Public Transport Authority
Government of Western Australia

Your ref:
Our ref: 10672
Enquiries: Hugh Smith

11 May 2004

The Chairman
Economic Regulation Authority
Rail Division
P O Box 8469
Perth Business Centre
PERTH WA 6849

Request for Section 9 Determinations

In accordance with your request we enclose the information required under Clause 9 of Schedule 4 of the Railways (Access) Code 2000 for the following routes:

1. Perth to Midland comprising the following two route sections:

   Perth to East Perth

   East Perth to Midland

2. Perth to Robbs Jetty comprising the following three route sections:

   Perth to North Fremantle

   North Fremantle to Fremantle; and

   Fremantle to Robbs Jetty

1. Definitional Information

For each route section in question we have provided a summary sheet which contains:

(a) Route section and Track distances

(b) Ceiling Price Schedule

(c) Floor Price Schedule

(d) Gross Replacement Value

2. Basis of the Cost Developed

(a) Railway Access Code

The costs have been calculated in accordance with the definitions and the principles of the Code.

(b) Costing Principles

The costing principles are as previously submitted and accepted by you.

(c) PTA Costing Model

All of the costs are extracted from the PTA Costing model which has been the subject of audit by your office.

The model incorporates the following assumptions:

- Interest during construction for track at the rate of 1 Km per day
- Interest during construction for non track infrastructure such as bridges stations and tunnels is at the rate of $1M per month.
- WACC is set at 5.8% as approved by the Regulator on 30th June 2003.
- Unit rates for capital are based upon current tendered rates for the Mandurah line where available. Otherwise they are based upon the most recent construction data.
- Construction and Engineering overheads are set according to the PTA Costing Principles of 20%.
- Track Maintenance costs are based upon the most recent maintenance costs for the Northern suburbs line. Station maintenance costs are based upon internal PTA engineering data. The overhead electricity network is based upon the whole network costs for 2002/03. Signals and communications costs are based upon the budgeted costs for 2002/03.
- Economic lives are based upon the approved PTA Costing Principles. Economic life information for stations and the electricity overhead system where not included in the PTA costing principles but for the purposes of the Model have both been given an economic life of twenty five years.
- The GRV capital costs are calculated as an annuity at the beginning of the period according to the PTA Costing Principles. An allowance for Working Capital has been included consistent with the Costing Principles.
- Perth Station costs are allocated to each route by passenger boardings and to each route section by train kilometres.
- Operating costs are derived from Train Control system and are allocated to each route section by train klms.
- Overhead costs have been allocated by staff numbers to the regulated framework and within the regulated framework by train klms to each route section.

3. Source of Inputs and Basis of Costings

For each category the following sources of information and costs are included:

Capital Costs

(a) Track Capital

- The unit costs are based upon negotiated contract rates extracted from the Mandurah line.
- Economic lives are based upon the PTA costing principles.
- The population data is based upon route section definitions and is contained in the PTA costing Model.

- It is assumed that only concrete sleepers are used in the network and that the rate is 1,430 sleepers per klm and rail weight is set at 50kg and ballast set at a depth of 200mm.
- Maximum operating design speed for passenger trains is 130Kph.

(b) Tunnels, Bridges and Overhead Electricity

- The unit costs are based upon negotiated contract rates extracted from the Mandurah line. Tunnels are based upon average PTA ledger rates sourced from internal PTA reviews. The unit costs for those bridges over water are based upon the costs associated with the Goongoongup Bridge in East Perth. Station costs are based upon recent internal and external reviews of costs for construction of the existing station structures. The costs are based upon current rates for materials.
- Economic lives are based upon the PTA costing principles. The economic lives for stations and the overhead electrical network is 25 years. This figure is based upon PTA experience with these assets.
- The population data is based upon physical verification and the Fixed Asset register of PTA. The data is contained in the PTA Costing Model.

(c) Signalling and Communication Capital

- The unit costs are based upon negotiated contract rates extracted from the Mandurah line.
- Economic lives are based upon the PTA costing principles.
- The population data is based upon route section definitions and is contained in the PTA costing model.

Maintenance Costs

(a) Track Maintenance

- Track maintenance is based upon maintaining the infrastructure to a serviceable level until the end of its economic life. The activities and rates are contained within the PTA Costing Model.
- Unit rates are extracted from current rates used in the Northern Suburbs line.

(b) Signalling and Communications Maintenance

- These costs are based upon the budgeted costs for 2002/03.
- The activities and costs are contained within the PTA Costing Model.

Operating Costs

- Operating costs are based on PTA's actual costs for 2002/03 for Train Control, Train Scheduling, Emergency Management and the cost of information.
- Operating costs are allocated between routes based upon Train Klm's.

Overhead Costs

- PTA Overheads
- Overheads are based upon budgeted figures for the financial year ended 30 June 2004 and include:
    1. IT costs
    2. Management costs including motor vehicles.
    3. Support costs including HR services and Accounting Services.
- They are allocated to each route section by train Klm's. This is considered the most equitable method of allocation for a passenger network.

4. Attached Information

The following information is attached to assist in understanding the output of the PTA Costing Model.

- Route sections and distances
- Ceiling, floor, capital, maintenance, operating and overheads by route section
- Bridges, Level Crossings
- Overhead allocation
- Rates for capital and maintenance

5. Basis of Costs

The unit rates for capital are based upon recently tendered rates or, where not available, using the cost recently constructed assets.

The unit rates for track maintenance are based upon actual rates for the Northern Suburbs line. Signals and communication costs are based upon 2002/03 budgeted rates. Station maintenance costs are based upon a increasing percentage rate of the capital value of the station.

Overheads are based upon budgeted rates for 2003/04.

Operating are based upon 2002/03 actual costs.

6. Conclusion

We believe that the model and attached information are sufficient for you to proceed with the Section 9 determinations and look forward to assisting you I this process.

Yours faithfully

Hugh Smith
General Manager Network & Infrastructure

Route Section	Points	Route Klms	Track Klms
Perth Central (excl) - East Perth Terminal (excl)	822 (excl) - 772 (excl) 823 (excl) -771(excl) 771(excl) - 772 (incl) 772 (excl) - d/e main Platform 773 (excl) - d/e Car Dock 772 (excl) - d/e shunt 774(excl) - 776 (excl)	2.65	7.51
East Perth Terminal (incl) - Midland (incl)	771 (incl) - 740 (incl) 771 (incl) - 725 (excl) 740 (excl) - d/e Midland 741 (excl) - d/e Midland Signal 94 - 755 (excl) W'bridge 764 (excl) - p/s boundary B'dean	13.63	26.79
Perth Central (excl) - Nth Fremantle (incl)	841 (excl) - 876 (excl) 840 (excl) - 878 (excl) 876 (excl) - 874 (incl) 874 (excl) - d/e 874 (excl) - d/e Wharf Access to P/S Boundary 862 (excl) - d/e Showgrounds	16.29	33.85
Nth Fremantle (excl) - Fremantle (incl)	876 (incl) - 881 (incl) 878(incl) - 882 (incl) 881 (excl) - 894 (incl) 882 (excl) - 889 (excl) 881 (excl) - 894 (excl) 882 (excl) - d/e Fremantle 886 (excl) - d/eFremantle	2.45	7.61
Fremantle (excl) - Robbs Jetty (incl)	894 (excl) - Sig 3K Robbs	3.32	3.32

Ceiling Price Schedule	Maintenance	Operating	Capital	Perth Station Allocation	Working Capital	Overheads	Total
Route Section							
Perth Central (excl) - East Perth Terminal (excl)	350,492	27,408	2,317,954	94,530	67,221	38,611	2,896,217
East Perth Terminal (incl) - Midland (incl)	1,677,503	140,845	6,976,347	492,150	202,314	201,019	9,690,178
Perth Central (excl) - Nth Fremantle (incl)	1,953,315	168,378	8,061,883	779,519	233,795	242,886	11,439,775
Nth Fremantle (excl) - Fremantle (incl)	417,972	25,341	2,671,367	117,320	77,470	36,555	3,346,026
Fremantle (excl) - Robbs Jetty (incl)	115,450	34,343	558,799	3,744	16,205	1,166	729,708
Total	4,514,732	396,316	20,586,350	1,487,263	597,004	520,238	28,101,904

Floor Price	
Route Section	
Perth Central (excl) - East Perth Terminal (excl)	27,587
East Perth Terminal (incl) - Midland (incl)	131,766
Perth Central (excl) - Nth Fremantle (incl)	154,485
Nth Fremantle (excl) - Fremantle (incl)	26,922
Fremantle (excl) - Robbs Jetty (incl)	8,080
Total	348,839

Gross Replacement Value	Signalling	Communications	Track	Stations	Bridges	Overhead Power	Train Control	Tunnels	Boom Gates and Crossings	Interest on Construction	Total
Route Section											
Perth Central (excl) - East Perth Terminal (excl)	4,919,550	415,492	8,854,327	1,979,525	5,158,524	1,582,968	218,084	13,500,000	-	171,264	36,799,734
East Perth Terminal (incl) - Midland (incl)	7,086,560	2,135,117	33,869,629	22,640,270	23,707,640	8,134,498	1,120,682	-	3,652,000	506,274	102,852,671
Perth Central (excl) - Nth Fremantle (incl)	8,637,965	2,552,490	28,018,582	30,343,668	7,074,418	9,724,629	1,339,753	30,900,000	2,436,000	683,140	121,710,644
Nth Fremantle (excl) - Fremantle (incl)	1,275,040	384,158	11,327,630	4,544,391	23,921,676	1,463,589	201,637	-	-	251,248	43,369,369
Fremantle (excl) - Robbs Jetty (incl)	1,727,960	-	3,104,891	-	-	-	273,263	-	1,720,000	2,110	6,828,224
Total	23,647,075	5,487,257	85,175,059	59,507,854	59,862,258	20,905,683	3,153,418	44,400,000	7,808,000	1,614,036	311,560,641

Train Klms	
Route Section	
Perth Central (excl) - East Perth Terminal (excl)	183,013
East Perth Terminal (incl) - Midland (incl)	952,815
Perth Central (excl) - Nth Fremantle (incl)	1,151,259
Nth Fremantle (excl) - Fremantle (incl)	173,268
Fremantle (excl) - Robbs Jetty (incl)	5,529
Total	2,465,884

Level Crossing Protection Data	Unit Replacement Price
Ped gates & lights at road crossing	238,000
Ped gates & lights at staton	120,000
Road crossing with booms & lights	238,000
Special road crossing with booms & lights	230,000
Stand-alone ped gate & lights	274,000
Road crossing with booms & lights (country)	215,000
Flashing lights only	270,000
Stand-alone ped crossing with maize, bells & lights	250,000

Route Section	Level Crossings	Bridges	Tunnels
Perth Central (excl) - East Perth Terminal (excl)	MOORE ST.	E.PERTH TERMINAL F/B	East Perth
		CLAISEBROOK FOOTBRIDGE	
		MCIVER U/PASS	
East Perth Terminal (incl) - Midland (incl)	CALEDONIAN AVENUE.	MT LAWLEY SUBWAY	
	MOOJEBING ST.	MT LAWLEY FOOTBRIDGE	
	COLLIER ROAD	MELTHAM FOOTBRIDGE	
	MEADOW ST.	PEDESTRIAN SUBWAY	
	EAST STREET	BAYSWATER SUBWAY	
	DEVON ST.	BAYSWATER_U/PASS	
	ARCHER ST.	ASHFIELD FOOTBRIDGE	
	HELENA ST.	BASSENDEAN FOOTBRID.	
		BASSENDEAN U/PASS	
		SUCCESS HILL F/BRID.	
		GUILDFORD BRIDGE	
		GUILDFORD BRIDGE	
		GUILDFORD FOOTBRIDGE	
		EAST GUILDFORD F/BR.	
		W.MIDLAND U/PASS	
Perth Central (excl) - Nth Fremantle (incl)	BUS TERMINAL ACCESS.	MILLIGAN ST FOOTBRIDGE	Subiaco
	JARRAD ST.	WEST PERTH SUBWAY	
	SALVADO ST.	WEST LEEDERVILLE SUBWAY	
	MACARTHUR ST.	DAGLISH U/PASS	
		NICHOLSON RD SUBWAY	
		SHENTON PARK U/PASS	
		SHENTON BUSWAY	
		KARRAKATTA U/PASS	
		SHOWGROUND SUBWAY	
		CLAREMONT FOOTBRIDGE	
		STIRLING ROAD_SUBWAY	
		COTTESLOE_FOOTBRIDGE	
		PEARSE ST FOOTBRIDGE	
		LEIGHTON FOOTBRIDGE	
Nth Fremantle (excl) - Fremantle (incl)	None	TYDEMAN ROAD	
		FREMANTLE HARBOUR	
		VICTORIA QUAY	
		EDWARD ST FOOTBRIDGE	
		PHILLIMORE ST F/BR	
Fremantle (excl) - Robbs Jetty (incl)	CLIFF ST.		
	PHILLIMORE ST.		
	MEWS RD.		
	ROSE ST.		
	MARINA ACCESS.		
	OCEAN RD.		

Maintenance Rates

Track	Amount per activity		Cycle
Rail Grinding	$ 3,000	Track Klm	Every 50 Years
Maintenance Grinding	$ 3,600	Track Klm	Every 3 Years
Tamping	$ 6,000	Track Klm	Every 3 Years
Ballast	$ 3,780	Track Klm	Every 5 Years
Joint Correction	$ 5,000	Track Klm	Every 20 Years
Ultrasonic	$ 1,442	Track Klm	Every Year
Hand Ultrasonic	$ 555	Track Klm	Every Year
Patrols	$ 3,790	Track Klm	Every Year
General	$ 500	Track Klm	Every 5 Years
Turnouts			
Tamping	$ 2,000	Per Turnout	Every 3 Years
Blade Replacement	$ 5,500	Per Turnout	Every 2 Years
Rebuild Crossing	$ 1,500	Per Turnout	Every 10 Years
General Repairs/lube	$ 1,700	Per Turnout	Every Year
Tunnels			
Painting	$ 10,000	Per Tunnel	Every 10 Years
Drainage	$ 1,000	Per Tunnel	Every 2 Years
Graffiti	$ 1,000	Per Tunnel	Every Year
General Repairs	$ 1,000	Per Tunnel	Every 10 Years
Handrail repairs	$ 1,000	Per Tunnel	Every 10 Years
Level Crossings			
Minor	$ 220	Per sqm	Every 3 Years
Fencing			
General Repairs	$ 100	Per Klm	Every Year
Culverts			
Washways	$ 100	Per culvert	Every 20 Years
Headwall Maintenance	$ 2,000	Per culvert	Every 10 Years
Graffiti	$ 100	Per culvert	Every Year
General Repairs	$ 1,000	Per culvert	Every 10 Years
Bridges			
Cathodic Protection	$ 1,000	Bridge	Every 5 Years
Painting	$ 15,000	Bridge	Every 10 Years
Bearing Maintenance	$ 1,000	Bridge	Every Year
Graffiti - 1	$ 2,500	Bridge	Every Year
Graffiti - 2	$ 2,000	Bridge	Every Year
General Repairs	$ 5,000	Bridge	Every 10 Years
Protective Screens	$ 5,000	Bridge	Every 5 Years
Handrail repairs	$ 1,000	Bridge	Every 5 Years
Access Roads			
Grader Work	$ 200	Road Length	Every Year
Limestone Top up	$ 1,000	Road Length	Every 5 Years
Weedspray	$ 50	Road Length	Every Year

Stations	Maintenance based upon a percentage of the capital cost	
Year 1	0.5000%	
Year 2 to Year 14	.6071% to 2.0% by year 14	Previous year plus an increase of .1071% of capital cost
Year 15 to 25	2.0% to 4.5% by year 25	Previous year plus an increase of .25% of capital cost

Overhead Electrcity Network	$ 19,649	$/route km	Annual
Signals	$ 22,464	$/track km	Annual
Communication	$ 16,218	$/route km	Annual
Train Control	$ 10,335	$/route km	Annual

Capital Rates

No	Category	Activity	Unit	Activity Total $
1	FORMATION		Track Km	227,500
2	FENCING	Supply and Erect	Route metres	25
3	BALLAST	Supply	Tonne	
		Distribute	Tonne	
		Operational		27
4	RAIL - 50kg/m	Supply	Tonne	
		Place (2 rails)	Track Km	
		Place (3 rails)	Track Km	
		Rail	meter	60
5	SLEEPERS NG CONCRETE - 50 kg/m incl built in shoulders incl fastenings	Supply	No	
		Place	No	
	Fastenings	Supply	Sleeper	71
6	SLEEPERS SG CONCRETE - 50 kg/m incl built in shoulders incl fastenings	Supply	No	
		Place	No	
	Fastenings	Supply	Sleeper	81
7	SLEEPERS DG CONCRETE - 50 kg/m incl built in shoulders incl fastenings	Supply	No	
		Place	No	
	Fastenings	Supply	Sleeper	107
8	TURNOUTS NG - 60Kg/m 1 in 12	Supply	No	
		Place	No	196,000
9	TURNOUTS NG - 60Kg/m 1 in 16	Supply	No	
		Place	No	210,000
10	TURNOUTS SG - 60Kg/m 1 in 12	Supply	No	

Capital Rates

No	Category	Activity	Unit	Activity Total $
		Place	No	203,000
11	TURNOUTS DG - 60Kg/m 1 in 16	Supply	No	
		Place	No	383,000
12	TRACKLAYING - NG		Track Km	56,500
13	TRACKLAYING - SG		Track Km	60,000
14	TRACKLAYING - DG		Track Km	77,000
15	BRIDGES - Rail over water		$meters^2$	4,150
16	BRIDGES - Rail over roadway		$meters^2$	2,610
17	BRIDGES - Road over rail		$meters^2$	
18	CULVERTS		per opening	8,500
19	TUNNELS	Supply & Place	$meters^2$	2,500
20	PEDESTRIAN SUBWAYS	Supply & Place	$meters^2$	3,710
21	VEHICULAR SUBWAYS	Supply & Place	$meters^2$	2,610
22	FOOTBRIDGES	Supply & Place	$meters^2$	1,800
23	LEVEL CROSSINGS	Supply	$meters^2$	
		Place	$meters^2$	80
24	ACCESS ROADS	Place	Route km	24,000
25	TRACK SIGNS	Supply and Instal	Track km	2,200

Capital Rates

No	Category	Activity	Unit	Activity Total $
	All of above have a 20% construction and engineering overhead added to them in the Model.			
26	Stand-alone ped gate & lights	Supply & Place	No	238,000
27	Stand-alone ped crossing with maize, bells & lights	Supply & Place	No	120,000
28	Ped gates & lights at station	Supply & Place	No	238,000
29	Ped gates & lights at road crossing	Supply & Place	No	230,000
30	Road crossing with booms & lights	Supply & Place	No	274,000
31	Flashing lights only	Supply & Place	No	215,000
32	Road crossing with booms & lights (Country)	Supply & Place	No	270,000
	Special Road crossing with booms & lights	Supply & Place	No	250,000
34	SIGNAL SYSTEMS (Section Rate)	Supply & Place	$/route km	520,000
35	SIGNAL SYSTEMS (City Rate)	Supply & Place	$/track km	659,340
36	SIGNAL SYSTEMS (Claisebrook Rate))	Supply & Place	$/track km	1,258,388
37	COMS SYSTEMS	Supply & Place	$/track km	156,671
38	TRAIN CONTROL	Supply & Place	$/route km	82,234
39	Overhead Electricity Network	Supply & Place	$/route Km	596,896