Western Australia

Economic Regulation Authority

FLOOR AND CEILING COSTS TO APPLY TO THE PUBLIC TRANSPORT AUTHORITY

DETERMINATION OF THE

ECONOMIC REGULATION AUTHORITY

14 OCTOBER 2004

Level 6, Governor Stirling Tower, 197 St. Georges Terrace, Perth WA 6000

GPO Box 8469 Perth Business Centre WA 6849

Telephone: 61 8 9213 1900 Facsimile: 61 8 9213 1999

Email: enquiry@era.wa.gov.au Website: http://www.era.wa.gov.au/

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1. Introduction

The Public Transport Authority (PTA) is the provider of passenger transport services and owner of rail infrastructure in Perth, covering approximately 220 kilometres of track. The PTA is split into a number of businesses which provide for the transport of passengers in Perth and country centres and is also the "below rail" provider of rail infrastructure in the urban network through its Network and Infrastructure Division.

Section 3 of the WA *Railways (Access) Act 1998* ("the Act") defines a "railway owner" to mean the person having the management and control of the use of the railway infrastructure. Within this context, the PTA is considered to be the railway owner for the Western Australian urban railway infrastructure.

In accordance with Clause 9, Schedule 4 of the *Railways (Access) Code 2000* ("the Code"), the Rail Access Regulator ("the Regulator") advised the PTA on 29 October 2003 of the Regulator's intention to determine the floor and ceiling costs, on a route section basis, for the following routes:

- Perth to Midland; and
- Perth to Robb's Jetty.

In preparation for the Clause 9 Determination, the Economic Regulation Authority ("the Authority") commissioned PricewaterhouseCoopers (PwC) to audit the PTA Costing Model. The audit was completed in December 2003. The audit report can be accessed on the Authority's website.

On 26 May 2004, the PTA submitted its proposed floor and ceiling costs to the Authority.

On 29 May 2004, the Authority published in *The West Australian* and *The Australian* newspapers a notice of intention to determine floor and ceiling costs on these routes, with details on where further information can be obtained and inviting submissions. The closing date for submissions was 30 June 2004.

No public submissions were received on the PTA's proposed floor and ceiling costs.

An important reference document in the determination of the floor and ceiling costs is the approved PTA (formerly Western Australian Government Railways) Costing Principles. The proposed PTA Costing Principles was approved by the Regulator on 11 April 2003 and is available on the Authority's website.

PwC and Hughes Consulting Services Pty Ltd (HCS) were engaged to provide advice to the Authority on costing and engineering issues in the calculation of the floor and ceiling costs as proposed by the PTA. The consultants provided recommendations on:

- what is to be an acceptable Modern Equivalent Asset (MEA) standard for each of the two nominated lines to meet current and projected levels of demand, and
- provide a review of the PTA's capital, maintenance, operating and overhead costs to assess what are acceptable rates, that can be substantiated and/or benchmarked, to ensure that operating and technical efficiencies are achieved at the MEA standard.

The review also included an assessment as to whether the PTA has achieved the MEA standard on a line-by-line basis, and if not, what the PTA would need to do to achieve that standard.

To obtain a better understanding of the current condition of the nominated lines to enable comparative benchmarking with other rail operator's lines of similar usage and topography, a track inspection was carried out by HCS on both lines.

The PwC and HCS report recommendations are summarised within the Authority's Determination. However, because of the inclusion in the report of some commercially sensitive information relating to the PTA's current operation, the Authority considers the PwC and HCS Report to be confidential and has not made it publicly available on the Authority's website.

2. The WA Legislative Floor And Ceiling Calculation Requirements

The key legislative requirements in relation to calculating the floor and ceiling costs can be summarised as follows:

Definition of costs (Clauses 1 and 2, Schedule 4 of the Code)

Incremental costs are the operating costs and, where applicable, capital costs and overheads that the owner would be able to avoid in respect of the 12 months following the proposed access.

Operating costs are the train control, signalling and communications, infrastructure maintenance, train scheduling, emergency management and information reporting costs. The cost of maintaining the railway infrastructure is to be calculated on the basis that cyclical maintenance costs are evenly spread over the maintenance cycle. All cost items are to be based on the costs that would be incurred if the infrastructure were replaced using MEA, if appropriate.

Capital Costs are the costs comprising both the depreciation and risk-adjusted return on the relevant railway infrastructure. It is to be determined using an annuity formula by applying the Gross Replacement Value (GRV) of the infrastructure as the principal, the Weighted Average Cost of Capital (WACC) appropriate to the railway infrastructure as the interest rate, and the economic life in years as the number of periods.

The GRV of the railway infrastructure is calculated as the lowest current cost to replace existing assets with assets that have the capacity to provide the level of service that meets the actual and reasonable projected demand and are, if appropriate, MEA.

Total Costs include the total of all operating, capital and overhead costs attributable to the performance of the access-related functions of the owner or an associate.

Determination of WACC (Clause 3, Schedule 4 of the Code)

The Regulator is required to determine, as at 30 June in each year, the WACC for the railway infrastructure associated with the urban network. In 2003 and every five years thereafter, the Regulator is to publicly consult when determining the WACC.

Nature of costs (Clause 4, Schedule 4 of the Code)

All costs are to be those that would be incurred by adopting efficient practices for the provision of railway infrastructure, including the practice of operating a particular route in combination with other routes to achieve efficiency.

Allocation of costs to determine the floor (Clause 7, Schedule 4 of the Code)

The floor price of a route and associated railway infrastructure is the incremental costs resulting from the combined operations of all operators and other entities on that route and use of that infrastructure.

Allocation of costs to determine the ceiling (Clause 8, Schedule 4 of the Code)

The ceiling price of a route and associated railway infrastructure is the total costs attributable to that route and that infrastructure.

Determination of the floor and ceiling costs on routes for which access proposals are likely to be made (Clause 9, Schedule 4 of the Code)

The Regulator will be required to nominate the routes on which the Regulator considers that proposals for access are likely to be made, and ask the railway owner to make an initial determination of the floor and ceiling costs of these routes. The Regulator will need to make a determination on these costs and will seek public comment before making the determination.

Review and re-determination of costs (Clause 12, Schedule 4 of the Code)

If it is considered that there is a material change in the circumstances that existed when the floor and ceiling costs were determined, the Regulator may review the costs and make a fresh determination. The Regulator may also give public notification of such a review and seek public comment on the determination.

Competition Principles (Section 20(4) of the Act)

The Act also provides a framework within which the Regulator's determination, required under Clause 9, Schedule 4 of the Code is to be made.

Subsection 20(4) states:

> *In performing functions under this Act or Code, the Regulator is to take into account –*
>
> > *the railway owner's legitimate business interests and investment in railway infrastructure;*

> *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;*
>
> *the economic value to the railway owner of any additional investment that a person seeking access or the railway owner has agreed to undertake;*
>
> *the interests of all persons holding contracts for the use of the railway infrastructure;*
>
> *firm and binding contractual obligations of the railway owner and any other person already using the railway infrastructure;*
>
> *the operational and technical requirements necessary for the safe and reliable use of the railway infrastructure;*
>
> *the economically efficient use of the railway infrastructure; and*
>
> *the benefits to the public from having competitive markets.*

The nature of the decision-making power given to the Regulator under Clause 9 of Schedule 4 is such that it is mandatory in so far as the Regulator must exercise it by taking into account all the factors listed in Section 20(4).

However, under Clause 9 of Schedule 4 its application is discretionary in so far as the Regulator may allocate such weight to each of the factors listed in Section 20(4) as the Regulator considers appropriate for the particular case.

3. Costing Model In The WA Railways Access Regime

The PTA is required to negotiate access prices between a floor and a ceiling as specified in Clauses 7 and 8, Schedule 4 of the Code. The floor and ceiling approach attempts to prevent a railway owner from extracting monopoly profits, and ensures that prices are not set so low or so high that some rail operators cross-subsidise the services provided to others.

The floor is determined by the incremental costs resulting from the operations on the section of a route and use of the infrastructure. The calculation of the floor is dependent upon a number of specific circumstances which will vary based on each access application. Each operator can have a different floor and the sum of all operators' floors on a route section will be no less than the floor for that route section.

The PTA will apply the following factors to calculate the floor:

- the percentage that the incremental traffic represents of the total traffic;
- the existing overall level of traffic (ie. high or low density traffic use);
- the requirements of the service (eg. high speed passenger versus low speed freight);
- the nature of the infrastructure (which will influence the operating costs) and the specific requirements of the user; and
- the nature of the train operations and its impact on overhead costs.

Capital costs will only be incorporated in the floor when it can be demonstrated that the operator's requirements require additional capital investment to increase the capacity of the MEA. However, as it is unlikely that the floor for a particular route section will have a capital requirement attached to it, the floor of a route section will generally be based on the operating and overhead costs attributed to that route section.

Similarly, the ceiling is derived from the total costs attributable to the section of a route and the use of the infrastructure.

The components of the floor and ceiling prices and the approach to estimating these prices are not based on actual costs or the actual network but rather the hypothetical GRV of a MEA, assuming efficient practices. There is no obligation for the PTA to provide a network that is MEA or to adopt the specific maintenance practices assumed in the regime as its actual practices. However, the standard of service assumed for the hypothetical GRV of a MEA must be consistent with what is to be provided by the actual network to meet current and reasonably projected demand.

Schedule 2 of the Code defines a "route section" as a section of the railway network that has been divided for management and costing purposes. Each route section contains its own derived ceiling and floor costs and it is between these costs that

access prices will be negotiated. It should be noted that a negotiated route could equate to a route section (or part thereof) or be a combination of several route sections.

The Regulator has agreed to the PTA's definition of the railway network into the following route sections based on differences in track characteristics and traffic densities:

Perth to Midland

- Perth - East Perth
- East Perth - Midland

Perth to Robb's Jetty

- Perth - North Fremantle
- North Fremantle - Fremantle
- Fremantle - Robb's Jetty

To calculate the floor and ceiling costs, the PTA has developed a computerised costing model, the PTA Costing Model, which has since been audited by PwC for the Regulator. The audit report can be accessed on the Authority's website.

The purpose of the audit in December 2003 was to evaluate the Costing Model's data and model integrity risks, confirm that model assumptions and logic were consistent with the Costing Principles, and randomly test the accuracy of the access pricing calculations. Since the audit, PwC has been working with the PTA to ensure data integrity and calculation accuracy.

4. Discussion Of Issues

4.0 Introduction

Issues pertaining to the PTA's floor and ceiling determination that were considered significant are discussed under the following headings:

- Level of service and modern equivalent assets, if appropriate
- Capital costs
- Operating costs and working capital
- Maintenance costs
- Overhead costs

The following discussion commences with a review of what has been established in PTA's Costing Principles under each of the above headings. This is followed by a summary of PTA's submission, recommendations from the Authority's consultants, and the Authority's views and comments.

4.1 Level of Service and Modern Equivalent Assets, if appropriate

i) *Costing Principles*

The term MEA has been defined as:

> *An optimised network that is reconfigured using current modern technology serving the current load with some allowance for reasonably projected demand growth for up to five years into the future. The MEA excludes any unused or under utilised assets and allows for potential cost savings that may have resulted from technological improvement.*

For the parts of the network that the PTA is able to demonstrate are MEA, unit cost levels quoted in competitive tenders for providing actual services, could be used as common proxies for estimating efficient costs. However, unit rates will need to be assessed against the number of units consumed to ensure operating (productivity of inputs) and technical (type and combination of inputs) efficiency. Benchmark unit rates will also require adjustment for environmental factors as well as for factors such as the scope of the contract and the time elapsed since it was awarded.

For the parts of the PTA network that are not considered MEA, the Authority will benchmark their costs against other comparable assets as required.

A "greenfields" assumption is to be utilised for estimating a GRV on a MEA basis for the PTA, and costs related to constructing around rail traffic, surface restoration and other surface diversions are excluded from the GRV. It is also

assumed that the optimised network is provided by rail and within the existing corridor of land. In other words, the existing rail track alignment of the network will be considered as efficient.

The PTA believes the existing network can meet the current and reasonably projected demand for all potential users taken together. If the PTA sought to include the costs of additional infrastructure to meet projected demand, it would need to demonstrate the basis of the demand projection and a commitment to the capital expenditure.

Where the ceiling costs calculated for a specific rate using MEA is significantly higher than the existing infrastructure calculation, the Authority may determine that it is not appropriate to apply MEA. Under these conditions, the pre-existing infrastructure may be used in determining the ceiling costs if the existing infrastructure meets current and anticipated operational and safety standards and if the infrastructure components are available in the market.

ii) *Summary of the PTA's submission*

The PTA considers that the majority of the existing track configuration (ie. sleeper type, rail weights, etc.) can be adopted as the MEA.

The PTA acknowledges the following instances where the existing network is not MEA:

- The five nominated route sections contain timber sleepers, these are progressively being replaced with concrete sleepers;
- Optic fibre has been used as the MEA asset to provide high speed digital communications on main lines where signalling is used (excluding the North Fremantle to Robb's Jetty route section);
- Processor Based Interlocking has been used in all cases of signalling systems instead of electro-mechanical interlockings (excluding the North Fremantle to Robb's Jetty route section; and
- Electro code has been used in all signalling systems in the North Fremantle to Robb's Jetty route section.

The PTA advises that it's SG (standard gauge) and NG (narrow gauge) Codes of Practice apply to the MEA as the PTA is required to comply with these Codes under its Rail Safety Accreditation.

The PTA proposed MEA is as follows:

Table 1: PTA Proposed MEA

Both Routes	MEA Specifications
Axle load (tal)	16
Max speed passenger (kph)	130
Average formation height (mm)	600
Rail (kg/m)	50
Ballast depth (mm)	200
Sleeper type and number/km	Concrete; 1,430

Source: PTA submission to the Authority; 25 February 2004

iii) *Consultants' recommendations*

The PTA has indicated, in discussions, that its understanding of the concept of the MEA was similar to that of WestNet Rail (WNR) which defined the concept of the MEA, and which PwC/HCS considered acceptable, on the following basis:

The MEA should be expressed as a total package of items which leads to an operating standard, including:

- *track standard for tangent operations (speed and axle load);*
- *the effect of curve and gradient (noting that the Regulator has already determined the existing track alignment is what should be used);*
- *the capacity and capabilities of the signalling system;*
- *the prevalence and level of protection provided at level crossings; and*
- *other public safety issues such as fencing.*

The PTA's MEA for determining the GRV of its NG assets is based on its NG Code of Practice, which in turn is based on the SG National Code of Practice that applies to the Defined Interstate Railway Network (DIRN) requirements. The National Code is voluntary and not enforceable by law. However, railway owners can elect to adopt the National Code as part of their safety accreditation. The PTA is able to implement the National Code at a rate of progress that it is free to determine.

During the inspections, some track configurations were identified as not meeting the MEA which were confirmed by PTA officers. These are summarised below:

- The formation generally averages 300mm in height on the older lines due to the closeness of level crossings. The MEA assumed height is 600mm (including capping layer).
- Ballast depth on passenger lines appears to be currently from 100mm to 150mm below the base of sleepers. The MEA indicates a standard depth of 200mm throughout the network.
- Sleepers are currently mostly timber on the lines inspected with some recently upgraded sections being concrete. The MEA assumes concrete at 1430/km minimum throughout.
- Rail used currently on the older lines is 41 or 47kg/m. The passenger lines have continuously welded rail (CWR) while some sections of the dedicated freight line between Leighton Yard and Robb's Jetty are mostly jointed rail. The MEA indicates 50kg/m CWR throughout.

PwC/HCS are of the view that the PTA proposed MEA for the passenger component of the nominated route sections is acceptable. However where freight trains operate on parts of the PTA network a separate freight MEA should be established. In practice the track components are broadly similar and a slower maximum speed of approximately 80 kph (subject to operating requirements) can be set to accommodate the higher axle load (generally 21 tal). For example, on the diesel freight lines between North Fremantle (Leighton Yard) and Robb's Jetty (as an extension of the WNR Cockburn to Robb's Jetty line) a different standard of MEA can be applicable (similar to the previously approved WNR Mainline MEA).

The recommended MEA changes are as follows:

Table 2: PwC/HCS Recommended MEA

Both Routes	PTA Proposed MEA Specifications	Recommendation (Passenger)	Recommendation (Freight)
Axle load (tal)	16	No change	21
Max speed (kph)	130	90-115 (individual line dependant speeds)	80
Average formation height (mm)	600	No change	No change
Rail weight (kg/m)	50	No change	No change
Ballast depth (mm)	200	No change	No change
Sleeper type and number/km	Concrete; 1,430	No change	No change

Source: PwC/HCS report to the Authority; August 2004

iv) *The Authority's views and comments*

In determining the MEA, consideration needs to be made of some recognised and agreed standards that are to be used to achieve acceptable levels of safety and service on all rail lines forming the PTA network. These standards involve the assessment of the elimination of any excess capacity, the use of current cost effective track components, the assumed use of modern network control and communications systems, the adequacy of crossing loops, plus reviewing the track structure required for present and future demand.

The PTA has not nominated a separate MEA for freight services between North Fremantle and Robb's Jetty. The Authority's consultants PwC/HCS have recommended a separate MEA for freight services with changes to train speed and total axle load. The recommended MEA, for freight services, includes a lower maximum speed recognising the speed constraints of operating within the existing corridor (eg. tight curves and short distances between stopping points). The recommended freight service MEA is similar to the MEA for passenger services, with the exception of maximum speed, signalling, communications and traction power type, due to the need to retain consistency of infrastructure within the existing corridor. Signalling and communications are of a lesser standard to the passenger service MEA because of the relative infrequent diesel freight services and these have been agreed to in the approved Costing Principles.

The proposed PTA MEA is an acceptable definition for the MEA of the nominated route sections for passenger services. The Authority also accepts the PwC/HCS recommended MEA for freight services. Accordingly, the Authority is of the view that the MEA for the five nominated route sections is to be the standard outlined in Table 2.

4.2 Capital Costs

i) *Costing Principles*

The assets included in the capital cost calculations consist of assets that are directly engaged in the provision of rail infrastructure services. These include:

- railway track, associated track structures, over or under track structures, supports (including supports for equipment or items associated with the use of a railway);
- tunnels and bridges;
- stations and platforms;
- train control systems, signalling systems and communication systems;
- buildings and workshops; and

- associated plant, machinery and equipment.

Sidings or spur lines that are excluded by Section 3(3) or (4) of the Act from being railway infrastructure are not included.

Also not included are capital assets that support operating functions. These are included in the operating cost or overhead cost calculations as appropriate. Assets in this category include motor vehicles, computers, printers, facsimile machines, photocopiers, system hardware and software, mobile and fixed communications, office furniture and equipment. The cost of these assets is to be calculated on a net basis.

Cuttings and embankments are not in the initial capital calculations. However, expenditures on cuttings and embankments incurred since the commencement of the WA Rail Access Regime ("the Regime"), to create capacity or expand the network, or improve operating standards or efficiency, will be included in the calculation of the ceiling.

The cost of formation is to be included in calculating the GRV.

The PTA's economic life assumptions as detailed in the Costing Principles are based on an engineering assessment of rail life on curves and have been approved by the Regulator.

Key capital cost drivers to be adopted include:

- the operating track standard, eg. axle load and speed;
- population of supporting infrastructure, eg. bridges and culverts; and
- topography the infrastructure covers, eg. track curvature and gradient.

All operator and Government contributed railway infrastructure assets are to be included in calculating the floor and ceiling. An amount of the contribution determined as the equivalent annual cost will be credited to the operator and the route section(s) concerned in the calculation of the over-payment in the ceiling price test.

The appropriate design, construction and project management fee is at a rate of 20 percent of the total cost of the infrastructure and based on an economic life of 50 years.

The appropriate construction rate is an average of 1 kilometre per day, and there will be sections of the network where the Authority may consider a higher or lower rate to be more appropriate.

The WACC is to be used as the interest rate for assessing the capital costs incurred during the construction period as a component of the GRV.

ii) *Summary of PTA's submission*

The PTA's unit rates for track capital, signalling and communications are based on current tendered rates for the Perth to Mandurah rail line. Costs for tunnels are based on escalated historic costs of construction. The unit costs for bridges over water are estimated from the cost of construction of the Goongoongup Bridge in East Perth. Station capital costs are based on recent reviews, internal and external, of construction costs for existing station structures and costs for rebuilding some stations on the Perth to Armadale route.

The PTA has built unit rates into the Costing Model based on:

- tendered rates for the Perth to Mandurah rail line;
- recent construction history for infrastructure such as stations, bridges and tunnels; and
- direct quotations from suppliers where appropriate.

Unit rates were multiplied by the population data for that particular section of line using the MEA design standard for that new line which then produced the GRV.

Existing level crossings are included in the GRV calculation. Components included in this calculation are:

- signalling protection equipment – flashing lights or boom gates, power supply, insulated joints; and
- track crossing three metres either side of centre line of track which includes sub base preparation and bitumen surfacing.

The Costing Principles do not include the economic life for some items such as for stations and overhead power traction. The economic life for these items is based on PTA engineering standards.

The construction rates for stations, bridges and tunnels are based on PTA engineering standards rather than the approved rate of 1 kilometre per day, for track infrastructure, outlined in the Costing Principles.

The PTA's proposed capital costs by route sections are outlined in Appendix 1.

iii) *Consultants' recommendations*

The calculation of the GRV for an MEA standard, for the five nominated route sections, has been simplified by both the current construction of the "greenfield" Joondalup rail line extension to Clarkson and the proposed new rail line to Mandurah. These two projects provide current unit rates or reference points for

the various items applicable to the GRV for the nominated route sections at the MEA standard.

Track Infrastructure

PwC/HCS have tested the justifications provided by the PTA for key unit rates and have compared the PTA's outcomes to benchmarks available in other Australian rail networks.

In previous reviews undertaken for the Authority and the Regulator, PwC/HCS have confirmed that some rail construction and maintenance costs can be different in Western Australia compared to the eastern states of Australia. This is due to factors such as higher transportation costs or different production approaches. This situation was confirmed during the reviews of WNR's costs and accordingly the PTA proposed costs have been compared with those provided by WNR previously. Where any significant deviations have been identified, the reasons for the differences have been addressed by the PTA.

The unit rates proposed by the PTA for track work, signals and communications and overhead traction power are considered by PwC/HCS to be reasonable and efficient and consistent with the requirements of the Code.

Stations

Stations on the Perth to Joondalup route have a greater distance between them and are larger than the stations in the five route sections being assessed. They also include bus interchange facilities. Consistent with the Regulator's prior decision to contain the extent of changes to the MEA to the limits of the existing alignment, PwC/HCS are of the view that station costs be assessed on the basis of the existing number of stations along the five route sections. The alternative approach of optimising station numbers and sizes by assuming some are rationalised and others expanded is considered to be subjective.

PwC/HCS have indicated that the PTA stations are of a different type, size and standard to stations in other jurisdictions in Australia. In addition, the services provided and use of stations in the PTA network varies from station to station. In establishing a MEA for stations, current estimates of the replacement cost are required to be calculated. These costs have been benchmarked against the indexed costs of construction of the stations on the Perth to Joondalup rail line. The basic items used to calculate the station replacement cost include:

- platform costs;
- shelter costs;
- building costs;
- communications room costs;

- car park/interchange costs, where appropriate, and
- pedestrian access costs, eg. footbridge, stairs, escalators, lifts, etc.

Some PTA stations contain retail outlets which are leased to private sector operators. The PTA has included in their capital cost estimates, structures for the retail outlets as they form part of the station structure. The internal fit out costs of these retail outlets are the responsibility of the lessees.

The PTA has included ticket vending machines in their capital cost calculations. PwC/HCS view these costs as "above rail" costs which are not permitted under the Code's definition of railway infrastructure (ie. they are a train operator specific item) and consequently PwC/HCS recommend that these be excluded from the station capital costs.

There are some stations in the nominated route sections, such as Perth Central, McIver and Claisebrook, that also service other routes which are not being assessed as part of this Determination. In this situation, the capital cost of these stations needs to be allocated on a proportional usage basis using the following methodology.

- Perth Central Station – on proportional passenger boardings obtained from ticket sales for the four routes serviced. The boardings data also includes patronage on diesel services such as the Australind.
- McIver and Claisebrook Stations – the PTA has proposed allocating these costs using a 50/50 split between the Perth to East Perth route section and the Perth to Armadale route. The equal split used by the PTA is based on 2001 boardings data for the proportional use of the Perth to East Perth route section and the Perth to Armadale route by McIver and Claisebrook Station customers. Whilst this data is arguably dated, the PTA is satisfied that it is sufficiently accurate for access pricing purposes. As the Perth to East Perth route section is only 2.6 route km and a significant number of passengers pass through this section PwC/HCS are of the view that it may be more reasonable to allocate 25% of the cost to the Perth to East Perth route section; 25% to the East Perth to Midland route section and 50% to the Perth to Armadale route. The alternative, arguably more accurate, approach to this allocation is to require the PTA to complete new passenger surveys. However, this survey cost is not warranted given any likely change in floor and ceiling costs by route section would be immaterial.

Some stations, especially most of those on the Perth to Joondalup rail line and some of the larger stations on the nominated route sections, eg. Perth, Fremantle, Subiaco and Midland, contain bus/rail and bus/bus interchanges as a part of the station infrastructure all of which have been included in the capital cost of the station where appropriate. In smaller stations, where there are bus interchanges or other parking facilities, the costs associated with these facilities

have not been included in the PTA cost estimates as the costs are relatively insignificant when compared with the costs for the network or individual route sections.

Economic Life

The PTA has provided an economic life assumption for specific asset types (eg. level crossings, fences, sleepers, etc.) within the Costing Model which is consistent with the economic life of assets outlined in the PTA Costing Principles. However, the economic life for stations is not included in the Costing Principles and the PTA has proposed an economic life of 25 years for this asset class.

PwC/HCS view an economic life of 50 years for stations as more appropriate, after which major upgrades would be necessary to meet changes in technology and infrastructure usage. This 50 year economic life for stations is also consistent with the period over which the PTA depreciates its buildings, as indicated in the 2003 edition of the Western Australian Government Railways Annual Report. Consequently, PwC/HCS recommend an economic life for stations of 50 years with no salvage value and this economic life should be included in future revisions to the PTA Costing Principles.

iv) *The Authority's views and comments*

The key steps to completing a GRV estimate based on MEA are:

- review asset databases;
- establish existing network capacity, and current and reasonably projected future demand on the network;
- complete an analysis of each asset class to optimise the network to a MEA;
- assess the current replacement cost (GRV) of the MEA; and
- confirm GRV is at efficient costs.

In an earlier Determination, the Costing Principles Determination for WNR, the Regulator has indicated that there are a number of approaches which can be used to calculate the GRV which also applies to the PTA network. These include:

- using best practice capital cost unit rates per track kilometre for an average unit cost including rail, track, bridges, signals and communications.
- using best practice capital cost unit rates per kilometre for basic formation, rail, ballast and sleepers. Adding to this a value for items such as bridges, culverts, level crossings, cross overs on a population basis (ie. a count of the number and length of each type of asset for each line sector) plus a capital

cost estimate of an efficient signalling and communication system for the network; this is then allocated back to line sectors;

- requiring a detailed independent valuation on a route section by route section basis, which includes specific, rather than average build costs.

PwC/HCS's advice to the Authority is that the proposed PTA capital costs are reasonable and recommends to the Authority the capital costs be accepted with the exception of the:

- costs associated with ticket vending machines which should be excluded;
- proportional costs for McIver and Claisebrook Stations, be adjusted so that 50 per cent of the costs are allocated equally between the Perth to East Perth and East Perth to Midland route sections.
- economic life of stations should be 50 years rather than 25 years as proposed by the PTA.

On this basis, the Authority requires the PTA to amend the proposed capital costs to reflect the three changes as suggested by PwC/HCS and outlined above.

The Authority's determined capital costs for each of the nominated route sections are outlined in Appendix 1.

4.3 Operating Costs and Working Capital

i) *Costing Principles*

Operating costs are costs directly associated with operational management of the network such as access management, train control, train scheduling and operations planning, safe working management, telephone charges, and radio licences. They reflect a centralised train control system and include compliance costs with the PTA's safety accreditation requirements under the *Rail Safety Act 1998* and requirements for emergency management.

Operating costs also include the approved annual working capital charge that is calculated by multiplying half the WACC by the annualised capital costs.

The PTA will test whether the operating costs used for determining the floor and ceiling costs are efficient as follows:

- benchmarking will be used where it is available and comparable;
- for certain processes and activities unit costs from competitive tendering may be used;

- actual costs may be used where the consumption and scope are efficient (eg. train controllers' salaries if the number of controllers and their range of duties are efficient by benchmarking);

- actual costs may also be used where the costs come from a competitive market such as insurance; or are regulatory costs (such as the cost of Rail Safety Accreditation).

In measuring efficiency, the PTA recognises that these costs change over time, especially as a result of innovation and technological change.

Allocation of non-sector specific operating costs will be in accordance with the allocation rules using train movements.

ii) *Summary of the PTA's submission*

The PTA's proposed operating costs are those costs directly associated with the operational management of the Perth metropolitan rail network. The costs reflect the modern centralised train control system, train scheduling, the operation of the communications system between train controllers and the train drivers and the signalling system required to meet the safe working of the network. Operating costs also include compliance costs and safety accreditation costs as required under the *Rail Safety Act 1998* and for emergency management.

The PTA has included, in the Costing Model, the costs associated with a single train control function. The PTA has not allocated train controllers by numbers to routes but has allocated the cost of train control function based on route kilometres.

The PTA's proposed operating costs and working capital for the nominated route sections are outlined in Appendix 1.

iii) *Consultants' recommendations*

To be consistent with the Costing Principles, the PTA operating costs for train control should be allocated based on the actual train movements (train numbers) as scheduled on a day by day basis for the passenger services for each route section. For freight services, the train movements can be calculated from available historical usage data.

The PTA has adopted a fixed rate cost per kilometre for the train control function in the Costing Model. While this is inconsistent with the PTA Costing Principles, the allocation methodology used by the PTA does not have a material impact on the total floor and ceiling costs. PwC/HCS view this treatment as reasonable.

PwC/HCS view the total network operating costs as quite efficient due to the small size, substantially modern and simple network operation of the four lines

radiating out from the Perth Station. The individual operating costs of various metropolitan passenger networks around Australia vary considerably due to age, size, station and level crossing density, equipment used and the reliability of services and rollingstock, etc. The relatively simple PTA network configuration is reflected in the actual operating costs which are substantially less than those for larger, older and more complex networks such as those in Sydney. PwC/HCS are of the view that the PTA operating costs are reasonably complete in that the majority of material cost items are included in the total operating cost.

iv) *The Authority's views and comments*

The use of actual costs has been accepted in the approved Costing Principles on the basis that they can be shown to be efficient through benchmarking and competitive tendering. Reviews, by PwC/HCS, of the PTA's actual costs and budgets have provided a level of confidence that the proposed costs are reasonable and represent the operating costs for an efficient railway owner.

In an earlier Determination, the Costing Principles Determination for WNR, the Regulator identified the key operating cost drivers to be:

- the frequency of services, eg. track used for daily passenger services typically requires daily inspection whereas grain lines are often only used for a small part of the year and receive far fewer inspections;
- traffic density, eg. GTKs;
- average speed for freight and passenger services;
- actual average axles load relative to maximum axle load;
- climate related factors, eg. higher costs can be caused by extreme heat causing rail buckling or higher rainfall increasing the rate of degradation; and
- the safety, quality and reliability requirements of customers and other stakeholders.

The Authority considers that the operating cost drivers outlined above also apply to PTA's urban passenger network.

The PTA has proposed a uniform rate per kilometre for its operating costs which is inconsistent with the Costing Principles. The Authority's consultants, however, recommend that the Authority accept this approach as it does not have a material impact on the floor and ceiling calculations.

PwC/HCS have assessed the proposed PTA operating costs to be efficient and recommend that the Authority accept the proposed costs. On this basis, the Authority accepts the operating costs as proposed by the PTA.

The PTA will need to reduce the cost attributable to working capital, however, to reflect adjustments made to the proposed capital costs as outlined in section 4.2 above.

4.4 Maintenance Costs

i) *Costing Principles*

The PTA's method of calculating maintenance costs is based on the cost of maintaining the track infrastructure, with the following assumptions:

- The track infrastructure is new at year 1 and is maintained to realise the defined economic life of the assets. The infrastructure maintenance levels and the frequency of the activities are deemed to comply with the Australian Standard AS4292 Parts 1 and 2 which specify safety requirements of the PTA Railway Safety Management System. The PTA's maintenance practices also comply with the Codes of Practice for both the Narrow and Standard Gauge network.

- The maintenance regime is broadly classified into routine maintenance and cyclical maintenance.

- There are two major activity classifications within routine maintenance, namely routine inspections, and routine maintenance (which typically follows the inspection process). The inspection regime includes patrolling, on-train inspection, track condition monitoring (using recorder vehicles), defined event inspections by patroller and structures inspection. Routine maintenance is the corrective action taken as a follow up to routine inspections.

- Cyclical maintenance represents tasks that are undertaken at regular intervals which are necessary to achieve the expected asset life and include track resurfacing, rail grinding, ballast top up and cleaning, rail defect removal and structure maintenance to achieve economic life; and firebreaks, scrub slashing, drainage, access roads and road seal on level crossings to meet operational and safety requirements.

As the level of maintenance activity varies over the life of the asset, the net present value of the projected stream of maintenance costs that occurs over the life of the asset is calculated and annualised to derive an average annual maintenance charge over the life of the asset.

The cost of repairing damage from incidents such as fire and flood, or damage caused to the track as a result of derailments or accidents has been included in maintenance costs but only to the extent they are not recoverable from operators. The cost of repairing incidents will not be included if it can be shown that the PTA is negligent in its responsibility as a railway owner. The PTA intends to calculate incident costs based on a historical cost approach.

Routine maintenance of signalling and communications is based on industry accepted inspection regimes and fault history. It includes specified periodical inspections and procedures (including testing) and responses to faults.

Cyclical maintenance is significantly less important for signalling and communications and includes component rebuilds to achieve economic life.

The signalling and communications maintenance costs are included as part of the Costing Model. The annual charge is based on an annualised value of the net present value of the maintenance costs stream.

Major periodical maintenance (MPM) is set at zero on the understanding that MPM is an asset renewal program to maintain the infrastructure in perpetuity. Re-railing, rail grinding and re-surfacing, and ballast cleaning however, may be permitted as cyclical maintenance activities if they were considered necessary to achieve the targeted life of the assets.

ii) *Summary of PTA's submission*

The track maintenance cost is based on maintaining the infrastructure to a serviceable level until the end of its economic life.

Maintenance activities typically include inspections, routine maintenance and cyclic maintenance.

Inspections include patrolling, on-train inspection, track geometry car and structure inspections. Routine maintenance includes broken sleeper replacement, ballast top up following tamping, mechanical corrective surfacing, recant curves, turnout maintenance, track corrections following inspections and ultrasonic testing. Cyclic activities include firebreaks, scrub slashing, drainage, access roads, weed spraying and rail grinding.

Unit rates for maintenance activities for track infrastructure are based on current rates for the Perth to Joondalup rail line as this rail line is relatively new and is considered to be a modern equivalent asset.

Maintenance costs for bridges and tunnels are based on current maintenance activity for like infrastructure on the Perth to Joondalup rail line as well.

Station maintenance costs have been estimated on the basis of an increasing percentage of station replacement values. The percentage varies with the economic life of the stations.

Signalling and Communications maintenance costs are based on the PTA's budgeted costs for the 2002-03 financial year.

The PTA's proposed maintenance costs, by route section, are outlined in Appendix 1.

iii) *Consultants' recommendations*

The use of maintenance unit rates on a per kilometre basis is a common industry approach to assess cost efficiency and is regularly used by other network owners such as the Australian Rail Track Corporation (ARTC), Rail Infrastructure Corporation, Freight Australia and Queensland Rail (QR). Hence the approach is more readily amenable for completing benchmarking comparisons. It is also a simpler approach for stakeholders to understand. Furthermore, the approach is easier for the Authority to administer, check, and verify as it is significantly less prone to gaming.

The PTA's Costing Principles has defined the maintenance regime that must be considered to meet the requirements of the PTA's Codes of Safe Working for both the NG and SG within the PTA's area of responsibility. There is also a requirement on the PTA to meet the inspection and maintenance provisions as defined by Australian Standard AS 4292 Railway Safety Management Parts 1, 2 and 4.

In the Costing Model, the following maintenance elements have been included:

- Routine maintenance for track, civil works, signals and communications;
- Cyclical maintenance for track, civil works, signals and communications; and
- Project management costs.

The above are described in the Costing Principles and meet the requirements of the Code of Safe Working Practice. The estimated costs for maintenance over the economic life of components of infrastructure are outlined in the Costing Model covering each maintenance item. These estimates have been determined from a variety of sources including, where possible:

- Maintenance on the newest PTA route, the Perth to Joondalup rail line, being a line which meets the MEA standards; and
- Actual maintenance costs across the network. The current actual track maintenance costs relate to the inspection, safety and operational requirements of the track and PwC/HCS are of the view that this would not significantly change if infrastructure were upgraded to the MEA level.

PwC/HCS are of the view that the deviations between the PTA's proposed MEA and the actual asset configuration are not material and hence application of the MEA provides little scope to reduce the cost base for the MEA below current costs; ie. the costs of maintaining the current network and the MEA network will be very similar as the same inspection and routine maintenance regime will apply to meet safety standards.

Track Infrastructure

To assess the efficiency of the proposed maintenance costs, PwC/HCS have compared the PTA proposed costs to the costs of maintaining QR's Brisbane CityTrain network. The QR CityTrain maintenance cost data is *Commercial-in-Confidence so* cannot be made public. Overall, PwC/HCS have confirmed that the PTA and the CityTrain track maintenance costs are broadly comparable. Individual routes will have some variance in maintenance costs depending on the population of the various items that need to be maintained.

The North Fremantle to Fremantle route section has cost levels much higher than the QR benchmarked costs. Despite this, PwC/HCS view the costs for this route section as efficient as it is a relatively high cost section which comprises mostly quad track (two DG and two NG lines) and a large DG bridge of approximately 600 metres. This route section also has multiple turnouts and cross overs which generate greater maintenance requirements.

The analysis above indicates that the PTA actual track and civil maintenance costs for substantially NG track sections are consistent with cost outcomes on the QR CityTrain network. For freight services, the PTA maintenance cost on the freight line from Fremantle to Robb's Jetty is broadly similar to the Regulator's approved WNR cost levels for the mainlines in the WNR rail freight network.

Based on the sample testing analysis and other cost comparisons, PwC/HCS have indicated that the proposed PTA maintenance costs for track and civil works are reasonable and efficient.

Signalling and Communications

The PTA's proposed MEA for signalling and communications is considered to be the systems that are in place for each of the relevant route sections. Consequently, there is not likely to be any scope to reduce maintenance costs from assuming a switch to newer and more reliable technology.

The signalling system encapsulates train control and level crossings. Therefore the maintenance costs of the signalling system are directly related to the operation of train control and level crossings. The PTA has proposed the average network signalling maintenance cost based on it's 2002-03 electrified network signalling budget. PwC/HCS are of the view that this approach is reasonable as all the actual signalling, communications and traction assets are already considered to be at the proposed MEA standard.

PwC/HCS have benchmarked the proposed PTA signalling maintenance costs against those of other electrified passenger networks in Australia using *Commercial-in-Confidence* data. The maintenance cost comparisons illustrate

that costs vary depending on the signalling system used, size of the network, train numbers and frequency and the population of track obstacles including train stopping patterns, train separation, distances between stations and level crossings.

The Perth rail network is currently the smallest electrified network in Australia and has the greatest number, and variation in type, of level crossings per track kilometre which creates a comparative cost disadvantage. Despite this cost disadvantage, PwC/HCS consider the signalling maintenance cost used by the PTA as an acceptable level of cost for the Perth network.

For freight services, the Costing Model has included a signalling maintenance cost rate which is similar to the rate proposed for passenger services. PwC/HCS consider this rate to be to high for the Fremantle to Robb's Jetty route section. This is because the route section has only a single track, with single train operation controlled by the network train controllers. Therefore, PwC/HCS consider a lower cost per kilometre for signalling maintenance costs similar to WNR's south west main rail line be adopted for this route section. The consultants consider that a cost of $6,500/single track km is reasonable, due to the high number of level crossings, interaction with the electric network and slower speed of 70kph with a centralised train control system in place.

In regard to maintenance costs for communications facilities on the passenger network, the Costing Model includes an average rate per kilometre which is in an acceptable range for communication costs when viewed against *Commercial-in-Confidence* data for other metropolitan rail networks. The communications cost varies due to factors such as the size of network and the method of communication stipulated within each operator's Safe Working procedures. The smaller the network, the higher the cost per kilometre required for communications, hence the PTA is at the higher end of the range.

The PTA's average cost of overhead traction power maintenance on the electrified routes has been verified, by PwC/HCS, from the available PTA records for the 2002-03 financial year actual costs. The cost is viewed by PwC/HCS as within an acceptable range for overhead traction power maintenance costs.

PwC/HCS have tested a representative sample of maintenance costs for signals, communications and overhead traction power with verification achieved against current PTA records and supplier invoices. The cost outcomes are viewed by the consultants as being within an acceptable range for an efficient network operator.

Stations

In regard to station maintenance, the PTA cost calculations have been undertaken based on the typical program of maintenance completed for stations over an annualised 25 year economic life. The PTA estimates are based on a ratio of the replacement cost of a station, with the ratios varying depending on the

length of the economic life of stations. The PTA estimates are consistent with cost levels incurred in other jurisdictions and are viewed by PwC/HCS as being of an efficient order.

PwC/HCS have sought the PTA view on whether it needs to increase station maintenance costs to reflect the recommended increase in economic life. The PTA indicated that there was no adjustment required to the station maintenance cost ratio. Overall, given the PTA's approach to calculating this cost, the PwC/HCS recommended increase in economic life for stations from 25 to 50 years does not in itself require an adjustment to the station maintenance cost ratio but results in higher annual maintenance costs due to the extended economic life for stations.

v) *The Authority's views and comments*

The Authority considers the use of a uniform maintenance rate per kilometre, as proposed by the PTA, as an acceptable approach to estimating maintenance costs for MEA track infrastructure for each of the nominated route sections. This ensures customers attain the benefit of efficient maintenance practices through benchmark comparisons. The Authority has also used this approach in three previous determinations on the floor and ceiling costs for the mainlines in the freight network; some of the grainlines in the freight network and terminal ends for the south west mainline.

The Authority's consultants have indicated that the proposed maintenance costs for track, signalling and communications, and overhead power traction assets in the electrified passenger route sections are efficient when benchmarked against maintenance costs of other railway infrastructure owners in Australia. The consultants recommend that they be accepted by the Authority. The signalling maintenance costs for freight services on the Fremantle to Robb's Jetty route section however, are considered to be too high and should be reduced.

While the adjustment to the economic life of stations does not require a change to the maintenance ratio, the station maintenance costs will be higher due to the extended economic life of stations. In addition, maintenance costs associated with the ticket vending machines should be deleted as these costs are an "above rail" item.

After considering the PwC/HCS recommendation, the Authority is of the opinion that the PTA proposed maintenance costs are acceptable with the following adjustments:

- omission of the ticket vending machines maintenance costs;
- maintenance costs to reflect the extended economic life for stations; and

- reduced signalling maintenance costs for freight services on the Fremantle to Robb's Jetty route section.

The Authority's determined maintenance costs are outlined in Appendix 1.

4.5 Overhead Costs

i) *Costing Principles*

The PTA has two categories of overhead costs:

- The PTA Network and Infrastructure division overheads; and
- corporate overheads.

The Networks and Infrastructure Division overheads include information technology and software costs, motor vehicle costs, support services, accreditation costs, and management costs.

The PTA provides certain corporate overhead functions to the Networks and Infrastructure Division which relate to the performance by the division of its access related functions. The corporate functions include accounting and financial support (but not including the preparation and maintenance of access related financial records, which is undertaken by the Networks and Infrastructure division), safety related issues and human resource matters such as payroll and recruitment.

The methodology used to allocate overhead costs between rail routes in the PTA rail network is train movements.

ii) *Summary of the PTA's submission*

The PTA overheads are based on PTA's budgeted rates for the 2003-04 financial year. All of the PTA's Network and Infrastructure Division's overhead costs have been allocated to overheads as rail access is the division's only function.

The PTA has also included in its proposed floor and ceiling costs, the cost of complying with a number of other regulatory functions, including:

- the *Rail Safety Act 1998*;
- the *Dangerous Goods (Transport) Act 1998*;
- the *Bushfires Act 1954*; and
- regulatory requirements such as the use of the corridor for public and private utilities (such as telecommunications carriers) and for public access.

Overheads for services provided by the PTA's corporate function are included in the Costing Model. They include:

- accounting and audit services (based on transactions and surveys);
- human resources services (based on the Network and Infrastructure divisions share of total staff count);
- group overhead costs (based on the Network and Infrastructure division's share);
- information technology (based on the Network and Infrastructure division's share of total terminals and includes dedicated Network and Infrastructure division hardware); and
- compliance, environment and safety (based on time spent associated with each business group captured through a staff survey).

The Network and Infrastructure Division and corporate overhead costs are allocated by train kilometres as the PTA considers this approach as the most equitable method of allocation for a passenger network.

The PTA's proposed overhead costs by route sections are outlined in Appendix 1.

iii) *Consultants' recommendations*

The overhead costs are those costs incurred in the management of the PTA rail network. These costs include costs associated with IT costs, corporate costs, accommodation and office costs (as applicable), motor vehicle running costs and support service costs such as human resources and financial accounting costs. As a large number of these assets are leased or are of minimal salvage value at the end of the life, the PTA has not adjusted for a resale value as stipulated in the PTA Costing Principles. PwC/HCS do not view this minor inconsistency with the Costing Principles as being material.

PwC/HCS understand that the PTA self-insures for most operating risks. Consequently, it has not sought to include an allowance for rail network related insurance costs due to quantification challenges. This cost is typically a more significant overhead cost for rail networks.

In the Costing Model, the PTA has allocated overhead costs according to train kilometres. While this is inconsistent with the PTA Costing Principles, which stipulates the allocation should be by actual train movements by route section, it is not unreasonable and does not have a material impact on the total floor and ceiling costs. PwC/HCS have advised that the PTA allocation approach of using train kilometres is reasonable.

iv) The *Authority's views and comments*

Reviews of the PTA's actual costs and budgets by PwC/HCS have provided a level of confidence that the proposed costs are reasonable.

The key issue is how to fairly allocate overhead costs between line sections. The current PTA approach elects to use train kilometres.

Whilst the number of trains managed on a line (as a percent of total train movements) provides a fair indication of the intensity of administration resources applied to the line, this measure can become less accurate where a network has many shorter hauls and a range of other lines with longer average hauls. Consequently, the Authority has also considered the PTA's use of train kilometres as another possible measure.

On the basis that there is very little difference between the two allocation methodologies, train movements and train kilometres, on the floor and ceiling costs as indicated by the Authority's consultants, the Authority is prepared to accept the allocation methodology proposed by the PTA as there is no single allocation method that suits all rail networks. In addition, the Authority notes that other rail networks, such as the ARTC and the QR networks, have also used train kilometres in combination with GTKs which have been approved by regulators covering their regimes.

5. Ceiling And Floor Costs For Nominated Route Sections

This section of the Determination summarises the PTA's proposed ceiling and floor costs of the nominated route sections and provides amendments to the route sections.

The tables in Appendix 1 compare the PTA's proposed floor and ceiling cost levels against the Authority's approved floor and ceiling costs.

Determining whether the PTA is operating at efficient levels requires the need to:

- Determine the key cost components for measurement of efficiency;
- Identify, define and incorporate best practice performance and processes into the Costing Principles, which are then periodically updated;
- Develop and update annually an efficient cost model, based on operating the GRV network, that has the functional capacity to provide concise KPI benchmarking reports, so as to compare results against those achieved by other track owners; and
- Complete a gap analysis to reconcile differences in results.

Efficient costs is a dynamic concept with organisations at best practice, continuing to make efficiency gains through implementing further innovations and productivity enhancements. Accordingly, trends in efficient costs will need to be monitored over time, and this process should take into account past productivity improvements, and any industry changes likely to influence future operating costs.

GRV will require periodic reviews to ensure that it continues to reflect a MEA network for the current and projected volume. The Authority has indicated its intentions to review the GRV every three years but the review frequency will likely increase or decrease depending on the changes required.

In arriving at the approved floor and ceiling costs as summarised in Appendix 1, four sets of adjustments were made to the floor and ceiling costs submitted by the PTA:

- Several input and transposition errors were found in the Costing Model and these were corrected after discussions with the PTA.
- The ceiling and floor costs were then recalculated to reflect the Authority's determination of the costs as detailed in this Determination. The reduction in the PTA's proposed ceiling costs resulting from the corrections in the Costing Model and the Authority's determination of the costs range from 1 to 7 percent for the five nominated route sections. This is outlined in Table 4 of Appendix 1.

- With the change of the WACC for 2004-05 from 5.8 to 6.4 percent, a re-calculation of the floor and ceiling costs was undertaken. Table 5 in Appendix 1 compares the proposed PTA ceiling costs and the Authority's determined costs at the higher WACC. The reductions in the ceiling costs, at the higher WACC, vary between 0.6 and 7 percent for the five nominated route sections.

- The change in the WACC also has a minor impact on the floor cost calculation as some track capital costs are saved under the avoidable cost methodology. The savings are based on the difference between track capital costs at full traffic and no traffic. The difference between the two situations is mainly due to the life of the track assets. For some routes there is no difference, ie. the life of the assets are the same whether there is full traffic or no traffic. In those cases, there are no track capital costs saved in the floor cost calculation, and as a result the change in WACC has no impact.

- In the Costing Principles Determination, the Regulator agreed that the PTA could apply a CPI-X factor to the ceilings of its route sections, where X has been set at one quarter of CPI for the next three years. The majority of the cost data provided by the PTA is from cost outcomes recorded during 2003-04 and is hence in 2004 dollars. Consequently, there is no escalation required for cost levels until July 2005.

The Authority has a number of powers to monitor compliance by the PTA with the Costing Principles. Annual audit programs will be the key monitoring tool for assessing compliance. The Authority has also developed a KPI reporting system in consultation with the PTA.

6. Determination

It is the view of the Authority that the direction below appropriately addresses the differing needs and interests of the community, access seekers and the PTA as required under Section 20(4) of the Act.

The proposed Floor and Ceiling Costs submitted by the PTA dated May 2004 are not approved. Under Clause 9 (6), Schedule 4 of the Code, the PTA will be required to make the amendments as tabled in Appendix 1 of this Determination to apply from 1 July 2004.

LYNDON ROWE

CHAIRMAN

14 October 2004

Appendix 1 – PTA Nominated Route Sections

Table 1 - Approved Level of Service Indicators

	Passenger MEA Specifications	Freight MEA Specifications
Target max. speed	90-115	80
Rail weight (kg)	50	50
Sleeper type	concrete	concrete
Sleeper spacing (per km)	1430	1430
Axle load freight (tal)	16	21

Table 2 - General Route Section Information

Route Sections	Route distance in Km	Track section lengths in Km	Number of level crossings	Train Km's (actual 2002)
Perth to East Perth	2.7	7.5	1	183,013
East Perth to Midland	13.6	26.8	8	952,815
Perth to North Fremantle	16.3	33.9	4	1,151,259
North Fremantle to Fremantle	2.5	7.6	0	173,268
Fremantle to Robb's Jetty	3.3	3.3	6	5,529

Table 3 - Floor Price Schedule

Route Sections	Incremental Cost		
	PTA proposed	Determined by the Authority	With 30 June 2004 WACC
Perth to East Perth	27,587	27,587	27,589
	% change	0	0
East Perth to Midland	131,766	131,766	131,777
	% change	0	0
Perth to North Fremantle	154,485	154,485	154,506
	% change	0	0
North Fremantle to Fremantle	26,922	26,922	26,921
	% change	0	0
Fremantle to Robb's Jetty	8,080	2,775	2,778
	% change	(65.7)	0.1
Total	348,840	343,535	343,571
	% change	(1.5)	
		% change	0

Table 4 - Ceiling Price Schedule - WACC @ 5.8%

Route Sections	Capital Costs		Perth Station Allocation		Maintenance Cost		Working Capital		Operating Cost		Overhead Cost		Total Cost	
	PTA proposed	Determined by the Authority	PTA proposed	Determined by the Authority	PTA proposed	Determined by the Authority	PTA proposed	Determined by the Authority	PTA proposed	Determined by the Authority	PTA proposed	Determined by the Authority	PTA proposed	Determined by the Authority
Perth to East Perth	2,317,954	2,244,350	94,530	87,814	350,492	337,531	67,221	65,086	27,408	27,408	38,611	38,611	2,896,216	2,800,800
	% change	(3.2)	% change	(7.1)	% change	(3.7)	% change	(3.2)	% change	0	% change	0	% change	(3.3)
East Perth to Midland	6,976,347	6,809,063	492,150	457,186	1,677,503	1,797,730	202,314	197,463	140,845	140,845	201,019	201,019	9,690,178	9,603,306
	% change	(2.4)	% change	(7.1)	% change	7.2	% change	(2.4)	% change	0	% change	0	% change	(0.9)
Perth to North Fremantle	8,061,883	7,895,863	779,519	724,139	1,953,315	2,066,897	233,795	228,980	168,378	168,378	242,886	242,886	11,439,776	11,327,143
	% change	(2.1)	% change	(7.1)	% change	5.8	% change	(2.1)	% change	0	% change	0	% change	(1.0)
North Fremantle to Fremantle	2,671,367	2,624,060	117,320	108,985	417,972	435,021	77,470	76,098	25,341	25,341	36,555	36,555	3,346,025	3,306,060
	% change	(1.8)	% change	(7.1)	% change	4.1	% change	(1.8)	% change	0	% change	0	% change	(1.2)
Fremantle to Robbs Jetty	558,799	558,799	3,744	3,478	115,450	62,402	16,205	16,205	34,343	34,343	1,166	1,166	729,707	676,393
	% change	0	% change	(7.1)	% change	(45.9)	% change	0	% change	0	% change	0	% change	(7.3)
Total	20,586,350	20,132,135	1,487,263	1,381,602	4,514,732	4,699,581	597,005	583,832	396,315	396,315	520,237	520,237	28,101,904	27,713,702
	% change	(2.2)	% change	(7.1)	% change	4.1	% change	(2.2)	%change	0	%change	0	% change	(1.4)

NOTE:

The figures in the "**Determined by the Authority**" columns consist of the following:

- Corrections to PTA interest calculations;
- Corrections to unit rates for signalling equipment for two route sections;
- Ommission by PTA of some components of station costs for two route sections;
- Increase in the economic life of stations from 25 to 50 years;
- Deletion of Ticket Vending Machines from station capital costs;
- Revised cost allocations for the McIver and Claisebrook stations; and
- Lower signalling maintenance costs for the freight services on the Fremantle to Robb's Jetty route section.

Table 5 - Ceiling Price Schedule - WACC @ 6.4%

Route Sections	Capital Costs		Perth Station Allocation		Maintenance Cost		Working Capital		Operating Cost		Overhead Cost		Total Cost	
	PTA proposed	Determined by the Authority	PTA proposed	Determined by the Authority	PTA proposed	Determined by the Authority	PTA proposed	Determined by the Authority	PTA proposed	Determined by the Authority	PTA proposed	Determined by the Authority	PTA proposed	Determined by the Authority
Perth to East Perth	2,488,064	2,414,524	98,796	92,453	349,930	336,915	79,618	77,265	27,408	27,408	38,611	38,611	3,082,427	2,987,176
	% change	(3.0)	% change	(6.4)	% change	(3.7)	% change	(3.0)	% change	0	% change	0	% change	(3.1)
East Perth to Midland	7,421,844	7,281,028	514,361	481,333	1,669,311	1,777,619	237,499	232,993	140,845	140,845	201,019	201,019	10,184,879	10,114,837
	% change	(1.9)	% change	(6.4)	% change	6.5	% change	(1.9)	% change	0	% change	0	% change	(0.7)
Perth to North Fremantle	8,601,512	8,484,036	814,699	762,386	1,942,727	2,042,337	275,248	271,489	168,378	168,378	242,886	242,886	12,045,450	11,971,512
	% change	(1.4)	% change	(6.4)	% change	5.1	% change	(1.4)	% change	0	% change	0	% change	(0.6)
North Fremantle to Fremantle	2,875,963	2,838,444	122,615	114,741	416,280	431,233	92,031	90,830	25,341	25,341	36,555	36,555	3,568,785	3,537,144
	% change	(1.3)	% change	(6.4)	% change	3.6	% change	(1.3)	% change	0	% change	0	% change	(0.9)
Fremantle to Robbs Jetty	585,980	585,980	3,913	3,661	115,648	62,600	18,751	18,751	34,343	34,343	1,166	1,166	759,801	706,501
	% change	0	% change	(6.4)	% change	(45.9)	% change	0	% change	0	% change	0	% change	(7.0)
Total	21,973,363	21,604,012	1,554,384	1,454,574	4,493,896	4,650,704	703,147	691,328	396,315	396,315	520,237	520,237	29,641,342	29,317,170
	% change	(1.7)	% change	(6.4)	% change	3.5	% change	(1.7)	%change	0	%change	0	% change	(1.1)

NOTE:

The figures in the "**Determined by the Authority**" columns consist of the following:

- Corrections to PTA interest calculations;
- Corrections to unit rates for signalling equipment for two route sections;
- Ommission by PTA of some components of station costs for two route sections;
- Increase in the economic life of stations from 25 to 50 years;
- Deletion of Ticket Vending Machines from station capital costs;
- Revised cost allocations for the McIver and Claisebrook stations; and
- Lower signalling maintenance costs for the freight services on the Fremantle to Robb's Jetty route section.

Table 6 – Gross Replacement Value

Route	Perth to East Perth		East Perth to Midland		Perth to North Fremantle		North Fremantle to Fremantle		Fremantle to Robb's Jetty		Total Cost	
GRV ($)	PTA proposed	Determined by the Authority	PTA proposed	Determined by the Authority	PTA proposed	Determined by the Authority	PTA proposed	Determined by the Authority	PTA proposed	Determined by the Authority	PTA proposed	Determined by the Authority
Signalling	4,919,550	4,919,550	7,086,560	7,086,560	8,637,965	8,637,965	1,275,040	1,275,040	1,727,960	1,727,960	23,647,075	23,647,075
Communications	415,492	415,492	2,135,117	2,135,117	2,552,490	2,552,490	384,158	384,158	0	0	5,487,257	5,487,257
Track	8,854,327	8,854,327	33,869,629	33,869,629	28,018,582	28,018,582	11,327,630	11,327,630	3,104,891	3,104,891	85,175,059	85,175,059
Station	1,979,525	896,013	22,640,270	22,364,912	30,343,666	27,828,468	4,544,391	4,169,391	0	0	59,507,852	55,258,784
Bridges	5,158,524	5,158,524	23,707,640	23,707,640	7,074,418	7,074,418	23,921,676	23,921,676	0	0	59,862,258	59,862,258
Overhead Power	1,582,968	1,582,968	8,134,498	8,134,498	9,724,629	9,724,629	1,463,589	1,463,589	0	0	20,905,684	20,905,684
Train Control	218,084	218,084	1,120,682	1,120,682	1,339,753	1,339,753	201,637	201,637	273,263	273,263	3,153,419	3,153,419
Tunnels	13,500,000	13,500,000	0	0	30,900,000	30,900,000	0	0	0	0	44,400,000	44,400,000
Level Crossings	0	0	3,652,000	4,972,000	2,436,000	4,856,000	0	0	1,720,000	1,720,000	7,808,000	11,548,000
Interest on Construction	171,264	475,770	506,274	822,235	683,140	2,958,821	251,248	924,808	2,110	2,110	1,614,036	5,183,744
Total	36,799,734	36,020,728	102,852,670	104,213,273	121,710,643	123,891,126	43,369,369	43,667,929	6,828,224	6,828,224	311,560,641	314,621,278
	% change	(2.1)	% change	1.3	% change	1.8	% change	0.7	% change	0	% change	1.0