation under the Corporations Act. Its shares are owned by the Commonwealth and overseen by the Minister for Transport and Regional Services and the Minister for Finance and Administration.

A fundamental component of the Inter-Governmental Agreement was that the ARTC lodge an access undertaking with the ACCC to allow third party access to its network. The ARTC submitted an access undertaking to the ACCC on 22 February 2001 with a term of five years and with the provision for a review upon its expiry. This undertaking sets out the terms and conditions of access to ARTC's rail network[36] by freight and passenger service operators. There are four broad areas covered by this undertaking including provisions relating to:

- non-discriminatory access;
- the negotiate and arbitrate model;
- the pricing principles adopted for deriving the indicative access charge; and
- the proposed tariff structure.

The nine major operators currently utilising the network include: [37]

- QR National;
- CityRail;
- Australian Southern Railroad;
- CountryLink (passenger services);
- Great Southern Railway (passenger services);
- Pacific National;
- Patrick Rail Operations;
- Specialised Container Transport; and
- FreightLink.

A.1.2. Description of the network

The ARTC rail network links all capital cities[38] and comprises standard gauge tracks linking Wodonga, Melbourne, Adelaide, Broken Hill, Tarcoola and Kalgoorlie.

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corridors, dedicated metropolitan freight lines to the Sydney Ports and a licence to construct the Southern Sydney Freight Line within the existing rail corridor. The track between the New South Wales/Queensland border and Brisbane continues to be owned and operated by Queensland Rail.

36 The Network comprises the interstate mainline standard gauge track linking Kalgoorlie in Western Australia, Adelaide, Wolseley and Crystal Brook in South Australia, Broken Hill in New South Wales, and Melbourne and Wodonga in Victoria.

37 ARTC Website, http://www.artc.com.au/about/about.htm.

The ARTC currently has responsibility as track owner for management of track maintenance for the track from:

- Adelaide to Wolseley;
- Adelaide – Port Augusta – Kalgoorlie;
- Port Augusta to Whyalla;
- Tarcoola to Alice Springs (long term lease to ARTC); and
- Broken Hill to Crystal Brook.

In Victoria, ARTC manages the interstate standard gauge rail network under a fifteen year lease. These tracks include the track from Melbourne to Wolseley and Melbourne to Albury.

In New South Wales, ARTC leases from the New South Wales government:

- mainline interstate corridors;
- the Hunter Valley coal rail network;
- regional rail network corridors; and
- dedicated metropolitan freight lines to the Sydney Ports.

The ARTC also has the licence to construct the Southern Sydney Freight Line within the existing rail corridor.

In Western Australia, the ARTC has reached an agreement with the Western Australian Government which allows the ARTC to sell access to interstate services provided between Kalgoorlie, Perth and the Port of Kwinana.

Not all the aforementioned rail networks are subject to the undertaking lodged with the ACCC. The undertaking in its current form applies to the following:

- Tarcoola – Asia Pacific Interface Point;
- Kalgoorlie to Crystal Brook;
- Port Augusta to Whyalla;
- Crystal Brook to Broken Hill and to Dry Creek;
- Adelaide metropolitan area; and
- Dry Creek to the South Australian/Victorian border.

Following the award of its 60 year lease over the inter-state and Hunter Valley railway lines in New South Wales, ARTC was to lodge an undertaking with ACCC as soon as practicable. Until this occurs, these networks continue to be regulated by the relevant New South Wales undertaking (see Appendix B).

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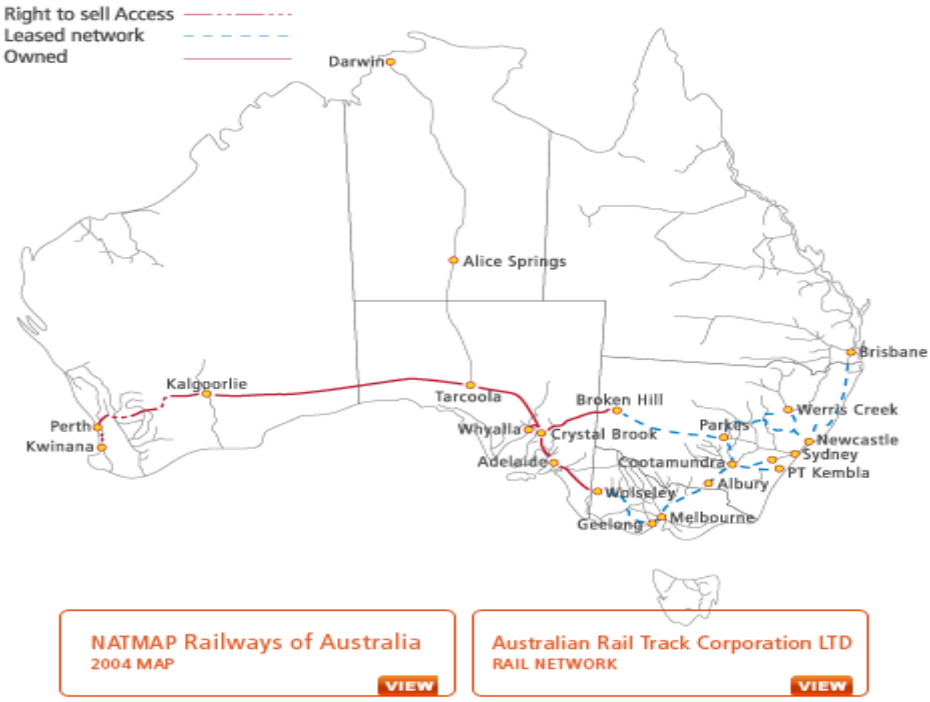
[38] Excluding the infrastructure linking the New South Wales/Queensland border to Brisbane which is managed by QR (see Appendix C).

The map below summarises ARTC's interests in infrastructure:

Figure A.1
The ARTC network



Note:

- Sydney Metropolitan Region managed by RailCorp;
- Brisbane to Queensland border managed by QR;
- Kalgoorlie to Perth managed by WestNet; and
- Alice Springs to Darwin managed by the Asia Pacific Transport Consortium.

A.2. Overview of the regulatory regime

As set out previously, the ARTC was established following the Inter-Governmental Agreement reached in November 1997 by the Commonwealth of Australia and the mainland States. Provisions within that agreement required the ARTC to lodge an access undertaking with the ACCC under Part IIIA (section 44ZZA) of the Trade Practices Act (the TPA). The ARTC submitted an access undertaking to the ACCC on 22 February 2001. The ACCC subsequently carried out a public consultation process and after a number of amendments, the finalised undertaking was accepted by the ACCC in May 2002.

A.2.1. Relevant legislative instruments

The 1997 Inter-Governmental Agreement identifies the charter under which the ARTC operates, its broad objectives and the obligations of the Commonwealth and the States to achieve a national interstate rail access regime. The agreement also covered arrangements associated with the operation of the mainline interstate network.

The ARTC began operations on 1 July 1998 when the Minister of Finance and Administration transferred the interstate rail corridors and rail infrastructure, other assets,

specified liabilities and contractual rights and obligations to ARTC. The transfer occurred pursuant to the Australian National Railways Commission Sale Act 1997 (sections 67AE, 67AG and 67AF).

Access to the ARTC network has been facilitated through the submission of an undertaking pursuant to Part IIIA of the TPA. The ACCC has responsibility for assessing undertakings submitted to it under section 44ZZA of the TPA. Following approval of an undertaking by the ACCC the services to which the undertaking pertains cannot be declared. If the ACCC does not accept an undertaking then interested access seekers have the option of seeking declaration of the service (section 44H). If the service is then declared, third party access seekers can negotiate with the service providers and if these negotiations fail then the ACCC may be called upon to arbitrate the dispute. The service provider may withdraw the undertaking at any time or may vary the terms but only with the consent of the ACCC.

A.2.2. Objectives and pricing principles

The pricing principles incorporated within the undertaking specify the development of floor and ceiling bounds on revenue which may only be breached if agreed to by the ARTC (in cases where the floor limit is breached) or the user (in cases where the ceiling limit is breached). In addition to the establishment of floor and ceiling bounds, the pricing principles provide for the development of an indicative tariff which is designed to enhance transparency and reduce the costs and time associated with negotiating a price.

Additional pricing principles included within the undertaking state that access charges will be set to:

- enable the ARTC to recover the reasonable costs incurred in providing access including a fair return on investment which is commensurate with the risks and competitive environment in which the ARTC is involved;
- promote efficient use and investment in the network; and
- stimulate customer confidence and growth of the rail industry.

A.2.3. Role of regulators

As set out above, the ACCC is responsible for considering any access undertakings submitted under section 44ZZA of the TPA. In considering whether to accept the undertaking, the ACCC is required to have regard to the following criteria set out in section 44ZZA(3):

- the legitimate business interests of the provider;
- the public interest, including the public interest in having competition in markets (whether or not in Australia);
- the interest of the persons who might want access to the service;
- whether access to the service is already the subject of an access regime; and
- any other matters that the ACCC thinks are relevant.

The undertaking submitted by the ARTC also identifies the ACCC as the arbitrator in the event a dispute arises or negotiations between the parties fail.

The ACCC will assesses parameters such as the appropriate rate of return by considering the legitimate business interests of the provider and the public interest.

In the absence of any prescriptive pricing principles the ACCC referred to the following principles when assessing ARTC's proposed access undertaking:[39]

- access pricing:
  - access prices should be no more than the efficient costs incurred by the ARTC, including a normal commercial return on efficient investment;
  - access prices should provide the ARTC with incentives to provide services at efficient levels of cost and quality and to undertake efficient investment; and
  - access prices should provide incentives for efficient use of rail track infrastructure.
- negotiation and arbitration:
  - access processes should promote commercially negotiated outcomes in a timely manner; and
  - access processes should provide timely and effective dispute resolution processes.
- enforcement:
  - the provisions in the undertaking should be sufficiently clear to allow enforcement.

A key element of the undertaking was the ARTC's commitment to ensure uniformity of access charges for all operators providing a like service and operating within the same end market.

A.2.4. Regulatory approach

The regulatory approach adopted can be characterised as an negotiate and arbitrate model, where access seekers and the ARTC seek to negotiate specific access arrangements in the first instance, and if this fails the arbitration provisions are triggered.

The following framework has been adopted for negotiating access to the network:

1. preliminary meetings and exchanges of information;
2. submission of an access application by the operator;
3. preparation of an indicative access proposal by the ARTC; and
4. negotiations to develop an access agreement for execution.

In accordance with this framework the ARTC will, within 30 days of acknowledging an applicant's request for access, undertake to provide an indicative access proposal. Negotiations commence following the receipt of this indicative access proposal. If an agreement cannot be reached then the parties may enter into mediation or arbitration.

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[39] ACCC, *Decision – Australian Rail Track Corporation, Access Undertaking*, May 2002, pg. 37.

A.2.5. Recent decisions

Following the ARTC's submission the ACCC engaged in public consultation and after a number of amendments the finalised undertaking was accepted in May 2002. In accepting the proposed undertaking, the ACCC expressed some concern that the proposed charges resulted in forecast revenues that fell significantly below the economic cost of providing the service and as a consequence the ARTC would be unable to earn an adequate long-term economic rate of return. [40] The ACCC noted that in the longer term this outcome would impact upon investment decisions and could compromise the sustainability of the network.

The ACCC also expressed some concerns about the potential for the magnitude of the fixed charge component of the tariff to act as a deterrent to new entry in the above-rail market. The ACCC noted that if this structure appeared to act as a barrier to potential new entry over the initial life of the undertaking then this aspect could be addressed at that time. [41]

A.3. Summary of current rail charges

The undertaking provides for an 'indicative access charge', similar to the reference tariffs incorporated in other regimes.

The indicative access charge is based on the following service requirements in specific geographical segments:[42]

- axle load of 21 tonnes;
- maximum speed of 110 km/h and an average speed of 80 km/h; and
- length not exceeding 1,500 metres east of Adelaide and 1,800 metres west of Adelaide.

The indicative access charge comprises a two-part tariff with an annual adjustment of the greater of CPI-2% or 2/3 of CPI. The tariff structure consists of:

- a fixed component (flagfall) – based on a $/km and specific to each train service type and segment (comprises 20-40% of overall charge for freight and 45-60% for passenger services); and
- a variable component – based on $/gross tonnes kilometre.

Both of these components are open to negotiation.

To calculate the indicative actual access charges, the ARTC propose the use of floor-ceiling revenue limits based on the building block methodology. In this context:

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[40] ACCC, Decision – Australian Rail Track Corporation, Access Undertaking, May 2002, pg. xvii.

[41] ACCC, Decision – Australian Rail Track Corporation, Access Undertaking, May 2002, pg. xviii.

[42] Actual charges vary from the indicative charge based on the characteristics of individual services including: technical aspects; the actual geographical segment to which access is sought; the opportunity costs to ARTC; the impact on existing traffic (including system capacity and flexibility); and the market value of the particular time path being sought.

- the floor revenue is based on the incremental cost[43] of the ARTC providing a service, which excludes depreciation and a return on assets; and
- the ceiling revenue is based on the full economic cost[44] to the ARTC of providing access to a certain segment of track, including the costs specific to a service, depreciation and an allocation of indirect costs, and a return on assets.

According to the ARTC, the indicative charges were set to ensure that forecast revenues were at the low end of the floor-ceiling range for each of the specified segments. The following indicative charges are currently published on the the ARTC's website.

Table A.1
ARTC applicable rates excluding GST (1 July 2005)

From	Adelaide	Crystal Brook	Tarcoola	Pt Augusta	Adelaide	Adelaide	Melbourne	Appleton Dock Junction	Footscray Rd -
To	**Parkeston**	**Broken Hill**	**Alice Springs**	**Whyalla**	**Pelican Point**	**Melbourne**	**Albury**	**Footscray Rd**	**Appleton Dock**
Variable Charge per 000G TK									
	2.256	2.55	4.225	3.986	3.547	2.594	2.27	0	0
Flagfall Price/Train									
Super Premium[1]							815.87		
Premium[2]	6565.57	772.92	26.61	151.36	47.23	1741.22	562.52		
High[3]	5688.52	669.87	23.32	132.04	40.79	1575.09	493.8	38.33*	16.42*
Standard[4]	4812.55	565.74	18.89	111.65	34.35	1427.77	383.25	38.33*	16.42*
Low[5]	4376.7	514.22	17.75	100.91	31.13	1378.4	383.25	0	0
Indicative Distance (kms)'									
	1992.5	372	6.35	73	19.3	847.5	307.1	N/A	N/A

Notes:

1. Super Premium is defined as maximum train speed 130kph and maximum axle loading up to 20T (XPT trains);
2. Premium defined as maximum train speed 115kph and maximum axle loading up to 20T (Passenger, Bi-modal trains);
3. High is defined as maximum train speed 110kph and maximum axle loading up to 21T (Superfreighters);
4. Standard is defined as maximum train speed 80kph and maximum axle loading up to 23T (Express goods);
5. Low is defined as off peak train paths (Metro shunts/work trains).

[43] The incremental cost is defined as the costs that could be avoided if a segment were removed from the network including segment specific costs and non-segment specific costs relating to: track and signalling and communication maintenance; maintenance contract management and project management; train control and communication; train planning and operations administration; system management and administration.

[44] The economic cost includes: revaluing the assets using DORC every five years and allowing for CPI and depreciation on an annual basis; the costs, depreciation and returns associated with segment specific assets; the costs, depreciation and returns associated with an allocation of non-segment specific assets; and any costs incurred in providing additional capacity.

A.4. Costs included in rail charges

Access prices for the ARTC network are subject to floor-ceiling revenue limits based on the building block methodology. Within the ceiling limit the cost components required include the value of the asset base, the rate of return, forecast operating and maintenance expenditure, forecast capital expenditure and depreciation. The following provides an overview of the cost components included in the ARTC's ceiling revenue.

Asset Base Value

The asset base used in the ARTC undertaking was valued using DORC and included the following categories of assets:

- track including rail, sleepers, fastenings and ballast (excluding land);
- turnouts;
- structures including underbridges and culverts (overbridges and footbridges are excluded since ARTC are assumed to have no responsibility for the maintenance of these assets);
- earthworks;
- signalling, train control and safeworking;
- communications; and
- fences and level crossings.

The ORC for the network was estimated to be $2.51 billion and the DORC was estimated to be $1.41 billion using both age and condition reports as a measure of depreciation.

Rate of Return

A pre-tax nominal WACC of 10.16%, with an assumed forecast inflation rate of 2.61%, was applied.

Depreciation

Separate depreciation assumptions were adopted for track assets, signalling and communications:

- track assets were assumed to have a perpetual useful life as a result of major periodic maintenance and thus do not depreciate (ie. the major periodic maintenance charges incurred are equal to the depreciation of the asset);
- signalling and communication assets were assumed to depreciate on a straight line basis; and
- any other depreciable assets depreciated on a straight line basis.

Operating and Maintenance Costs

Operating and maintenance costs consist of the following:

- Infrastructure maintenance, which makes up 74% of total operating expenditure, includes routine and major periodic maintenance which are carried out under private sector maintenance contracts. Track maintenance unit costs average $10,100 per track km across the network. The ARTC's average infrastructure maintenance unit cost (including signals and communications maintenance) is around $1.70/000GTK.[45]
- Train control, transit management and data processing expenditure (6% of total operating expenditure). Train control unit costs for comparison are often measured as $/000 train kilometres. The ARTC's train control unit cost (2000/01 Budget) is expected to be around $290/000 train kms (or $417/000 train kms if other operations costs including planning and safety management were included). Train control, planning and safety management expenditure is forecast at approximately $5m in 2001/2002 and $5.5m in 2005/2006.
- other management functions including:
  - maintenance contract management (5% of operating expenditure) includes administration, accounting, project management and maintenance planning;
  - operations and safety management (2.5% of operating expenditure) includes long and short term service planning, service quality control and safety management; and
  - system management and administration (12% of operating expenditure) function includes IT, property management, security, accounting, insurance, strategic management and executive.

The cost allocation methodology adopted by the ARTC states that:

- if the cost item is directly incurred then the associated expenditure is incorporated into segment costs; and
- if the cost item cannot directly be allocated to a segment (mainly materials, overheads, margins) then they are allocated to segments on a GTK (60%) and track kilometre (40%) basis.

A.5. Approaches to new infrastructure investment

The ARTC has announced that $1.4 billion will be invested over the next four years in the North South Corridor rail network which links Melbourne, the Queensland border and the Hunter Valley Coal Rail Network.[46] In addition to the funding derived through its general operations, the ARTC receives additional investment funding from the Australian government's AusLink program. According to the ARTC in cases where a government provides assets as a "gift" or where capital expenditure is undertaken via the Australian Infrastructure Foundation, then the value of these assets will not be included in the DORC valuation.

In cases where additional capacity is required to enable a user access to the network then the costs incurred in providing that additional capacity are to be met by the user.

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[45] ARTC's contention is that its cost structure is significantly lower than industry averages and WBP cost as considered in recent times.

[46] ARTC, Annual Report, 2005, pg. 6.

Appendix B. New South Wales[47]

The last two decades have seen substantial reforms in the New South Wales rail industry. Rail operations have moved from a single vertically integrated rail operator, controlled by the New South Wales Government, to a number of state, federal and privately owned below and above rail operators. Although the track infrastructure continues to be owned by government corporations, the infrastructure is now split between three different entities, one of which is owned by the Commonwealth. The major freight operator, Pacific National, is privately owned.

In the following section we provide a brief overview of the New South Wales rail industry. The overview includes a description of the industry participants, rail network and commodities carried. Section B.2 provides a description of the regulatory regime currently in place. Sections B.3 and B.4 discuss the costs included in rail access charges. Section B.5 briefly discusses approaches to new investment.

B.1. Rail industry overview

Below rail infrastructure in New South Wales is vested in three parties. The ARTC controls the inter-state and Hunter Valley lines, while the Railway Infrastructure Corporation ('RIC') controls the remaining regional lines. RailCorp controls the metropolitan lines predominantly used by passenger trains.

B.1.1. Below rail providers and above rail operators

Prior to 1991, all rail operations in New South Wales were under the control of the State Rail Authority ('SRA'). Significant reforms began with the formation of inter-state operator National Rail, merging the inter-state freight operations of the Commonwealth, New South Wales and Victoria. Ownership of all track within New South Wales remained with the state government under the SRA. In July 1996, the SRA was split into four separate entities: the Rail Access Corporation ('RAC'), Freightcorp, the Rail Services Authority ('RSA') and a new SRA.

RAC became the track infrastructure owner while Freightcorp was responsible for intra-state freight operations. The RSA provided maintenance services to other entities and the SRA provided both city and country passenger services and train control to RAC. National Rail remained in control of inter-state freight services.

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[47] This appendix has been drafted using the following material:
ARTC, "Memorandum between The Commonwealth of Australia & The State of New South Wales & The Australian Rail Track Corporation Ltd: In relation to the Lease of NSW Interstate and Hunter Valley rail assets to Australian Rail Track Corporation Ltd and associated arrangements", 4 June 2004.
IPART, "Aspects of the NSW Rail Access Regime: Final Report", 28 April 1999.
IPART, "Report on the Determination of Remaining Mine Life and Rate of Return: NSW Rail Access Undertaking", May 2005.
NSW Government Gazette No. 66, 4264, "NSW Rail Access Regime", 28 March 2003.
NSW Government Gazette No. 22, 903, "NSW Rail Access Regime", 19 February 1999.
"NSW Rail Access Undertaking: Pursuant to Schedule 6AA of the Transport Administration Act 1988 (NSW)", 3 September 2004.
RIC Annual Report 2005.
Transportation Administration Act 1988 (NSW), Schedule 6AA.

In 2001 the New South Wales industry underwent further reform, with RAC and the RSA merging to form the Rail Infrastructure Corporation. In 2004 the RailCorp was formed, merging the SRA with the metropolitan functions of the RIC. This created a vertically integrated entity providing metropolitan passenger services, in addition to country passenger services over the RIC network. The state government also agreed to give the ARTC a 60-year lease over the inter-state lines and most of the Hunter Valley rail assets, leaving RIC in control of only the regional and country lines of New South Wales.

National Rail and Freightcorp were jointly sold to Toll and Patrick in 2002, merging the operations with their existing rail businesses to form Pacific National. Pacific National remains the major freight operator in New South Wales. It also operates some long-distance passenger services. However, a number of competitors have emerged since the lines were opened to competition in 1996. QR has entered the intra-state market through its subsidiary Interail. Interail is based in Newcastle and has won several contracts for carrying coal over the Hunter Valley network.

The Australian Railroad Group (ARG) also operated for some freight customers on parts of the New South Wales intra-state network, but this business will be taken over by QR as part of the purchase of ARG by QR and Babcock & Brown.

Silverton Rail also offers some competition, primarily in the Parkes region of New South Wales. While it does offer some rolling stock capacity, it primarily provides 'hook and pull' services for other operators with its fleet of 30 locomotives.

B.1.2. Major freight commodities and volumes

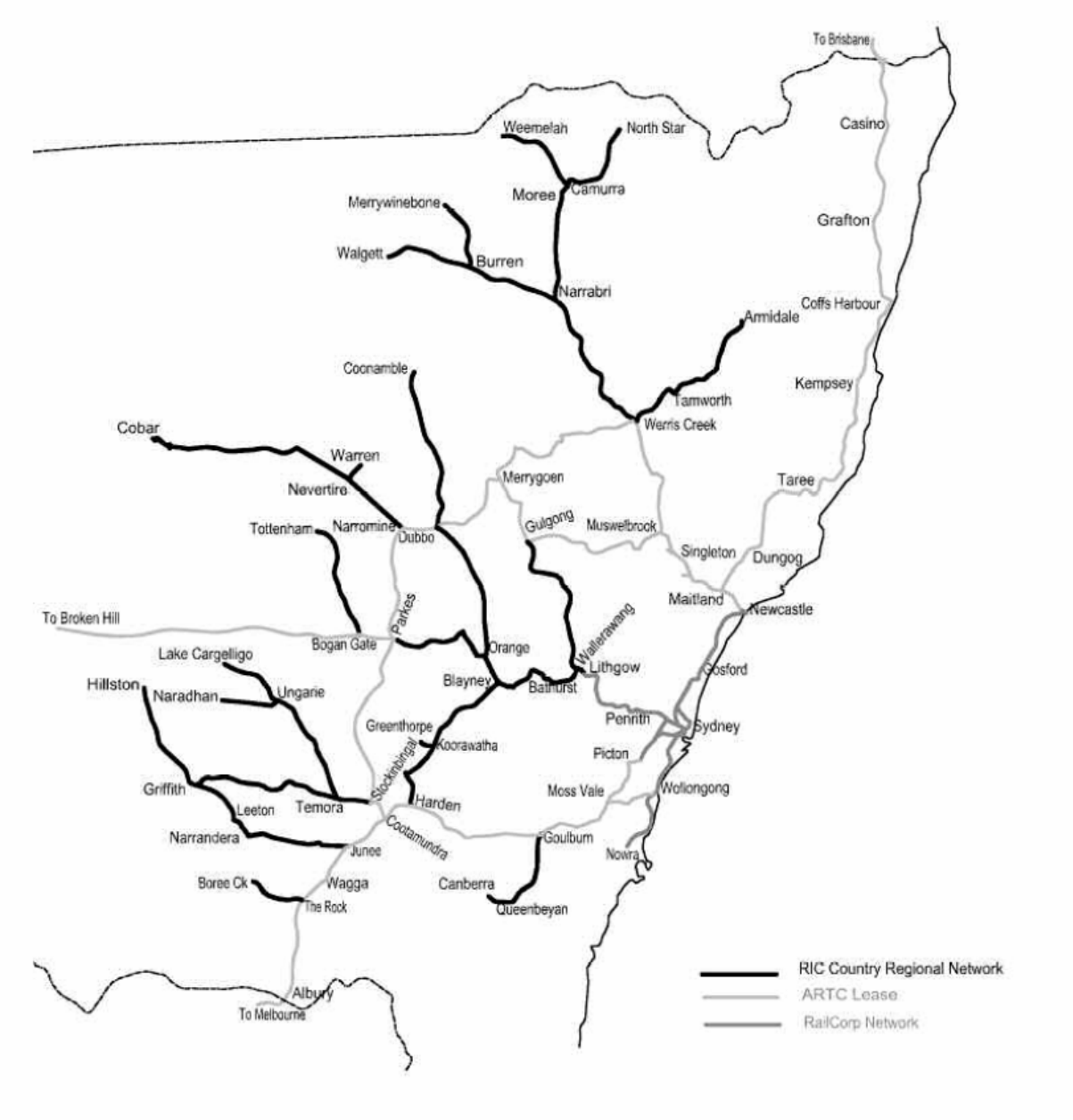
The major bulk commodities transported within New South Wales are coal, grain and steel. Most of the grain is carried by Pacific National, but Graincorp leases and crews a small number of its own trains to Port Kembla. Other commodities carried include ores, stone aggregate, limestone and cement, bulk liquids, slag and other waste. Cotton is a major commodity for Silverton Rail.

B.1.3. Description of the network

The New South Wales rail network consists of approximately 12,000 km of track, or a route length of 8,500 km, predominantly standard gauge. Figure B.1 below depicts the New South Wales rail network:[48]

[48] RIC, Annual Report 2004-05

Figure B.1
NSW rail network



The metropolitan railway lines extend from Newcastle to Nowra, while the ARTC controls the lines north to the Queensland border, west to South Australia via Broken Hill and south to Melbourne. It also controls the majority of the Hunter Valley coal network. The remaining lines, mostly regional branch lines, remain under the ownership of RIC. However, these are managed on RIC's behalf by the ARTC.

B.2. Overview of the regulatory regime

B.2.1. Relevant legislative instruments

The *Transport Administration Amendment (Rail Corporatisation and Restructuring) Act 1996* created the RAC and required the establishment of a New South Wales access regime. The NSW Rail Access Regime commenced on 19 August 1996, and was amended in 1999. On 15 November 1999, the Commonwealth Minister for Financial Services and Regulation certified the NSW rail access regime until 31 December 2000. This certified access regime has since been superseded by the NSW Rail Access Undertaking, made under Schedule 6AA of the *Transport Administration Act 1988* in 2004. This undertaking is not currently certified under Part IIIA of the TPA.

A Final Tripartite Agreement, signed by the Commonwealth, the government of New South Wales and ARTC on 4 June 2004, awarded a 60-year lease over the inter-state and Hunter Valley railway lines to the ARTC. As part of the agreement, the ARTC was to lodge an access undertaking with the ACCC as soon as practicable. However, this has not yet occurred. This means that the lines under the control of the ARTC continue to be regulated by the New South Wales undertaking.

Under the Tripartite Agreement, the ARTC committed to investing over $872 million on the east rail corridor, including at least $818 million in New South Wales. It also agreed to assume management of the Country Regional Network owned by RIC. RIC's responsibilities with respect to these lines include determining access fees, capital projects and maintenance requirements.

B.2.2. Objectives and pricing principles

Schedule 3 to the undertaking specifies the pricing principles that are to be applied in determining access revenues. These principles state that:

- Access revenues derived from access seekers should at least meet the direct cost imposed by that provision (the floor test). In addition, for any sector or group of sectors, access revenues and community service obligations ('CSO') together should exceed the 'full incremental costs' of provision on those sectors (the floor objective test);
- Access revenues derived from access seekers should not be more than the full economic cost required to provide that access on a standalone basis (the ceiling test); and
- *Total* access revenues plus any line sector CSOs should not exceed the full economic costs of provision for the part of the New South Wales network controlled by the access provider.

The following directions are provided for the technical terms:

- direct costs are defined as:[49]

[49] NSW Rail Access Undertaking, schedule 3, p2.

> "…efficient, forward-looking costs which vary with the usage of a single operator within a 12-month period, plus a levellised charge for variable MPM [major periodic maintenance] costs, but excluding Depreciation."

- full incremental costs are defined to be:[50]

> "…all costs which could be avoided if a Sector was removed from the system."

- and full economic costs as:[51]

> "…Sector specific costs including a permitted Rate of Return and Depreciation and an allocation of non-Sector specific costs such as train control and overheads including a Rate of Return and Depreciation on non-Sector specific assets. All items are to be assessed on a standalone basis."

In addition to these rules, access providers are required to keep an under and overs account with access seekers where the ceiling test may be exceeded. The aim of this account is to ensure that any revenues temporarily earned above the ceiling price will be compensated for in the following year. The operation of this account may be examined by IPART annually, as will the providers' compliance with the asset valuation principles set down in the undertaking.

B.2.3. Role of regulators

Under the undertaking, IPART is given specific responsibility for approving the rate of return for the purposes of access pricing, reviewing mine life with respect to the Hunter Valley network, determining whether the access provider has complied with the appropriate asset valuation principles, scrutinising its compliance with the ceiling test and ensuring correct operation of the under and overs accounts. These matters are not subject to arbitration.

IPART has also been specified as the arbitrator if a dispute arises. Part 4a of the *Independent Regulatory and Pricing Tribunal Act 1992* states that in arbitration of an access dispute, the regulator must have regard to:[52]

(a) the matters set out in clause 6 (4) (i), (j) and (l) of the Competition Principles Agreement,

(b) any guidelines referred to in section 12A (2) for the access regime to which the dispute relates,

(c) any submissions made on the dispute by the public, in a case to which subsection (2) applies,

(d) any other matters that the arbitrator considers relevant.

If the access seeker and provider cannot come to an agreement satisfying the undertaking, IPART (or a party appointed by the Tribunal) shall act as an arbitrator under the terms of Part 4a of the *Independent Pricing and Regulatory Act 1992*. The arbitrator will determine access prices satisfying the terms of the undertaking.

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50 Ibid.

51 Ibid.

52 Part 4a, Section 24B(3).

In recent years IPART has also released the following publications with respect to rail access issues in New South Wales:

- *Aspects of the NSW Rail Access Regime*, 28 April 1999. This document reviewed all aspects of the (then) existing NSW Rail Access Regime, culminating in major changes which were encapsulated in the amended Rail Access Regime of 1999;
- In 2002/03 and 2003/04 IPART conducted reviews into the operation of the over-and-under accounts and roll forward methodology of RIC. Only small discrepancies were discovered in its regulatory asset base; and
- In 2005 IPART conducted a review of the remaining mine life and rate of return to apply to the Hunter Valley Coal Network for the five years from 1 July 2004. It concluded a remaining mine life of 35 years was appropriate, along with a real pre-tax WACC of 7.3 per cent.

B.2.4. Regulatory approach

The objective of the undertaking is to make provision for third party access to the New South Wales rail network through the negotiate-arbitrate model. Under the undertaking, access is only to be provided through agreements that satisfy all the terms of the undertaking, including the pricing principles (noted above). In contrast to regulations in some other jurisdictions, there is no allowance for access agreements not in compliance with these principles to be negotiated, even if both parties are in agreement. All agreements must be notified to IPART.

Requirements for information disclosure are also a feature of the undertaking. Specifically, the undertaking requires an access provider to make available an Information Package to an access seeker within 28 days of an application for access. This package should include information regarding network configuration, recurrent costs, broken down into categories, capital costs, system usage and not utilised capacity and operational and arbitration information.

In addition to these disclosure principles, the undertaking requires access providers to submit annually to IPART documentation that demonstrates their compliance with the principles regarding asset valuation and the ceiling test.

B.3. Summary of current rail charges

The information disclosure requirements of the undertaking do not require access providers to disclose prices negotiated with access seekers, or floor and ceiling prices, other than to IPART. As a result it has not been possible to find public information regarding rail charges on the New South Wales rail network.

B.4. Costs included in rail charges

Amongst the items an access provider is required to make available in the Information Package is a breakdown of costs, providing the following items:

- infrastructure maintenance, disaggregated into:

  - routine maintenance; and
  - major periodic maintenance.
- network control costs;
- terminal management costs;
- depreciation;
- technical services costs;
- interest;
- overhead costs, disaggregated into:
  - corporate overheads;
  - marketing overheads;
  - asset management overheads; and
  - train operations and network control overheads.

However, the pricing principles do not direct that *these* costs should be those used in the calculation of floor and ceiling prices, merely that these costs should be included in the Information Package provided to access seekers. There is no requirement that the access provider should make available any price boundaries in the Information Package, although the required information may be sufficient to estimate these.

The asset valuation principles are noted in IPART's 1999 review of the NSW Rail Access Regime and accompany the publication of the 1999 regime in the New South Wales Government Gazette. The Gazette noted that:

> "…'below rail' general assets, being immobile assets which require future expenditures to retain the current Capacity of the NSW Rail Network, will be valued at equal to the current cost depreciated replacement value of the asset or group of assets"

and that:

> "…existing corridor formation assets, being assets which do not require future expenditures to maintain the current Capacity of the NSW Rail Network, will be valued at nominal amounts"

IPART's 1999 review determined that corridor formation assets vested to the RAC (now the RIC) in 1996 would be valued at zero. This category of assets includes cuttings, embankments and tunnels. Land was not included as corridor land was vested in the SRA at the time. Corridor assets and land purchased since would be valued at actual cost, indexed for inflation. Although the NSW Rail Access Regime has been updated since this time, we have found no information to indicate that IPART has changed its approach regarding asset valuation.

IPART has also determined that the real pre-tax WACC to apply for five years from 1 July 2004 should be 7.3%.

B.5. Approaches to new infrastructure investment

Schedule 3 to the undertaking establishes the rules regarding new investment. Such expenditure may only be made for the purposes of providing access. With respect to the Hunter Valley Coal Network, only capital expenditure relating to coal traffic may be included in the regulatory asset base.

New capital expenditure by track infrastructure owners can be recovered either directly through access charges on users of the new infrastructure, or it may be compensated for by a direct capital contribution from the access seeker. However an access provider is not obliged to undertake new infrastructure investment unless the full costs of this are met by the access seeker.

Appendix C. Queensland[53]

Queensland is the only state in Australia to have retained a vertically integrated above and below rail service provider, QR (formerly Queensland Rail), which continues to be fully owned by the Queensland Government. As such, QR remains the major provider of rail services in Queensland, dominating both freight and passenger services. Since the implementation of an undertaking in 2001, third parties have been able to compete with QR's above rail services. Pacific National has subsequently entered the Queensland freight market, winning several container freight contracts and providing competition in the market for freighting coal.

In the following section we provide a brief overview of the interstate rail system. The overview includes a description of the industry participants, rail network and commodities carried. Section C.2 provides a description of the regulatory regime currently in place. Sections C.3 summarises the current access charges and section C.4 discuss the costs that make up those charges. Section C.5 briefly discusses approaches to new investment.

C.1. Rail industry overview

C.1.1. Below rail providers and above rail operators

QR is a vertically integrated infrastructure owner and above rail operator. QR is the major provider of rail services in Queensland, controlling around 9,500km of track and providing the majority of above-rail freight and passenger services. QR remains wholly government owned, the only remaining non-privatised freight operator in Australia. QR became a corporatised body on 1 July 1995 and is governed by the *Government Owned Corporations Act 1993*.

The Queensland Department of Transport ('the Department') now holds the perpetual lease over all rail corridor land in Queensland following the passing of the *Transport Infrastructure Act 1994*, which provided for the transfer of ownership of rail corridor land to the State. The Department subleases the corridor to railway managers such as QR, Airtrain[54] and heritage railway managers.

The Queensland Government declared the services provided by QR in March 1998 to facilitate third party access to its intrastate rail transport infrastructure. The declaration was

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[53] This appendix has been drafted using the following material:
Queensland Transport Infrastructure Act 1994
Queensland Competition Authority Act 1997
QCA website: www.qca.gov.au
QCA, QCA, *Working Paper 3: Issues in the Estimation of Queensland Rail's Below Rail Coal Network Expected Rate of Return*.
QCA, *Draft Decision on QR's Draft Access Undertaking*, December 2000
QCA, *Final Decision on QR's 1999 Draft Undertaking*, July 2001
QCA Annual Report 2004/05
The Queensland Department of Transport website: www.transport.qld.gov.au
Queensland Rail website: www.qr.com.au
Queensland Rail Undertaking, December 2001
Queensland Rail Annual Report 2004/05

[54] Airtrain is a privately owned and operated network linking Brisbane Airport to the city.

extended in June 1998 to include access to QR's coal lines, which were previously exempt. Following these reforms the responsibility for railway policy and planning in Queensland moved from QR to the Department of Transport.

In June 1998, the Queensland Government applied to the NCC to certify as effective a third party access regime for certain rail services managed and operated by QR. The NCC published an Issues Paper and received submissions on that paper before the Queensland Government withdrew its application for certification in February 1999.

In January 1999, prior to the Queensland Government's withdrawal from the NCC certification process, QR voluntarily submitted a draft access undertaking for consideration by the Queensland Competition Authority (QCA). The undertaking provides that QR must allow other train operators to use its intrastate rail infrastructure, including its narrow, standard and dual gauge networks, in accordance with the provisions of the undertaking approved by the QCA. The access undertaking sets out general terms and conditions for the negotiation of access arrangements and also contains reference tariffs for coal train services in central Queensland.

QR is divided into several business operations to facilitate the operation of its various services. These include:

- QRNational, QR's freight and logistics division;
- QR Passenger Services, which provides commuter and long-distance passenger services across Queensland; and
- QR Network Access manages the Queensland rail network in accordance with the requirements of the undertaking.

Pacific National was the first third party operator to take advantage of the third party access arrangements provided by the undertaking. Pacific National Queensland (PNQ) commenced the running of trains in March 2005. Over $140 million is being invested in Queensland over a two-year period to support the expansion of Pacific National's rail freight operations into the narrow gauge network in Queensland.

Pacific National has won several container freight contracts and bids for coal contracts, providing competition to QR's freight and logistics division.

C.1.2. Major freight commodities and volumes

In 2004-05, QRNational carried 175.5 million tonnes of freight, the majority of which was coal. Of the 157 million tonnes of coal freighted by QRNational, 146 million tonnes was sent to six export coal terminals for export whilst 11 million tonnes for domestic use, primarily for electricity generation and minerals processing industries. QR also transports up to 2 million tonnes of coal in New South Wales.

Other bulk freight commodities moved by QR include grain, minerals, livestock, sugar, fuel, lead, copper, sulphur and cement.

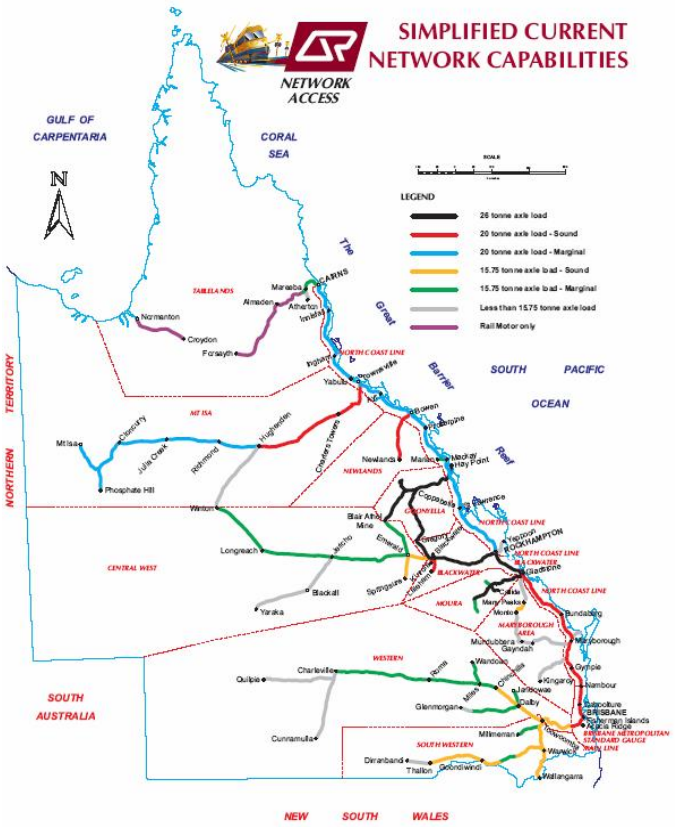
C.1.3. Description of the network

The Queensland rail network, valued at $3.8 billion, occupies approximately 40,000 hectares of rail corridor land and consists of approximately 9,500km of track. The network is predominantly narrow gauge with the exception of 93 kilometres of standard gauge track between Brisbane and the New South Wales border and around 35km of dual-gauge track upon which both narrow and standard gauge rollingstock may run. Currently 1,877km of the network is electrified. Figure C.1 depicts the Queensland Rail network:[55]

All rail corridor land, with the exception of the Weipa bauxite railway, the sugar cane rail system and three balloon loops,[56] is owned by the state and leased to accredited railway managers, predominantly QR. The network comprises 13 sub-networks, including:

- the metropolitan commuter system;
- the regional freight and tourist lines;
- the heavy haul tracks of the state's coal and mineral deposits; and
- the interstate track between the New South Wales border and Brisbane.

Figure C.1
Queensland rail network



55 Sourced from http://www.networkaccess.qr.com.au/downloads/maps/maps.asp

56 These loops are located at Box Flat, Laleham Mine and Queensland Alumina Limited near Gladstone, totalling approximately 35km.

C.2. Overview of the regulatory regime

C.2.1. Relevant legislative instruments

The main sources of rail industry regulation in Queensland are the *Queensland Competition Authority Act 1998* ('QCA Act'), which provides for third party access to infrastructure, and the *Transport Infrastructure Act 1994* ('TI ACT').

The QCA was established by the Queensland Government in response to the Council of Australian Governments' agreement to establish a national approach to competition policy. The QCA Act establishes the QCA and assigns it powers and responsibilities relating to the following functions:

- the establishment of state-based third party access regimes;
- prices oversight of state-based government business enterprises which have monopoly power; and
- the imposition of competitive neutrality between government business activities and their private sector competitors.

Under the QCA Act, the QCA has the authority to request and approve access undertakings.

The Transport Infrastructure Act regulates, amongst other things:

- safety accreditation;
- rail transport infrastructure powers;
- railway incidents; and
- rail corridors.

The TI Act seeks to:[57]

> … provide a regime that allows for and encourages effective integrated planning and efficient management of a system of transport infrastructure.

With respect to rail, the TI Act seeks to:[58]

> … establish a regime that —
>
> (i) contributes to overall transport effectiveness and efficiency; and
>
> (ii) provides for adequate levels of safety; and
>
> (iii) contributes to lower transport costs by allowing the maximum flexibility in rail transport operations consistent with achieving safety objectives; and
>
> (iv) provides a high level of accountability; and

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[57] *Transport Infrastructure Act 1994*, s.2(1).

[58] *Transport Infrastructure Act 1994*, s.2(2)(d).

(v) allows railway managers and operators to make decisions on a commercial basis; and

(vi) provides a framework under which Queensland Rail may operate as required by the Government Owned Corporations Act 1993.

C.2.2. Objectives and pricing principles

QR's undertaking is based on the following pricing principles:

- revenue adequacy for QR, defined as "sufficient to achieve full recovery of efficient costs…including an adequate rate of return on the value of assets reasonably required"[59];
- limits on price differentiation between access seekers;
- upper and lower price limits for individual train services or combinations of services; and
- provision for QR to maximise the commercial utilisation of rail infrastructure.

The prioritisation of these principles is established in the following clause within the undertaking:[60]

> In developing Access Charges, QR's primary objective is, over time, to achieve revenue adequacy (as outlined in Subclause 6.1.1). In order to do this, QR will endeavour to maximise the commercially viable utilisation of the Rail Infrastructure through observing the processes identified in Subclause 6.1.3, however, within this context, QR has an overriding obligation to observe the constraints on price differentiation identified in Subclause 6.1.2.

In accordance with these pricing principles, access charges are negotiated between the limits of incremental cost and standalone cost. These price limits are applied as follows:

> Pricing limits will be applied in respect of the following elements:[61]
>
> i. upper and lower limits for Access Charges for individual Train Services, established at levels which ensure there is no Cross Subsidy between individual Train Services; and
>
> ii. upper and lower limits for Access Charges in respect of combinations of Train Services, established at levels which ensure that there is no Cross Subsidy between combinations of Train Services.

The undertaking further defines the limits for individual train services and combinations of train services as not falling below the level that will recover the expected incremental cost of providing access and not exceeding the level that will recover the expected stand alone cost of providing access. These terms are defined further below.

An important consideration in determining the incremental and stand alone costs is that they should reflect efficient costs and not those incurred by QR. The QCA also considers that reference tariffs should be simple, transparent and predictable and that it is critical that users pay access charges according to the costs they impose on the system. Although this view

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59 QR Undertaking December 2001, Clause 6.1.1.

60 QR Undertaking, December 2001, Clause 6.1.

61 QR Undertaking, December 2001, Clause 6.2.

extends to congestion charging, the QCA recognised the unanimous view of stakeholders that the industry is not yet ready to incorporate explicit congestion charges into the access regime.

Recognising that these limits may provide for a wide range of potential charges, QR developed reference tariffs for certain types of train services in order to reduce uncertainty and the negotiation costs associated with attempting to negotiate between these broad limits.

Reference tariffs for specified reference train services currently apply only in relation to access charges for coal traffic on QR's central Queensland coal network. However the undertaking provides for reference tariffs to be developed and approved by the QCA, as and when required. The QCA was concerned that requiring reference tariffs to be developed for several types of third party users would effectively amount to price regulation and provide for an unnecessary level of regulatory intrusion. The QCA also noted that:

> access charges for intermodal traffics will instead be heavily influenced by the cost competitiveness of rail relative to road transport.[62]

For train services that do not have applicable reference tariffs the main limits to apply in establishing access charges arise from the limitations on price differentiation. These limitations prevent QR from charging different customers different prices where the customers are freighting the same goods in the same geographic region. Where QR does differentiate between such customers, the onus is on QR to justify the difference on the basis of costs or risks or changes in market conditions.

It is critical to note that long term decisions are affected by the reference tariff structure. Consequently, the signals that are implicit in the charging structure should be based on long term rather than short term considerations.

The QCA, in its draft decision on the 1999 draft undertaking, argued that the avoided costs associated with low tonnage rail activities will be small. Furthermore, the Queensland Government's policy of maintaining CSO arrangements with QR to ensure the continued operation of unprofitable lines implies that traffic on lightly trafficked lines are unlikely to cause additional costs. The QCA argued that in practice:[63]

> the appropriateness of access charges should not focus on incremental cost, but rather on the relativities with other charges pertaining to the relevant market so long as no traffic or combination of traffics is required to pay more than its stand alone cost.

The QCA considered that QR should therefore observe the limits on price differentiation irrespective of whether the resulting charges covered the incremental costs of individual train services.

C.2.3. Role of regulators

The QCA's responsibilities in relation to the rail industry are to:

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[62] QCA, Draft Decision on QR's Draft Access Undertaking, Volume 3 – Reference Tariffs, December 2000, pg. 197.

[63] QCA, Draft Decision on QR's Draft Access Undertaking, Volume 2, December 2000, pg. 214.

- assess and approve third party access undertakings to Queensland's intrastate rail network;
- arbitrate access disputes;
- enforce breaches of access obligations; and
- assess competitive neutrality.

Part 5 of the QCA Act sets out the criteria relevant to access to essential services which encompasses rail transport infrastructure, including criteria for declaration recommendations. Division 5 sets out the requirements for access undertakings, factors affecting the approval of draft undertakings and details regarding the powers of the QCA to conduct investigations for the purpose of assessing draft undertakings.

Division 7 provides the QCA with the power to prepare and approve draft undertakings for declared services where the owner or operator does not comply with its responsibilities to prepare a draft undertaking that meets the requirements set out in the QCA Act.[64]

The QCA must take into account the following factors when making access determinations:[65]

> The authority may approve a draft access undertaking only if it considers it appropriate to do so having regard to each of the following—
>
> (a) the legitimate business interests of the owner or operator of the service;
>
> (b) if the owner and operator of the service are different entities—the legitimate business interests of the operator of the service are protected;
>
> (c) the public interest, including the public interest in having competition in markets (whether or not in Australia);
>
> (d) the interests of persons who may seek access to the service, including whether adequate provision has been made for compensation if the rights of users of the service are adversely affected;
>
> (e) any other issues the authority considers relevant.

QR's undertaking further outlines the QCA's responsibilities in its role overseeing the undertaking. This includes a role in approving reference tariffs and in determining several of the key parameters in determining the appropriate incremental and stand alone costs, including the maximum allowable rate of return.

C.2.4. Regulatory approach

Under the QCA Act, negotiations play a central role in determining access between below rail providers and third party access seekers. Division 4 of Part 5 sets out the obligations on access providers of declared services to negotiate with access seekers in order to determine an access agreement. It also sets out the rights and obligations of the parties to access

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64 *Queensland Competition Authority Act 1997*, Part 5, Division 7, Subdivision 1, 135.

65 *Queensland Competition Authority Act 1997*, Part 5, Division 7, Subdivision 1, 138 (2).

agreements and dispute resolution processes. Part 4 sets out requirements for negotiations, such as time restrictions, information requirements, issues to be addressed during negotiations and dispute resolution processes.

The undertaking sets out the floor and ceiling pricing limits, as discussed above. In practice, the only below-rail services likely to be charged at the stand alone cost are the central Queensland coal systems, including the Newlands, Goonyella, Blackwater and Moura networks. A revenue limit, reflecting stand alone costs, applies to each system and the system as a whole.

C.2.5. Recent decisions

The 1999 undertaking initially proposed by QR was rejected by the QCA. An agreement was eventually reached in 2001. The 2001 undertaking was due to expire in June 2005. QR submitted a new draft undertaking in April 2004.

On 12 December 2005, the QCA released its decision rejecting QR's proposed 2005 Draft Access Undertaking. This decision requires QR to submit a revised access undertaking. If QR does not comply, the QCA has the authority to prepare and approve its own draft access undertaking.

Until a new access undertaking is approved, the 2001 access undertaking will continue to apply. To facilitate the process of approving a new undertaking, the expiry date for the 2001 undertaking has been extended to either 30 June 2006 or the approval date of a replacement undertaking, whichever comes first.

C.3. Summary of current rail charges

C.3.1. Reference Tariffs

Reference tariffs apply for a 'reference train service', ie, a given set of train service characteristics such as axle load, indicative transit time, speed, commodity type and geographic area. These reference services set the 'benchmark' for above-rail operators. The access charge for a given train service is then adjusted up or down from the reference tariff to reflect differences in the required services as compared to the reference service.

Reference tariffs have been developed for "clusters" of networks, generally coal networks, which are sections of QR infrastructure directly connecting certain specified loading and unloading facilities. QR publishes reference tariffs for each cluster in QR's coal system (the Blackwater, Goonyella, Stanwell, Moura and Newlands clusters).

Reference tariffs are separated into two price components: charges for track access and for electric traction. All users are charged for track access, but only those that utilise the electrical overhead infrastructure are charged the electric traction tariff.

In its 2001 decision, the QCA proposed a cost-reflective tariff structure to ensure that appropriate pricing signals are sent to market participants. In particular, the QCA determined it is necessary to separately identify causative elements in the pricing structure so that the costs that are imposed on the system through different operational arrangements are reflected in the prices that are charged. In the context of QR's below-rail coal network, these causative

costs are the marginal costs of maintenance imparted to the infrastructure through usage and the cost of providing capacity.

Consequently, the QCA proposed that revenue be collected via a multi-part reference tariff incorporating the following components:

- an incremental maintenance charge that is levied on a $/'000 GTK basis;
- an incremental capacity charge that is charged based on the number of (one-way) train services;
- an allocated component of the reference tariff that is levied on a $/'000 NTK basis;
- an allocated component of the reference tariff that is levied on a $/net tonne basis;
- an electric access charge that is levied on a $/'000 GTK basis;
- the electric energy tariff that is levied on a $/'000 GTK basis; and
- a QCA Levy - to cover the fees imposed by the QCA on beneficiaries of its regulatory services, that is levied on a $/net tonne basis.

The allocated component is calculated by dividing the fixed costs that cannot be causatively attributed to capacity or maintenance evenly into two components. The first component ($/'000 NTK) is then calculated by dividing the residual amount by the forecast NTK for that cluster over the regulatory period. A similar approach is adopted for the $/net tonne component. These allocated components are the most significant components of the reference tariff, each contributing 35 to 45 per cent of total reference tariff revenue.

For the period of the undertaking, the reference tariffs were increased by CPI - 1.5 per cent in order to provide ongoing efficiency incentives, with the exception of the QCA levy which is treated as a pass through cost.

The table below sets out the reference tariffs for 1 January 2006 to March 2006.

Table C.1
Queensland coal reference tariffs: January - March 2006

Coal Reference Tariffs

Price Component	Unit	Central Blackwater	North Blackwater	Stanwell	North Goonyella	South Goonyella	West Goonyella	Gregory Via Goonyella	Central Goonyella	Moura	Newlands
Inc. Mtce Charge	$/'000gtk	0.625	0.625	0.625	0.432	0.432	0.432	0.432	0.432	1.171	1.217
Inc Cap Charge	$/rtp	1,171	1,171	1,175	751	853	751	853	751	421	188
All. Component 1	$/'000ntk	3.845	-	3.497	2.650	2.714	2.778	3.523	7.095	7.987	5.160
All. Component 2	$/nt	1.176	2.364	0.643	0.479	0.681	0.777	0.926	1.285	1.259	0.726
Electric Traction	$/'000gtk	1.144	1.144	1.144	0.908	0.908	0.908	0.908	2.162	-	-
Electric Energy	$/'00gtk	0.921	0.921	0.921	0.921	0.921	0.921	0.921	0.921	-	-
QCA Levy	$/nt	0.00588	0.00588	0.00588	0.00588	0.00588	0.00588	0.00588	0.00588	0.00588	0.00588

C.4. Costs included in rail charges

Incremental costs are defined in QR's undertaking as:[66]

> those costs of providing Access, including capital (renewal and expansion) costs, that would not be incurred (including the cost of bringing expenditure forward in time) if the particular Train Service or combination of Train Services (as appropriate) did not operate, where those costs are assessed as the Efficient Costs and based on the assets reasonably required for the provision of Access.

Variable inspection and maintenance costs for the purpose of calculating incremental costs include:

- ultrasonic rail testing;
- track recording;
- rail grinding; and
- ballast cleaning.

The QCA calculated incremental maintenance costs for the coal lines and the extent to which those costs vary with axel load or train speed, in a working paper for the purpose of setting reference tariffs. Similarly, the QCA's Working Paper 3 calculates the incremental cost of capacity to develop a reference charge that varies with the above-rail operator's sectional running times and the level of priority sought relative to the reference charge.

Reference tariffs are set so as to allow QR to recover the stand alone cost of providing access to its below-rail network for coal traffic in Central Queensland. Stand alone costs are defined within the undertaking as:[67]

> those costs that QR would incur if the relevant Train Service(s) was (were) the only Train Service(s) provided Access by QR, and where those costs are assessed as the Efficient Costs and on the basis of the assets reasonably required for the provision of Access, and "Stand Alone" has a similar meaning

To test whether QR's access charges meet this requirement, a revenue limit consistent with the stand alone cost of service provision applies to train services operating on the Central Queensland coal systems (individually and collectively) in addition to the Mt Isa system. The QCA also required a revenue limit to apply to each system and to the system as a whole. The revenue limit is determined as:[68]

> the maximum amount of expected Access revenue (determined consistent with Paragraph 6.2.3(c)) that may be earned from Access Charges over the Evaluation Period measured such that the net present value of the cash flows associated with providing Access for the Individual Train Service or the combination of Train Services (as appropriate) over the Evaluation Period is zero.

The undertaking contains a formula to implement this definition in practice that includes those costs reasonably expected to be incurred for the provision of access on a stand alone basis, separated into the following categories:

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66 QR Access Undertaking, December 2001, pg.76.

67 QR Access Undertaking, December 2001, pg.82.

68 QR Access Undertaking, December 2001, pg.38.

- the value of the assets determined using the DORC methodology;
- capital expenditure;
- the efficient operating and maintenance costs and business and corporate overheads;
- maximum allowable rate of return; and
- tax expense, reduced each year by the application of an adjustment to reflect the value of dividend imputation credits.

More broadly, the stand alone costs of providing the network can be separated into the following components:

- maintenance costs (23% of coal region total below-rail costs in 2000-01);
- other operating expenses (8%); and
- capital costs (69%).

"Other operating costs" include train control and safe-working, infrastructure management, business management, corporate overheads and other below-rail costs not directly attributable to specific line-sections.

Capital costs are determined as a function of the opening and closing asset values, determined using the DORC methodology, and the rate of return.

Contrary to many regulators, the QCA values land at DORC for the purpose of valuing the coal network assets. The QCA expressed the view that it was:[69]

> not appropriate to value land at zero nor historical cost. Any attempt to value land in this way would undermine the incentives to invest in the network. Historical cost assessments would substantially understate the opportunity costs imposed on society of the existence of the network, particularly as some of the land that comprises QR's network was acquired over a century ago.

Other assets included in the DORC valuation for the coal network were grouped into the following categories:

- Track;
- Earthworks;
- Civil structures, including rail bridges, footbridges, culverts and other openings, fencing, retaining walls and drainage;
- Signalling System;
- Communications System; and
- Electrical traction system.

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[69] Queensland Competition Authority, *Final Decision on QR's 1999 Draft Undertaking*, July 2001, pg. 366

C.4.1. Cost allocations

A costing manual provides the framework for the identification, attribution and allocation of assets, costs, revenues and investments as Above Rail, Below Rail and Other Activities, and the development of financial statements for Below Rail services provided by Network Access.

The undertaking provides for the development of this costing manual, requiring, among other things:[70]

(a) The process for identifying, from QR's audited general purpose financial statements, the cost base for Below Rail Services provided by QR separate from other services provided by QR;

(b) Within the cost base for Below Rail Services, the process for identifying the costs of Below Rail Services provided by Network Access separate from the costs of Below Rail Services provided by QR Operator Business Groups (i.e. the management of stations and platforms);

(c) Within the cost base for Below Rail Services, the process for identifying:

- Assets and costs attributable to specified Line Sections;
- Assets, costs, revenue and investments not attributable to specified Line Sections but attributable to specified Geographic Regions; and
- Assets, costs, revenue and investments not attributable to specified Line Sections or any specified Geographic Region

C.5. Approaches to new infrastructure investment

The Queensland Department of Transport has released its *Rail Network Strategy for Queensland* for the purpose of facilitating "the effectiveness of the contribution of rail to the government's desired transport outcomes".[71] The strategy focuses on proposals for the development of below rail infrastructure. These proposals will provide the basis for future infrastructure maintenance and investment. In particular, the Department of Transport is seeking to identify potential opportunities for infrastructure development and where possible advocate the investigation of private sector investment in the Queensland rail network.

In April 2005, the Queensland Government announced a $35 billion government-funded road and transport package, including $300 million to plan and build a passenger rail line, including new stations, from Darra to Springfield.[72]

In assessing the relevance of capital contributions to the appropriate level of reference tariffs, the QCA concluded that the onus should be on the user to "point to documentary evidence"[73] that demonstrates adjustments to reference tariffs beyond what is currently allowed for in existing haulage contracts are justified. The undertaking allows for future contributions that are required as a condition of access to be adjusted for in the access charge in the way of a discount based on the QR's allowed rate of return.[74]

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70 Paragraph 3.2.2.

71 http://www.transport.qld.gov.au/qt/RPF.nsf/index/RailNetworkStrategy

72 http://statements.cabinet.qld.gov.au/MMS/StatementDisplaySingle.aspx?id=40583

73 Queensland Competition Authority, *Final Decision on QR's 1999 Draft Undertaking*, July 2001, pg. 380.

74 QR's Access Undertaking, December 2001, para 6.4(b).

Appendix D. South Australia[75]

South Australia was one of the first states to agree to a proposal by the Commonwealth Government in the 1970s to create a single national rail operator. South Australia's intrastate rail assets were combined with the Commonwealth's existing railways operations to establish a rail network that extended from Broken Hill to Kalgoorlie, operated by Australian National Railways. Continued reforms have culminated in four major parties holding rail track infrastructure in South Australia, with smaller operators owning branch lines predominantly for their own use.

Rail infrastructure in South Australia is governed by two separate undertakings. The majority of rail in South Australia is governed by the *Railways (Operations and Access) Act 1997*. In addition, access to the Tarcoola to Darwin railway is governed by the *AustralAsia Railway (Third Party Access) Act 1999*, a joint initiative between South Australia and the Northern Territories. Both regimes are overseen by the South Australian regulator.

In the following section we provide a brief overview of the South Australian rail system. The overview includes a description of the industry participants, rail network and commodities carried. Section D.2 provides a description of the regulatory regime currently in place. Sections D.3 and D.4 discuss the costs that make up access charges for both the South Australian and the Tarcoola to Darwin access regimes.

D.1. Rail industry overview

Rail track infrastructure in South Australia is held by four major parties, with smaller operators owning branch lines predominantly for their own use. The ARTC owns the inter-state lines with the exception of the Tarcoola to Darwin line, which is owned by Asia Pacific Transport ('APT'). Australian Southern Railroad ('ASR'), a subsidiary of the Australian Railroad Group ('ARG'), owns the majority of intra-state lines, while TransAdelaide owns the infrastructure and operates passenger trains over the metropolitan network in and around Adelaide.

D.1.1. Below rail providers and above rail operators

TransAdelaide owns and operates broad gauge lines and passenger services in metropolitan Adelaide, primarily for public transport. TransAdelaide is wholly owned by the South Australian Government, having been corporatised in 1998. TransAdelaide operates both

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[75] This appendix has been drafted using the following material:

Babcock & Brown, "Babcock & Brown acquires 'below-rail' business of Australian Railroad Group", ASX Release, 14 February 2006.
AustraliaAsia Railway (Third Party Access) Act 1999 (SA & NT).
Railways (Operations and Access) Act 1997 (SA).
ESCOSA, "Tarcoola-Darwin Railway: Access Pricing", Provisional Guidelines, August 2003.
ESCOSA, "Rail Industry (Tarcoola-Darwin) Guidelines No. 1: Access Provider Reference Pricing and Service Policies", February 2004.
ESCOSA, "Rail Industry (Tarcoola-Darwin) Guidelines No. 4: Compliance Systems and Reporting", April 2005.
ESCOSA, "South Australian Rail Access Regime Information Kit", May 2004.
ESCOSA, "South Australian Rail Access Regime Information Kit", October 2005.
ESCOSA, "South Australian Rail Access Regime: Changes to Regulator Components", Final Decision, October 2005.
McGowan, Bruce, "The AustralAsia Railway", Conference on Railway Engineering, 2004.

commuter train services and trams, and is also part of a joint venture providing metropolitan bus services.

The South Australian non-metropolitan intra-state railway system was combined with the inter-state rail system under Commonwealth control in the 1970s. Initially this was under the control of the Australian National Railway Commission. The interstate freight businesses were split off to form National Rail between 1991 and 1993. In 1997, Australian National was split again, with the remaining freight and passenger businesses sold to private companies. The South Australian intra-state freight business was sold to ASR while the passenger business was sold to Great Southern Railway.

ASR now owns the intrastate rail infrastructure and operates freight services on these tracks. ASR also leases locomotives, crews and wagons to other operators for services on the inter-state corridors. It was wholly owned by the ARG, a joint venture between Genesse & Wyoming and Westfarmers. However, in the acquisition of ARG by QR and Babcock & Brown, the below-rail operations in South Australia will be purchased by Genesee & Wyoming, who will also take over control of most of the above-rail operations. QR will acquire only the P&O haulage business between Adelaide and Melbourne, and access from Genesee & Wyoming to certain depots and facilities.

Great Southern Railway owns and operates a passenger terminal at Keswick but does not own any track. It operates long distance passenger services between Adelaide and neighbouring state capitals, as well as the Ghan service to Alice Springs and Darwin.

Construction of the rail link from Alice Springs to Darwin was completed by APT, a joint venture of domestic and international companies, including ARG, in 2003. It obtained a 50-year lease over the line from Tarcoola to Alice Springs to take control of the entire Tarcoola to Darwin line. The ownership of this will transfer to the AustralAsia Railway Corporation, a joint venture of the South Australian and Northern Territory government, at the end of the 50-year period. APT's wholly owned subsidiary FreightLink is the only freight operator on this line. ARG's stake in this joint venture has since been purchased by Genesee & Wyoming.

Aside from these major infrastructure owners and associated operators, there are a number of smaller infrastructure owners and operators in South Australia, including:

- NRG Flinders, who own the line between Port Augusta and Leigh Creek, used mainly for the transport of coal. Pacific National is contracted to haul coal along this line; and

- OneSteel owns some narrow gauge lines on the Eyre Peninsula for ore haulage. ASR was the contracted operator on these lines, with these contracts likely to be taken by Genesee & Wyoming after the purchase of ARG.

D.1.2. Major freight commodities and volumes

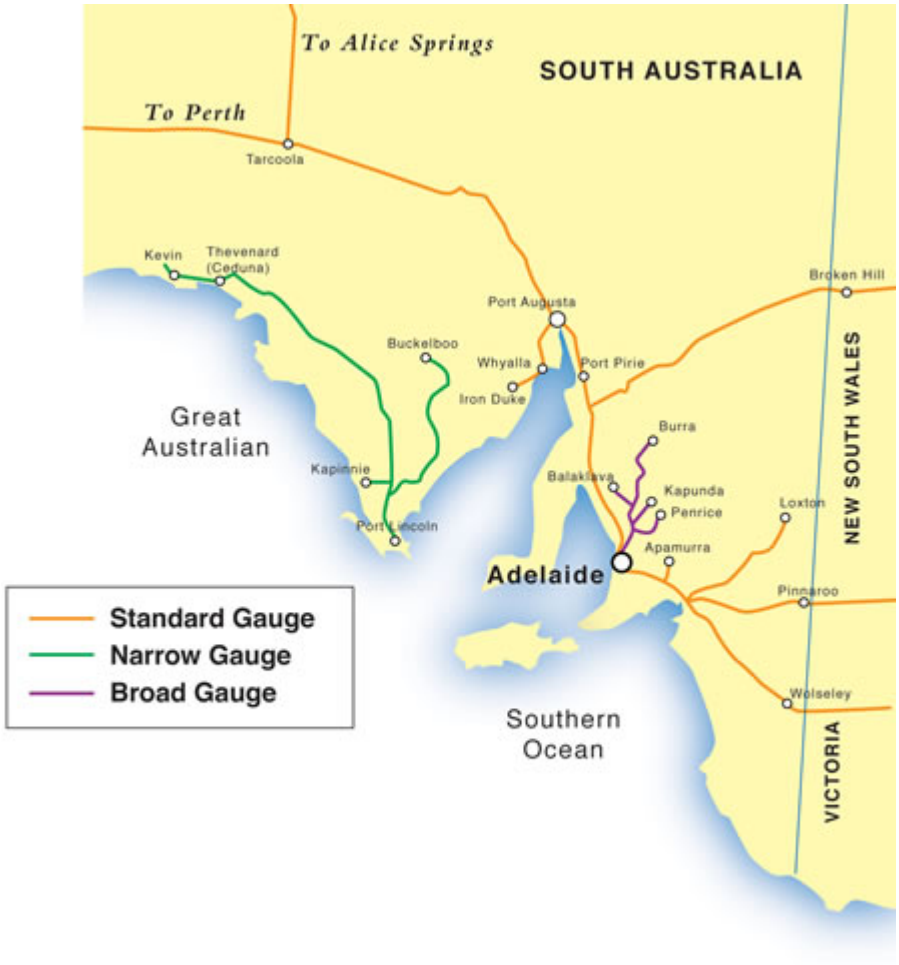
The major commodities hauled on ASR's network are grain (to Port Adelaide and Port Lincoln), gypsum, iron ore and limestone. Significant quantities of coal are hauled from Leigh Creek to the power station at Port Augusta by Pacific National.

On the Tarcoola to Darwin line, freighted commodities include refrigerated containers, cement, motor vehicles, petroleum products, minerals and livestock.

D.1.3. Description of the network

A map of the South Australian rail network is shown below.[76]

Figure D.1
South Australian rail network



Operation of the 1,420 km Alice Springs-Darwin railway began in January 2004. The railway operator also controls the existing 830km Tarcoola-Alice Springs railway. Together, the Tarcoola to Darwin railway connects Darwin's East Arm Port to Australia's interstate standard gauge rail network.[77]

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[76] Obtained from the ARG website.

[77] http://www.escosa.sa.gov.au/site/page.cfm?u=60

D.2. Overview of the regulatory regime

D.2.1. Relevant legislative instruments

D.2.1.1. South Australian Rail Access Regime

The Essential Services Commission of South Australia (ESCOSA) was proclaimed the regulator of South Australia's Rail Access Regime on 18 March 2004, as set out in Parts 3 to 8 of the *Railways (Operations and Access) Act 1997*. Prior to ESCOSA assuming the regulatory role for rail, the Executive Director of Transport South Australia fulfilled this function.

The objectives of the regime are described in section 3 of the Act:

> (a) to promote a system of rail transport in South Australia that is efficient and responsive to the needs of industry and the public; and
>
> (b) to provide for the operation of railways; and
>
> (c) to facilitate competitive markets in the provision of railway services; and
>
> (d) to promote the efficient allocation of resources in the rail transport segment of the transport industry; and
>
> (e) to provide access to railway services on fair commercial terms and on a non-discriminatory basis.

The regime covers rail track and yards, passenger railway stations and the services needed for the operation of these, such as train control. It does not cover freight terminals, private sidings, passenger or freight services, locomotives, wagons and workshops, maintenance or construction services.[78]

While the access regime was designed to comply with the requirements for certification under the TPA, certification has not been sought. The regime applies to all railways in South Australia, except those excluded by proclamation. These include the inter-state lines, the Glenelg tramline, the lines owned by OneSteel, the Leigh Creek line and tourist or heritage railway lines.

D.2.1.2. Tarcoola to Darwin Rail Access Regime

Access to the Tarcoola to Darwin railway is governed by the AustralAsia Railway (Third Party Access) Code, a schedule in the *AustralAsia Railway (Third Party Access) Act 1999 (SA & NT)*. This has been certified as an effective state regime by the NCC. ESCOSA is the regulator for these access arrangements, both in South Australia and the Northern Territory. The objective of the Code is to provide for the regulation of third party access to the AustralAsia Railway.

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[78] ESCOSA, South Australian Rail Access Regime Information Kit, May 2004, p5. Presumably 'maintenance' refers to that for rolling stock, rather than maintenance of railway tracks.

D.2.2. Role of regulators

D.2.2.1. South Australian Rail Access Regime

Under the South Australian Rail Access Regime ESCOSA can establish principles for determining the floor and ceiling prices for railway access. The floor price represents the lowest price the access provider can charge for the service without incurring a loss, while the ceiling reflects the highest price that could fairly be asked. However, operators may enter into contracts that do not reflect the pricing principles determined by the regulator. Should negotiations fail and arbitration is required, the price set must be between the floor and ceiling prices. The Act does not specify that ESCOSA should be the arbitrator, but that it should appoint an independent party for the role.

The *Railways (Operations and Access) Act 1997* also requires ESCOSA to establish Information Brochure requirements. That is, on application by an industry participant, an access provider must provide the terms and conditions on which it provides its services and under which it will make these available for use. ESCOSA has also specified that the Information Brochure is to include both floor and ceiling prices for significant services, and the methodology used to calculate these prices.

The Act vests in ESCOSA the monitoring and enforcement of compliance with the access regime. It also gives ESCOSA the discretion to establish reporting requirements, allowing the regulator to monitor the costs of railway operators and their access contracts.

D.2.2.2. Tarcoola to Darwin Rail Access Regime

The guidelines offered by the AustralAsia Railway (Third Party Access) Code are much more prescriptive than the legislation enabling the South Australian Access regime, giving ESCOSA less discretion. Again the framework involves a floor and ceiling price pair in a negotiate-arbitrate model.

Under the AustralAsia Access Code ESCOSA's functions mainly relate to the publication of guidelines outlining its approved approach to:

- valuing capital assets;
- establishing an appropriate return on capital assets for the purposes of determining prices; and
- establishing the appropriate timeframe over which costs may be avoided for this calculation.

ESCOSA applies the same approach to monitoring and enforcement under both access regimes, as set down in *Rail Industry (Tarcoola-Darwin) Guideline No.4: Compliance Systems and Reporting*.

Under the AustralAsia Access Code any arbitrator that is appointed should not be a party to the dispute, be subject to the control of the South Australian or Northern Territory governments or have an interest in the outcome of the arbitration. This would not appear to preclude ESCOSA from acting as an arbitrator.

D.3. Summary of current rail charges

The floor and ceiling prices actually used by the under-rail operators in South Australia are not transparent since these need be disclosed only in the Information Brochure, which is available only to industry participants.

D.4. Costs included in rail charges

D.4.1. South Australian Rail Access Regime

ESCOSA has significant discretion to decide how the floor and ceiling prices mandated by the Railways (Operations and Access) Act should be calculated. Aside from general principles regarding the intention of these prices, the Act does not attempt to state which costs should be used to determine each price. Discretion is therefore left to the regulator. However, the Act states:[79]

> The floor price should reflect the lowest price at which the operator could provide the relevant services without incurring a loss…

ESCOSA has interpreted this to imply that the floor price should be calculated using incremental costs from the following categories:[80]

> (a) operating costs (e.g. maintenance and operations) arising, if and only if the additional operating costs are a direct result of providing the relevant service prudently; and
> (b) overhead costs arising, if and only if the additional overhead costs are a direct result of providing the relevant service prudently; and
> (c) proportion of capital costs arising, if and only if the additional capital costs are a direct result of providing the relevant service prudently, and where included capital costs are limited to costs:
> - arising because the prudent replacement of railway infrastructure is brought forward by provision of the relevant service; and/or
> - incurred by providing specific infrastructure enhancements for the traffic in question.

The focus here is only on the direct costs incurred as a result of efficiently serving the access seeker.

The Act further states that:[81]

> …the ceiling price should reflect the highest price that could fairly be asked by an operator for provision of the relevant services

This involves the calculation of the full economic cost of providing the service. This must include:[82]

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[79] s27(2).

[80] ESCOSA, South Australian Rail Access Regime Information Kit, October 2005, pg. 9.

[81] s27(2).

[82] ESCOSA, South Australian Rail Access Regime Information Kit, October 2005, pg. 10.

(a) operating costs (e.g. maintenance and operations) arising from providing the relevant service prudently; and
(b) overhead costs arising from providing the relevant service prudently; and
(c) capital costs arising from providing the relevant service (including new capital) prudently, including both depreciation and a return on investment.

The terms 'operating costs', 'overhead costs' and 'capital costs' are currently not formally defined by the regulator or within the legislation. However, the first Information Kit published by ESCOSA in 2004 stated that the following cost categories should sum to make up the total operational and maintenance costs attributable to a railway service:

- maintenance expenses, including:
  - track and right of way, including all costs of section gangs, ballast cleaning, tamping, rail testing, re-ballasting, rail profiling and corridor maintenance;
  - signalling and communications, including costs of preventative and unscheduled maintenance of all signalling and communications equipment; and
  - facilities, including costs of maintenance of all buildings, platforms and equipment involved;
- operations expenses, including:
  - train control and signalling, including all control centre costs, operations of signalling boxes; and
  - train planning, including costs of preparation of the daily train schedule;
- overhead expenses, including all general and administration costs reasonably attributable to infrastructure maintenance and operation.

ESCOSA specifies that asset values are to be determined using the DORC methodology, consistent with that used in determining the value approved by the ACCC for the value of the ARTC's interstate network assets. The rate of return on these assets must be "commensurate with the regulatory and commercial risks involved". Ceiling prices must take into account other use of the relevant services or associated facilities. Land and formation works are to be valued at historical cost, except land leased from the Government at nominal rent, which is to be valued at zero.

While the responsibility for regulation moved from Transport SA to ESCOSA in 2004, there seems to be little change in the pricing principles required by the regulator. Changes in ESCOSA's Information Kit since their review of the South Australia Rail Access Regime reveal that they have become less prescriptive as to the proportions of each cost that must be allocated to the calculations of floor and ceiling prices.

D.4.2. Tarcoola to Darwin Access Regime

The Tarcoola to Darwin Access Regime also employs a negotiate-arbitrate regulatory structure. In addition, access seekers and providers are free to enter into access contracts without regard to the principles outlined in the Code. Arbitration may be required if:

- the access provider refuses to negotiate with the access seeker;

- the access seeker is unable to obtain agreement on its access proposal; or
- all parties agree there is no prospect of reaching an agreement.

The prices access seekers will pay under arbitration depends upon whether there is a competitive alternative to provision of that service, ie, it could be competitively provided by another mode of transport. If there is, then the price will be determined to be the competitive price the *access provider* could extract if it were to provide the relevant services, minus the incremental cost of it providing that service. This will be the arbitrated price unless it falls outside the floor and ceiling price (see below).

Here, incremental costs are defined as being the sum of ongoing operating costs, administration and capital costs. Operating costs are defined in the Code as including train crew labour costs, rolling stock maintenance costs, fuel costs and terminal handling costs.

The pricing principles also draw a distinction for access prices which are established in cases where there is sustainable competition that is sufficient to discipline rail operators and prevent the exercise of monopoly power. In such cases the regime specifies that the access price payable will be set equal to the competitive rail-line haul price[83] less the incremental cost (above-rail) of providing the relevant freight service.

If there is no competitive alternative to provision of the relevant services, the arbitrator will determine a price between the floor and ceiling prices, having regard to:[84]

(a) the legitimate business interests of the access provider and the access provider's investment in the railway generally;

(b) the initial capital cost of the railway infrastructure facilities (including the cost of the rail corridor), the degree of economic risk of the project, and the need for a fair return on the access provider's investment having regard to those costs and that risk;

(c) the cost to the access provider of providing access, including any costs of extending the railway infrastructure facilities, but not costs associated with losses arising from increased competition in upstream or downstream markets;

(d) the public interest, including the public interest in having competition in markets;

(e) the interests of all access holders and other persons who have rights to use the railway infrastructure facilities, including all firm and binding contractual obligations;

(ea) in relation to an interface issue involving a corresponding access regime--the interests of the access seeker in having efficient access to the railway;

(f) the pricing principles;

(g) the economic value to the access provider of extensions to the railway infrastructure facilities, the cost of which is borne by someone else and any additional investment that the access seeker or access provider has agreed to undertake;

(h) the operational and technical requirements necessary for the safe and reliable operation of the railway infrastructure facilities;

(i) the economically efficient operation of the railway infrastructure facilities,

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[83] The competitive rail-line haul price is defined as the maximum competitive price that the access provider could charge for the transport of freight between one point (point A) and another point (point B) on the railway having regard to the nature of the railway infrastructure service being sought.

[84] Part 2, Division 1, s21.

> (and may take into account any other matters, not inconsistent with the matters referred to above, that the arbitrator thinks are relevant).

Note that the above list explicitly includes the cost of the rail corridor. This is not explicitly included as a parameter for the calculation of floor and ceiling prices, yet it must be taken into account in any arbitration. Unlike other inter-state railway lines, the Alice Springs to Darwin line was constructed by the current infrastructure provider, rather than the government. It therefore seems likely that historic land costs will also be accounted for in determining access prices.

The methodology set down in the Code for the calculation of the ceiling price is defined under section 2. It states that the ceiling price is equal to the costs associated with the operation of the relevant services, assuming that the access seeker would be the sole user of the required infrastructure, less the avoidable costs attributable to other users of the required railway infrastructure and a reasonable contribution by these parties to the fixed cost of this infrastructure. These costs would include labour and material costs, administration costs and depreciation and return on capital for assets.

The price determined in arbitration may not be less than the floor price, which is defined in section 3 of the Code to be the economic cost of providing the railway service. The Code goes on to state that the access price must not be below the forward-looking and efficient avoidable costs associated with provision of the relevant service.

Clause 9 of the *AustralAsia Railway (Third Party Access) Act 1999* requires the infrastructure owner to make available information regarding access to access seekers at reasonable cost. In addition to technical details regarding facilities, track standards, time-path allocations and service quality, the access provider is also required to provide 'reference prices' in accordance with the relevant Guidelines published by the regulator. The relevant guidelines were issued by ESCOSA in February 2004.[85]

These guidelines indicate that a schedule of reference prices must be provided to access seekers on application and receipt of the necessary information required to calculate them, at no cost. These informational requirements are published on Freightlink's website.[86] The reference prices must be accompanied by supporting statements. However, the guidelines indicate that reference prices are intended to be indicative only. They are not intended to play a role in negotiations or arbitration, should negotiations fail.

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[85] ESCOSA, Rail Industry (Tarcoola-Darwin) Guidelines No. 1: Access Provider Reference Pricing and Service Policies, February 2004.

[86] http://www.freightlink.com.au/Content.aspx?p=79

Appendix E. Victoria[87]

The Victorian rail access regime is undergoing significant reform at present. In recent months the ESC has been developing the key elements of the new hybrid *ex ante* and *ex post* model for setting access charges, as it moves away from a pure *ex post* negotiate-arbitrate model. Each access provider is currently in the process of finalising access arrangements that set out the terms and conditions for third party access, including reference tariffs. Once approved, these arrangements will remain in place for three to five years, with the ESC undertaking a dispute resolution role. The proposed arrangements provide data on forecast costs, revenues and access for rail services, however, these have not yet reached the final approval stage and thus all data is preliminary.

In the following section we provide a brief overview of the Victorian rail industry. The overview includes a description of the industry participants, rail network and commodities carried. Section E.2 outlines the former rail access regime, including the perceived shortcomings that led to recent reforms. Section E.3 then provides an overview of the new statutory and regulatory arrangements for setting rail access prices. Section E.4 provides a summary of proposed rail charges. Section E.5 details to the extent possible the costs included in those charges. Finally, section E.6 outlines approaches to new infrastructure investment in Victoria.

E.1. Rail industry overview

E.1.1. Below rail providers and above rail operators

The Victorian rail industry comprises two distinct rail networks:

- the interstate standard gauge rail network, owned by the Commonwealth Government and managed by the ARTC; and
- the Victorian intra-state rail network, owned by the Victorian Government and leased by VicTrack to a passenger franchisee and a private operator.

VicTrack is a Government Business Enterprise established on 1 April 1997 under the *Rail Corporations Act 1996* ('RCA'). It owns all land and infrastructure in Victoria used for the purposes of public train and tram based transport. Specifically, it owns the majority of Victoria's rail and tram fixed infrastructure aside from the Spencer Street Station Precinct, privately owned sidings and certain tourist lines. Assets owned by VicTrack include:

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[87] This appendix has been drafted using the following material:
ABARE, *Australian Crop Report*, November 2005, ABARE.
Meyrick and Associates, *Grain on Rail Forecasts 2005-2015*, 2006
Maunsell Assessment of the Victorian Freight Task: Final Report, prepared for the Victorian Department of Infrastructure, 2002.
Ausroads, Forecasting Inter-regional Freight Transport from Regional Development, 2003.
Meyrick and Associates, Rail Freight Task – Victoria, 2006.
ESC, Rail Access Pricing Consultation Paper, 2005.
Freight Network Declaration Order 2005, the *Passenger Network Declaration Order 2005*, and the *Dynon Terminal Order 2005*.
Victoria Government Gazette, 5 October 2005.
ESC, Rail Access Pricing Guideline, January 2006.
WorleyParsons, Maintenance Cost Benchmarking for the Victorian Freight Network, 27 January 2006.

- the electrified train and tram networks in suburban Melbourne;
- the non-electrified network in country Victoria as far as the Victorian border; and
- some branch infrastructure in southern New South Wales.

VicTrack leases these assets to private transport operators through the Director of Public Transport. The rural component of the intra-state network is leased to Pacific National Pty Ltd ('Pacific National') and the Melbourne metropolitan rail network is leased to Connex Melbourne ('Connex').

Pacific National holds leases for most of the lines used for rail freight in Victoria. It is the sole leaseholder of the Victorian regional rail networks previously leased to Freight Australia, and the South Dynon and Dynon Intermodal Terminals. This infrastructure has been declared under the RCA. A condition placed on the purchase by the Victorian Government was that Pacific National provide open access to the declared network for all eligible operators. To demonstrate that external operators were being treated fairly, it was necessary for Pacific National to create a separate Network and Access ('PNNA') Division.

Connex Melbourne is the vertically integrated above and below rail private operator of the electrified suburban railway network in Melbourne, consisting of fifteen electrified main lines. It also operates the non-electrified Frankston to Stony Point line. In addition, it is responsible for all track work between North Melbourne and Spencer Street, including all non-electrified tracks used by other providers, eg, V/Line Passenger (see below). Launched in July 2000 as one of two private operators for Melbourne's suburban train network, Connex Melbourne is 100% owned by the Connex Group, Australia. In April 2004, it acquired the former M>Train network and now operates all suburban trains in Melbourne, carrying some 2.5 million passengers a week.

V/Line Passenger ('V/Line') operates Victoria's largest country passenger train service. As it owns no below-rail assets, V/Line Passenger has access agreements with Connex and Pacific National to use their respective rail networks. V/Line is wholly owned by the Victorian State Government, which became the sole shareholder via a recently created Statutory Corporation, V/Line Passenger Corporation. The State ownership of V/Line is intended to assist various infrastructure projects designed to achieve improved regional rail travel.

E.1.2. Major freight commodities and volumes

Grain traffic represents the principal commodity carried by rail in Victoria. The annual average grain production in Victoria is in excess of four million tonnes[88] and more than 85% of the export task moves by rail.[89] Grain production in Victoria comprises wheat and coarse grains and oilseeds, with wheat, barley and canola being the principal commodities. Victoria's two major grain producing regions are the Mallee and the Wimmera, which together produce 80% of the Victorian grain crop. The modal shares of grain moved by rail

[88] Five year average to 2003-04 of State production – principal crops at 23 November 2005 Australian Crop Report, November 2005, ABARE.

[89] Based on AWB's historical data: '… Approximately 85% Victorian wheat exports is carried by rail with the other 15% being road deliveries during harvest time and periods where backloading is available', AWB Submission to the Victorian Rail Access Review.

vary by region, but on average, 90% of the export grain task and 40% of the domestic grain task is moved by rail.[90]

Table E.1 below, drawn from Meyrick's recent analysis of Victoria's grain freight task, estimates grain rail freight volumes for the last five years.[91]

Table E.1
Historic estimate of grain rail freight volumes

Year	Tonnage on Rail ('000t)	Train Kilometres ('000TK)	Gross Tonne Kilometres (GTK Million)
2000–01	4,288	1,194	1,954
2001–02	3,830	1,204	2,309
2002–03	1,280	554	873
2003–04	2,755	844	1,603
2004–05	2,650	710	1,404

Meyrick forecast a 2.4% pa growth in the grain freight task (as measured in tonnes) between 2004-05 and 2014-15. This broadly aligns with other independent forecasts, including studies by Maunsell[92] and Ausroads.[93]

The market for *general* freight (other than grain) on the Victorian intrastate rail network is fragmented by location and freight type. As Meyrick recently highlighted in its investigation into Victoria's general rail freight task, volumes moved by rail appear to be inversely related to general economic activity within Victoria.[94] Predominant movements relate to containerised rice; timber products, including sawn logs, woodchips, pulp and paper; agricultural products and steel products.

Table E.2 below, reproduced from Meyrick's recent paper, summarises current and projected future Victorian rail freight volumes for commodities other than grain.[95]

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90 Pacific National estimates, see: Meyrick and Associates (2006), Grain on Rail Forecasts 2005-2015, at: http://www.reggen.vic.gov.au/apps/page/user/pdf/MeyrickGrainRailFreightForecastsV7.pdf.

91 Meyrick and Associates, Grain on Rail Forecasts 2005-2015, 2006, pg. 11.

92 Maunsell Assessment of the Victorian Freight Task: Final Report, prepared for the Victorian Department of Infrastructure, 2002.

93 Ausroads, Forecasting Inter-regional Freight Transport from Regional Development, 2003.

94 See: Meyrick and Associates, Rail Freight Task – Victoria, 2006 at: http://www.reggen.vic.gov.au/apps/page/user/pdf/MeyrickReviewGeneralRailFreightTaskVictoria.pdf.

95 Op cit, pg. 40.

Table E.2
Summary of current and projected future rail freight volumes (ex Grain)

Commodity	Current Volumes		Projected Task 2015	Rail Link
	Tonnage (t)	Teu		
Sawn Logs	40,000			Gippsland – Geelong
Woodchips	220,000			Gippsland – Geelong
Pulp & Paper	120,000–150,000			Gippsland – Melbourne
Containerised Products		25,000		Shepparton – Melbourne
Rice	75,000–100,000	25,000		Echuca – Melbourne
Containerised Products		13,000	10,000–15,000teu	Merbein – Melbourne
Cement	25,000		20,000–30,000t	Geelong – Mildura
Gypsum	15,000			Cowargie – Ouyen – Geelong
Fuel	Unknown		Less	Shell Corio – Mildura
General Cargo	16,000		Less	Melbourne – Mildura
General Cargo	4,000		Less	Swan Hill – Melbourne
Containerised Grain		7,000	10,000–13,000teu	Dooen – Melbourne
Containerised Products		5,000	5,000–10,000teu	Wamambool
Cement	60,000		60,000–80,000t	Waum Ponds – Somerton
Steel Products	800,000		800,000t	Westernport – West Melbourne

E.1.3. Description of the network

The Victorian rail network can be broadly broken down into four distinct segments:

- the freight lines operated under leasehold predominantly by Pacific National, classified by reference to the speed at which the trains are permitted to operate, specifically:
  - class 1, 2: > 80kmph
  - class 3: 65-80kmph
  - class 4: 50-65kmph
  - class 5: < 50kmph
- the regional passenger rail lines operated by Pacific National for predominantly V/Line services;
- the regional fast rail lines operated by Pacific National for predominantly V/Line services; and
- the metropolitan rail lines operated under leasehold by Connex Melbourne.

Figure E.1 below provides a map of the main rail network in Victoria.

Figure E.1
Victorian rail network[96]

E.2. Former Victorian rail access regime

In 1998, the Victorian Government established a framework for the provision of third party access to declared intrastate rail track and other rail infrastructure on commercial terms.[97] Access to track and infrastructure was provided by way of the declaration of relevant rail transport services by the Governor-in-Council. The Victorian intrastate rail network was declared in May 2001 for the purposes of freight traffic.

Once a rail transport service was declared, the operator of that rail network had certain access obligations;[98] namely, an operator of declared rail or tram infrastructure was required to:

- use all reasonable endeavours to meet the requirements of a person seeking access to declared rail transport services;
- make a formal proposal of terms and conditions for access within 14 days after receiving a request or within such longer period as is allowed by the ESC (then ORG); and

96 ESC, Rail Access Pricing Consultation Paper, 2005.

97 The Victorian Rail Access Regime is contained in Part 2A of the Rail Corporations Act 1996.

98 Section 38E, Rail Corporations Act.

- at the request of a person seeking, or considering seeking, access to a declared rail transport service, provide to that person the access seeker information approved under section 38EA.

If negotiations failed, the Essential Services Commission (ESC) was empowered to arbitrate an outcome.

On 15 May 2001, the *Freight Network Pricing Order 2001* was published in the Government Gazette. The Pricing Order set out the pricing methodology the ESC was required to apply in the event of an application requesting a determination on the price to be paid by the Access Seeker.[99] The ESC set out a series of high level pricing principles in its *Access Regime Guidelines*, published in July 2001, including:

- in determining the cost base in order to set an access price, the ESC would potentially be required to estimate the efficient cost and the incremental cost of providing the service:
  - in estimating efficient costs, the ESC stated that it may have considered:
    - traffic forecasts;
    - historical costs of the operator;
    - benchmarking information on comparable services; and
    - the likelihood of changes in costs over time including productivity improvements.
  - the ESC stated it would consider the incremental cost of providing a given incremental service as being a reasonable estimate of the difference between the net present value of costs and revenues to the operator in providing the incremental service (other than any charges for the incremental service) and the net present value of costs and revenues to the operator where that incremental service is not provided.
- in determining cost allocations between different services and infrastructure, the ESC stated it would have reference to:
  - directly attributable costs, where data was available; and
  - cost allocation principles that were efficient, fair and reasonable, and consistently applied over time and between different infrastructure and services.
- the rate of return for new capital expenditure would be the prevailing Australian 10-year bond rate plus a risk margin of at least 4 per cent, which would be determined by reference to a well-established methodology such as the CAPM; and
- the ESC stated that it would also allow a 10 per cent margin on operating and maintenance costs (see further discussion in section E.5.1.3 below).

This pure *ex-post* negotiate-arbitrate regime was generally considered unsuccessful due to the inability of potentially competitive operators to obtain access on terms which were financially

[99] Section 38M(1), Rail Corporations Act.

viable. We note that during this period a number of operators gained minor access to the infrastructure such as ATN, Great Northern and ARG, however, the cost of obtaining access ultimately resulted in the withdrawal of these operators. The capacity of the ESC to render appropriate, timely determinations was also seen to be undermined by its inability to acquire the information necessary to make appropriate decisions, and Freight Australia's reluctance to provide information in the presence of favourable information asymmetries.

In July 2001, the Victorian Government submitted an application for certification of the Victorian Rail Access Regime ('VRAR') to the NCC. The NCC identified a number of concerns relating to the 'effectiveness' of this regime and in August 2002, the Victorian Government withdrew its application for certification.

Ultimately, the state Minister for Transport, Peter Batchelor, and the Treasurer, John Brumby, announced on 2 July 2004 that the VRAR would be re-vamped to promote on-rail competition. In so doing, Mr Batchelor explained that the previous legislation had provided access providers an unfair advantage in negotiations. The new regime, which came into effect on 1 January this year, is designed to alleviate these shortcomings – principally by moving to a predominantly *ex-ante* approach to access prices setting – and is outlined below.

E.3. Overview of the current regulatory regime

The new VRAR, established by Part 2A of the RCA, came into effect on 1 January 2006. The VRAR applies to declared rail infrastructure services as defined by three *Declaration Orders*.[100] In practical terms, subject to some exceptions (eg, for certain sidings), the declared infrastructure includes:

- the rail infrastructure that is the subject of the primary infrastructure lease between the state and Pacific National;
- the infrastructure lease between the state and Connex Melbourne;
- the Dynon intermodal terminal lease and the South Dynon lease between the state and Pacific National; and
- some sidings and common user areas of VicTrack in the Dynon precinct.

The *Declaration Orders* effectively declare the following classes of rail transport services:

- certain below rail services provided to freight operators on the rural and metropolitan intrastate rail networks;
- certain services provided to V/Line Passenger[101] for regional passenger operations on the rural and metropolitan rail networks; and
- services provided by means of terminals located within certain parts of the Dynon precinct.

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[100] See: Freight Network Declaration Order 2005, the Passenger Network Declaration Order 2005, and the Dynon Terminal Order 2005. The Orders (together, the "Declaration Orders") came into effect on 1 January 2006 and were published in the Victorian Government Gazette, No S 259.

[101] "V/Line Passenger" refers here to V/Line Passenger Pty Ltd , and to its sole shareholder V/Line Passenger Corporation (a statutory corporation established by Division 2A of Part 2 of the RCA).

The new VRAR moves away from the negotiate-arbitrate model that had previously been in existence to a hybrid *ex ante* and *ex post* model. Each access provider is now required to maintain an approved *access arrangement* that sets out standard terms and conditions for third party access to the declared rail transport services provided by that access provider, including reference tariffs. Access arrangements will remain in place for three to five years, with the ESC undertaking a dispute resolution role. The ESC has also issued a number of regulatory instruments, including regulatory accounting keeping, ring fencing, capacity use and network management, as well as guidelines for the negotiation of access.[102]

The principles that an access provider and the ESC alike must apply when determining the prices for a declared rail transport service are set out in the *Rail Network Pricing Order 2005* (‘*Pricing Principles Order’*), which came into effect on 1 January 2006.[103] The *Pricing Principles Order* also authorises the ESC to determine a rail access pricing methodology for the calculation of prices to be charged by an access provider in respect of declared rail transport services. The ESC conveyed these views in its *Rail Access Pricing Guideline* on 6 January 2006.

The *Pricing Principles Order* provides for a revenue cap, which sets a limit on the revenue the network provider can earn from providing rail network services. It also states that network providers are only entitled to receive a return for capital expenditure after 30 April 1999 (see further discussion below). In addition, the pricing principles have been structured to ensure freight services do not incur additional costs directly related to passenger services. The ESC did not, however, form a final view in relation to certain matters, including the price smoothing mechanism, pricing zones, the allocation of costs common between passenger and freight services and certain elements of the price structure.[104]

A proposed access arrangement must provide information in relation to every reference service to which the proposed access arrangement relates, including but not limited to:[105]

- a description of the service;
- information about whether that service is being provided by the access provider to itself or to a related body corporate;
- the terms and conditions for the provision of that service; and
- the price, or methodology for the calculation of the price, to be charged in respect of the provision of that service.

The distinction between reference and non-reference services is central to the balance between *ex ante* and *ex post* regulation, which is a key feature and objective of the new VRAR. Reference services will, to a significant degree, be subject to *ex ante* regulation by

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[102] These instruments took effect on 6 January 2006: see Victoria Government Gazette of the same day.

[103] See: Victoria Government Gazette, 5 October 2005.

[104] ESC, Rail Access Pricing Guideline, January 2006, pg. .3.

[105] A series of additional requirements is set out in s38X. The access provider must also submit other documentation and information with its access agreement, including a cost allocation policy, a separation arrangement under the ring fencing rules, a statement of ‘capacity management protocols’, a ‘network operating handbook’ and ‘rolling stock interface standards’.

virtue of the terms and conditions contained in access agreements. By contrast, non-reference services will continue to be subject to *ex post* regulation, ie, the exercise of the ESC's role under the RCA to determine access regime disputes. Under the RCA reference services are defined as:

> a declared rail transport service that—
>
> (a) is provided by an access provider to itself or a related body corporate; or
>
> (b) is likely to represent a significant proportion of demand by access seekers for declared rail transport services; or
>
> (c) is provided by means of a terminal.

It is clear from this definition that all services provided by declared rail freight terminals are reference services. It remains to be considered which freight services are reference services, and whether services to V/Line passenger are reference services. In its role of approving access arrangements the ESC will be required to make decisions on these matters.

E.3.1. Regulatory principles and objectives

When deciding whether to approve proposed access prices, and the proffered access arrangements in general, the ESC must give consideration to a range of factors, including how satisfactorily the proposed access arrangement achieves the overall purpose of an access arrangement and whether it is consistent with statutory objectives. First, the ESC must have regard to its rail-specific objectives under section 38F of the RCA, namely:

- to ensure that access seekers, and any other person the Commission considers may want to be provided declared rail transport services, have a fair and reasonable opportunity to be provided declared rail transport services; and
- to promote competition in rail transport services to achieve an increase in the use of, and efficient investment in, rail infrastructure or tram infrastructure (as the case requires).

Second, these objectives in the RCA are supplemented by the ESC's general regulatory objectives under section 8 of the *Essential Services Commission Act* 2001, under which it must:

- protect the long term interests of Victorian consumers with regard to the price, quality and reliability of essential services;
- facilitate efficiency in regulated industries and the incentive for efficient long-term investment;
- facilitate the financial viability of regulated industries;
- ensure that the misuse of monopoly or non-transitory market power is prevented;
- facilitate effective competition and promote competitive market conduct;
- ensure that regulatory decision making has regard to the relevant health, safety, environmental and social legislation applying to the regulated industry;
- ensure that users and consumers benefit from the gains in competition and efficiency; and
- promote consistency in regulation between States and on a national basis.

Third, the ESC must have regard to the matters identified in section 38ZI of the RCA, including:

- the access provider's legitimate business interests and investment in the rail network owned or operated by that access provider;
- the costs to the access provider of providing access, including any costs of extending the rail network owned or operated by that access provider but not including costs associated with losses arising from increased competition in upstream or downstream markets;
- the economic value to the access provider of any additional investment that an access seeker or the access provider has agreed to undertake;
- the interests of users;
- existing contractual obligations of the access provider and users of the rail network owned or operated by that access provider;
- the operational and technical requirements necessary for the safe and reliable operation of the rail network owned or operated by the access provider;
- the economically efficient operation of the rail network owned or operated by the access provider;
- the benefit to the public in having competitive markets; and
- any other matters that the ESC considers relevant.

Other matters of relevance include relevant government policies such as its objective of increasing the percentage of the freight transported to Victoria's ports by rail,[106] or ensuring that access fees are sufficient to recover the access provider's efficient costs, to the extent possible, so as to avoid the need for the Government to provide supplementary contributions. The ESC may also have regard to reports and analysis specific to the rail industry, eg, the recent COAG National Competition Policy review. Given this wide spectrum of objectives it is clear that in some cases there may be conflicts between objectives which can only be reconciled through the exercise of regulatory discretion.

E.3.2. Pricing principles

The prices that an access provider may charge in respect of declared rail transport services that it provides must be calculated in accordance with the following principles taken from the *Pricing Order*, and with any methodologies determined by the ESC:

- prices charged by an access provider, including internal transfer prices, must be set with the objective of generating revenue such that across all declared rail transport services the expected revenue is equal to a reasonable forecast of the access provider's efficient cost of providing those services (taking account the amount of any capital contributions from third parties), having regard to the standard and quality of those services, including the reasonably estimated financing costs associated with efficient capital expenditure incurred by that access provider since 30 April 1999;

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[106] In its Growing Victoria Together Statement, the Government announced a target to move 30% of port-related freight by rail by 2010.

- the structure of prices may allow for multi-part pricing and price discrimination when it aids efficiency;
- the framework for setting prices must seek to provide an access provider with incentives, including within an access period and between access periods, to incur an efficient level of costs of providing declared rail transport services;
- the framework for setting prices must seek to avoid volatility in prices arising by reason of volatility in freight traffic; and
- where an access seeker or user, or a third party on behalf of an access seeker or user, makes any contribution towards capital or maintenance expenditure incurred in relation to the provision of declared rail transport services to that access seeker or user, the prices for the provision of those declared rail transport services must be reduced so that the revenue to be derived from the provision of those services is to be adjusted to take account of the contribution and any ongoing capital or maintenance savings.

E.3.3. The revenue cap framework

The RCA requires that an access provider in its access arrangement must specify either the price, or a methodology for the calculation of the price, to be charged in respect of providing access to each reference service. In so doing, the overarching principle that access providers must comply is for access prices, including internal transfer prices, to be set so as to comply with a revenue cap, comprising:

- a forecast revenue requirement;[107]
- an under and over recovery mechanism;
- an efficiency carry-over mechanism; and
- a cost pass-through mechanism, a Government contribution pass-through mechanism and a service and quality standard adjustment mechanism.

E.4. Summary of current proposed rail charges

Unfortunately it is not possible to provide a precise summary of rail access charges in Victoria since the access charges proposed by Pacific National, Connex and VicTrack in their undertakings are yet to meet with ESC approval. The ESC has released a draft decision but a final decision is not expected until late May.

E.5. Costs included in rail charges

Under the *Pricing Principles Order* and the RCA the ESC is required to identify the costs of supplying all reference services for the purposes of approving the revenue cap. The *Order* specifies that an access provider is only entitled to recover the *efficient costs* of supplying those services. In its *Rail Access Pricing Guideline* the ESC stated that its approach to

[107] Specifically, across the network as a whole, expected revenue must not exceed a reasonable forecast of each access provider's efficient costs of service provision, accounting for capital contributions from third parties and the standard of those services and including the reasonably estimated financial costs associated with efficient capital expenditure incurred since 30 April 1999.

establishing efficient costs is to use a *building block* approach. The key components of the building block approach outlined by the ESC in its *Guideline* comprise:

- capital costs; including:
  - return on capital in the Regulatory Asset Base ('RAB'), including tax; and
  - return of capital in the RAB, ie, depreciation;
- non-capital costs, including:
  - operating and maintenance expenditure;
  - other non-capital costs; and
  - an operating margin.

Implicit in the building block costs, is an allocation of costs between passenger services and freight services for the purposes of determining appropriate freight reference prices. However, as was explained above, the ESC has not yet formed a view regarding its preferred cost allocation methodology.[108]

E.5.1. Capital expenditure

The ESC has stated that when considering whether expenditure is operating and maintenance expenditure or capital expenditure, it will generally consider as capitalised all expenditure that enhances the capacity or upgrades the quality of the network. The ESC's *Guideline* states that when calculating the revenue cap:

- the return on capital is determined by applying the cost of capital to the average of the opening and closing RAB for any given year;
- the value of the RAB at the beginning of the initial access period should be based on accumulated new capital expenditure *since 30 April 1999,* ie, the capital base prior to this date is *valued at zero* (see further discussion below on operating margin) – capital expenditure incurred subsequently should be valued at:[109]
  - construction or original cost;
  - *plus* an adjustment for inflation;
  - *less* accumulated depreciation and disposals; and
  - *less* any relevant capital contributions.
- regarding the WACC the ESC has stated:
  - a real WACC should be applied consistently with the real revenue model, with all modelling to be done in real terms;

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[108] However, it did note that when allocating costs between passenger and freight services, the costs directly attributable to each service should be recovered from that service, and common costs allocated in proportion to usage. It noted that measures of usage might include train kilometres, gross tonnes kilometres or some combination of both.

[109] The ESC concluded that a DORC methodology was likely to be more costly than could be justified, hence it favoured a Depreciated Actual Cost ('DAC') methodology.

  - it preferred a real pre-tax WACC be used incorporating the statutory tax rate adjusting for the value of franking credits; and
  - when calculating the real pre-tax WACC, the benchmark cost of equity and debt should each be calculated using the real risk free rate of return – in other respects the calculation of the real pre-tax WACC will be the same as the calculation of the nominal pre-tax WACC.
- depreciation should be carried out on a straight-line basis over the life of each asset and applied to an inflation indexed asset base; and
- new capital expenditure benchmarks should be consistent with efficient costs incurred by a prudent operator to achieve a 'fit for purpose' service standard, with forecasts expressed in real terms – the ESC is yet to reach a view on the appropriate interpretation of the term 'fit for purpose'.

E.5.2. Operating and maintenance expenditure

The *Rail Access Pricing Guideline* states that forecast efficient operating and maintenance costs must be:

- best estimates arrived at on a reasonable basis;
- must not exceed those that would be incurred by a prudent access provider to achieve a 'fit for purpose' service standard;
- consistent with good industry practice, and
- achieve the lowest sustainable cost of delivering the service to that standard.

Maintenance expenditure is the most important cost of providing declared rail transport services in Victoria, since capital expenditure that pre-dates 30 April 1999 is not included in the asset base for pricing purposes. Although the ESC has no approval role in relation to maintenance works, it must have regard to the efficient costs of maintaining the network when establishing the revenue cap, while recognising the expertise of the network operator in formulating the asset management plan. The ESC has stated that all expenditure that is *"incurred on a regular and periodic basis"* is maintenance expenditure. Maintenance expenditure includes routine maintenance and major periodic maintenance, the major categories of activities including:

- track maintenance and renewal, such as the maintenance and renewal of rails and joints, sleeper replacement and upgrade, resurfacing (ballast profiling/rail geometry), ballast cleaning and work on formation; and
- other maintenance and renewal of associated assets, including the maintenance of:
  - level crossings, signage and access roads;
  - rail sidings and pathways for temporary storage of trains and carriages;
  - bridges and culverts, including rail bridges, handrails, culverts, crash beams for rail over road bridges, and footbridges over rail-lines;
  - buildings and structures which include retaining walls, cuttings and embankments, platforms, light poles and signal gantries and masts;

  - signalling, including level crossing booms, train detection track circuits, power supplies, signal displays;
  - communications and train control equipment; and
  - clearing drainage, vegetation management.
- regular inspections of facilities in order to identify and rectify faults as well as to prioritise the work program.

Operating expenditure is modest in proportion to network maintenance expenditure, and is thus of less consequence to the derivation of efficient access prices. The prime categories of operating expenditure include:

- train control and safe-working operational costs;
- train planning and associated information technology and accommodation requirements;
- insurance costs; and
- Transport Accident Commission premiums.

E.5.3. Operating margin

In the *Rail Access Pricing Guideline* the ESC stated it would also allow access providers an operating margin to provide incentives associated with operating and managing the pre-30 April 1999 assets in the event costs and risks are incurred not otherwise factored into cost benchmarks. The context is the specific treatment of the capital value of the rail infrastructure in place at the time of their lease to private operators in April 1999 outlined in section 38(J)(3) of the RCA, which precludes lessees receiving a return in relation to those assets.

The ESC has stated that in this situation, where the regulated service provider does not have an asset base, it considers an allowance for an operating margin is appropriate to reflect the role of the access provider as an operator of the assets, so as to provide ongoing economically efficient incentives for access provider to continue to operate those assets.[110] The pricing principles under the previous Victorian rail access regime, outlined in section E.3 above, also contained an "allowable margin":

> The Allowable Margin for a Line for the Charging Period will be either:
>
> (a) 10% of the Operations and Maintenance Costs for that Line for the Charging Period; or
>
> (b) such other amount as the Office determines represents:
>
> (i) a reasonable contribution to overhead costs (including all insurances except the Transport Accident Commission premiums) and administration costs, including corporate head office costs, not included in the calculation of Operations and Maintenance Costs; and

[110] The ESC has explained that it is mindful of the relatively thin markets for rail freight in Victoria and it is conceivable that competition might focus on competition for the market rather than competition within the market. Under such circumstances, there should remain an incentive for the access provider to continue to efficiently operate the infrastructure assets over and above any benefit they might have received from operating above rail services.

> (ii) a reasonable return on Operations and Maintenance Costs, having regard to the risks involved in incurring the Operations and Maintenance Costs.

This margin previously allowed for an allowance for overheads and administrative costs to the extent that these were not otherwise included in the operating and maintenance cost benchmarks, but also made a specific allowance for a *"reasonable return on operating and maintenance costs"*, having regard to the risks. The figure of 10 per cent was neither an upper nor lower limit, but simply a default in the absence of a determination.

E.6. Approaches to new infrastructure investment

Under the new regulatory regime, new capital expenditure can be incorporated into the RAB for the purpose of determining the revenue cap, and hence reference prices, provided it is consistent with efficient costs incurred by a prudent operator to achieve a 'fit for purpose' standard. As we outline above, the ESC is yet to reach a view on the interpretation of the term 'fit for purpose', so some uncertainty remains. Nonetheless, currently the approach to new infrastructure investment does not appear significantly dissimilar to that employed in other regulated Australian industries.

The *Pricing Principles Order* does, however, establish certain rules that apply to capital expenditure related to the passenger services, specifically:

- the Secretary of the Department of Infrastructure or the Director of Public Transport might specify new quality and service levels and standards for the provision of declared rail transport service to passenger services; and
- the efficient costs of providing those services are to be recovered through the prices that an access provider may charge to *passenger services*.

This principle appears to imply that, whenever an upgrade to the rail network is undertaken to improve the quality of rail services provided to *passenger services*, the full cost of these upgrades should be recovered from passenger services, as distinct from freight services. Since the track quality standards required by passenger services are generally higher than those required to meet the 'fit for purpose' standard required by freight lines (however defined), the costs of any network upgrades on the passenger network are likely to be fully attributable to passenger services.

The VRAR also incorporates a mechanism analogous to a generic cost-pass through to deal with unforeseeable benefits received by access providers arising from Government works, or from direct contributions to the capital or operating and maintenance expenditure of an access provider. As was outlined above, section 4.1(e) of the *Pricing Order* establishes a general principle governing the treatment of such contributions, including from Government:

> Where an access seeker or user, or a third party on behalf of an access seeker or user, makes any contribution towards capital or maintenance expenditure incurred in relation to the provision of declared rail transport services to that access seeker or user, the prices for the provision of those declared rail transport services must be reduced so that the revenue to be derived from the provision of those services is to be adjusted to take account of the contribution and any ongoing capital or maintenance savings.
>
> Example: A Government makes a contribution to an access provider for expenditure on an upgrade of the rail network and states that the contribution is on behalf of all, or a particular

> category of, access seekers and users. The revenue to be recovered through charges for the provision of declared rail transport services to all, or the particular category of, access seekers and users is reduced to take account of the contribution.

The ESC was of the view in its *Guideline* that to give effect to this general principle, it was necessary to include a *Government contribution Pass-through Mechanism*. However, the issue was complicated by the inability to predict the form or nature of any Government contributions that may be made. In the absence of such knowledge the ESC considered it infeasible to establish anything more than certain generic principles.

The ESC outlined that there were two types of Government expenditure of relevance to this pass-through mechanism:

- first, where the Government undertakes projects in its own right in relation to the rail network (such as the Regional Fast Rail project), and this project involves spill-over benefits to an access provider, eg, by obviating the need to carry out some of the works contained in the asset management plan; and
- second, where the Government makes a direct contribution to an access provider.

In either case, if there is a benefit to an access provider, eg, a reduction to its cost base, then in principle there should be a corresponding adjustment to reference prices. Sections 38ZO and 38ZP of the RCA provide mechanisms for amending an access arrangement relevant to this situation. Where an access provider has benefited in this way, it is required to notify the ESC, provide all relevant information, and may apply for an amendment to its access arrangement under section 38ZO.

Alternatively, whether an access provider has informed the ESC or not, the ESC may investigate the matter and initiate an amendment to an access provider's access arrangement under section 38ZP. The ESC also noted in its *Guideline* that there are various conceivable kinds of Government contributions, not all of which would involve a benefit to a particular access provider, including:

- where the Government has imposed new, higher, standards of service and provides a contribution to fund the incremental cost of achieving those new standards; or
- if the Government were to make a contribution towards capital or operations and maintenance expenditure on behalf of a user or group of users, and an access provider merely transfers those benefits to those users, eg, by directing rebates to the relevant users on whose behalf the contribution was made.

The ESC noted on the other hand, that if the Government were to make a direct contribution to support an access provider's maintenance or capital works program, there may be no specific intended beneficiaries, but there would be a natural concern that an access provider's revenue cap, and reference prices, should be adjusted to fully take account of the Government contribution, and prevent 'double dipping'. Given these complexities, and also consistent with the terms of the *Pricing Order*, the ESC considered it particularly important that if and when the Government makes any direct contribution to an access provider, the purpose for the contribution should be clearly identified.

Appendix F. Western Australia[111]

The Western Australian rail industry has changed significantly over the last ten years as a result of implementing national rail reforms to facilitate competition amongst rail operators, and the selling of traditionally government owned rail participants. These changes have been designed to reinvigorate the rail sector and deliver performance improvements for the benefit of customers.

In the following section we provide a brief overview of the Western Australian rail industry. The overview includes a description of the industry participants, rail network and commodities carried. Section F.2 provides a description of the regulatory regime currently in place since 1998. Section F.3 provides the determined floor and ceiling prices for WestNet and the PTA. Finally section F.4 details the costs that are included in the determination of the floor and ceiling prices. Section F.5 briefly discusses approaches to new investment.

F.1. Rail industry overview

F.1.1. Below rail providers and above rail operators

Following the reforms to the rail industry in Western Australia, the former Western Australian Government Railways was split into four parts in December 2000. The existing freight operations and infrastructure was sold to the ARG– a joint venture between Westfarmers Ltd and Genesee & Wyoming Inc. of the United States of America – which established WestNet Rail as the wholly owned infrastructure provider and Australian Western Railroad as the wholly owned freight operator.

The urban rail network and passenger operations are managed by the Public Transport Authority – a government owned authority under the Department of Planning and Infrastructure. The infrastructure is managed by a separate division of the PTA and passenger operations by Transperth, the public transport operator.

As part of the reforms, the rail network was leased to WestNet from the Western Australian Government for a period of 49 years, of which 43 years remain. WestNet Rail is responsible for maintaining track infrastructure, the supply of the train control function and the determination of track access fees.

In February 2006, ARG announced the sale of its entire operations to QR and Babcock & Brown.[112] The announcement indicates that the intention is for Babcock & Brown to acquire the WestNet Rail below rail business and assume responsibility for the standard and narrow

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[111] This appendix has been drafted using the following material:
ARG media release, 14 February 2006
Office of the Rail Access Regulator, Floor and Ceiling costs to apply to the Worsley Route Sections.
Office of the Rail Access Regulator, Floor and Ceiling costs to apply to WestNet Rail, 24 September 2003.
ERA, Floor and Ceiling costs to apply to WestNet Rail Grain Lines, 5 July 2004.
ERA, Final Report – Review of the Western Australian Railways (Access) Code 2000, 23 September 2005.
WestNet Rail, Overpayment Rules, December 2005.

[112] ARG media release, 14 February 2006.

gauge leases from the Western Australian Government. QR will acquire the above rail operations in Western Australia, but also in the other states where the ARG operated.[113]

The other main freight operator in Western Australia is Pacific National, which operates a daily return freight service between Perth and the east coast of Australia. Pacific National also provides rollingstock and crew services for Specialised Container Transport ('SCT'), which provides container freight services between Perth and Melbourne.

Finally, Great Southern Railway operates the Indian Pacific passenger service between Perth and Sydney. Currently there are two return passenger services each week.

F.1.2. Major freight commodities and volumes

The majority of the freight transport services provided by ARG are intrastate haulage. In general, ARG provides over 40,000 train services, hauling approximately 33 million tonnes of bulk freight each year.

The main commodities hauled are grain, alumina, bauxite, iron ore, nickel, mineral sands and woodchips.

Approximately 95 per cent of freight is destined for export through one of the five port facilities located in Geraldton, Kwinana, Bunbury, Albany and Esperance.

F.1.3. Description of the network

The rail network in Western Australia is characterised by a standard gauge interstate track connecting Perth with the eastern states and a predominately narrow gauge regional network. WestNet Rail operates approximately 5000 kilometres of rail track, 22 per cent standard gauge, 72 per cent narrow gauge, and 6 per cent dual gauge.

Figure F.1 below provides a map of the main rail network in Western Australia.

[113] For the purposes of this report, we continue to refer to the provision of freight services by ARG as the details of the finalisation for the acquisition and timing are unclear at the time of writing.

Figure F.1
Western Australian rail network

In addition to the WestNet Rail network, BHP Billiton and Rio Tinto own and operate approximately 1,700 km of rail network in the Pilbara region to the north of Perth. This network delivers iron ore from their mine sites to their export facilities at Dampier, Port Hedland and Port Walcott.

F.2. Overview of the regulatory regime

With the introduction of the Western Australian Rail Access Regime, regulatory arrangements were transferred from the Western Australian Independent Rail Access Regulator to the ERA of Western Australia. The ERA is the independent authority responsible for the regulation for a number of industries in Western Australia including gas, electricity and water, in addition to rail.

F.2.1. Relevant legislative instruments

The rail access regime in Western Australia is governed by two legislative instruments. The first is the *Railways (Access) Act 1998 (WA)* and the second is the *Railways (Access) Code 2000 (WA).* The regime came into effect on 1 September 2001.

The regime was Western Australia's response to the Competition Policy Agreement between the States and the Commonwealth. The Western Australian Government sought certification for its state-based rail access regime from the NCC in February 1999. The NCC determined that while it was broadly effective, it did not allow the introduction of a National Access

Regime. The unresolved issue related to the interface between the Western Australia Rail Access Regime and the proposed national regime. The NCC suggested that inter-state operators should be required to submit an undertaking to the ACCC to ensure that any arrangements developed would be nationally consistent. Western Australia did not accept this recommendation, and subsequently withdrew its application.

The Western Australia Rail Access Regime only applies to rail track currently provided by WestNet Rail and the PTA. The rail track owned and operated by BHP Billiton in the Pilbara is currently excluded from this regime.

F.2.2. Objectives and pricing principles

Section 2A of the *Railways (Access) Act 1998* provides:

> **2A. Object of the Act**
>
> The main object of this Act is to establish a rail access regime that encourages the efficient use of, and investment in, railway facilities by facilitating a contestable market for rail operations.

The Act requires that a Code be developed to give effect to the "Competition Principles Agreement in respect of railways to which the Code applies", section 4(1). Similarly, the Code is required to be reviewed by the ERA after three years from its commencement and every subsequent five year interval, section 12(1). The purpose of the review is to assess the suitability of the Code to the achievement of the CPA, section 12(2).

In this way, the objectives of the CPA are incorporated into the Western Australia Rail Access Regime. The principles relevant to third party access to infrastructure under a state-based regime are contained in clause 6(4), which provide for the ability of an access seeker to negotiate terms and conditions of access, for arbitration in the event of a dispute and a requirement for infrastructure owners to not hinder access in any way.

F.2.3. Role of regulators

The ERA of Western Australia has responsibilities as the regulator for third party access under the Western Australia Rail Access Regime. These responsibilities include:

- review of costs included in floor and ceiling prices where there is a reasonable expectation that there may be access seekers on those routes;
- determine the rate of return to apply;
- agree to proposals from infrastructure providers for cost principles, train management guidelines and segregation arrangements;
- investigating matters related to the operation of the Regime and proposing amendments to the Regime; and
- disseminating information regarding access agreements required by the Regime.

Section 20(4) of the Act requires the regulator to take into account a number of factors when exercising its discretionary powers under the regime. These include:

> In performing functions under this Act or Code, the Regulator is to take into account –

(a) the railway owner's legitimate business interests and investment in railway infrastructure;

(b) the railway owner's costs of providing access, including any costs of extending or expanding the railway infrastructure, but not including costs associated with losses arising from increased competition in upstream or downstream markets;

(c) the economic value to the railway owner of any additional investment that a person seeking access or the railway owner has agreed to undertake;

(d) the interests of all persons holding contracts for the use of the railway infrastructure;

(e) firm and binding contractual obligations of the railway owner and any other person already using the railway infrastructure;

(f) the operational and technical requirements necessary for the safe and reliable use of the railway infrastructure;

(g) the economically efficient use of the railway infrastructure; and

(h) the benefits to the public from having competitive markets.

F.2.4. Regulatory approach

The access regime regulatory approach can be characterised as a negotiate-arbitrate model, where access seekers and infrastructure providers seek to negotiate specific access arrangements. The regime places obligations on each party as to how prices are to be negotiated, including mandated time restrictions and information requirements. Disputes are resolved via commercial arbitration, pursuant to the *Commercial Arbitration Act (1985) (WA).*

As indicted above, in addition to the regime detailing the parameters for the negotiation, the regulator also has a role to determine the key parameters used in setting the floor and ceiling prices for access.

F.3. Summary of current rail charges

The ERA examines the costs that are used to determine the floor and ceiling prices for those routes that an access seeker is more likely to wish to seek access. This is for the purpose of determining reference floor and ceiling access charges for the routes and sections within the route.

Error! Reference source not found. contains the floor and ceiling costs determined by the ERA for its most recent determination in 2002 for the main WestNet Rail routes.[114] The ceiling costs vary between $9.37/GTKm and $30.03/GTKm. The floor costs vary between $0.32/GTKm and $0.88/GTKm.

[114] It was then known as the Independent Rail Access Regulator.

Table F.1
Floor and ceiling costs for WestNet Rail

Rail Segment	2003/04		2002		$/GTKm		$/Train Movement	
	Ceiling	Floor	Ceiling	Floor	Ceiling	Floor	Ceiling	Floor
Forrestfield to Kalgoorlie	$99,181,635	$4,668,724	$9706820	48360	$10.22	$0.48	$2,050.90	$96.54
Leonora to Kalgoorlie (Leonora)	$18,933,978	$341,741	$630488	1713	$30.03	$0.54	$11,053.11	$199.50
Kalgoorlie to Esperance (Esperance)	$32,102,300	$1,059,677	$3294170	6963	$9.75	$0.32	$4,610.41	$152.19
Kwinana to Bunbury Inner Harbour (SWM)	$21,689,693	$2,038,047	$2314757	56450	$9.37	$0.88	$384.23	$36.10

To provide ongoing efficiency incentives to the rail infrastructure provider, these floor and ceiling costs are allowed to vary by the change in the consumer price index each year, less an X factor. In the absence of detailed information on the expected productivity improvements for rail infrastructure, the regulator set the X factor at one quarter of CPI.

F.4. Costs included in rail charges

The approach used in the Western Australia Rail Access Regime for determining access prices is for the ERA to determine floor and ceiling costs, within which the infrastructure provider must negotiate an access price.[115] Schedule 4 of the Code provides the requirements for access prices.

The floor price is required to be no less than the incremental costs to the infrastructure provider for operating the route for which access is sought, including any costs of providing access. In addition, the total of the payments by all operators and any other revenue related to the route must not be less than the total incremental costs of that route.[116]

The critical part to the floor price is the definition of incremental costs. The Act provides the following definition of incremental costs:

> **"incremental costs",** in relation to an operator or a group of operators, means –
>
> (a) the operating costs; and
>
> (b) where applicable –
>
> (i) the capital costs; and
>
> (ii) the overheads attributable to the performance of the railway owner's access-related functions whether by the railway owner or an associate,
>
> that the railway owner or the associate would be able to avoid in respect of the 12 months following the proposed commencement of access if it were not to provide access to that operator or group of operators.

Operating costs are further defined as:

> **"operating costs",** in relation to railway infrastructure includes –
>
> (a) train control costs, signalling and communications costs, train scheduling costs, emergency management costs, and the cost of information reporting; and
>
> (b) the cost of maintenance of railway infrastructure calculated on the basis of cyclical maintenance costs being evenly spread over the maintenance cycle,
>
> and if, for particular infrastructure, modern equivalent assets are determined to be appropriate for the purposes of clause 2(4)(c)(ii), the operating costs in relation to that infrastructure are to be the costs that would be incurred were that infrastructure replaced using those modern equivalent assets.

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[115] Schedule 4, clause 6(1).

[116] Schedule 4, clauses 7(1) and 7(2).

When considering the appropriate operating costs to use when determining the floor price, the ERA's view is that only efficient costs should be used. This is justified with reference to Schedule 4, Clause 4 where costs referred to in the schedule are those incurred by an infrastructure manager adopting efficient practices.

To avoid double counting of maintenance costs as operating costs and the inclusion of depreciation in the ceiling test, the ERA defined maintenance costs as those required to ensure the assumed asset lives were achieved. In other words, routine maintenance that does not impact on assumed asset lives are properly treated as an operating cost. This approach avoids any potential for double counting in the calculation of ceiling prices.

The Act requires that the ceiling price for access be no greater than the total cost of providing access to the particular route for which access is sought. Identical to the treatment of floor prices, the sum of the prices paid by all access seekers cannot exceed the revenue needed to provide access and operate the particular route.

Total cost is defined in the Act as:

> **"total costs"** means the total of all –
>
> (a) operating costs;
>
> (b) capital costs; and
>
> (c) overheads attributable to the performance of the railway owner's access-related functions whether by the railway owner or an associate.

The important concept in the ceiling price is the definition of capital costs. The Act goes on to define capital costs as follows:

> **"capital costs"** means the costs comprising both the depreciation and risk-adjusted return on the relevant railway infrastructure.

Clause 2, Schedule 4 goes on to provide that land on which rail infrastructure is situated is not to be included as capital, and also specifies the approach to be used for calculating capital costs. The approach requires the calculation of an annuity based on the Gross Replacement Value of the railway infrastructure, with the annuity using the WACC as the required rate of return. The value of the infrastructure is required to be based on modern equivalents rather than historic costs.

The assets to be included in the capital cost calculation include:[117]

- Railway track, associated structures and supports;
- Tunnels and bridges;
- Stations and platforms;
- Train control, signalling and communication systems;

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[117] Pursuant to section 3 of the Code.

- Electric traction infrastructure;
- Buildings and workshops; and
- Associated plant and equipment.

The approach adopted by the regulator for contributed assets is to include them for the purpose of determining the floor and ceiling costs, but to treat them as revenue[118] for the purpose of ensuring that charges for a specific route to not over recover the underlying costs. In this way, contributed assets are accounted for by operators not needing to pay the capital costs for them.

The following provides a summary of the items included in the definitions of cost used in the floor and ceiling prices:

- Operating costs include the costs associated directly with the operational management of the network including:
  - centralised train control system;
  - cost of compliance with safety and environmental requirements;
  - train scheduling and operations planning; and
  - return on working capital.
- Maintenance costs include:
  - routine inspections of track condition and on-train inspections; and
  - costs that do not influence the MEA asset life.
- Overhead costs include:
  - IT and software costs;
  - motor vehicle costs;
  - office accommodation and support services;
  - insurance;
  - accreditation; and
  - management costs.
- Capital costs are based on the MEA value of the assets and include:
  - depreciation; and
  - return on assets.

[118] The approach is to calculate an equivalent annual cost for the contributed assets in a particular route section and net this from the costs of that route section.

F.5. Approaches to new infrastructure investment

The floor and ceiling charging bounds allows the infrastructure provider to potentially recover part of its capital costs, while also maximising utilisation of existing infrastructure where the capacity to pay more than the marginal costs of access is limited. This approach, however, has implications for investment decisions, as it providers little incentive for an infrastructure provider to undertake new investment in routes where charges are not expected to recovery the costs of the investment.

Current arrangements for new investment are entirely the responsibility of the rail infrastructure provider. WestNet Rail would need to finance and build any new infrastructure that it may require.

The Western Australia Government is also undertaking new urban rail investment to extend existing rail corridors particular towards the growing urban residential areas to the south and north of Perth. The project is budgeted for around $1.5 billion and is being undertaken by the Public Transport Authority under the project name, New MetroRail.

Appendix G. Commonwealth – Road[119]

The States and Territories have largely been responsible for regulating road transport within their own jurisdictions, developing their own laws in such areas as road rules, vehicle standards and driver licensing. Over time the differences in laws and regulations between states increasingly impeded the efficient movement of freight and law reform between jurisdictions, especially for heavy vehicle freight transport.

In an effort to standardise arrangements between jurisdictions, the National Road Transport Commission ('NRTC') was established in 1991. The NRTC's role was to develop uniform arrangements for vehicle regulation and operation and consistent charging principles for vehicle registration.

On 15 January 2004, the National Transport Commission ('NTC') replaced the NRTC with a broader charter that continues the role of reforming road transport regulation and operations and now also undertakes reform of rail and intermodal regulation and operations. The NTC was established under the *National Transport Commission Act 2003* and a commitment by the Commonwealth, State and Territory Governments in the *Inter-Governmental Agreement for Regulatory and Operational Reform in Road, Rail and Intermodal Transport*.

The national road user charging system for heavy vehicles in Australia was developed by the then NRTC and agreed by the ATC in 1992. The First Determination on heavy vehicle charges, which was also agreed in that year, introduced a uniform set of national charges for heavy vehicles. States and Territories implemented the First Determination in the period between July 1995 and October 1996.

In the following section we provide a brief overview of the national road system. The overview includes a description of the industry participants, rail network and commodities carried. Section G.2 provides an overview of the regulatory regime currently in place. Section G.3 discusses the costs included in road charges. Section G.4 then summarises the current road user charges for heavy vehicles, including the process for setting those charges. Finally, section G.5 discusses funding for investment in new infrastructure.

G.1. Road Industry Overview

This section draws primarily on a working paper published by the BTRE in 2003, Working Paper 60: *An Overview of the Australian Road Freight Transport Industry*.

G.1.1. Major industry participants

As discussed above, the NTC and ATC are the national transport regulators tasked with, among other things, developing and maintaining a nationally consistent road user charging

[119] This appendix has been drafted using the following material:
BTRE, Working Paper 60: An Overview of the Australian Road Freight Transport Industry, 2003.
BTRE, Australian Transport Statistics 2005
Austroads, RoadFacts 2005
NTC, Third Heavy Vehicle Road Pricing Determination, Draft Technical Report, July 2005
NTC, 2004, Third Heavy Vehicle Pricing Determination: Narrowing the Scenarios Discussion Paper.

regime for heavy vehicles. In addition to these federal entities, each state and territory has its own authority charged with maintaining state road infrastructure. These include:

- the New South Wales Department of Transport and New South Wales Roads and Traffic Authority;
- Queensland Transport and Queensland Department of Main Roads;
- Transport South Australia;
- Victorian Department of Infrastructure and VicRoads; and
- the Department for Planning and Infrastructure and Western Australian Department of Main Roads

Local councils are generally responsible for non-arterial road infrastructure.

Road freight industry participants may be divided at a primary level into: [120]

- in-house carriage of freight - 60% of trucks on the road are involved in the in-house carriage of freight, and are thus owned by firms whose main business is non-transport-related; and
- hire and reward freight operators - 40% of trucks are operated by 'hire and reward' freight operators.

The hire and reward part of the industry, which is growing in importance, includes: [121]

- freight forwarders (who consolidate consignments and act as intermediaries between clients and freight operators); and
- freight operators (who operate the trucks), which are in turn broken down into fleet operators and independent sub-contractors.

Major road freight operators include Toll Holdings, K & S Corporation, Linfox and Scott Corporation (formally Heggies Bulkhaul). The BTRE reports that the concentration of the Australian road freight industry is low: the top 4 firms account for only 15 per cent of the market share (based on sales) and the top 8 firms for 21 per cent.[122]

In 2002 there were over 46,000 road freight operators. [123] These are mostly[124] small establishments with one or two trucks, which generally specialise in short-distance freight operations, and account for a small proportion of industry income. [125]

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120 BTRE, An Overview of the Australian Road Freight Transport Industry, 2003, pg 3.

121 Op cit, pg. 4

122 Op cit, pg. 47.

123 Op cit, pg. 44. This excludes ancillary operators, of which there were over 165,000 in 1994-95 (nearly two thirds of which were in the agricultural sector). There were also over 700 road freight forwarders.

124 The proportion of establishments with only one or two trucks was over 90 per cent in 1995.

125 Op cit*: Owner drivers/small freight operators account for less than 12 per cent of the [road freight] industry's operating income. . .[yet] they represent nearly two-thirds of the total number of operating businesses.*

G.1.2. Major freight volumes and commodities

Around 1.5 billion tonnes of freight are transported around Australia by road each year. This amounts to about 153 billion tonne kilometres. Table G.1, sourced from the BTRE's 2003 *Overview of the Australian Road Freight Transport Industry*, breaks the latter figure down by jurisdiction.

Table G.1
Shares of States/Territories in total tonne-kilometres (1991, 1995 and 2001) [126]

	Shares (%)			Changes in shares		
State	**1991**	**1995**	**2001**	**1991–1995**	**1995–2001**	**1991–2001**
			All freight vehicles			
ACT	0.8	0.7	0.5	-0.1	-0.2	-0.4
NSW	26.3	23.2	23.2	-3.1	-0.1	-3.1
NT	3.6	3.3	2.1	-0.3	-1.2	-1.5
Qld	19.2	21.5	21.8	2.4	0.3	2.7
SA	9.1	10.4	9.5	1.3	-0.9	0.4
Tas	2.9	2.4	2.0	-0.5	-0.4	-0.9
Vic	25.9	25.6	29.4	-0.3	3.8	3.5
WA	12.3	12.8	11.5	0.5	-1.3	-0.8
Australia	100.0	100.0	100.0	0.0	0.0	0.0

Source: Shares were derived from SMVU 1991, 1995 and 2001

There are over 400,000 freight trucks (as opposed to light commercial vehicles) on the road,[127] which transport around 1.4 billion tonnes of freight (and 146 billion tonne km) out of a total 1.5 billion tonnes. Approximately 84% of freight trucks are rigid trucks, and 16% are articulated vehicles. [128] Of the 1.5 billion tonnes of freight moved by road in 2001, light commercial vehicles accounted for 7%, rigid trucks 46% and articulated trucks 47%.[129] On a tonne-kilometres basis, however, articulated trucks accounted for 78%of the total delivered by the road freight transport industry in 2000. [130]

According to the BTRE's most recent projections, the growth of the road freight task will be around 3.6 per cent each year, for the next 20 years (compared with 3.9 per cent per annum over the past 10 years), which means that the total road freight task will double by 2020.[131]

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126 Op cit, pg. 33.

127 The average number of vehicles registered over 12 months to 31 October 2003 was 409,000.

128 BTRE, Australian Transport Statistics 2005.

129 BTRE, An Overview of the Australian Road Freight Transport Industry, 2003, pg 32.

130 Op cit, pg. 31.

131 Op cit, pg. 5.

The major commodities carried by road are fuel and non-fuel industrial materials, agricultural products, manufacturing goods, and machinery and transport equipment. Table G.2, sourced from the BTRE's 2003 *Overview of the Australian Road Freight Transport Industry*, shows the goods carried by road in 2001.

Table G.2
Goods carried by vehicle type and by commodity (Million Tonnes)[132]

Commodities	LCV	Rigid trucks	Articulated trucks	All
Food and live animals	9	71	169	249
Beverages and tobacco	1	8	12	21
Crude materials, inedible, except fuels	6	295	191	492
Mineral fuels, lubricants and related materials	3	48	107	158
Animals and vegetable oils, fats and waxes	0	1	2	3
Chemicals and related products, nes	3	7	16	26
Manufactured goods	9	96	77	181
Machinery, transport equipment	11	30	42	82
Miscellaneous manufactured articles	3	10	7	19
Tools of trade	49	30	3	82
Other commodities, nes	7	85	58	150
Unspecified	3	3	11	18
Total	**103**	**683**	**697**	**1,482**

G.1.3. Description of the network

According to Austroads (the association of Australian and New Zealand road transport and traffic authorities), the total length of public roads in Australia in 2003 exceeded 800,000 km.[133] Of this length, 333,000 km (or 41%) had a bituminous or concrete sealed surface.

Table G.3, sourced from the BTRE's *Australian Transport Statistics 2005*, shows the length of road on a jurisdictional basis.

[132] Op cit, pg. 35.

[133] Austroads, RoadFacts 2005.

Table G.3
Length of road (km)

State	ACT	NSW	NT	Qld	SA	Tas	Vic	WA	AUST.
Sealed	2.6	90.9	6.5	68.5	28.2	10.5	75.6	50.1	332.9
Other	0.1	91.2	15.5	109.8	68.4	13.8	80.4	98.2	477.4
Total	**2.7**	**182.1**	**22.0**	**178.3**	**96.6**	**24.3**	**156.0**	**148.3**	**810.2**

Notes:
1. Excludes Lord Howe Island, forestry and crown roads
2. Includes VicRoad declared roads (June 2003) and unclassified roads (June 2002)
3. Excludes approximate 27,100 km of forestry roads.
4. Includes estimate for forestry roads.
5. Includes non NT government managed road.

Source: ABS, Yearbook, Canberra, 2004 (1301.0)

The following map, sourced from the BTRE's *Australian Transport Statistics 2005*, depicts the AusLink national road network.

Figure G.1
National road network

According to Austroads,[134]

> …while rural local roads are the greatest in length, on average they carry the least amount of traffic. It is the urban arterial roads that carry the highest volumes of traffic and have the highest traffic densities.

Table G.4, sourced from Austroads' *Roadfacts 2005*, shows the length of road and vehicle-km travelled for each of the main road types.

Table G.4
Road length by road type and travel comparisons – Australia – 2003

Road Type	Length (km)	% Length	Lane km (km)	% Lane km (km)	Travel (million veh-km)	% travel
National highway	18,773	2.3	42,279	2.6	25,679	13.3
Rural arterial	109,031	13.4	221,295	13.5	40,270	20.9
Urban arterial	13,051	1.6	39,853	2.4	80,892	41.9
Rural local	581,903	71.6	1,158,127	70.5	13,826	7.2
Urban local	90,215	11.1	181,056	11.0	32,147	16.7
Total	**812,972**	**100.0%**	**1,642,612**	**100.0%**	**192,815**	**100.0%**

G.2. Overview of the regulatory regime

G.2.1. Role of regulators

National heavy vehicle road use charges are developed by the NTC, an independent statutory body funded jointly by the States, Territories and Commonwealth governments. Charges only apply to heavy vehicles (over 4.5 tonnes). Charges for light vehicles are set separately by State and Territory governments.

The NTC develops its proposed charges by attributing part of total road expenditure to each different heavy vehicle type, based on estimates of relative cost causation for each type. The NTC recommends its proposed charges to the ATC, which is comprised of a minister from each jurisdiction. The ATC decides on a majority basis whether to approve the NTC's recommendations.

G.2.2. Relevant legislative instruments

The *Inter-Governmental Agreement on Regulatory and Operational Reform in Road, Rail and Intermodal Transport (2003)* sets out that the NTC is responsible for developing:

> 1) 'Road use charging principles for Heavy Vehicles (until such time as the Council decides that another organisation should undertake this function); [and]

[134] Op cit, pg. 14.

2) Proposed Reforms in relation to Heavy Vehicle Road Use Charges based on charging principles agreed by the [Australian Transport] Council from time to time.'

G.2.3. Regulatory principles and objectives

The NTC recognises, as the general economic basis for pricing the use of infrastructure, that prices should reflect the costs of a decision to use that infrastructure. [135] Heavy vehicle road use charges are set to recover heavy vehicles' share of road expenditure.

The NTC, in recommending national heavy vehicle charges to recover costs of heavy vehicle road use, is bound by the Road Use Pricing Principles (approved by ATC in August 2004). [136] These Principles were prepared to guide future developments in heavy vehicle pricing as part of a broader consideration of infrastructure pricing approaches. The Pricing Principles are as follows:

National heavy vehicle road use prices should promote optimal use of infrastructure, vehicles and transport modes.

This is subject to the following:

- full recovery of allocated infrastructure costs while minimising both the over and under recovery from any class of vehicle
- cost effectiveness of pricing instruments
- transparency
- the need to balance administrative simplicity, efficiency and equity (eg impact on regional and remote communities/access)
- the need to have regard to other pricing applications such as light vehicle charges, tolling and congestion.

Note: These principles allow for the inclusion of variable mass distance charges and externality charges relating to noise and air emissions where:

- there are clear net economic gains;
- the extent of effort is recognised; and
- transparency and more accurate pricing within the road mode are ensured.

While the principles provide for the costs assigned to heavy vehicles to include costs associated with noise and air emissions in addition to road construction and maintenance costs, it has been agreed that this will not form a part of the Third Determination.[137]

G.2.4. Recent decisions

To date, the process of calculating heavy vehicles' share of expenditure and recommending charges has been undertaken twice. The First Determination was agreed in 1992 and implemented in 1995-96. The First Determination on heavy vehicle charges introduced a uniform set of national charges for heavy vehicles based on their share of road costs,

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135 NTC, Third Heavy Vehicle Road Pricing Determination, Draft Technical Report, July 2005.

136 Ibid

137 Op cit, pg. 7.

including a fixed annual registration fee for each vehicle type and a notional fuel charge.[138] The Second Determination was agreed and implemented in 2000. The NTC submitted its recommended Third Determination to the ATC for approval in December 2005, however, the ATC has not yet approved the Third Determination.

The NTC is carrying out work on the feasibility of an incremental pricing system for heavy vehicles,[139] and also differential pricing for environment externalities.

G.3. Costs included in road charges

Before setting road charges, the NTC must calculate heavy vehicles' share of the costs of road construction, management and maintenance. In summary, the NTC's cost allocation process attributes road expenditure by vehicle class, on the basis of road use data.

The following sections draw primarily on a technical paper published by the NTC in 2005: *Third Heavy Vehicle Road Pricing Determination, Draft Technical Report, July 2005*.

G.3.1. Road expenditure categories

The NTC assumes that the costs of road use are equal to the average level of road expenditure over a three year period (the 'PAYGO' approach). [140] The NTC divides road expenditure into pavement activities (pavement maintenance, rehabilitation and new construction), which are responsible for roughly 40% of expenditure, and non-pavement activities (60%), including:[141]

- Servicing and Operating Expenses (cleaning and repairs to drains, maintenance of street lighting, line markings and traffic signals, grass mowing, and pavement sweeping);
- Bridge Maintenance and Rehabilitation;
- Low Cost Safety/Traffic Improvements (e.g. installation of traffic signals, roundabouts and pedestrian crossings);
- Non-pavement asset extensions/improvements: e.g. land acquisition costs associated with road improvements; and
- Other Miscellaneous Activities (for arterial roads only), which includes:
  - Corporate Services; and

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138 Op cit

139 NTC, 2004, Third Heavy Vehicle Pricing Determination: Narrowing the Scenarios Discussion Paper.

140 NTC, Third Heavy Vehicle Road Pricing Determination, Draft Technical Report, July 2005: The NTC believes that, providing the network is not deteriorating over time and optimal investment decisions are taken, an accounting approach and the PAYGO approach will arrive at the same result. A three–year average of expenditure is used to smooth out any major fluctuations, particularly in the split of expenditure between categories.

141 The NTC obtains data on arterial road expenditure (including national highways) directly from State and Territory road authorities. Estimates of local government authority (council) spending on roads are obtained from the Australian Bureau of Statistics.

– Enforcement of Heavy Vehicle Regulations.[142]

The NTC classifies the costs of providing and maintaining roads into attributable costs (which vary depending on the use of the road system by different types of vehicles) and non–attributable costs (which have little relation to road use). [143] Examples of attributable costs are the costs of repairing pavement wear resulting from the impacts of heavy loads, costs of providing more road space (extra capacity) on the road network to carry the volume of traffic using the system and the costs of keeping the road system running. Examples of non–attributable costs are the costs of repairing storm or flood damage and the cost of building a minimum possible standard of road or bridge.

G.3.2. Measures of road use

Various measures of road use are used, including:[144]

- vehicle kilometres travelled ('VKT'), or ;
- passenger car equivalent units ('PCUs'), which provide an estimate of the amount of space taken up by a vehicle when travelling in a stream of traffic (and PCU-km: passenger car unit kilometres of travel);
- average gross mass ('AGM') and AGM-km; and
- equivalent standard axles ('ESA'), which estimate the relative road wear of different combinations of axles and loads (and ESA-km).

The NTC determines which measure of road use (eg VKT, PCU, AGM, ESA) is most closely associated with each category of road expenditure. According to the NTC: [145]

> …attributable costs are attributed to road users based on the measure of road use that most closely reflects the drivers of the need for each type of cost. For example, pavement rehabilitation costs are shared between classes of users based on their relative road wear contribution (measured by equivalent standard axles). This is a function of load, and the axles and tyres over which the load is spread. On the other hand, costs of providing traffic and safety measures are shared between users on the basis of the volume of vehicles concerned (vehicle-kilometres travelled—VKT) and the space they require, measured as Passenger Car Equivalent Unit kilometres (PCU-km).

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142 Regarding enforcement costs, the NTC notes in its Third Heavy Vehicle Road Pricing Determination, Draft Technical Report: *Under the terms of the Heavy Vehicle Agreement that governed the Second Determination, charges could only recover road construction and maintenance costs. However expenditure on enforcement of heavy vehicle regulations has been included in allocated costs in the Third Determination because these costs are considered to be mainly related to reducing the rate of pavement deterioration and thereby reducing maintenance and rehabilitation costs. Heavy vehicle enforcement expenditure is heavily weighted towards NSW (64% of total for all states). Apart from the fact that NSW has more traffic this is because the Roads and Traffic Authority has wider enforcement powers than road authorities in other States and operates sophisticated enforcement programmes such as permanent weighing stations and Safe-TCam. This means that the NSW heavy vehicle enforcement expenditure possibly includes some costs that are covered by police expenditure in other States and hence not included in their road expenditure figures.*

143 NTC, Third Heavy Vehicle Road Pricing Determination, Draft Technical Report, July 2005.

144 Op cit, pg. 16. Road use estimates for the cost allocation process are derived from ABS Survey of Motor Vehicle Use (SMVU) statistics.

145 Op cit

Pavement construction costs along with repairs to pavement strength associated with wear from heavy vehicles are allocated to vehicles on the basis of Equivalent Standard Axle kilometres.

Table G.5, sourced from the NTC's *Third Heavy Vehicle Road Pricing Determination, Draft Technical Report, July 2005*, shows the NTC's cost allocation template developed for the Third Determination.[146] It shows the proportion of each type of road expenditure that is related to vehicle use and the proportion considered non-attributable. It also shows how each type of attributable expenditure should be allocated between vehicle classes.

Table G.5
Cost allocation

Expenditure Category		Percentage of cost that varies with:					
		Attributable costs					Non–attributable costs
		VKT	PCU – km	ESA – km	AGM – km	Heavy Vehicle VKT	
A	Servicing & Operating Expenses	100	0	0	0	0	0
B	Road Pavement & Shoulder Maintenance						
	Scenario 1						
	B1 – Routine Maintenance	0	37	0	37	0	26
	B2 – Periodic Maintenance of Sealed Roads	0	10	0	60	0	30
	Scenario 2						
	B1 – Routine Maintenance	0	50	0	50	0	0
	B2 – Periodic Maintenance of Sealed Roads	0	15	0	85	0	0
	Scenario 4						
	B1 – Routine Maintenance	0	0	0	50	0	50
	B2 – Periodic Maintenance of Sealed Roads	0	0	0	50	0	50
C	Bridge Maintenance	0	0	0	33	0	67
D	Road Rehabilitation	0	0	45	0	0	55
E	Low Cost Safety/Traffic Improvements	80	20	0	0	0	0
F	Asset Extension/Improvements						
	FI – Pavement Components	0	0	45	0	0	55
	F2 – Bridges	0	15	0	0	0	85
	F3 – Land Acquisition, Earthworks, Other Extension/Improvement Expenditure	0	10	0	0	0	90
G	Other Miscellaneous Activities						
	G1 – Corporate Services	0	0	0	0	0	100
	Scenario 1						
	G2 – Enforcement of Heavy Vehicle Regulations	0	0	0	0	100	0
	Scenario 3						
	G2 – Enforcement of Heavy Vehicle Regulations	0	0	0	0	0	0
	G3 – Vehicle Registration	0	0	0	0	0	0
	G4 – Driver Licensing	0	0	0	0	0	0
	G5 – Loan Interest	0	0	0	0	0	0

[146] Op cit, pg. 35.

Different scenarios for cost allocation have been defined, based on variables such as whether pavement maintenance expenditure is to be considered partly or fully attributable, and whether or not heavy vehicle enforcement costs are to be included. Final decisions on these variables will be made in the Third Determination.[147]

Unit costs for each measure of road use are calculated by taking the expenditure allocated using each measure of road use and dividing it by the total amount of road use, based on that measure. The unit costs calculated for the Third Determination (for Scenario 1) are shown in Table G.6, sourced from the NTC's *Third Heavy Vehicle Road Pricing Determination, Draft Technical Report, July 2005*: [148]

Table G.6
Unit costs

Unit/Parameter	Arterial	Local	Total
Vehicle Kilometres Travelled *(c/km)*	1.57	0.51	1.34
Passenger Car Units *(c/PCU-km)*	0.31	0.19	0.29
Equivalent Standard Axles *(c/ESA-km)*	3.22	4.63	3.44
Average Gross Mass *(c/tonne-km)*	0.12	0.31	0.13
Non-attributable costs *(c/km)*	2.27	1.00	2.00

G.3.3. Cost allocation results

The NTC determines which measures of road use are associated with each type of vehicle (eg, the average ESA, VKT etc of a 9 axle road train) for the purpose of allocating the attributed costs, (eg pavement resurfacing is mainly caused by ESA, so a high ESA vehicle type, such as a road train, is likely to be allocated a large proportion of pavement resurfacing costs). Costs are allocated between all motorised road users, including motor cycles, cars, light commercial vehicles, heavy trucks, heavy buses and special purpose vehicles.[149]

The NTC allocates non-attributable costs to each vehicle type, using a broad measure of road use (VKT was used in previous Determinations). This results in an annual cost per vehicle type, which is a target for recovery (via a fuel charge and fixed annual charges). The costs per vehicle type calculated by the NTC for the Third Determination are shown, by way of illustration, in the following table, which is sourced from the NTC's *Third Heavy Vehicle Road Pricing Determination, Draft Technical Report, July 2005*.[150] These result from applying the cost allocation template for Scenario 1 to current road expenditure and estimates of the current levels of road use.

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147 There is ongoing uncertainty about how pavement maintenance expenditure should be allocated, so a range of options have been included that cover the range of assumptions that could reasonably be made.

148 NTC, Third Heavy Vehicle Road Pricing Determination, Draft Technical Report, July 2005, pg. 45.

149 Op cit*: For example, costs of traffic and safety improvements are attributed on a combination of VKT and PCU-km. All motorised road users contribute something to the total VKT and PCU-km across the road network. If cars perform 70 per cent of the VKT on Australian roads, then they are assigned 70 per cent of the costs attributed using VKT.*

150 Op cit, pg. 38.

Table G.7
Costs allocated by road type: attributable and non–attributable costs

Road Type and Vehicle Type	Allocated Expenditure		
	Attributable ($ million)	Non–attributable ($ million)	Total ($ million)
Arterial Road			
Light Vehicles	1,210	2,680	3,880
Heavy Vehicles	1,180	240	1,410
Total	**2,380**	**2,910**	**5,300**
Local Roads			
Light Vehicles	550	690	1,240
Heavy Vehicles	290	30	320
Total	**1840**	**720**	**1,560**
All Roads			
Light Vehicles	1,760	3,370	5,120
Heavy Vehicles	1,470	270	1,740
Total	**3,220**	**3,640**	**6,860**

Cost allocation results have also been calculated for more finely defined vehicle classes, that is, each different type of rigid truck and articulated truck within the 'heavy vehicles' class. Of the $6.86 billion total allocated road expenditure, $247 million (including $224 million of attributable costs, and $43 million non-attributable costs) was allocated, for example, to the B-double (9 or more axle rig) class of truck. This translates to $41,330 per vehicle of that particular class.

The costs allocated by the NTC to each vehicle class for the Third Determination are set out in the following table.[151]

[151] Op cit, pg. 43.

Table G.8
Costs allocated to each vehicle class

Vehicle Class	Non–attributable Costs		Attributable Costs		Total Costs	
	($ million)	($/vehicle)	($ million)	($/vehicle)	($ million)	($/vehicle)
Light vehicles						
Motor Cycle	27	90	13	40	40	130
Passenger Cars	2,286	260	1,091	130	3,377	390
Passenger van & light buses	81	390	38	180	119	570
4WDs passenger	355	320	169	150	524	480
4WDs light commercial	222	340	161	240	383	580
Light commercial & other light vehicle	375	320	259	220	634	530
Light rigid trucks	26	350	21	290	47	640
Rigid trucks						
2 axles						
No trailer: 4.5–7t	14	280	18	380	32	660
No trailer 7–12t	36	450	62	780	98	1,230
No trailer: over 12t	20	420	74	1,530	95	1,950
With trailer	5	420	20	1,780	24	2,200
3 axles						
No trailer: 4.5–18t	2	540	7	1,780	9	2,320
No trailer: over 18t	20	550	99	2,700	120	3,250
With trailer	9	1,280	56	7,770	65	9,050
4 axles						
No trailer: 4.5–25t	-	180	1	610	1	790
No trailer: over 25t	3	670	15	3,480	17	4,160
With trailer	1	1,470	7	9,730	8	11,200
Truck trailers	4	1,320	33	11,570	37	12,890
Articulate trucks						
Single trailer						
3 axle rig	-	380	2	1,170	2	1,550
4 axle rig	4	830	16	3,640	20	4,480
3 axle trailer: 5 axle rig	1	1,010	9	6,680	11	7,690
2 axle trailer: 5 axle rig	8	1,300	41	7,190	49	8,490
6 axle rig	66	2,000	444	13,470	510	15,460
B-doubles						
Less than 9 axle rig	5	3,730	49	35,500	54	39,230
9 or more axle rig	23	3,770	224	37,560	247	41,330
Road trains						
2 trailers	8	2,610	105	33,680	113	36,290
3 trailers	4	3,710	68	62,560	73	66,270
6 or more axle rig (NEC)	3	2,020	27	16,920	30	18,940
Other trucks	3	220	24	1,550	27	1,770
Buses						
2 axle						
3.5–4.5t	1	300	1	280	3	580
4.5–10t	6	550	10	810	16	1,360
Over 10t	15	770	46	2,350	62	3,130
3 axle	3	1,210	12	4,760	14	5,970
Articulated	-	830	1	2,660	1	3,480

G.4. Road user charges

G.4.1. Current road charges

After the NTC has established a target 'dollars per vehicle' cost figure for each vehicle in a particular class, it then determines the charges that should be paid by vehicles in each class, to recover those costs. The charging regime involves the Federal Government's fuel excise charge and the State and Territory Governments' heavy vehicle registration charges.

The current charges are:

- a road use (fuel excise) charge, set at 20 cents per litre in the Second Determination; and
- a fixed annual charge, which varies depending on truck type.

The Commonwealth collects the fuel charge as a nominal component of the diesel fuel excise. States and Territories collect the annual charge at the time of vehicle registration or registration renewal.

Current fixed annual registration charges range between $334 for a small rigid truck to $9,903 for a triple road train (including both the prime mover and trailers). The registration charges applying from July 2005 are set out in Table G.9, sourced from the NTC's *Third Heavy Vehicle Road Pricing Determination, Draft Technical Report, July 2005*.[152]

Table G.9
Registration charges - July 2005

Division 1 – Load Carrying Vehicles				
Vehicle Type	**2 axle**	**3 axle**	**4 axle**	**5 axle**
Trucks				
Truck (type 1)	$334	$668	$1,002	$1,002
Truck (type 2)	$557	$890	$2,225	$2,225
Short combination truck	$612	$2,225	$2,225	$2,225
Medium combination truck	$4,228	$4,228	$4,561	$4,561
Long combination truck	$5,840	$5,840	$5,840	$5,840
Prime Movers				
Short combination prime mover	$1,146	$3,781	$4,893	$4,893
B–Double prime mover	$4,449	$5,561	$6,118	$6,118
Road train prime mover	$5,561	$5,561	$6,118	$6,118
Division 2 – Load Carrying Trailers				
The amount calculated using the formula: $334 x Number of axles				

G.4.2. The process for setting road charges

Road user charges include a fuel charge per litre and a fixed registration charge. They are determined by first calculating a minimum annual fixed charge per vehicle (currently $334) and a diesel fuel charge. These charges are set to ensure that revenue earned is sufficient to

[152] Op cit, pg. 5.

fully recover all the costs of the smallest truck type (a 2 axle 4.5-7.0 tonne rigid truck). [153] The minimum access charge per vehicle is intended to ensure that heavy vehicle registration charges are consistent with light vehicle charges.

The next stage is to subtract the revenues from these charges from expenditure allocated to each remaining vehicle class. The remaining portion of the annual fixed charge is then set to recover the remaining target costs associated with all the other vehicle types.

Once charges have been set and the Determination approved by the ATC, an annual adjustment procedure applies. This is based on changes in road expenditure and expected changes in road use. The level of inflation caps the possible increases in charges.

The NTC has recognised a number of constraints that it faces in relation to its charging regime, including:[154]

> For operators of larger heavy vehicles and those in rural areas, the effective level of diesel excise paid is roughly the same as the fuel charge due to eligibility for rebates under the Energy Grants Credit Scheme. However, for other urban operators the level of excise paid is substantially more than the fuel charge. The NTC does not have control or jurisdiction over setting of fuel excise, or over administration of the Energy Grants Credit Scheme…
>
> The level of charges for light vehicles (below the 4.5 tonne break point where heavy vehicle charges commence) is a constraint on what can practically be levied for the smallest heavy vehicles.
>
> Under current fuel excise arrangements, non-diesel powered heavy vehicles only pay the registration component of heavy vehicle charges as they are exempt from fuel excise… Although it should be noted that the Commonwealth in December 2003 announced that the fuel excise free status of LPG and biofuels will be maintained until June 2008. From July 2008 fuel excise will be phased in over the next five years, which is outside the time period for implementation of the 3rd Determination.

G.5. Infrastructure investment and funding

Road infrastructure investment in Australia is undertaken primarily by Government, although some private infrastructure investors are involved in building toll roads and tunnels. The NTC has no role in road funding arrangements, or infrastructure provision or maintenance decisions.

Government expenditure on road infrastructure takes place at the Commonwealth level through the AusLink program, State and Territory road agencies and the local level.

The following table shows funding in new fixed assets for road transport, 2002–2003.[155]

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153 Op cit

154 Op cit, pg. 4.

155 According to the BTRE, the figure for Federal road expenditure of $1,028 million equals the sum of grants used on capital works and should be regarded as a minimum figure.

Table G.10
Funding in new fixed assets

Source of Funding	Road
Commonwealth Government	$1,028 m[b]
State Government	$1,131 m
Local Government	$1,907 m
Total Government	**$4,066 m**
Government Business Enterprise	$138 m
Private	$1,325 m
Total	**$5,529 m**

Table G.11, also sourced from the BTRE's *Australian Transport Statistics 2005*, gives government expenditure on a broader range of road-related works, including road construction and maintenance, administration, regulation and subsidies.

Table G.11
Government expenditure on road-related works

Source of Funding	1999-00	2000-01	2001-02	2002-03
Commonwealth	$1,675 m	$1,459 m	$1,822 m	$1,720 m
State	$3,143 m	$3,764 m	$3,599 m	$3,695 m
Local	$2,631 m	$2,290 m	$2,264 m	$2,240 m
Total	**$7,450 m**	**$7,512 m**	**$7,685 m**	**$7,656 m**

Notes: 1. Components may not sum to totals due to rounding
2. Figures include road construction and maintenance, administration, regulation and subsidies associated with those activities. Figures for state and local expenditure differ from those in IS 23 on account of changes in latest ABS GFS data.

Source. DOTARS, personal communications, 2004; ABS (2004a), State Road Authorities (1999–2004)

Road funding arrangements are not closely linked to the road charging regime. The NTC observes that while the process is based on recovering past levels of expenditure in total, it is not linked to road funding arrangements for each level of government.[156] The charges reflect expenditure on roads by all levels of government, and there is no link between the amount of expenditure and the revenue of each level of government receives from the heavy vehicle charging arrangements.

Revenues from the national fuel charge (around two-thirds of the revenue collected through the heavy vehicle charges) go into Commonwealth consolidated revenues. Initially (at the time of the First Determination), the fuel charge was nominated as part of the existing excise and did not affect the purchase price of fuel. Consequently, the level of this charge had no impact on government revenues. However, with the introduction of new fuel taxation arrangements in July 2006, the fuel charge is expected to impact on Commonwealth revenues.

[156] NTC's Third Heavy Vehicle Road Pricing Determination, Draft Technical Report, July 2005.

Revenues from annual registration charges generally flow to State and Territory revenues. [157] Primarily, the funds flow into State and Territory consolidated revenues, although some States hypothecate at least some revenue from registration charges to road funding. [158] No revenue from heavy vehicle charges accrues to local governments.

[157] Ibid

[158] Ibid

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