Public Transport Authority

COSTING PRINCIPLES

Public Transport Authority of Western Australia

Costing Principles

CONTENTS

1. INTRODUCTION

1.1 Background

The purpose of the *Railways (Access) Act 1998* (the Act) and the *Railways (Access) Code 2000* (the Code) is to establish a rail access regime that encourages the efficient use of, and investment in, railway facilities by facilitating a contestable market for rail operations.

The Act requires nominated parts of the rail network managed by the Public Transport Authority of Western Australia (PTA) to be made available for access by third party rail operators. Schedule 1 of the Code lists the sections of the PTA rail network covered by the Code.

PTA is established under the *Public Transport Authority Act 2003* to direct, manage, maintain and control the Government Railways in Western Australia.

The Economic Regulation Authority (ERA) was established on 1 January 2004 and became responsible for the administration of the Act and the Code which were previously the responsibility of the Office of the Rail Access Regulator.

1.2 Relevance of the Costing Principles

Section 46(1) of the Code requires each railway owner to prepare and submit to the ERA a statement of the principles, rules and practices (the costing principles) that are to be applied and followed by the railway owner in the determination of the costs associated with the Floor Price Test and the Ceiling Price Test referred to in Clause 7 and Clause 8 of Schedule 4 of the Code.

The Costing Principles is the main facet of the access regime to ensure that the correct risk return balance is struck between third party train operators and PTA.

The objectives of the Costing Principles are:

- to provide the framework for the calculation and determination of Floor and Ceiling costs required under the Code; and
- to define the manner in which the keeping and presentation of the railway owner's accounts and financial records so far as they relate to the determination of the Floor and Ceiling costs will occur.

Definitions for key terms referred to in the Costing Principles, whether defined in the Act or the Code or not, are provided in Section 8.

The Over-payment Rules determined by the ERA under Part 5, Section 47 of the Code are linked to the Costing Principles in so far as application of the Ceiling Price Test defined in Clause 8 of Schedule 4 of the Code is concerned. The Over-payment Rules, as determined, set out the methodology in dealing with overpayments where breaches of the Ceiling Price Test have occurred.

These Costing Principles have been developed on the basis that they are a set of principles and that they will need to be supported by databases and costing models

containing considerable detail, which will change from time to time. That detail is not contained in this document but PTA recognises that it must:

- prepare and have the information available for the ERA at all times and its preparation and maintenance must be consistent with these principles;
- respond to any request or Determination by the ERA related to these Costing Principles and their application; and
- comply with its obligations under the Code.

The Code also allows PTA to negotiate prices between the Floor and Ceiling and as such the Floor and the Ceiling costs only provide the lower and upper boundaries to potential final prices for access which will be established by negotiations (and if necessary arbitration).

Although this document only refers to the Costing Principles, PTA notes that Clause 13, Schedule 4 of the Code provides the Pricing Principles on which negotiated access prices under the Code are to be based.

PTA is prepared to discuss access with interested parties either within the requirements of the Code or outside the Code. The rights and protection offered under the Code are not extended to negotiations and agreements undertaken outside the Code.

1.3 Definition of Route

The Code refers to specific "routes" in Schedule 1. In this context, the term is used to define groupings of contiguous track sections between junctions for the purpose of exhaustively listing the track sections covered by the Code. Route is a defined term in the Code meaning "those parts of the railway network and associated infrastructure to which this Code applies, and includes part of a route".

Schedule 2 of the Code defines a "route section" as sections of the railway network that has been divided for management and costing purposes.

PTA will calculate Floor and Ceiling costs at the route section level, which will then aggregate to provide a total Floor and Ceiling for the "route" nominated by the access seeker. The route section for key parts of the network, which will be used in the application of these costing principles, are included as Annexure 7.3. If Floor and Ceiling cost calculations are required for the rest of the network in Schedule 1 of the Code, they will be provided to the access seekers in accordance with Section 9(1)(c) of Part 2 of the Code.

The route Ceiling costs together with volume detail provided as part of Section 7(1)(b)(i) of the Code will assist access seekers to assess price consistency and accuracy.

Schedule 2 of the Code also lists the information relating to the standard of and the characteristics of the infrastructure, together with operating limits, for each route, and which must be provided to access seekers.

1.4 Service Quality Commitment

PTA will adopt economically and technically efficient practices to provide a network, which maintains service quality at the specified operational levels for the network.

PTA will report any specific service quality key performance indicators (KPI's) to the ERA that are agreed between PTA and the ERA.

PTA will negotiate specific KPI's covering both PTA and the operator's performance in its Access Agreements to measure operational performance of itself and the operator. This may include financial incentives or penalties.

1.5 Structure of this Document

This statement of Costing Principles is structured into seven further sections:

- Section 2 – Determination of capital costs
- Section 3 – Determination of operating costs
- Section 4 – Determination of overhead costs
- Section 5 – Other matters
- Section 6 – Review and consultation
- Section 7 – Annexures
- Section 8 – Definitions.

2. DETERMINATION OF CAPITAL COSTS

2.1 Introduction

The Ceiling costs, and in certain circumstances the Floor costs, include a capital charge which is intended to reflect the cost to PTA of establishing and replacing infrastructure capacity over time. The Code sets out the basis for determining the capital charge based on an annuity formula, calculated having regard to the gross replacement value of the infrastructure, its economic life and an allowable rate of return. The capital charge, using the annuity formula compensates PTA for both the return on capital and for capital depreciation.

The circumstances where the Floor costs will include a capital charge are where it is necessary to make capital expenditure to provide the service (either because of the need to expand capacity or because of the characteristics of the service requested). In such cases, it is appropriate to include the cost of this capital in the Floor costs. These circumstances will usually be limited to situations where capacity has to be expanded to meet the customer's requirements. In calculating an operator's incremental cost, the economic life assumption underpinning the annuity payment calculation for these types of capital costs will be based on the economic life of assets listed in Section 7.1. If the assets service a time limited project, then the annuity will be based on that shorter life, and the ERA will be advised as to the reasons for the shorter life assumption.

There are five key elements which underpin the determination of the appropriate capital charge:

- infrastructure to be included in the calculations;

- gross replacement value;
- economic life of the asset;
- allowable return; and
- annuity calculation.

Each of these elements are discussed below.

2.2 What infrastructure is included

The assets included in the capital calculations include only the assets directly engaged in the provision of rail infrastructure services, and as defined in the Code and 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.

Assets which support operating functions will be included in the operating cost or overhead cost calculations as appropriate. Assets included in this category are motor vehicles, computers, printers, facsimile machines, photocopiers, system hardware and software, mobile and fixed communications, office furniture and equipment. The cost of these assets will be calculated on a net basis.

In accordance with the ERA's Determination the PTA has not included cuttings and embankments in the initial capital calculations. However, expenditures on cuttings and embankments incurred since the commencement of the Rail Access Regime, to create capacity or expand the network, or improve operating standards or efficiency, will be included in the calculation of the Ceiling.

2.3 Gross Replacement Values

There are a number of underlying assumptions which affect the calculation of Gross Replacement Values ("GRV") including:

Capacity of Infrastructure

The infrastructure is required to be optimised to meet current and reasonably projected demand.

PTA believes the existing network can meet the current and reasonably projected demand for all users taken together. If 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.

Route Optimisation

PTA has assumed that the optimised network is provided by the rail track within the existing corridor of the land and therefore the resulting lateral alignment of the network is considered efficient.

Contributed Assets

Contributed assets will be included in the cost of capital for the purpose of calculating the GRV and the Ceiling. Contributed assets include both government and operator contributed assets, and the cost of operating and maintaining these assets will also be included in the calculation of ceiling costs.

In the case of Government and operator contributed assets, the value of the contributed capital will be accounted for as an equivalent annuity payment which is to be included in the revenue earned on the asset, for the purpose of the Ceiling Price Test.

As an illustration, if PTA contributed 50% of the capital cost of a new level crossing, with the other 50% coming from another source, then for the purpose of the ceiling calculation, the full cost of the level crossing calculated as an annuity would be added to the ceiling of the relevant route section. As for the 50% contribution from the other source, that amount would be annualised and treated as revenue for the purpose of the Ceiling Price Test of that route section.

Greenfields Site

For the purposes of calculating the GRV, the replacement cost calculations are to assume a greenfields site and hence costs related to constructing around rail traffic, surface restoration and other surface diversions are excluded from the GRV.

Modern Equivalent Assets

Replacement values are to be assessed on the basis of Modern Equivalent Assets ("MEA"), where appropriate.

PTA considers that various components of the existing track configuration such as rail weights can be adopted as the MEA. It is assumed, however, that this track configuration is new in accordance with the Code. Where the Ceiling costs calculated for a specific route using MEA are significantly higher than the existing infrastructure calculation, the ERA 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.

It is PTA's view that the current exceptions in calculating the GRV for the existing network are:

- The route sections
  - ◊ Perth to East Perth,
  - ◊ East Perth to Midland Terminal,

- ◊ Perth to Armadale,
- ◊ Armadale to Mundijong,
- ◊ Perth to North Fremantle, and
- ◊ North Fremantle to Robb Jetty

are all timber sleeper tracks and are progressively being replaced with concrete sleepers. Accordingly, concrete sleepers rather than timber sleepers have been used as MEA;

- optic fibre has been used as the MEA asset to provide digital communications on main lines where signalling is used (excluding North Fremantle to Robb Jetty and Armadale to Mundijong);
- Processor Based Interlocking has been used in all cases of signalling systems instead of electro-mechanical interlockings (excluding North Fremantle to Robb Jetty and Armadale to Mundijong); and
- Electrocode has been used in all cases of signalling systems in Armadale to Mundijong and Fremantle to Robb Jetty.

However, PTA recognises that the ERA, when determining the Floor and Ceiling on the various routes as either part of the Clause 9, Schedule 4 of the Code review or as Clause 10, Schedule 4 of the Code request will decide the MEA applicable to the route sections and the exceptions proposed by PTA.

PTA calculates the GRV using current market tested unit rates for materials and construction based on the MEA, or using the existing infrastructure, if appropriate. All Ceiling costs will be calculated using best practice capital cost unit rates. Where there is a likelihood that the Ceiling cost calculation for a route section has the potential to breach the Ceiling, the ERA may require an independent review of these costs.

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

- identify the route for which the GRV is being calculated;
- assess the existing railway infrastructure specification to ensure that the MEA test is appropriate;
- review asset databases to ensure the population of assets is correct;
- confirm existing network capacity will meet current and reasonably expected future demand on the network;
- confirm unit rates are based on efficient costs;
- complete an analysis of each asset class to optimise the network to a MEA; and
- calculate the current replacement cost GRV of the railway infrastructure using the MEA or existing asset specification if appropriate.

The key capital cost drivers PTA will adopt to ensure a MEA network are:

- the operating track standard (axle load, speed);
- population of supporting infrastructure (bridges, culverts);
- topography of route (gradient and track curvature);
- automatic train protection, signalling; and
- Passenger stations.

The operating standards that PTA will apply for determining GRV are in accordance with the National Codes of Practice. Nevertheless, PTA recognises that the standards to be adopted in the calculation of the GRV, including track specifications, will need to be agreed to by the ERA.

Unit Rates

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

- tendered rates PTA has tested in the market; and
- direct quotations from suppliers,

where these rates have any adjustment for scale or scope or the impact of location these assumptions will be included.

This information is contained in PTA's Costing Model and will be made available to the ERA and contains information of the source and the assumptions that are currently used in the model.

In addition, PTA will identify and provide to the ERA unit rate information and assumptions that it considers can be released as part of the public consultation process for the ERA's Clause 9, Schedule 4 of the Code determination on the floor and ceiling costs to apply to certain routes.

Design, construction and project management fees

PTA will apply design, construction and project management fees at a rate of 20% of the total cost of the infrastructure and based on an economic life of 50 years.

Because PTA uses primary unit rates for establishing construction costs, it is appropriate to charge full project management fees on the materials cost calculated for the infrastructure. In cases where such fees are included in unit rates, PTA accepts that the project management fees should be reduced to account for such charges, keeping total design, construction and project management fees in line with a 20% limit.

Financing charge during railway infrastructure construction

The Code requires that the GRV for railway infrastructure be applied as part of the calculation of the capital charge. Consistent with this approach is that PTA will include in the capital cost an allowance for its cost of capital and related financing fees and charges during the construction period.

PTA will apply the WACC determined by the ERA to the construction cash flows to calculate the financing charge. Upon completion of construction, the interest calculation ceases. In determining the annuity payment attributed to such costs, a 50-year economic life assumption will be utilised.

Construction rates will vary depending on scale and scope and also the geography and the impact of other infrastructure on the route. PTA has used an average construction rate of one kilometre per day. This rate will be based on the entire route and allocated to route sections on a per kilometre basis. The ERA may consider a

higher or lower rate in some sections of the network and adjust the construction rate accordingly.

2.4 Economic Life

PTA has evaluated the economic lives of its infrastructure based on the application of MEA with new components and key determinants of asset life such as environmental factors, which will have an impact to extend or reduce the life of the asset.

This evaluation is based on generally accepted industry lives and PTA's own experience. The lives adopted by PTA are generally consistent with those accepted in other regimes.

Two assets subject to reduced lives due to the specific nature of the rail operation in which they are used are:

- rail life – affected by track curvature and volume; and
- turnouts – a complex asset which has a different spread of lives for components.

Rail life is one asset where the track curvature and volume specific to a nominated route will reduce the life of the rail. The effect of such curvature and traffic volume on economic life will be represented using the matrix shown below. These estimates are based on engineering assessment of rail life on curves, and have previously been applied elsewhere by the ERA.

Life Expectancy (Years)				
Rail Curvature	0-10MGT	>10-15MGT	>15-20MGT	>20MGT
0 to 400 metre radius	15	8	7	6
400 to 800 metre	30	14	12	10
> 800 to tangent	70	65	62	60

MGT = Million Gross Tonnes

This matrix assumes that rail lubrication is used as a preventative maintenance method.

In the case of turnouts some components have different lives. As approved by the ERA, PTA will calculate the annuity based on the individual components and the lives of each component as shown below:

Turnout Sub asset	Years 0-10 MGT	Years >10-15 MGT	Years >15-20 MGT	Years > 20 MGT
Bearers (concrete)	40	35	32	30
Blades and Stock Rails	9	5	5	4
Rail bound crossings	17	12	12	10
Balance of turnout	25	22	21	20

MGT = Million Gross Tonnes

Whilst this will be discussed in the section relating to maintenance in Section 7.1, the maintenance regime has been set to allow the asset to reach its economic life. It has been assumed that the asset is life expired at the end of that period, has no economic (salvage) value and there are no costs to reclaim or dispose of the life expired assets.

The economic lives of the assets adopted by PTA are set out in Section 7.1.

2.5 Allowable return

The ERA has determined that the current allowable return (or WACC) for PTA is 5.6% real pre-tax. In accordance with the Code, the ERA will review the WACC at 30 June each year.

2.6 The annuity calculation

The annuity calculation provides a return on capital and implicitly provides for depreciation of the asset.

PTA has adopted the methodology (applying the PMT formula) used in a Microsoft Excel spreadsheet to calculate the annuity required.

The MS Excel terminology for the Annuity formula (PMT) is described:

Rate of Interest: be set at the relevant WACC as defined by the Code.

Nper: be expressed in years and based on the relevant economic life of the track sections.

Pv: is the GRV of the relevant route section.

Fv: is the salvage value, if any, which remains at end of economic life. When an asset achieves its full economic life, then the salvage value is to be set at zero.

Type: be set at the start of the period by inputting “1”.

This formula calculates the costs at the beginning of the period which does not reflect the actual payment cycle for access charges. The appropriate methodology is to calculate the change monthly in arrears but this is not possible under the definition in the Code where economic life for the GRV of the railway infrastructure is to be expressed in years as the number of periods.

To allow for this, the ERA has determined that PTA can include in its operating costs a proxy for the working capital required because of the effects of the formula (refer to Section 3.3).

3. DETERMINATION OF OPERATING COSTS

3.1 Introduction

PTA has prepared its operating costs based on the efficient cost of maintaining the MEA network.

3.2 Efficient Cost Tests

PTA will test whether the operating costs used for determining the Floor and Ceiling 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;
- if the maintenance programs are based on accepted industry standards for maintenance which describe the scope and frequency of the activity then this may be considered to be efficient;
- actual costs may be used where the consumption and scope are efficient (eg. train controller's 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, PTA recognises that these costs change over time especially as a result of innovation and technological change.

PTA will report against agreed efficiency KPI's to the ERA.

3.3 Definition of Operating Costs

In determining what maintenance activities are required to maintain MEA infrastructure in a GRV based regime, major periodical maintenance activities ("MPM") have not been included. For the purpose of the Costing Principles, this is because MPM is assumed to extend the economic life of the assets.

However, it is noted that the use and definition of MPM has a wide variety of application and interpretation in the rail industry.

There are some activities which are included in both MPM or in Cyclical Maintenance in a GRV based regime and are not exclusive to either.

Therefore PTA has defined the terms Routine and Cyclical Maintenance to detail what activities have been included in operating costs.

Operating costs are defined in the Code and PTA has four categories of operating costs in PTA's Costing Model as follows:

- Routine Maintenance for track, and signals and communications;
- Cyclical Maintenance for track, and signals and communications;
- Network Management Costs; and
- Working Capital.

Routine and Cyclical Maintenance for track

PTA has developed a track maintenance model which calculates the cost of maintaining the track infrastructure in accordance with the defined assumptions documented in the Costing Principles. The assumptions adopted in this process are:

The track infrastructure is new at year 1 and is maintained to realise the defined economic life of components of the asset. 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 Railway Safety Management System. 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 two categories:

- routine maintenance; and
- cyclical maintenance.

There are two major activity classifications within Routine Maintenance.

- 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 therefore 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 structures maintenance to achieve economic life; and
- firebreaks, scrub slashing, drainage, access roads and road seal on level crossings to meet operational and safety requirements.

The cost of repairing 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 insurance or operators. The cost of

repairing incidents will not be included if it can be shown that PTA is negligent in its responsibility as a railway owner. PTA intends to calculate incident costs based on a historical cost approach. However, PTA understands that the ERA will decide on the manner in which the cost of incidents will be calculated when determining the Floor and Ceiling on the various routes as part of the Clause 9, Schedule 4 of the Code review.

The track maintenance model is incorporated as part of the PTA Costing Model and includes all the assumptions and prices used. As the level of maintenance activity varies over the life of the asset, it is appropriate to calculate the net present value of the projected stream of maintenance costs that occurs over the life of the asset, starting with the assumption of a new asset in year 1. The annualised value of this stream of costs is then used to represent an average annual maintenance charge over the life of the asset.

These are costs included in the definition of Operating Costs in Schedule 4 of the Code.

Routine and Cyclical Maintenance for signalling and communications

Signalling and communications costs largely are based on Routine Maintenance because of the safety and operating requirements of these systems.

Routine Maintenance is based on industry accepted inspection regimes and based on 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 signal and communications maintenance model is incorporated as part of the PTA Costing Model. The annual charge is based on an annualised value of the net present value of maintenance costs stream. Maintenance costs are allocated to route sections according to train movements.

These are costs included in Part (b) of the definition of “operating costs” in Schedule 4 of the Code and the NPV of the cash flows is then used to calculate an average annual maintenance charge over the life of the asset.

Network Management Costs

There are PTA costs directly associated with operational management of the network as defined in Part (b) of the definition of “Operating Costs” in Schedule 4 of the Code.

They reflect a centralised train control system and include compliance costs with PTA’s Rail safety accreditation requirements under the Rail Safety Act and requirements for emergency management.

Working Capital

Because of the limitations in the Code in calculating the annuity formula described in Section 2.6 PTA has included in its operating costs an annual working capital charge that is calculated by multiplying ½ of the WACC by the annuity.

3.4 Allocation of Operating Costs

Track and signalling maintenance costs are directly allocated to route sections based on the nature and population of the infrastructure.

Allocation of non-sector specific operating costs including costs in Part (a) of the definition of "Operating Costs" in Schedule 4 of the Code is in accordance with the allocation rules using train movements and listed in Section 7.2. In general, train movements will provide the most appropriate allocation method for PTA's Network, which predominantly is for the transport of urban passengers.

4. OVERHEAD COSTS

4.1 Definition of Overhead Costs

Overhead costs are defined in the Code and PTA has two categories of overhead costs included in the PTA Costing Model as follows:

- Network and Infrastructure Division overheads; and
- Corporate overheads.

These are defined in Section 7.2 and included in the PTA Costing Model.

PTA is a vertically integrated organisation structured into autonomous Divisions that report to the Chief Executive Officer. The Network and Infrastructure Division is responsible for railway access and has its own management structure and related overheads. It is supported by Corporate Divisions that provide accounting and financial support, accreditation and safety related issues and human resource matters such as payroll. These overheads have been allocated based on the usage by Network and Infrastructure as a proportion of all other users in the organisation.

It should be noted that within the Network and Infrastructure Division not everything is access related and in that respect only those costs related to access will be included in the Floor and Ceiling Price Tests. For example, all costs including overhead costs associated with branches such as the Property and Planning Branch which are not involved in access related matters are excluded.

Overhead costs are as follows:

Network and Infrastructure Division overhead costs include:

- Safety;
- Legal fees and other statutory costs;
- Training and development costs for management and staff;

- Communication costs such as telephone, facsimile and data transmission, motor vehicle, travel and accommodation;
- Office stationery and consumable sundry items;
- Inventory holding cost;
- Labour on costs (Superannuation, Payroll Tax, Workers Compensation and Long Service Leave); and
- Fringe Benefits Tax.

These costs are apportioned directly to branches within the Network and Infrastructure Division.

Corporate Costs include:

- Building lease costs;
- Power and water;
- Corporate overheads (finance, safety compliance and human resources); and
- Safety accreditation fees.

Allocation of corporate overheads will be by staff numbers for those branches of the Network and Infrastructure Division associated with the management of the rail network.

Information technology costs are distributed based upon the personal computers and share of other computer systems within the Network and Infrastructure Division branches associated with the management of the rail network.

As stated in Section 7.2 all overhead costs will be allocated on a route section basis by the number of train movements.

4.2 Allocation of Overhead Costs

PTA has considered the correlation between the allocation proxy and the causality of the cost for categories of overheads. An allocation table is included in Section 7.2. In general terms, train movements will provide the most appropriate allocation method for PTA's Network, which predominantly is for the transport of urban passengers.

5. OTHER MATTERS

5.1 Floor and Ceiling variation

PTA will index the Floor and Ceiling costs based on CPI less the "X" factor.

CPI-X will not apply in the year that the GRV and operating costs are reset. The "X" factor will be set at one quarter of the CPI for the second and third years. The Floor and Ceiling will be reset at the end of the third year based on a review of assumptions and movements in costs. The ERA has indicated an intention to monitor and assess the movement in costs to determine an appropriate "X" factor for the years after the reset.

In determining CPI, the Australian Bureau of Statistics Weighted Average of Eight Capital Cities All Groups CPI index will be used. The annual change in CPI is

calculated as the percentage change in the average of the four quarters to March of each year from the average of the previous four quarters.

5.2 Calculation of the Ceiling

Clause 1, Schedule 4 of the Code includes a definition of the total costs to be included in the calculation of the Ceiling.

There will be only one regulatory Ceiling for all access seekers on a route section and the Ceiling will be calculated based on:

- Capital costs (Section 2 of this Costing Principles document);
- Operating costs (Section 3); and
- Overhead costs (Section 4).

PTA recognises the need to demonstrate to the ERA that the costs referred to the above are efficient.

5.3 Calculation of the Floor

The Floor Price Test is defined in Clause 7, Schedule 4 of the Code.

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.

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 (that is, 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.

These factors will influence the derivation of the incremental costs to be avoided and issuing a set of rules which deals with these and other factors either individually or in combination is impractical. Each application will be based on its individual circumstances and will set out the factors that PTA determines are relevant in calculating the Floor. If factors other than those mentioned above are considered relevant by PTA it will apply to the ERA to have these additional factors included.

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.

Given the likelihood that the Floor for a particular route section is unlikely to have a capital requirement attached to it, this means that the Floor of a route section will generally be based on the operating and overhead costs attributed to that route section.

6. REVIEW AND CONSULTATION

PTA will formally consult with the ERA at the end of the five years of operation of the Costing Principles to determine whether any amendments are required.

PTA's compliance with the Costing Principles will be subject to an annual independent external audit. The ERA may select and manage the auditor with costs paid by PTA. The ERA will approve the scope of the audit and the final audit report will be made available to the ERA and the access proponents.

The ERA has the power to commission special purpose audits on any Costing Principle issue or area where additional assurance is sought. The ERA will complete a routine revision to process any non-urgent changes to the Costing Principles before June 2012. The ERA has the power under the Code to amend the Costing Principles at any time and access seekers and operators can at any time request the ERA to consider amendments.

7. ANNEXURES

7.1 Economic Life of Assets

			Life Expectancy			
1	Earthworks for Track		100 yrs			
2	Bridges, Tunnels and Culverts					
a	Bridges (not footbridges)		100 yrs			
b	Culverts		50 yrs			
3	Level Xings		10 yrs			
	Access Roads		10 yrs			
4	Fencing of Track		10 yrs			
5	Track Materials					
			0-10 MGT	**>10-15 MGT**	**>15-20 MGT**	**>20 MGT**
a	Rail	Curve <400m	15 yrs	8 yrs	7 yrs	6 yrs
		Curve 400-800m	30 yrs	14 yrs	12 yrs	10 yrs
		Curve >800m & Tangent	70 yrs	65 yrs	62 yrs	60 yrs
			0-10 MGT	**>10-15 MGT**	**>15-20 MGT**	**>20 MGT**
b	Turnouts	Bearers – concrete	40 yrs	35 yrs	32 yrs	30 yrs
		Blades and Stock Rails	9 yrs	5 yrs	5 yrs	4 yrs
		Rail bound Crossings	17 yrs	12 yrs	12 yrs	10 yrs
		Balance of Turnout	25 yrs	22 yrs	21 yrs	20 yrs
c	Sleepers (concrete)		50 yrs			
d	Ballast		25 yrs			
e	Jewellery		25 yrs			
6	Track Construction		50 yrs			
7	Roads and Shunter's Pathway		10 yrs			
8	Signalling					
a	Track		20 yrs			
b	Flashlights		10 yrs			
c	Boom gates		10 yrs			
9	Communications		20 yrs			
10	Maintenance					
a	Track Signs		10 yrs			
11	Contractors Margin and Contribution to Overheads		50 yrs			
12	Engineering and Contract Management		50 yrs			
13	Interest on Construction		50 yrs			

7.2 Operating and Overhead Cost Classification

Cost Classification	Description	Inclusions
Operating Costs		Access management; train control; train scheduling and operations planning; safeworking management; telephone charges; and radio licences.
Overheads	Corporate	Accounting and finance; safety compliance and accreditation fees; payroll and human resources; and building and occupancy costs including accommodation costs and costs of power and water.
	Network and Infrastructure Division	Legal and other statutory fees; training and development costs for management and staff; communication costs such as telephone, facsimile and data transmission; and travel and accommodation costs; net costs of office equipment, motor vehicles and information technology, such as computers; financial costs including bank fees and charges (excluding interest); insurance and risk management costs; Fringe Benefits Tax and labour on-costs; inventory holding costs; and costs of office stationery, consumables and sundry items.

Notes

Train movements are used to allocate overhead costs.

7.3 Route Sections

Route sections as approved by the ERA are provided:

Route Sections for Selected Routes

PERTH – EAST PERTH

EAST PERTH – MIDLAND TERMINAL

PERTH – ARMADALE

ARMADALE – MUNDIJONG

PERTH – NORTH FREMANTLE

NORTH FREMANTLE – ROBB JETTY

PERTH – CURRAMBINE

8. DEFINITIONS

Access Agreement	Means an agreement between PTA and an entity for access by that entity.
Act	Means the *Railways (Access) Act 1998.*
Ceiling	Means the sums equal to the Total Costs.
Ceiling Price Test	Means an operator (or group of operators) that is provided with access to a route and associated railway infrastructure must pay for the access not more than the total costs attributable to that route and that infrastructure.
Code	Means the *Railways (Access) Code 2000* established under the Act.
Contractor	Means a person or entity engaged by PTA to provide advice about or to perform part of its access related functions.
Costing Principles	Means the principles, rules and practices determined by the ERA in accordance with Section 46 of the Code.
CPI	Means the Weighted Average of Eight Capital Cities All Group Consumer Price Index published by the Australian Bureau of Statistics or the Australian Statistician.
Cyclical maintenance	Means tasks that are undertaken at regular intervals (eg. annually or specific longer intervals) which are necessary to achieve the expected asset life. Tasks could include: • track resurfacing - rail grinding; calculation, ballast top up and cleaning, rail defect removal, and structures maintenance. • signalling and communications - servicing, component replacement and cleaning. • track - firebreaks, scrub slashing, drainage, access roads, road seal on level crossings; and • signalling and communications - upgrading of components and change out for detailed servicing.
Economic Regulation Authority (ERA)	Means the Western Australian Independent Rail Access Regulator under Section 13 of the Act.
Efficient Costs	Means those costs that would be incurred by a body managing the railways network and adopting efficient practices applicable to the provision of railway infrastructure, including the practice of operating a particular route in combination with other routes for the

	achievement of efficiencies.
Floor	Means the incremental costs as defined in Clause 1 of Schedule 4 of the Code.
Floor Price Test	Means a operator that is provided with access to a route and associated railway infrastructure must pay for the access not less than the incremental costs resulting from its operations on that route and use of that infrastructure.
GRV	Means the gross replacement value of the railway infrastructure calculated as the lowest current cost to replace the existing assets with assets that: • have the capacity to provide the level of service that meets the actual and reasonably projected demand; and • are, if appropriate, MEA.
MEA	Means modern equivalent asset, being an optimised network that is re-configured using current modern technology serving the current load with some allowances for reasonably projected demand growth 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.
MPM	Means major programmed maintenance activities which are, or are associated with, partial asset renewal to maintain functional condition of the infrastructure and which occur at intervals greater than one year.
Network Management	Means activities that are undertaken in the provision of train management. Functions include access management, train scheduling, operations planning, management, customer service and safe working management.
Overheads	Means overheads attributable to the performance of the railway owner's access-related functions whether by the railway owner or an associate.
Over-payment Rules	The Over-payment Rules are those rules determined by the ERA in accordance with Clause 47 (part 5) of the Code and deal with the circumstance of a breach of the ceiling test.
PTA	Means the Public Transport Authority of Western Australia established by the *Public Transport Authority Act 2003* section 5
Rail Safety Act	Means the *Rail Safety Act 1998*.

Route Section	Has the meaning defined in Section 7.3 of this Costing Principles document.
Routine Maintenance	Means regular and ongoing maintenance activities, which are required to meet specific levels of defined safety and operational standards and commences from day one of operation and is generally continuous for the life of the operation. There are two major activity classifications: • Routine Inspections ◊ Track – includes patrolling; track recording using on track recording technology, ultrasonic testing, site inspections; and structures inspections; and ◊ Signalling and Communications includes programmed inspections and systems and equipment testing • Routine Maintenance – usually undertaken as a result of the inspection process ◊ Track – includes change out of failed sleepers or components; cross boring; recanting of curves; geometry corrections and tamping following inspections; turnout maintenance, minor formation repairs; and fastening replacement; and ◊ Signalling and communications - includes scheduled services, replacements and cleaning, etc.
Total Cost	Means the total of all: • operating costs; • capital costs; and • overheads attributable to the performance of the railway owner's access related functions whether by the railway owner or an associate, as defined in Clause 1, Schedule 4 of the Code.
WACC	Means the target long term weighted average cost of capital appropriate to the railway infrastructure expressed as an annual interest rate and determined by the ERA in accordance with Clause 3, Schedule 4 of the Code.
PTA Costing Model	Means the model that PTA use to calculate Ceiling costs and includes the associated models and data bases for: • the track and signalling and communications model which calculate the GRV of the infrastructure; • track and signalling/communications maintenance models; • the operating costs model; • the overhead and other costs allocation model;

	• track population data bases, and supporting detail for these models including unit rates, assumptions and sources of information as well as the physical characteristics of the infrastructure including distance and specifications.
PTA Rules	Means PTA's Rules (including the Appendix to the Rules and Working Timetables) issued in accordance with PTA's Safety Management Plan approved under Section 10 of the Rail Safety Act together with any amendments, deletions or additions made in accordance with the Safety Management Plan and all policies and notices issued by PTA for the purpose of ensuring the safe use of the Network.
Working Timetable	Means the train timetables and operating data for all or part of the network issued as part of the PTA Rules and as amended from time to time.