13 October 1997

Australian Black Coal Industry Inquiry
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Australian Black Coal Industry Inquiry

Enclosed is a Submission related primarily to "cost components from the mine to the port", as represented by rail charges. These represent 14 per cent (NSW) and 20 per cent (Qld) of average FOB prices for export coal. In Queensland, all export coal, other than a few hundred thousand tonnes transported by barge, is hauled over rail whilst in NSW 80 per cent is conveyed by rail.

However, the content of the Submission is wide-ranging, as indeed it must be if it is to convey a meaningful picture. I have adopted a process under which the Submission, although brief in itself, embodies numerous references to my 1996 doctoral thesis on Rail and the Export Coal Industry. These references are both as to detailed data and the rationale for my conclusions. Should the Commission require, I will be happy to participate in "round table" discussions and/or give formal evidence.

It is noted that, in your Issues Paper, the Commission indicates that it would welcome information as to "other substantive studies or sources". Apart from my thesis, which is already available to the Commission, the Bibliography at pages 182 to 190 of that thesis may provide useful information. I have mentioned this to Mr Gooday, specifically in regard to Freebairn and Freebairn/Trace papers and the 1987 Report of the US Railroad Accounting Principles Board (2 vole). During the course of the 1990-91 Inquiry, I lent my copy of the latter to the Commission, which made a copy. Should you have difficulty in locating this copy, I would be happy to make my copy available, to be returned to me in due course.

Yours faithfully

~'
E W Easton

Industry Commission Inquiry into the

Black Coal Industry

Submission

by

E W Easton

Easton Business Consultants

October 1997

Industry Commission Inquiry into the Black Coal Industry, 1997-98

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Industry Commission Inquiry into the Black Coal Industry, 1997-98

Submission by E W Easton, Easton Business Consultants

introduction

The submission relates primarily to the extent to which charges for rail transport of export coal diverge from costs of the services provided, but it also discusses a number of other matters associated with or deriving from such divergence. Rail charges represent a high proportion of the FOB price of coal exports, averaging about 14 per cent in NSW and 20 per cent in Queensland. The proportions are, of course, even higher for the lower-priced thermal coal, an important aspect in view of expectations that the market for such coal constitutes the future growth area.

By way of back-ground, I refer to my extensive experience in railway matters and to my detailed research into aspects of rail transport. In 1971, I was the rail consultant to the Bland Inquiry into Land Transport in Victoria and my services were subsequently retained by Victorian Railways over more than a decade, reporting at all times to the Board and/or the Chief Executive. The range and scope of assignments are illustrated by examples of major tasks in Appendix "A". Since 1978, I have undertaken more than 100 studies of rail hauls of coal and other minerals from 60 mines in Australia and New Zealand [Appendix "B"]. Since 1985, efforts have been increasingly concentrated on movements of export coal, as well as domestic coal to suppliers of electricity in three States.

During the course of the 1990-91 Industry Commission Inquiry into Rail Transport, I was closely involved in Submissions by a number of mining companies, including, CRA, Shell, Ecmal, MIM and Pasminco, as well as giving evidence to the Inquiry on several occasions. The Inquiry Report makes many references to my estimates of coal transport costs, which the Commission, in the main, accepted, with some reservations as regards capital return. Most of the latter have been addressed in my thesis estimates.

2 Content of submission

Initially, the Submission examines and evaluates divergences between rail charges and costs, on a "whole of State" basis for Queensland and for a group of Upper Hunter mines in New South Wales; evaluations are based on charges and costs as at 1993. It also discusses movements in charges and costs since 1993, as well as cost reductions possible under "best practice' operating. As appropriate, reference is made to detailed treatment of these matters in the thesis, including rationale for assumptions, especially in respect of costs of capital. An underlying premise in the thesis is that railroads should price as if they were operating in a competitive environment, that is, to recover efficient operating costs and the equivalent of depreciation on appropriately valued assets and generate a risk-modif~ed "commercial" return on those assets. This premise opens up questions of what constitute eff~cient costs, the method of valuation of rail-specific assets, beta value which measures specif~c risk and the level of the target rate of return. All these aspects are examined in detail in the thesis, the f~rst at pages 126 to 134 and the others at pages 77 to 112.

The Submission makes reference to wider economic implications of excess rail charge; these are discussed in more detail at pages 144 to 154 of the thesis. Inevitably, the Submission is concemed with the efficiency of differential pricing on a "within industry" basis, as is currently professed and practised by SRA and QR, ostensibly to

attract to rail coal which would not otherwise be transported nor produced. It is suggested in the Submission, as in the thesis, that such "encouragement" would flow more efficiently from replacement of existing volume and ad valorem royalties by a resource rent tax. This aspect is discussed in several parts of the thesis and in particular at pages 155/6 and in the "Summary and Conclusions" at page 180.

As contracts for rail transport of coal generally extend over some years, mechanism to adjust prices within the period of such contracts is essential. The Submission deals briefly with the problem and suggests an approach which not only ensures that the user benefits from productivity-induced reductions in supplier costs but also ensures that the latter retains the incentive to increase productivity. The matter is discussed in greater detail at pages 135 to 139 of the thesis. Finally, the Submission suggests a preferred pricing system, again discussed in detail in the thesis, which is not only efficient in theory but is in harmony with the cost characteristics of both coal production and the rail transport of its product.

3 Divergence between Charges and Costs

At pages 113 to 126 of the thesis, charges and costs as at 1993 are contrasted on a "whole of State basis" for Queensland and for hauls from a group of Upper Hunter mines in New South Wales. The analysis reflects largely the results of studies in 1993 but in one or two instances where studies were not made in that year, results of prior (but recent) studies were up-dated, using revised data on tonnages railed, consist sizes, train cycle times, etc. In all cases, costs were assessed in respect of existing practices and not those achievable under "best practice" operating.

Rail charges for Queensland on a "whole of State basis" are identifiable from statistics published in QR's Annual Reports; those for each Upper Hunter mine are known as a result of periodic surveys (one in 1993), undertaken for the New South Wales Minerals Council. The inclusions of an unspecified "super-royalty" in the figures published by QR introduced a minor problem. For purposes of charges/costs comparisons in the thesis, this super-royalty was calculated as follows. Pre-1994 royalties on coal were 4 per cent for underground production and 5 per cent for coal mined by open cut, assessed on free-on-rail values. A Proposal Paper for *Alternative Royalty Arrangements,* 1993, initiated a single 7 per cent rate, indicating that such a rate would provide an "adequate return to the community". At an average FOR price of $45T, the increase from 4/5 per cent to 7 per cent is of the order of $1T. Accordingly, the rail charge has been reduced by $1T, that is, from $12.30T indicated in the QR Accrual Report for 1992-93 to $11.30T.

Methodology applied in assessing operating costs for a coal haul is set out in detail at pages 69 to 76 of the thesis. The data referred to is essential not only to assessment of operating costs but also tor providing mformation on usage of rolling stock and infrastructure, essential to computation of capital values to which depreciation and return are then related.

Capital values for rolling stock and infrastructure are set out on pages 116 and 117 in respect of the Upper Hunter hauls; in all cases, values represent historic costs and return on assets has been evaluated in accordance with conclusions at pages 94 to 112 of the thesis. Asset values shown for Queensland (pages 123/4) exclude $1244M contributed by mining companies. However, as the supplier of a service involving no capital expenditure on his part would expect his price to include a mark-up on cost in such circumstances, a management fee has been included as part of costs incurred by QR (page 124). Tables 1, 2 and 3, which reproduce data embodied in Tables 21, 23 and 24 of the thesis, show details of the rail charges and estimated costs. It will be seen that the excess of charges over costs for all export coal hauls has been estimated at $535 7M, an average of $4.65T.

Table 1

Freight Rate/Cost Comparisons
Upper Hunter Hauls

Table 2

Freight Rate/Cost Comparisons
Queensland Hauls

Table 4

Indices of Relative Productivity
SRA Freight Operations

In its 1995 report, BE concludes that SRA and QR would have to reduce freight operating costs by 27 per cent to achieve best practice standards. As the disparity would not be as great in respect of coal hauls, I have applied a disparity of 20 per cent. The result increases the average excess, charges over efficient costs, by 60 cents per tonne to $5.25T. This estimate does not allow for any impact on cost of capital.

It is important to note that "best practice" standards are not stationary targets. The extent of movements in labour productivity in USA railroads in the 1980's is ilustrated in Table 5, which reproduces Table 26 of the thesis.

Table 5

Percentage Improvements in Labour Productivity
North American Railroads 1980-81 to 1988-89

Freight rates charged by railroads overseas for transport of export coal are difficult to compare with charges in Australia, especially those in the USA where railings are generally over distance of 1,000 kilometres and more. Comparisons on a cents per tonne basis therefore tend to be misleading. For example, crewing and rolling stock utilisation costs incurred whilst loading and discharging coal may account for 40/50 per cent of such costs on a 90Km haul but only 10 per cent on a 900Km operation.

Table 3

Divergence Between Freight Rates and Costs - Overall

(a) Based on return on assets of 12.5 per cent. An increase of one per cent in that return would reduce the excess by I O cents per tonne to $4. 5 5 per tonne.

Of interest is that on one occasion, and one only, financial data was published from which operating costs for export coal hauls in Queensland may be derived. This was in the QR section of the Report of the Queensland Department of Transport for 1990-91; the derived figure is $3.80/$3.90T. My estimate for that year was $3.90T. The comment by the NSW Premier [Press Release, 13 November 1994] that the opening up of coal haulage in the Hunter Valley competition "could save coal producers between $1.80 and $1.90 per tonne of coal hauled" is also of interest. At a COAG meeting in February, NSW had claimed that, at existing charges, the Hunter Valley rail traffic was worth $400M to $500M in extra profit over the next six years [Financial Review, 28 February 1994].

4 Best Practice Standards

Best practice costs and the extent to which SRA and QR do not currently meet those standards are discussed at pages 126 to 134 of the thesis. Both railroads acknowledge that they are operating at less than best practice standards of performance, For instance, the Taylor Report refers to a "benchmarking exercise" by Travers Morgan which found that QR's "operating costs per net tonne kilometre of coal hauled were 18 per cent higher than those of Burlington Northem in the USA (taken to represent WBP)". As costs per tonne kilometre generally decrease with distance, substantial disparities in haul distances would account for some of the excess.

Booz, Allen and Hamilton reported that there was scope for substantial improvement in many aspects of SRA operations, including workshops' practices and output and infrastructure maintenance. Table 4, reproduced from Table 25 of the thesis, shows interesting indices of current (1994) and objective SRA freight standards and World (best practice) levels.

6 Movements in Freight Rates - 1985 to 1995 SRA charges for transport of export coal decreased from an average of $8.96T in 1984-85 to $7.55T in 1993, 16 per cent

nominal and 45 per cent real. A paragraph of the thesis, repeated below, is indicative of factors contributing to this movement.

"The decrease in rail charges between 1985 and 1993 was associated with a number of factors, the first being a "freeze" on rail freights as from 1/1/87, accompanied by an undertaking to review operations "to bring about improved efficiencies in coal handling", with a guarantee "that any savings generated will be shared between it (the industry) and state rail" [Minister for Transport: Media Release *(22112186)].* The Minister went on to say that "the coal industry is facing diff~culties at present and this initiative is aimed at providing relief as well as maintaining jobs". These statements are placed in perspective by comments made by the next Minister for Transport, already referred to on page 55 of the thesis, that "the coal industry has lost out on both counts by subsiding ineff~ciencies and then being slugged for rates set well above costs" [Minister for Transport (October 1988)]. Other factors contributing to lower charges have included an increased proportion of short-distance railings, incremental railings at discounted rates, extension and liberalisation of rapid loader rebates and the adoption of "capped" escalation by use of CPI minus X formulae." (Thesis: page 114).

For Queensland, charges for transport of export coal, inclusive of the super-royalty, averaged $10.99T in 1985, increased *to* $12.26T in 1991, fell *to* $11.70T in 1992 and rose *to* $12.30T in 1993 and had fallen *to* $11.99T by 1995. Lower rates now apply to hauls as contracts commence or are renewed.

7 Reduchons of Upper Hunter Rates since 1995

Since 1995, charges for coal railings in NSW, including those applicable to Hunter Valley hauls, have been decreased. For instance, in 1996/97, the average charge per tonne for all coal railed in NSW, export and domestic, was $6.80T ($408M for 60MT). Although the average rate for Upper Hunter hauls is not known, a reduction consistent with the movement in Whole of State rates would give $6.30T in 1996/97. At the Coal Conference luncheon (22 September 1997) and in a subsequent media release, Freight Corporation indicated that, as a result of "flow-on" from its economics and "success in access negotiations" with RAC, freight rates to Hunter Valley miners in 1997-98 would be 25 per cent lower than in 1995-96. From information available to me in respect of current charges for some, but by no means all, Upper Hunter hauls, it is estimated that the average rate is currently of the order of $5.25T per tonne. Reductions have been possible because of the favourable influence of a number of factors on Freight Corporation's costs and also to the inception of a staged "phase out" of monopoly rent admitted to be presently incorporated in coal freight rates.

It is understood that RAC has estimated that monopoly rent of 90 cents per tonne is currently incorporated in the access fee. The factors conducive to reductions in costs of rail hauls as incremental tonnages are railed are analysed in Sections 8 to 11 and, in more detail in the thesis.

Tonnages railed by QR have also increased markedly, up from 62MT in 1992/93 to 82MT in 1996/97 and further growth is expected in 1997/98. This has had a favourable impact on QR costs;
However, during the course of thesis research, I had access to details of rail charges for transport of domestic coal in respect of 26 US hauls over distances ranging from 78 to 316 kilomekes. These may reasonably be compared with charges by SRA and QR for hauls averaging 130Km and 250Km respectively. Table 6, which reproduces Table 27 of the thesis, summarises comparisons.

Table 6

Australian and USA Rail Charges for Coal Hauls of Equivalent Distance

NOTE:

The QR. average rate is ex-royalty, assessed as the difference between ad-valorem rates of 4/5 and 7 percent of FOR coal value.

(a) SRA: Easton for NSWCA (1993). (b) QR Annual Report, 1992-93.

(c) Feldston and Exxon data - 1993 (Conversion rate of $A = 73 cents US).

"Some of the differential in both NSW and Queensland may be accounted for by disparity in performance standards, although eff~ciencies in coal hauls from the Upper Hunter mines are above "whole of state" averages. However, the gap is wider in Queensland and the margin is actually greater than the "raw f~gures" indicate. This is because the companies have funded more than 60 percent of capital expenditure on relevant infrastructure, rolling stock and other facilities. Conkibutions aggregate $1244M and this amount, amortised over 25 years at 12.5 percent interest2, represents $164.8M per annum. Related to railings of 70.549MT in 1992-93, this equates to an average of $2.34T.3 On the other hand in the USA many coal wagons are owned by coal miners, a factor which reduces the "real" comparative excess in Queensland and also in NSW." (Thesis: page 141).

BIE, in "Rail Freight 1995" refers to "observed rates of around 2.2 c/ntk or lower currently available in the USA for hauls around 250 km" [p 32].

Capital Recovery Factor (CRF) is 0.1325.

The annual cost to the companies varies, particularly as between pre- 1978 and post-1978 mines. Some "greenfield" mines have not been required to make contributions. As a "contra", some mining companies in the USA own their wagons. Submission by E W Easton Easton Business Consultants

Queensland operations, although in varying degrees. However, as Queensland mining companies have contributed hundreds of millions towards infrastructure costs, the

difference between costs of railing a benchmark tonne and an incremental tonne is less in Queensland. For a number of reasons, including problems arising from these aspects, but principally as I have not undertaken any cost studies in Queensland since 1995, I have not attempted to develop appreciative estimates of current costs per tonne. On the other hand, I have undertaken a number of studies in the past two years in respect of hauls of coal over the Hunter Valley route. Although comprehensive studies, embodying most if not all of the Upper Hunter mines would be necessary to derive close estimates of current rail costs, sufficient data is available to make appreciative estimates based on more general data and assess the reasonableness of the conclusions. These appreciative estimates are made in Section 12.

8 Factors Influencing Costs - Upper Hunter Hauls Costs per tonne of coal hauled from Upper Hunter mines have fallen as a result of the operation of a number of factors; some of the more important are:

a) sharp increases in tonnages hauled, predominantly from Upper Hunter mines;
b) associated economics of scale;
c) marked improvements in employee productivity and consequent reduction in costs per tonne of
coal hauled,
d) use of larger consists and greater capacity wagons and reduction in cycle times;
e) substantial reductions in costs of service and maintenance of rolling stock, achieved by greater
productivity and technological developments;
f) falls in interest rates; and
g) low inflation.

9 Increases in Tonnages Hauled

Tonnages have increased sharply since 1992-93. On a whole-of-state basis, tonnages hauled rose from 44M in 1992-93 to 57.2M in 1996-97; currently, Freight Corporation is delivering coal to the Port of Newcastle at the rate of 66MT per annum [Media Release of 23 September 1997]. Freight Corporation and previously SRA have acknowledged that incremental tonnages can be hauled at "marginal" cost, where their conveyance is possible without exceeding the capacity of the infrastructure and/or relatively minor expenditure is necessary to increase the capacity. Excess capacity still exists on the Hunter Valley route and there are measures, eg the use of larger consists and wagons with greater loads, which can extend capacity. The practical application of the recognition has been pricing of transport of incremental volume, over and above basic (benchmark) tonnages, at discounts of up to 20 per cent (Thesis, p 41). Marginal costs per tonne transported were assessed in 1993 as averaging 83 per cent of base tonnages costs. In one case, where the mine was located on a lengthy "spur" line, MC per tonne represented 70 per cent of base tonnage costs (Thesis, p 41). Concepts of marginal costs in the context of coal transport are discussed in the thesis, in particular at pages 40 to 42.

10 Improvements in Employee Productivity

Substantial improvements in employee productivity, measured by Freight Corporation in terms of net tonne kilometres, have occurred since 1992-93. In that year, NTKm's per employee were 1,448; by 1995/96, the figure had risen to 2,335, an increase of 61 per cent [Annual Report 1995 96, p 99]. I have assumed that the increase in the coal transport area was 30 per cent. The Managing Director, Freight Corporation has indicated that, in its f~rst year of operation (1996-97) the Corporation had "achieved a 31 per cent improvement in employee productivity" [Address to Coal Conference, 22 September 1997]. Again, I have assumed that improvement in the coal area was half that figure, or 15 per cent. Aggregate improvement of labour productivity in the coal area
since 1992-93 has accordingly been assessed at 50 per cent. NSW does not publish a break-up of labour costs under labour, materials, etc. Data published in Annual Reports of QR indicate that labour accounts for about two-thirds of operating costs, excluding depreciation and financial
servicing. Accordingly, in calculations in Section 12, I have assumed that higher employee
productivity has resulted in a reduction of 33 per cent in per tonne costs. The higher productivity is
influenced by factors (a), (b), (d) and (e) listed in Section 8; increased investment in equipment is
also a contributory factor.

11 *Other Factors Contributing to Reduction in Costs Per Tonn'e*

Use of larger consists and greater capacity wagons has contributed to reduction in costs per tonne of coal transported, especially in respect of costs of crewing and of those related to rolling stock utilisation. Improved performance at loading terminals has also impacted favourably on those costs by reducing train cycle times. The likely extent of such reductions is illustrated by a speciEc example from Queensland, where Central Queensland Shipping Terminals have advised of improvements of 8 to 17 per cent cycle times over a two-year period.

An outstanding instance of reduction in rolling stock maintenance costs in NSW is the success of the "One Stop" Wagon Maintenance Centre at Newcastle. With an annual throughput of 4,000 wagons, the Centre currently employs 26 multi-skilled staff; Prior to its establishment, a staff of 175 was required for similar work. The General Manager, Freight Corporation, has intimated that "inspection periods for train examinations have been extended from 28 days to 56 days and these are aligned with the 112 day inspections on locomotives" [Address to Coal Conference, 23 September 1997]. Modern locomotives, now used extensively on coal hauls, require less servicing than their older counterparts and are more fuel-effcient. All these developments have induced lower costs.

The fall in interest rates assists Freight Corporation inasmuch as it reduces debt-service costs. As it assesses its target rate of return by application of a "real" rate, understood to be 7 per cent, to assets valued at replacement cost, the fall in interest

rates would not affect that rate of return. In the thesis, cost of capital has been assessed in nominal terms on historical costs and adjustments to these costs have therefore been effected on a similar basis, in respect of both rolling stock and infrastructure.

RAC now owns the infrastructure and charges access fees to Freight Corporation and other rail operators. It sets those fees in the context of a requirement to generate an after-tax return of 14 per cent on assets valued at replacement cost.4 The Freight Corporation has been successful recently in negotiating a reduction in access fees previously payable and is passing on the benef~ts to users. I am unable to comment on the extent of the reduction nor its rationale. However, it would be surprising if a target return, determined when the bond yield was of the order of 8.88 per cent (March, 1996) were not varied when the yield fell to 6.12 per cent (30 September 1997).

4 In later Sections, I comment on the ustification for this tar et return and on its association with re lacement valuation.

12 Estimates of Current Costs - Upper Hunter Hauls

As indicated, appreciative estimates of current costs have been developed in respect of hauls from Upper Hunter mines assessed in the thesis as at 1993. Estimates relate to both operating and capital costs.

Operating costs were assessed at $1.60T in 1993. In Section 1O, I have assumed that the increase in labour productivity has been reflected in a reduction of 33 per cent in operating costs in the coal area; such a reduction is equivalent to 53 cents per tonne. The higher productivity is induced partly by economics of scale associated with greater volume of railings and is related also to technological developments which have reduced the need for rolling stock service and maintenance, as well as to use of larger consists and wagons of greater load capacity. In view of the greater fuel economy of modern locomotives; I have assumed a 10 per cent saving, or 4 cents per tonne. Aggregate savings in operating costs are therefore estimated at 57 cents per tonne.

It has been assumed that investment in rolling stock and other assets apart from infrastructure has increased proportionally with volume of traffic; this may overstate the position. On a per tonne basis, the depreciation component of 49 cents per tonne is therefore constant. However, target return decreases, consistent with the decline in bond yields. In 1992-93, nominal bond yield averaged 8.30 per cent; at 30 September 1997, it was 6.12 per cent. A recalculation of pre-tax target rate of return reduces the 12.5 per cent applied in my 1993 cost calculations to 9.8 per cent. The amount of 74 cents per tonne incorporated in the 1993 cost estimates for depreciation in respect of Upper Hunter hauls has accordingly been reduced by 16 cents to 58 cents per tonne.

It is not necessary to increase investment in infrastructure unless and until route capacity is exceeded. Therefore, depreciation and other capital costs will, in effect, be spread over greater tonnages. The increase from 44MT in 1992-93 to 66MT in 1997-98 will reduce infrastructure depreciation from 13 cents per tonne shown in

Table 20 to 9 cents per tonne and the target rate of return from 60 cents to 40 cents per tonne. Allowances for the lower bond yield will reduce the latter further - by 9 cents to 31 cents per tonne. In summary, my appreciative estimates of current costs per tonne are as shown in Table 7.

Table 7

Estimated Rail Costs - Upper Hunter Hauls

13 Estimated Current Excess - Upper Hunter Hauls

With current charges averaging $5.25 per tonne, the excess of $3.44T estimated in 1993 has been reduced to $2.75 per tonne. In the absence of information as to access fees payable to RAC by Freight Corporation, it is, of course, not possible to access to what this excess is wholly or partly attributable to levels of such access fees. The latter are overtly determined on a basis which embodies an element of monopoly rent; it is proposed that this be phased out progressively by the year 2000. The quantification of monopoly rent is dependent to a major extent on attributes adopted in respect of asset valuation and determination of an economic but equitable target return on those assets. It is also essential that benefits of decreases in infrastructure maintenance costs induced by greater productivity are passed on to users; these and other aspects relevant to access fees are discussed in Section 24.

14 Access Fees Payable to RAC

If fees per tonne payable to the RAC for use of the Hunter Valley route as a coal transport system were determined originally on a basis ensuring zero economic profit,5 continuance of fees at similar level where traffic volume is greater would clearly result in "over-recovery".6 This demonstrates the importance of a fixed component of the access fee, covering aspects other than traffic-induced maintenance, as an essential element in an efficient two-part pricing system. Such as system is discussed in depth in Chapter 9 of the thesis. At pages 162 to 168 in particular, it is contended that the fixed part of the fee should relate to "benchmark" tonnage7 and should not vary as incremental tonnages are railed, except in circumstances where additional expenditure on the route (or a section) is necessary to accommodate the greater volume of traffic. Even then, the extra expenditure will, in the preponderance of instances, be marginal. As a specific case, the cost of

5 Defined in thesis Glossary, p xii.
6 Freight Corporation has negotiated lower rates effective as from I July 1997.
7 Defined in Glossary p xi.

constructing a lengthy branch line to carry x MT/A was estimated at $a M; costs to convey x MT/A were estimated at $1.05aM.

15 Valuation: of R4C Assets

The choice of method of valuation most relevant to rail-specif~c assets is important to evaluation of costjustif~ed charges, especially since access fees will be signif~cant components of those rates, whether paid direct by a miner or as part of the charge by an operator accessing the route. Even with competition between operators, a monopoly situation will continue to exist as to the infrastructure. In New South Wales, Freight Corporation would no longer be in a position to collect monopoly rent but, if RAC overvalued infrastructure assets and/or set its target rate of return at too high a level, RAC would be in a position to embody monopoly rent in its charges for access, over and above acknowledged levels. Freight Corporation and any other supplier of rail services will have to pay the required access fees and endeavour to recover these, including any excess, from users.

RAC has opted to value infrastructure at replacement cost. This method of valuation and the several alternatives are examined at pages 77 to 93 of the thesis. I have concluded that historical cost is the preferred option; the rationale is also discussed in later Sections of the Submission.

16 Target Return - RAC

RAC has been required by the Government [Chief Executive Off~cer to Coal Conference, 22 September 1997] to fix its access fees at a level suff~cient to recover its costs and generate an aftertax return of 14 per cent on written-down asset values. Generation of an overall after-tax return of 14 per cent requires an overall pre-tax return of 22 per cent. If WACC is calculated on the principles set out at pages 109 to 112 of the thesis, these rates of return could be arrived at only by applying a specif~c risk equity Beta of the order of 2.5.

Such a value assumes that specific risk to investment on the Hunter Valley rail route is 2.5 times as great a risk as investment in a representative bundle of All Ordinaries' Shares. The former investment is in an area of natural monopoly, with a captive, growing and long-term market. In the thesis, I have used equity Beta of 0.3; reasons are given at pages 105 to 108

17 Nature and Characterishcs of Rail-Specif c Assets

Sections 18 to 20 of the Submission discuss methods of asset valuation and the rationale for opting for historical cost. It is essential that the method selected shall take account of the nature and characteristics of rail specif~c assets. Relevant comments, embodied in Section 6.15 of the thesis are reproduced below.

"These assets are predominantly rolling stock and infrastructure, the former having an assumed working life of 20 years whilst the latter is depreciated over even longer periods. Until recently, SRA and QR did not apply depreciation to infrastructure assets, the rationale being that "once the asset is created, it is maintained in something approaching its original condition and thus does not depreciate in value" [Advice from ARRDO to Victorian Railways (May, 1983)].

However, SRA introduced depreciation of assets in 1989-908 and QR followed suit in 1992-93, preparing and presenting its f~rst balance sheet in that year.9 Both systems now depreciate infrastructure over a period of 50 years. Victorian Rail, which adopted bettemment accounting in the 1970's'°, does not depreciate the track and a working party representing all public rail suppliers has recommended that only renewable infrastructure assets should be depreciated [National Freight Costing Convention (1990), p 13]. Western Australia does not depreciate any track element, other than concrete bridges (66 years) and rail (40 years). ~' Until recently, Australian National depreciated infrastructure over 90 years but it now uses a 50 year period. 12

Lives of coal rail assets extend over several business cycles in which rates of inflation may vary widely. For instance, over the period 1950 to 1995 annual inflation (as measured by the CPI) has ranged from minus 0.3 per cent to 22.8 per cent. Furthermore, with a mine "life expectancy" of 15/20 years,~3 infrastructure endures over 2.5/3.3 mine lifetimes.

In recent years, low inflation, decreasing production costs arising from higher productivity, greater volume of orders resulting in longer and more economic production runs, standardisation of design, improving technology and growing competition from imports (progressive reductions in import duties) have contributed to lower prices of rolling stock in real and often nominal terms. As an example, a coal wagon of 75 tonne capacity cost $144,000 in 1985, equivalent to $1920 per tonne capacity unit, but in 1992 a wagon of 95 tonne capacity, with lower maintenance and operating costs, cost $125,000, or $1310 per tonne of load. Indexation of the 1985 cost for movements in the CPI would have given a 1992 wagon "cost" of $216,000, or $2880 per tonne of load. Information from the USA shows that Burlington Northem railroad is currently purchasing 110 tonne capacity wagons for $A87,000 each, or $791 per tonne of load [NSWCA, February, 1996].

A 3000 HP locomotive cost $1.6M in 1985. In 1995, a locomotive of equivalent horsepower but with greater service potential and lower operating expenses cost $2.75M, about the same in constant dollar temms. However, Canadian Pacific is currently purchasing 4400 HP locomotives for $A2.5M, illustrative of a trend overseas which will inevitably be reflected in costs to Australian railroads.

For infrastructure, the situation is that most of the track components may never have to be replaced. These elements include the fommation and concrete bridges, which collectively account for a high proportion of total capital expenditure on track. Another important element, ballast, is progressively replaced and restored as an essential element in on-going maintenance. Concrete sleepers, universal on coal routes, have an almost indef~nite life, whilst BHP and overseas research has indicated that modem rail has a life expectancy of 2500 million tonnes, equivalent to usage over 50/60 years on the most heavily-trafficked Australian coal routes

8 Annual Report (1989-90).
9 Annual Report (1992-93).

10 On reconunendation of Easton.
1l Advice to Easton as consultant to V-Line.
12 Annual Reports.
13 Trace and Freebairn use 15 years [August, 1988, Appendix I, p 23].

[Mitchell, R. and Mackreth, J.J: How New Technology Can Enhance the Efficiency and Productivity in Freight Railways (1994), pp 5/6]. As mentioned above, 50 years is equivalent to 2.5/3.3 mine "lives" and, by the end of such a period, bulk transport arrangements may have changed dramatically.

For instance, a system involving transportation of wagons loaded with bulk materials through a tube-way has been developed and patented. Air blown into the tube creates pressure that pushes a "train" of up to 30 wagons, each with a load of 10 tonnes, through a tube-way system which is conceived as having a "range" of up to 2000 miles. The feasibility and effectiveness of the system are as yet untested in practice and many questions arise eg could the system be designed for transport of larger tonnages? Although the thesis does not suggest that such a system, or a derivative, will replace transportation by rail, it is evidential of technological development which may render replacement of rail infrastructure assets, at least in their present fomm, a questionable future option."

Infrastructure on coal routes is generally engineered to cope with railing of much greater tonnages than those originally entailed. Extra costs may be relatively minor; for instance, costs of new construction on a lengthy branch line servicing a major mine were only 5 per cent higher for doubling capacity. On an existing route, approaching capacity, measures such as provision of additional crossing loops, use of larger consists and/or heavier load wagons and faster train running, can increase capacity at marginal or even cost.

18 Inference from Asset Characteristics Significant inferences are drawn from examination of these characteristics in Section 6.16 of the thesis, which is reproduced below.

"These characteristics of rail-specific assets, together with the longevity and monopoly supply factors, have important connotations for valuation of assets, particularly so because those values are one of the major detemminants of pricing of services, in respect of target retum and depreciation. Experience in recent years and trends in the USA indicate that, concurrently with technological improvements, which have resulted in greater service potential and reduced rolling stock maintenance and servicing costs, low inflation, higher productivity in Australian manufacturing, decrease in tariff protection (the last two may not be unrelated) and the increasing tendency of SRA and QR to place large-scale orders (with higher production runs), have resulted in steady and sometimes decreasing costs of rolling stock in service potential temls. Taken in conjunction, these factors warrant use of the identifiable and verifiable historical cost method for valuation of such assets. With rolling stock being replaced in large volume at less frequent intervals, valuation at replacement cost would have greater dependence

on annual indexation, which would have to take account of, and give appropriate weightings to, all the factors mentioned.

Infrastructure assets are irretrievably committed to their present use, and hence have negligible market value. In such circumstances, there appears to be little justification, on grounds of equity or efficiency, for valuing the assets at replacement cost. The Centre for Transport Policy Analysis, University of Wollongong, points out that "the orthodox result in welfare economics is that (for

pricing purposes) they should not be priced at all" [Valuation of Assets in Coal Export: Some Underlying Principles: (1989), Executive Summary, p 2]. However, the Wollongong study concludes that considerations of eff~ciency and equity "suggest that the user should pay for the opportunities that the community had to forego at the time it committed itself to the investment" [Executive Summary, p 2]. This is consistent with the approach in the thesis.

These opportunities relate to expenditure on the asset at the time and have little to do with return on replacement cost, which represents opportunities which would have to be foregone if the investment were made at current costs. In Part C of the thesis, I refer at length to a major argument for valuation at replacement cost in current cost accounting, namely, the concept of capital maintenance. This argument has little or no relevance to sunk costs and, as the Wollongong University paper says in reference to sunk costs of infrastructure, there is, in such circumstances, "no need to generate funds to cover replacement."

At pages 80 to 86 of the thesis methods of asset valuation, including market value, net present value, deprival value, reproduction cost, replacement cost, indexed historical cost and historical cost are discussed, together with the approach adopted by SRA and QR. It is concluded that valuation of rail specific assets at historical cost is the preferable option.

19 Asset Valuation - SRA and QR
In Section 6.24 of the thesis, I outline approaches to asset valuation adopted by SRA and QR,
historically and currently. Relevant parts of that Section are reproduced below.

"In its balance sheet as at 30 June 1994, SRA values non-current assets at historical cost, with note 1C to the accounts indicating that such valuation is in accordance with clause 5(1)A(ii) of the *Public Finance and Audit (Statutory Bodies) Regulation Act (1985) [Annual Report (1993-94),* pp 39/40]. Furthermore, in 1989, Price Waterhouse, in a review carried out for SRA and the NSWCA found that SRA assessed its target "capital cost recovery" on rolling stock assets by applying real interest rates to replacement costs whilst for infrastructure, nominal rates were applied to historical costs of infrastructure. *[Price Waterhouse Urwick Report on Capital Cost Recovery Methodology* (December, 1989), pp 6/7]. Price Waterhouse commented that "we believe that assets which are unlikely to be replaced by assets of a similar nature (such

as infrastructure) should be measured at historical cost and that other assets (such as rolling stock) should be measured at replacement cost for capital cost recovery purposes" [Report, p2]. On page 3 of the report, Price Waterhouse f~nd that "since the SRA approach to capital cost recovery covers the elements noted, we find their methodology to be appropriate". The report concludes accordingly that "both historical cost and replacement cost have a role in price or price setting" [p 33], emphasises the view that "capital cost recovery on infrastructure (should be calculated) by reference to historical cost" [p 34] and supports this by adding that, as the asset involved will probably not be replaced by an asset similar in nature, historical costs are actual and verifable and readily available and "the problem of fmding an acceptable method of valuing assets and escalating values is avoided" [p 34]. However, by 1990, SRA had "changed its mind" on valuation of infrastructure, advising the Industry Commission Inquiry into

Rail Transport that it favoured valuation of "non-renewable" elements at historical cost, and "renewable" assets (rail and sleepers) at replacement cost [Submission 98, pp 3,15,16], the dichotomy recommended in NFG II.29 Finally, SRA has informed me [Advice of 15 September 1995] that the NSW Treasury has directed that, in future, all non-current assets should be valued at replacement cost.

QR produced its first balance sheet as at June 30, 1993, with non-current assets "carried at cost of management's valuation (which) is based on either replacement cost, current market value, net realisable value or a nominal value" *[Annual Report* (1992-93), p 60]. However, the Queensland Treasury has advised the Queensland Mining Council [Letter of March 26, 1995] that it considers that current value of assets based on deprival value, provided that this is no greater than replacement value, is "the best measure of the opportunity cost of investment in the rail network" [p 8]."

20 USA Attitudes to Valuation of Assets
Section 6.32 of the thesis, reproduced below, summarises attitudes to methods of valuation in the
USA, especially as expressed by the Railroad Accounting Principles Board.

"Views of Anthony, as published in 1976, have been referred to previously. Whilst freely admitting that he is an advocate of historical cost, he raises an interesting point when contending that "the burden of proof should be on those who propose a change. Replacement cost advocates have offered no evidence to support their position" [p 78]. He also quotes Wriston as saying that "the intellectual exercises (CCA theory) which are now starting to move from drawing room dialogues to the market place appear to be entirely self-propelled in the sense that ... there is just no demand for a new accounting system from those who must use the product". Wriston also emphasises that "investors are currently (1976) confused by the current over recording of short term swings, which tend to obscure the long term trends of the business" [Wriston, W.B. in *Financial Executive* (September, 1976), p 13].

The views of the US Railroad Accounting Principles Board on asset valuation are of particular interest from several aspects, first, because of its membership, second,

because of its role in determining principles of railroad accounting and third, because its findings are binding on the Interstate Commerce Commission, as the arbiter of disputes on charges for rail and other utility services. Its membership included the US Comptroller-General, the Professor of Economics at Yale, the current Professor of Accountancy at Columbia, the Executive Vice President of the American Association of Railroads and the President, Shell Mining Company. Constituted in 1984 to "establish a body of cost accounting principles" for regulatory cost determinations and to "make administrative and legislative arrangement to integrate these principles into the regulatory process". [p 2], the Board reported to Congress (which endorsed its Report) in September, 1987. The Report was lengthy and detailed and I shall refer only to recommendations on valuation of assets and measurement of cost of capital.

In its deliberations, the Board analysed alternative methods of asset valuation and, in particular, methods of valuing at current cost, namely, market value, reproduction cost, replacement cost and net liquidation value, as well as historical cost. Each of these was examined from aspects such as practicality, verifiability and objectivity, compensation for price level changes and capital requirements [pp 39-40] The Board did not consider market value as a viable option lor valuation of highly specialised rail assets, and it also rejected reproduction cost as lacking reality in an area where technological change is proceeding rapidly and assets have long economic lives and net liquidation valuation was considered to be an exercise lacking reality in most instances. The Board therefore concluded that the choice rested between replacement and historical cost [p 41 /42]

In examining replacement cost valuation, the Board defines it in terms similar to those already outlined [6.21], with value determined either directly or by some form of indexation and concludes that use of replacement cost "violates the data integrity principle, especially if indexation is used" [p 42]. Under that principle, cost and related information should be "valid, accurate and verifiable" and, to meet those standards, information must represent what it purports to represent (validity), be free from significant error (accuracy) and include "all factors supporting the judgement" (verifiability). The Board comments that, except in rare instances "where replacement cost confonns precisely with the replaced asset in performance and cost, those considerations are not met with valuation at replacement cost" *[pp* 42/3]. However, measurement at historical cost is considered by the Board to be valid, accurate and verifiable, as the information is readily available in relation to actual acquisition costs.

Furthermore, as market rates of return vary in nominal terms •ith changes in nominal rates of interest, investors are compensated for "general price level changes through (the) increased cost of capital rate" [p 42]. The Board also dismisses the "argument advanced for current cost asset valuation that (only) its use will provide capital adequate to replace the assets of the enterprise" [p 43], with that rebuttal related to considerations already discussed in the chapter.

As already mentioned, the recommendations of the RAPB, w•hen endorsed by Congress, \vere binding on the ICC. In a decision of March 22, 1989, (SICC 2d 344),

the Commission stated that "the problems in estimating the current replacement value of assets are inherently so difficult that we have rejected it in (this and) other contexts, as has the Railroad Accounting Principles Board".

21 Target Return on Assets CAPM methodology has inherent weaknesses eg, associated with failure to take account sensitivities to a plurality of factors. I have adopted it, as have many others, for lack of a better alternative. Constituent elements and their quantification are discussed at pages 94 to 112 of the thesis. Consistent with this analysis, l have concluded that:

· return should be assessed for debt-funded and equity capital separately to arrive at a weighted average cost of capital;

· return should be in nominal terms on written-down historical cost;

· a debt/equity ratio of 50/50 should be assumed, consistent with SRA and QR data;

· in view of the minimal risk to investment, equity beta should be 0.3;

· notional corporate tax should be applied to determine a pre-tax target.

At pages 109 to 112, the thesis quantifies a pre-tax target retum on coal rail assets of 9.25 per cent on debt-funded capital and 15.70 per cent on equity-funded capital, equating to a WACC of 12.5 per cent. This target rate is calculated in relation to a bond yield of 8.25 per cent and is variable as changes occurred in that yield, debt/equity ratios, etc. As mentioned in Section, current bond yield would equate to 9.8 per cent.

22 Financial and Economic Implications of Excess Freig/zt Rates

At pages 144 to 154 of the thesis, I discuss implications of removal of excess rail charges for the production and sales of export coal, employment, prof~tability of the industry, Federal and State government finances and national economic efficiency. In so doing, I draw heavily on the definitive research undertaken by Freebairn in 1988-89; he used my estimates of excesses in rail charges and allowed also for excess charges at the ports. His estimates have been re\vorked in the light of revised estimates of rail charges and costs and improved efficiencies at shipping terminals, several of which now operate at WBP standards.

Table 7, which reproduces Table 32 of the thesis, embodies estimates of effects on the various factors of removal of excesses of $7T and $5T, as postulated by Freebairn, the $6T assumed by the Industry Commission in 1991, the $4.65T estimated in the thesis and $5.25T and $5.50T with more

Table 8

Effects of Reductions in Rail Charges

on Various Factors: Per Annum in 2000

As Freebairn points out, the flow-on of effects of lower freight rates would inevitably result in 'a rise in the value of the Australian dollar, relative to what it otherwise would have been" [p. 355]. He ~,oes on to say that appreciation in the currency will "reduce the returns available to other exporting industries and to import-competing industries". Therefore, this "removal of a discriminatory tax" on the export coal industry results in a redistribution of resources and incomes to that industry from other sectors. The possibility, perhaps a probability in the short term at least, of higher wage rates for workers in the export coal industry and also for rail staff \vould reduce mine profitability and impact on investment decisions, production, employment and exports, resulting in lower figures and amounts than those estimated in the Freebairn model. Whatever the qualifications, however, a reduction in export coal rail freight levels to levels justified by costs is "a positive sum game that increases national income and thus provides some scope for raising both private and public real expenditure" [p. 3561.

All estimates in the Table take account of prospective world marl~et demand for both thermal and coking coal. Forecasters agree that the world market for thermal coal in the year 2000 and beyond will increase markedly whilst that for coking coal will be constant at best. As indicated in the "Introduction", rail charges represent a higher proportion of the lo\ver FOB cost of the former.

23 Price Differentiation on a "within industry" Basis

Both SRA and QR profess adherence to policies which partake of Ramsey pricing principles by application of differential mark-ups to attract maximum traff'c too a route. I have few quarrels with this on an inter-industry basis or to attract or retain traffic which would otherwise be conveyed by another mode of transport. But application of a "within industry" policy to miners competing in an international market, and with minimal or no mechanism to make meaningful decisions, involves uninformed, arbitrary decisions. In any case, the circumstances of a marginal, or even submarginal, miner may change and the question arises as to the grounds on which the railroad will be aware of the impact on the miner. References to problems are made at pages 48, 49, 56, 156, 167 and 171 of the thesis. At page 167, it is suggested that a resource rent tax should replace existing, less efficient, volume (NSW) and ad-valorem (Queensland) royalties. As a spin off', it would remove the professed need to encourage railings (and production) through differential rail charges. Page 156 of the thesis, which illustrates these points, is reproduced below:

"The thesis concludes that, from a national perspective, incentive to initial production (and railings) could be more effectively and efficientlN provided by substituting a "revenue neutral" resource rent tax for current ad-valorem and volume-based royalties in Queensland and NSW.'4

The latter are payable on the same basis by all miners irrespective of relative profitability (or expectations).~5 On the other hand, RRT is not payable unless and until a miner eams a positive return" [IAC, A.ssi.s~unce to]/i/?i/?~g', (1988), p 43] and is related subsequently to the magnitude of profits in any prescribed period.

'4 The Queensland Government says that the community will receive "an adequate return" from current 7 per cent ad
valorem royalties [3 6].
i5 The IAC has said that ' royalties based on either the value or volume of output are disincentive to production"

With royalties as currently payable, a miner who is confident of achieving economic profits equal to or in excess of the opportunity return on funds invested may not be restrained from establishing a new mine and commencing production but a marginal miner may be deterred unless he can negotiate a lo\ver rail charge. The situation is quite different with a resource rent tax, as that procedure ensures complete relief from tax during periods of negative profitability, with lower taxes during periods of low prof~tability. Furthermore, differentiation as between miners is predictable, measurable in accordance with prescribed rules and based on factual and identifiable data, with inbuilt procedures for automatic and "transparent" review.

The case for, and the advantages to be derived from, collection of mineral rent by resource rent tax, instead of by less efficient volume or ad valorem royalties, was developed by Garnaut and Clunies Ross twenty years ago *[1he* l4'conol7lic *.Journal* (1975), p 272 - 287] and its greater efficiency has not been seriously challenged since On the other hand, fixing of differential access fees to provide incentive to rail coal is a matter of subjective and uninformed assessment by the railroad, related to inadequate and unverifiable data, deficiencies which also inhibit, **perhaps prohibit, meaningful review.** The last is particularly important because a miner's **financial position may** vary markedly e.g. with changes in export prices, movements in **the exchange rate,** etc.

To illustrate problems associated with differential access fees, I simulate a situation in which two miners, A and B, are the only railers on a dedicated coal line, each having paid (or paying) equivalent access fees. Miner "B" subsequently states that he requires some relief to continue in production and therefore to rail. As his royalty payments under current arrangements are unchanged and his usage charge with MPTP is related to marginal costs, the only available avenue is through adjustment of the access fee. If the railroad acts accordingly, it will achieve less than zero economic profit" unless it increases the access fee payable by miner "A". But, if it chooses the latter course, it may not only charge at above "stand-alone costs" but will also remove the element of certainty which is one of the intrinsic merits of MPTP.

Furthermore, if miner '~A" is a marginal producer, the increase in access fee may make him sub-marginal and serve as a disincentive to his continuing in production.'" On the other hand, an efficiently applied RRT c•ould resolv•e problems in that it

would provide automatic relief for miner --B", without adwerse impact on miner .~A"or on the rail supplier."

24 User Participation in Productivity-induced Cost Savings

As coal haul contracts are often long-term, it is normal for escalation t'ormulae to apply to adjustments during their currency. In recent years, SRA and QR have applied CPI minus x t~pe t'ormulae. These have-an inherent weakness in that the supplier has to forecast the rate of improvement in productivitN and benefits from a conservative approach. Relevant aspects are discussed at pages 135 to 139 of the thesis, together with an alternative approach devised by the US

16 The removal of certainty **as to access** fees would raise serious questions as to the efficiency of the pricing rule.
Interstate Commerce Commission. T his approach, which I strongly support, is outlined at page 138 of the thesis and is repeated below.

The RAPB, in its analysis of means of measuring cost charges accurately for "railroad regulatory purposes" in the USA made a "Statement of Principle" that the indices "shall incorporate changes in productivity as well as changes in input prices" [RAPB Report (1987), p 52]. Furthennore, the RAPB recommended that the ICC "implement an appropriate methodolo`~,v to measure and incorr~orate productivity into input indices" [p 54].

Over the objection of Consolidated Rail Corporation (Con Rail) and the Association of American Railroads, the ICC decided to include a deflator for railroad productivity gains in calculating approved adjustments to freight rates and, in the second quarter of 1989, began adjusting the RCAF for "changes in productivity, lagged by two years". In so doing, the Commission adopted a modified version of the Caves-Christensen-Diewert measure of TFP. The ICC considered that a decision to "lag" the adjustment for productivity by 2 years would avoid "dampening unduly" the railroads' incentive to achieve productivity, by replicating the position of a supplier who, in a "pure" competitive market gains a temporary advantage through improved efficiency. In recognition of the "lag", the whole of the cost benefit was to be passed on to the customer so as to "evenout" short term "inconsistencies". The ICC also decided that "the annual measurement of industry-wide productivity (should) be based on a five year moving average"~7 [ICC: "Railroad Cost Recovery Procedures = Productivity Adjustment - (22/03189), p 9].

The US Department of Energy has commented that the ICC has established a "sophisticated~' measure of changes in total factor productivity, which "accounts for changes in the mix of rail traffic and inputs", adding that 'using this productivity adjustment formula, the ICC has slashed the carriers' requested rate increases as much as two thirds in a single quarter" [Innovative/Alternative Transport Modes for Movement of US Coal (1990), p 44].

Current measures of rail productivity in the USA and the manner of their application have been discussed at length, because they represent practical procedures for adjusting tor productivity gains, not on a basis involving estimates of future gains, inevitably using "safe", low estimates, but on adJustments related to achieved productivity gains. In those adjustments with the 9-year lag, there is incentive to the supplier in that he benefits for that period and, concurrently, assurance to the user that he will, in the ultimate, benefit from the total gain, replicating the situation that would apply in a contestable market.

Any incorrect approach to escalation and productivity could, and almost certainly would, result in distortion of charges in the future, however economic and equitable these may be initially.

]7 The American Association of Railroads and others appealed against the ICC decision and questioned its authority to make such a ruling (1991). After hearing extensive evidence from the American Association of Railroads and a number of its member companies, the Federal Court of Appeal found that "the Commission did not exceed its statutory authority by including railroad producti\ity pains in the RCAF' [United States Federal Court of Appeal, District of Columbia Circuit - Decision of July 24, 1992. DD 221/2301

25 Two-Part Pricing

Chapter 4 of the thesis (pages 33 to 53) examines alternative pricing policies tor a monopoly railroad against a background of cost characteristics of the industry and of rail transport of coal. A feature common to both industry and rail is heavy investment in the initial infrastructure, \vith consequent cost advantages deriving from greater output (railings) at least and until the initial capacity of that infrastructure is strained or exceeded; this common factor has implications tor selection of an efficient rail pricing system. The preferred system is t\vo-part pricing, with a fxed element related to infrastructure and a usage charge related to marginal cost. Such a system is discussed briefly at pages 50/51; pages 155 to 171 (Chapter 9) outline in some detail the suggested manner of its application. It matters little \vhether the infrastructure is o\vued by the service provider or by another party, as is the case in NSW

In brief, it is suggested that there should be a fixed infrastructure access fee related to "benchmark" production and railings, which will not vary except in extraordinary circumstances, unlikely to occur in the foreseeable future. The concept and its application are described in detail at pages 157/158 and 162 to 168. 1 \vould make one qualiEcation to the vie\vs expressed. The access fees proposed by the RAC in NSW include a component for infrastructure maintenance. The "constant" proportion should be fixed but the "\vear and tear" from use constituent is clearly variable. The latter is usually measured in terms of gross (or net) tonne kilometres of usage.

The usage charge should be assessed on a basis related to marginal cost, apart trom infrastructure excluded, most other costs are directly variable, that is, unit costs are constant, apart from economies of scale. These economics would flow from the impact

of greater traffic volume on, for instance, relative size of reserves of cre\v and rolling stock, ratios of administrative staff, etc. Table 8 (a reproduction of Table 36 of the thesis) simulates access tees and usage charges, per tonne and overall, for railings at various levels for a "typical" Upper Hunter mine.

Table 9

Charges Per Tonne
at Various Levels of Railings

The Table sho\vs that average cost per tonne decreases quite sharply for each increment of railing, a not unexpected result given fxed access fees and usage charges related to marginal cost. Although the reduction in usage charge is small, it must be noted that each one cent reduction in charges represents a saving of $50,000 per annum, to a miner railing 5MT/A.

Appendix ``A',

Major Assignments Included

1. Develop~nent, introduction of"responsibility accounting and costing system (RAMAS) to

record costs and measure performance against budget for:
(a) Cost centres and aggregations of these;
(b) Traffic categories.
(c) Routes

Development and introduction of costing by routes, lines and line sections.

Review of workshops costing to provide for:

(a) More accurate treatment of on-costs and overheads; (b) Costing by locomotive class; (c) Costing by wagon type.

Re-organisation of Rolling Stock Branch.

Review of depreciation rates.

Valuation of major assets

Introduction of asset register.

Review of overheads applicable to recoverable works, eg company sidings.

Expert evidence in major cases for recovery of damages to rail property.

Development and introduction of effective procedures for charging hire rates for mobile plant and equipment.

Introduction of betterment accounting for infrastructure.

Review of scope of road motor repair and maintenance workshops.

Review of form of presentation of balance sheet, profit and loss and other financial statements in annual reports.

Review of size of wagon fleet.

Initial design of an Annual Financial and Statistical Bulletin.

Appendix "B"

Easton Studies of Costs and Freight Rates for Hauls of Coal and other Minerals

A Export Coal

Shipping Terminal Mines

Abbot Piont Collinsville* and Newlands*.

Mackay Goonyella, Peak Downs, Saraji, Norwich Park, Riverside, Blair Athol*, German Creek and Oaky Creek*.

Gladstone Blackwater*, South Blackwater*, Curragh, Gregory, Yarrabee and Moura.

Fisherman Island Aberdare, New Hope, Oakleigh, Rhondda and Westfalen.

Newcastle Drayton, Great Greta, Gunnedah, Howick*, Hunter Valley No I *, Lemington*, Liddell*, Macquarrie, Mt Arthur, Mt Thorley*, Newstan, Preston, Ulan*, Vickery*, Wambo* and Warkworth*.

B Domestic Coal

Hauls from Blackwater*, Curragh, Collinsville*. Boundary Hill*, Callide, Leigh Creek*, and Collie mines.

C **Other Minerals**

Hauls from Mount Isa*, Broken Hill*, Cobar*, Woodlawn*, Mount Lyell, Heliver, Rosebery, Kambalda and Leonora mines.

D New Zealand Export Coal

Hauls from Westport mine to Lyttleton and Oahu mine to Invercargill.

*

Multiple studies have been undertaken in respect of these hauls.