BOOZ·ALLEN & HAMILTON

Appendix C

INTERSTATE RAIL NETWORK AUDIT - Competitive Analysis and Performance Targets

ARTC

AUSTRALIAN RAIL TRACK CORPORATION LTD

April 2001

Appendix C

The derivation of the performance targets was undertaken in three phases

Key Market Drivers

- Identifies and defines the key market driver's critical to improving rail's competitive position

Competitive Analysis

- Compares road and rail's current market characteristics and competitive position

Performance and Engineer Targets

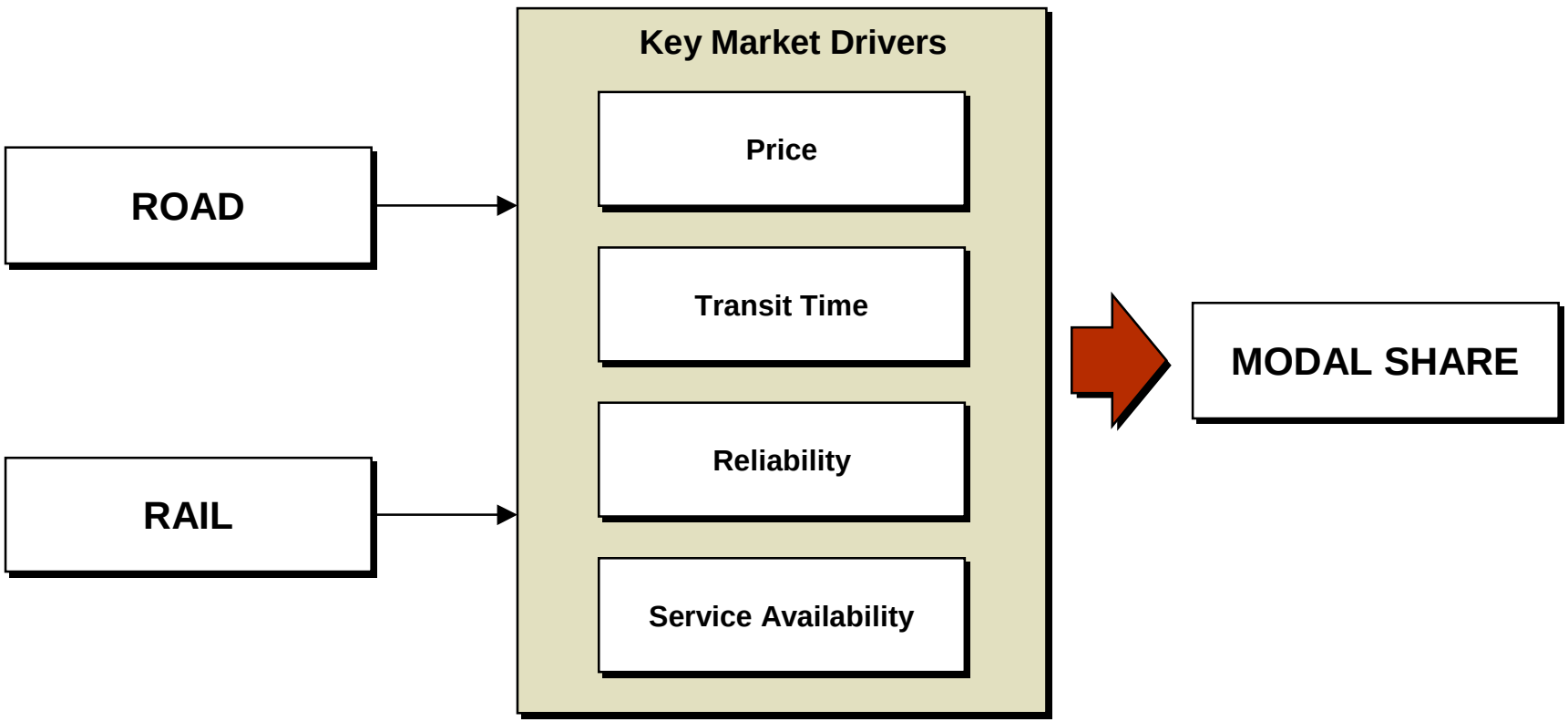
- The key market driver improvements are translated into performance and engineering targets

Key Market Drivers

- Price
- Transit Time
- Reliability
- Service Availability

Performance targets have been specified in terms of improvements to key market drivers

- Rail's competitiveness is influenced by the package of price and service characteristics in relation to road



Price is the primary driver

- Definition :
  - In this analysis price includes the linehaul and pick-up and delivery (PUD) cost from origin to destination
  - Price is not included as a performance target (transit time, reliability and service availability) – it has been assumed that rail's price reductions are a direct result of operating savings generated from changes in performance targets
  - The rate per tonne assumed for each corridor is based on discounted National Rail book rates

- General Discussion :
  - Price is the key variable, but without improvement in other key market drivers modal shift is unlikely to occur
  - Rail has a price advantage over road in the long haul corridors
  - On the short haul corridors rail has difficulty matching road's price advantage - PUD costs make up a large percentage of total door to door costs

Transit times are required to satisfy preferred market pick up and delivery times

- Definition :
  - Travel time includes the time taken between the terminal origin and terminal destination including pick-up and delivery
  - Transit time information was obtained from rail timetables and discussions with major road and rail operators

- General Discussion :
  - Transit time is most critical in adjacent city corridors - road can offer a superior door to door time in these corridors
  - Rail can operate more competively by arriving within the same time window as road
  - On the long haul corridors, transit time is generally not as important

Reliability is critical to the mode's overall service offering

- Definition :
  - The percentage of trains arriving within 15 minutes either side of their scheduled arrival time
  - Reliability data was provided by rail track owners for the financial years 1996/1997 to 1999/2000
- General Discussion :
  - Compared to road, there is a "stigma" amongst customers that rail offers an unreliable service
  - A number of factors affect the on-time running of a train. These may include network delays or operator related delays
  - Increasing and maintaining rail's reliability will greatly assist in increasing the market share of rail

Service availability can be improved by pushing back rail's cutoff times

- Definition :
  - Service availability is the time of day a service is made available to the market
  - It is directly linked to transit time, whereby a reduction in transit time may translate into a later departure or earlier arrival of a service
  - The market demand time profile is assumed to mirror the the distribution of truck departure times and satisfy customer dispatch times
- General Discussion :
  - The tight departure and arrival times at the terminal reduces the service availability of rail
  - On some corridors, restricted train paths during peak periods means cut-off times for departure may not correspond to 100% of market requirements. By moving the cut-off time back, a greater percentage of the market can be serviced

Competitive Analysis

- Melbourne - Sydney
- Sydney - Brisbane
- Melbourne - Brisbane
- Melbourne - Adelaide
- Melbourne - Perth
- Sydney - Perth

Competitive Analysis

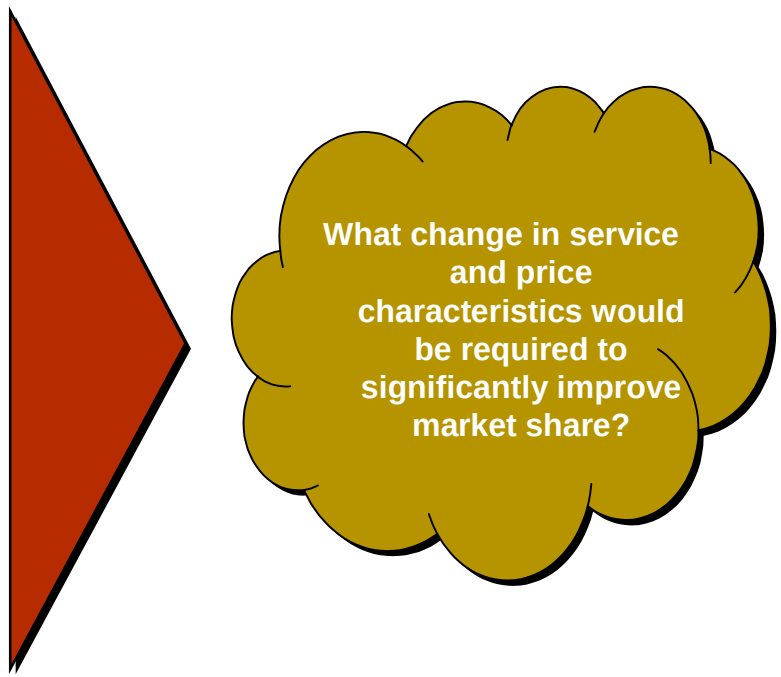
A workshop and industry consultation was conducted to determine what is required to gain a commercially sustainable shift to rail

Workshop & Industry Consultation

- Workshop attendees
  - National Rail
  - Toll
  - Patricks
  - ARTC
  - GSR
- Industry Consulted
  - FreightCorp
  - BHP
  - FCL
  - SCT

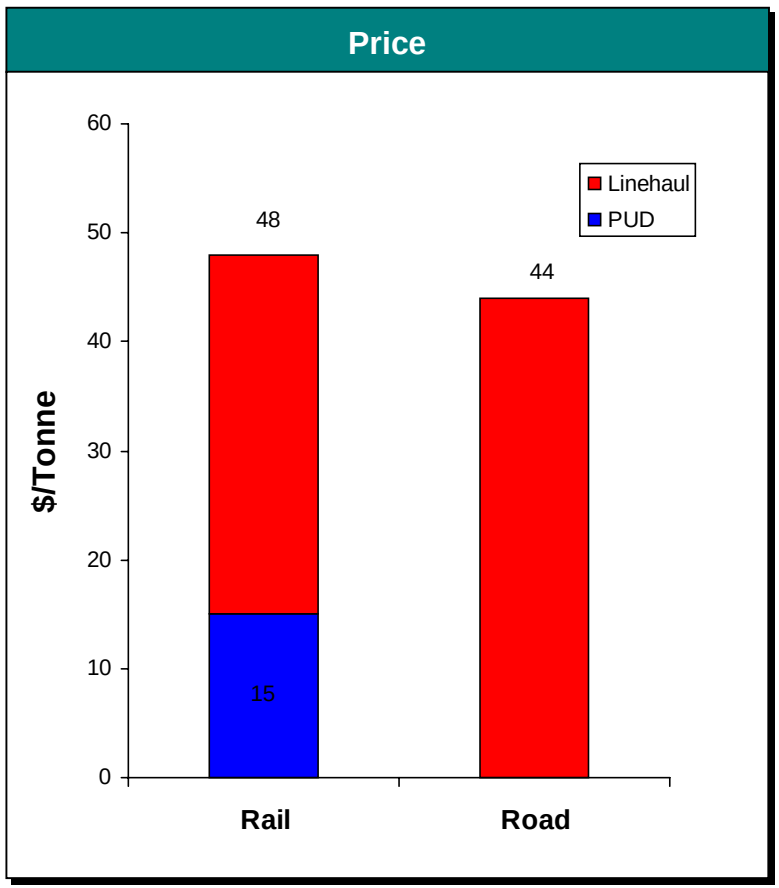
Market Characteristics

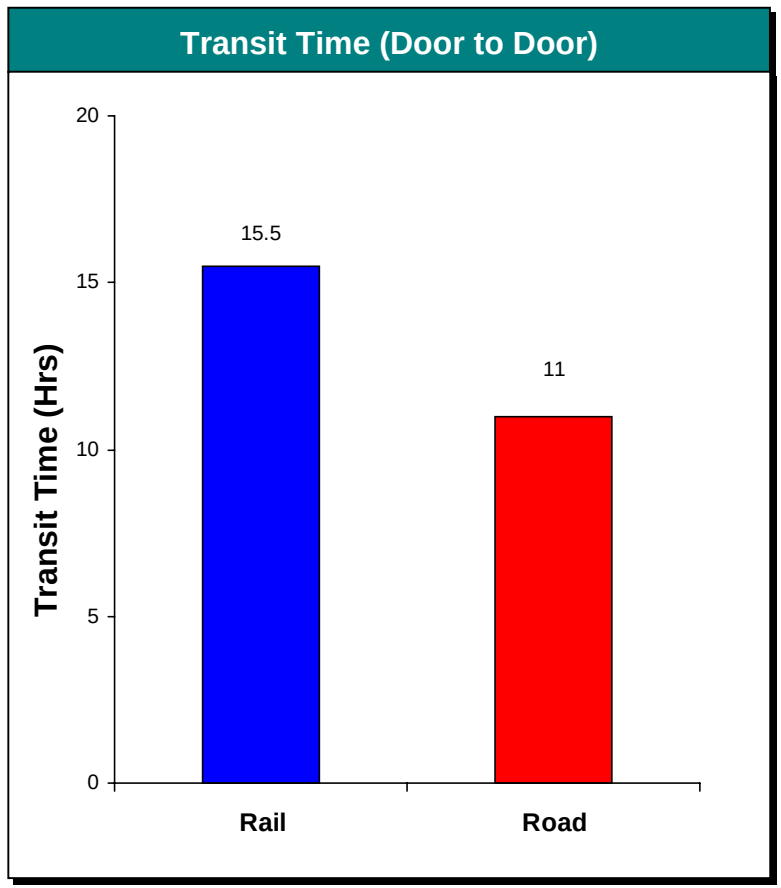
- Road and Rail data collected on the key market drivers by market segment
  - Price
  - Transit Time
  - Reliability
  - Service Availability



Rail's current prices and transit times are well in excess of road in the Melbourne - Sydney market segment

Melbourne - Sydney



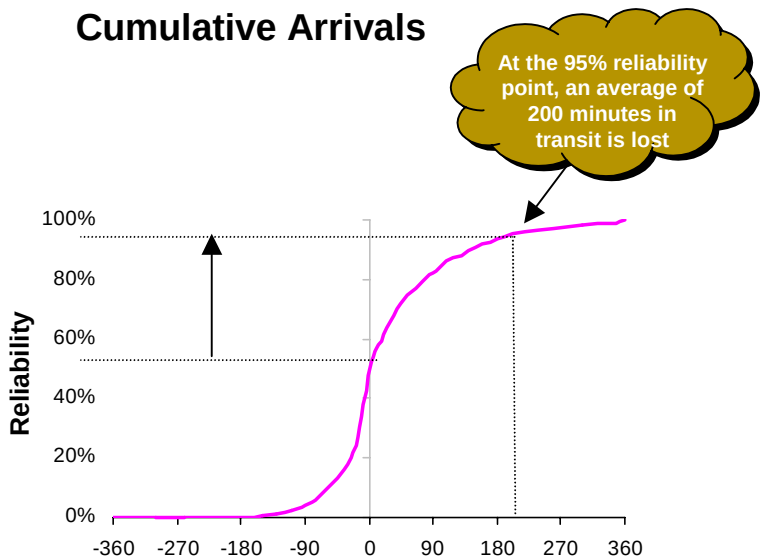


Reliability will need to improve considerably to match road's service offering

Melbourne - Sydney

Reliability

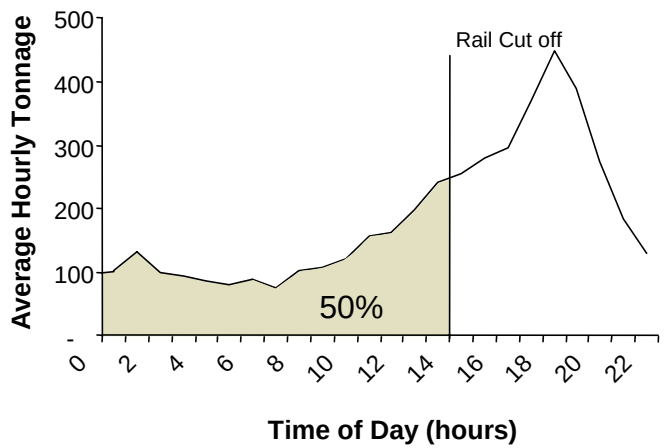
Cumulative Arrivals



	Rail	Road
% within 15 mins	55%	95%

Service Availability

Current Distribution of Road Departures



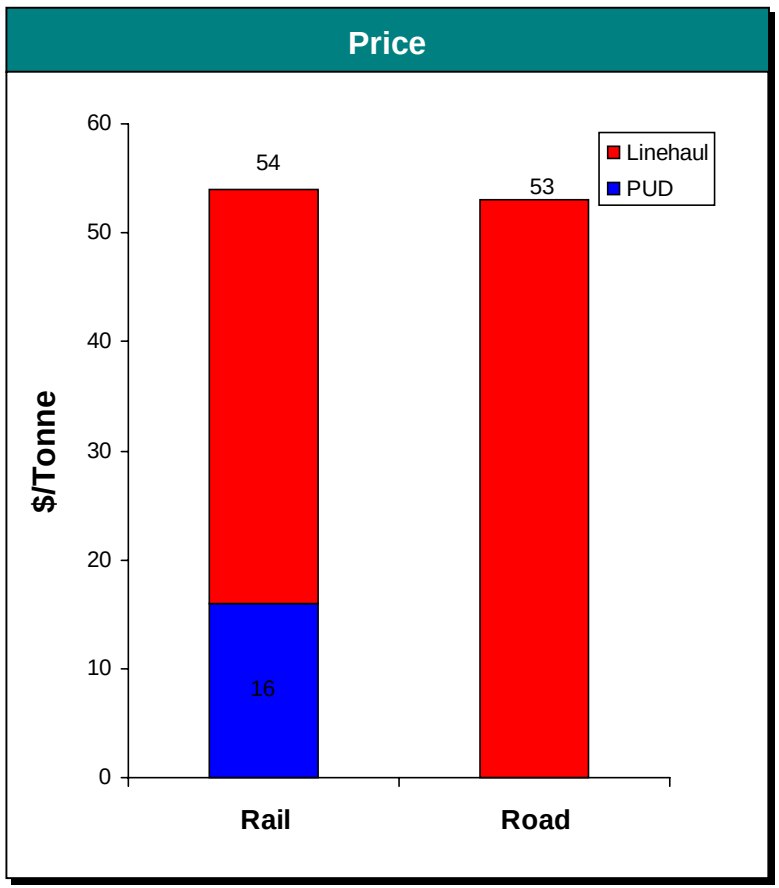
Current cut-off times dictate the % of market rail currently services

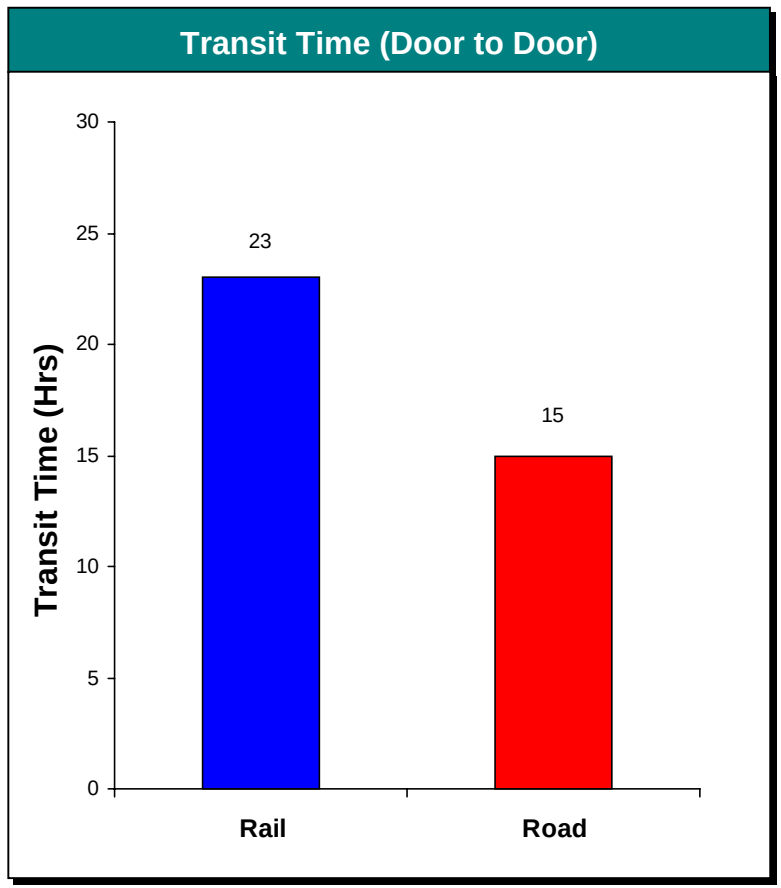
Price and service improvements are needed for rail to maintain its current market position

ITEM	TRENDS/ISSUES	INFRASTRUCTURE	ABOVE RAIL/ROAD	REGULATION/POLICY
General Market	Road • Has been gaining market share Rail • In its existing form, likely to continue to lose market share • Volume largely limited to shipping containers	Road • The customers have invested in systems to match road's service offering Rail • Slight increase in track performance between Melbourne & Albury	Road • Highly competitive linehaul • Flexible operation providing seamless D2D service	Rail • Flexibility and responsiveness is affected by regulatory requirements i.e. take or pay access regime
Transit Time & Distance	Road • Travel time has improved with the Hume Highway upgrade Rail • Travel time has improved slightly between Melbourne & Albury • Travel time disadvantaged by additional distance & PUD	Road • High capital investment into constructing a freeway between Melbourne & Sydney Rail • Increase in speed limits between Melbourne & Albury		Road • No driving hour regulations applicable on corridor Rail • Axle loads & speeds improvements between Sydney & Albury may be implemented
Service availability	General • Customers preference for goods to arrive before open of business & shipped out before cob Road • Offers next morning delivery Rail • Unable to offer next morning del. • M-S availability is limited by the early afternoon cut off time	Rail • Service availability may be improved by : - reducing transit times - increasing the number of train paths - extending cut-off times	Rail • Capacity on the corridor has been halved	Rail • May be some opportunities to increase the number of train paths by optimising the master timetable
Price	Road • Price has decreased overtime Rail • Linehaul rate is close to road's D2D rate • Price has largely remained unchanged • Productivity improvements have not been passed on to customers	Road • Travel time & increased road mass operational cost savings Rail • Investment in increasing crossing loop lengths	Road • Major productivity improvements have led to reduced costs Rail • Some productivity improvements. e.g. increased train lengths from 900m to 1400m	Rail • Streamlining of train control & documentation requirements may create further cost savings
Reliability	Rail • Expected to deteriorate with increased rail operators & passenger services	Rail • Freight movement curfews within Sydney affect reliability & service • A freight only path through Sydney would assist in providing a better service and market growth		Rail • Additional costs incurred with major train delays • Directly related to Sydney passenger curfew

Road and rail rates are similar in the Sydney - Brisbane market corridor

Sydney - Brisbane



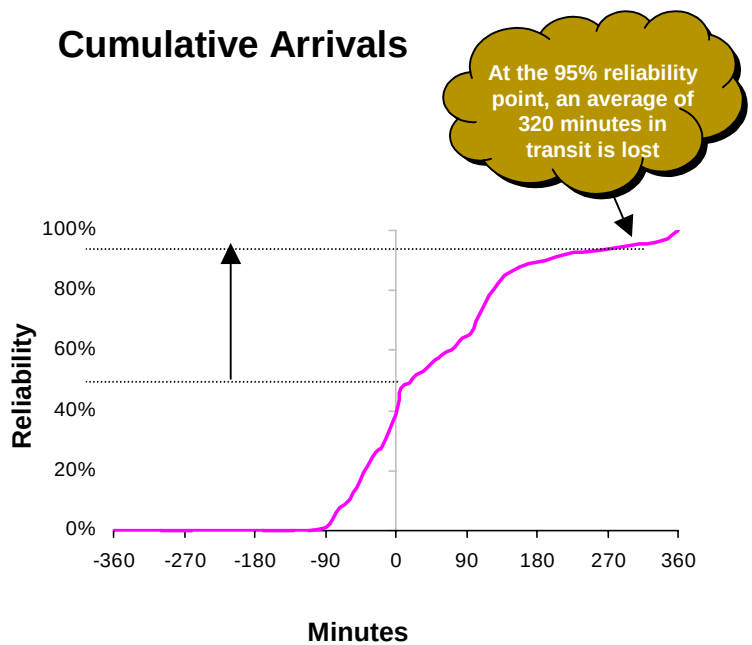


However, rail offers an unreliable service with a early cut off time

Sydney - Brisbane

Reliability

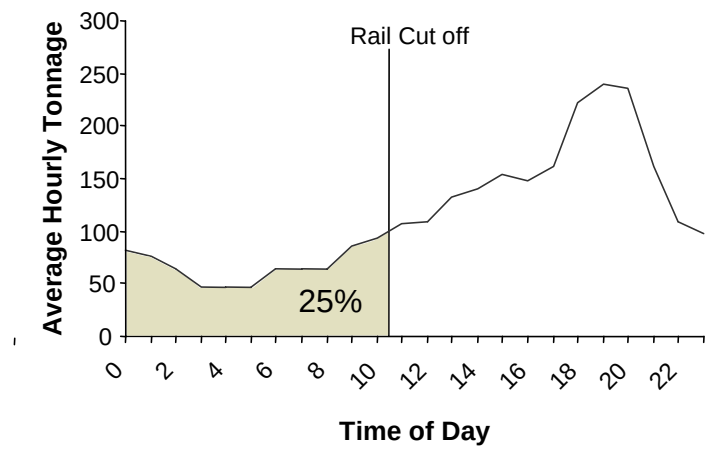
Cumulative Arrivals



	Rail	Road
% within 15 mins	50%	95%

Service Availability

Current Distribution of Road Departures



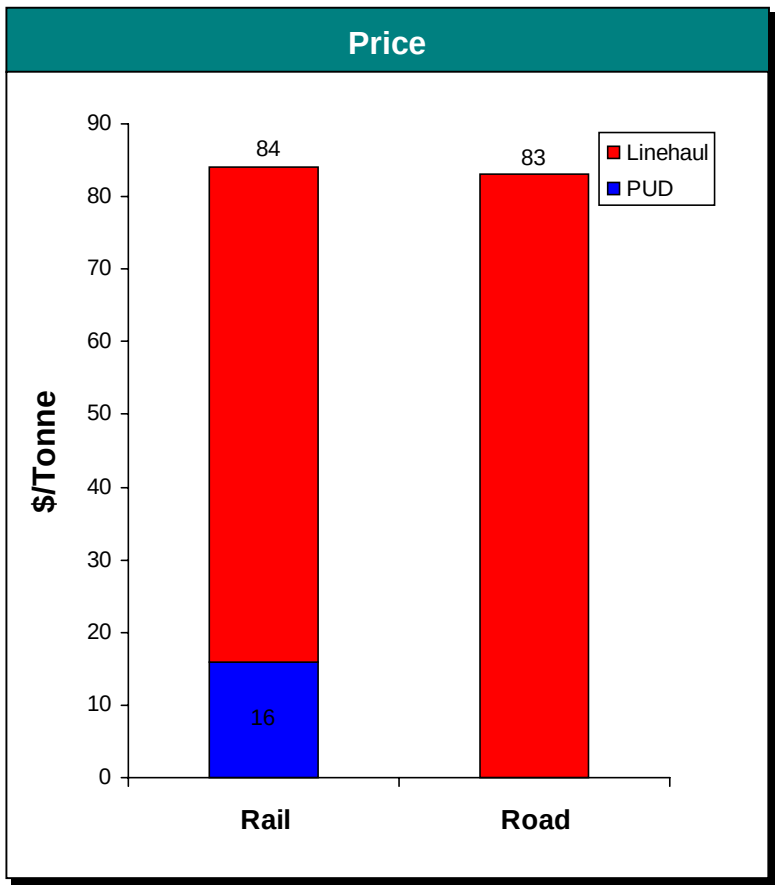
Current cut-off times dictate the % of market rail currently services

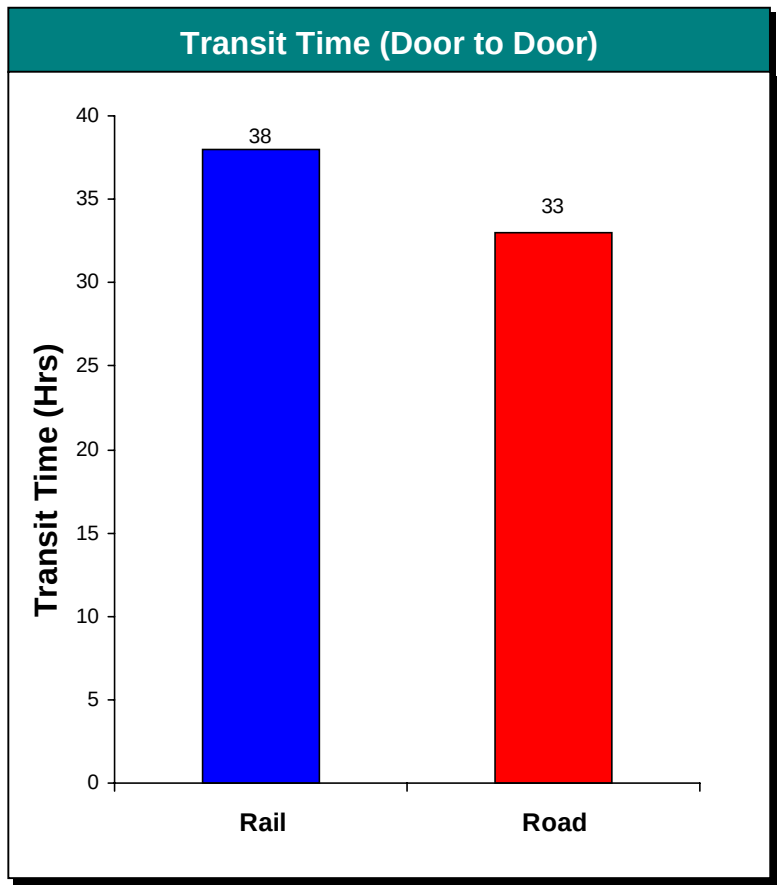
In improving its service offering, rail has the potential to improve its market share considerably

ITEM	TRENDS/ISSUES	INFRASTRUCTURE	ABOVE RAIL/ROAD	REGULATION/POLICY
General Market	Road • Difficult road corridor - distance in excess of a legal overnight delivery service • Drivers currently working illegally to achieve 7am next morning delivery Rail • Rail has been gaining market share • FreightCorp recently started servicing the corridor	Road • $3.1 billion Pacific Hwy 10 year reconstruction strategy Rail • No improvement in track performance characteristics • Freight separation in accessing Sydney is a major issue		
Transit Time & Distance	Rail • Delays in entering Sydney due to the passenger peak curfew extends the B-S transit time	Road • Road's travel time is expected to improve by 1 hour following Hwy upgrade Rail • The completion of the 9 remaining crossing loop extensions is expected to reduce travel time by ½ hour		Road • Driving hour regulations do not make it possible to achieve an overnight road service • Under existing driver regulations, the 14 hr trip requires a 10 hour rest break
Service availability	Rail • Significant opportunity for a modal shift to rail • NR suggest existing market share could be doubled with the completion of all crossing loop extensions	Rail • Service availability may be improved by reducing transit times & increasing the number of train paths • A transit time reduction of 4 hrs hours is required to achieve an overnight service	Rail • Capacity is limited by the restricted number of 1,500 m train paths	Rail • Opportunities to increase the number of train paths by optimising the master timetable
Price	General • Both road & rail prices have decreased in recent years Rail • Fuel surcharges have been imposed due to higher fuel prices	Rail • No major investments in freight corridor	Road • Major road productivity gains with B Doubles and increased road mass limits Rail • No major productivity improvements – limited 1,500 m length services	Rail • Streamlining of train control & documentation requirements may create further cost savings
Reliability	Rail • Expected to deteriorate with increased rail congestion within Sydney	Rail • Reliability limited by the difficulties associated with entering & exiting Sydney • A freight only path through Sydney would relieve congestion and improve reliability		Rail • Additional costs incurred with train delays

Road and rail rates are competitive in the Melbourne - Brisbane market corridor

Melbourne - Brisbane



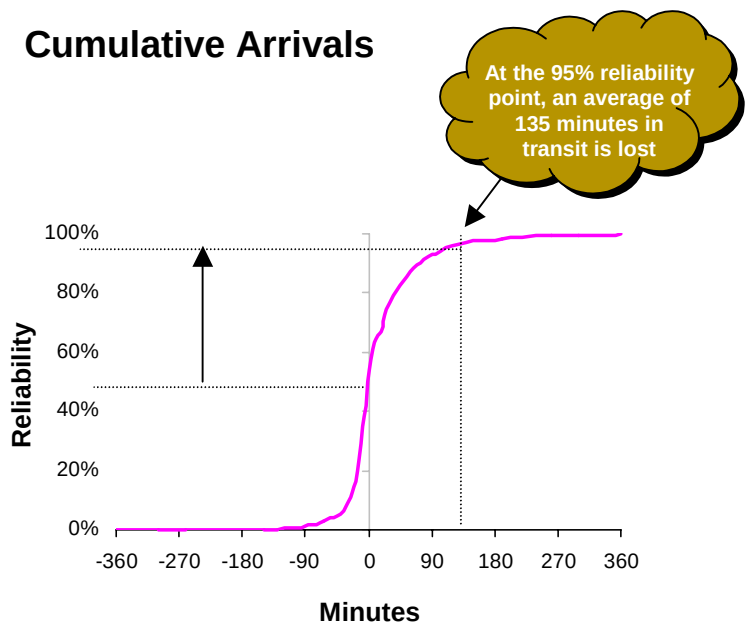


While an unreliable service limits rail's market potential

Melbourne - Brisbane

Reliability

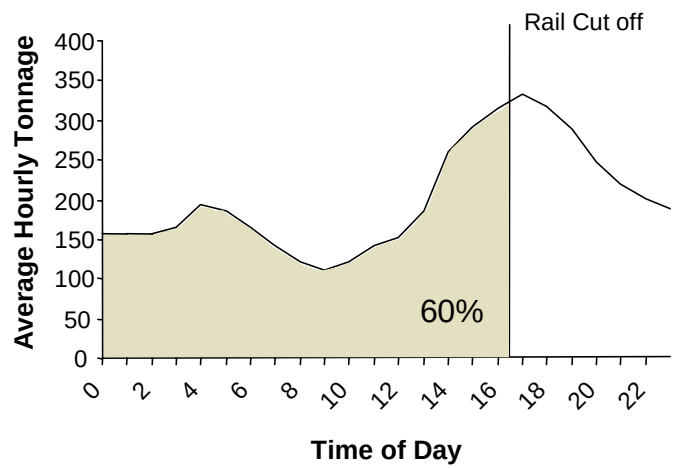
Cumulative Arrivals



	Rail	Road
% within 15 mins	45%	95%

Service Availability

Current Distribution of Road Departures



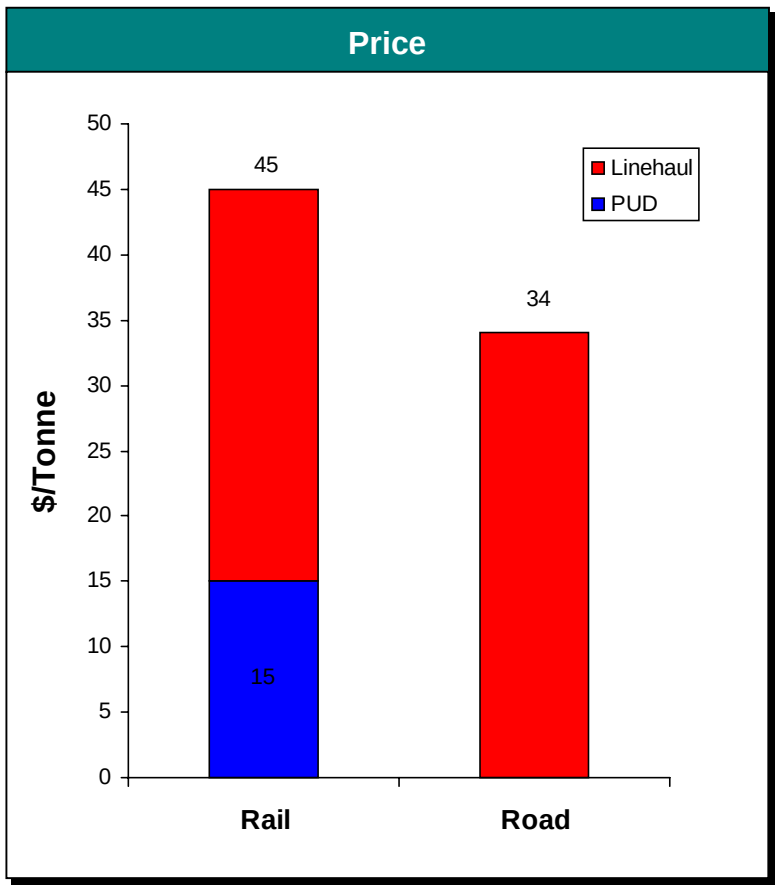
Current cut-off times dictate the % of market rail currently services

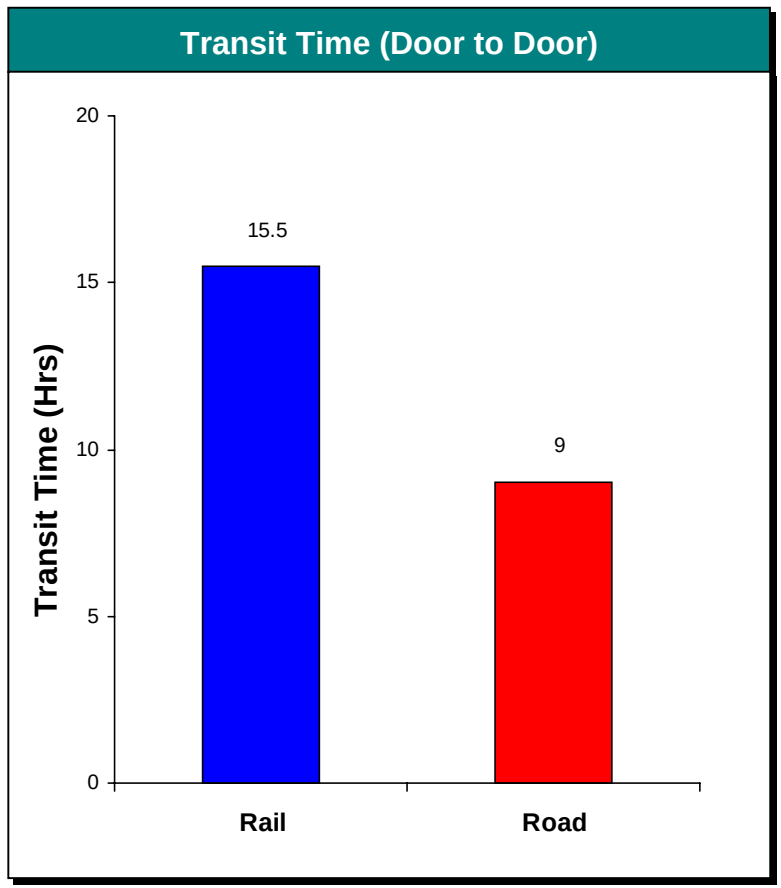
Minor improvements in service characteristics are expected to enhance rail's competitive position

ITEM	TRENDS/ISSUES	INFRASTRUCTURE	ABOVE RAIL/ROAD	REGULATION/POLICY
General Market	General • Road & rail offer a 2nd day service – late cut off & early delivery Rail • Has been gaining market share • NR's volume growth 5 years ago was 20% pa. Now growth has stabilised • Growth has largely occurred in servicing the NQ market	Road • No major upgrades planned for the Newell Hwy Rail • Track performance within Victoria has improved • Proposed inland rail corridor		
Transit Time & Distance	Rail • Transit time reductions needed to improve the reliability • Disadvantaged by additional linehaul distance	Rail • The completion of the 9 remaining crossing loop extensions is expected to reduce travel time by ½ hour		Road • Road driving hour regulations not an issue
Service availability	General • Both road & rail offer a 2nd day service – late cut off early morning arrival Rail • Significant opportunities for a modal shift to rail • Existing afternoon service full – greater capacity required	Rail • Service availability may be improved by reducing transit times & increasing in the number of train paths • Crossing loop extension project may be able to increase the length and capacity of services	Rail • Additional capacity on afternoon service required - Either introduce 2nd train service - Free up capacity by managing non-critical freight	
Price	Road • Price has decreased with productivity improvements Rail • Slight reduction in NR's book rates		Road • Major productivity gains with B Doubles and increased road mass limits Rail • No major productivity improvements – limited 1,500 m length services	Rail • Streamlining of train control & documentation requirements may create further cost savings
Reliability	Rail • Transit time needs to be reduced to increase reliability	Rail • Congestion within Sydney is a major contributor • To relieve congestion and improve reliability, a freight only path through Sydney would assist market growth		Rail • Additional costs incurred with train delays

Further transit time and price improvements are required in the Melbourne - Adelaide market corridor

Melbourne - Adelaide



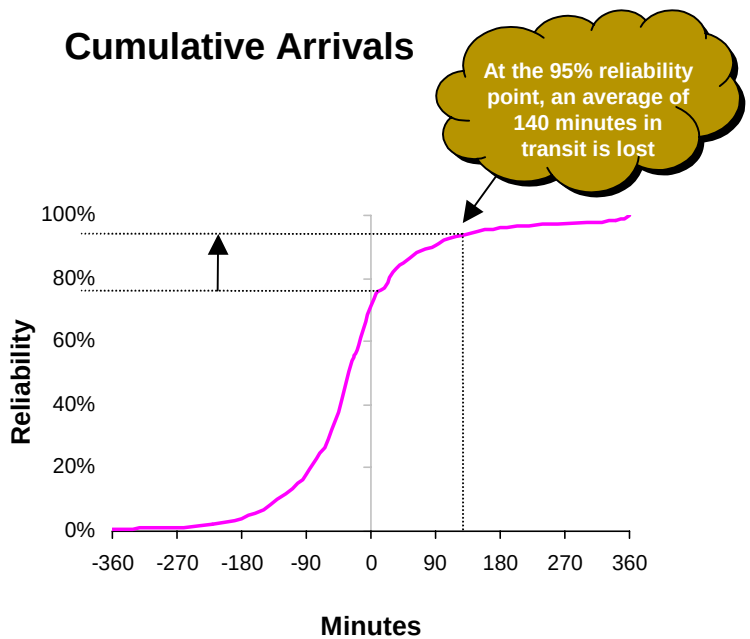


Rail's current service offering is satisfactory

Melbourne - Adelaide

Reliability

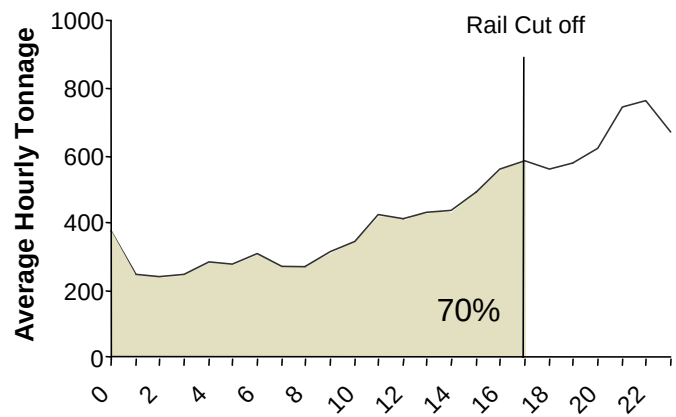
Cumulative Arrivals



	Rail	Road
% within 15 mins	74%	95%

Service Availability

Current Distribution of Road Departures



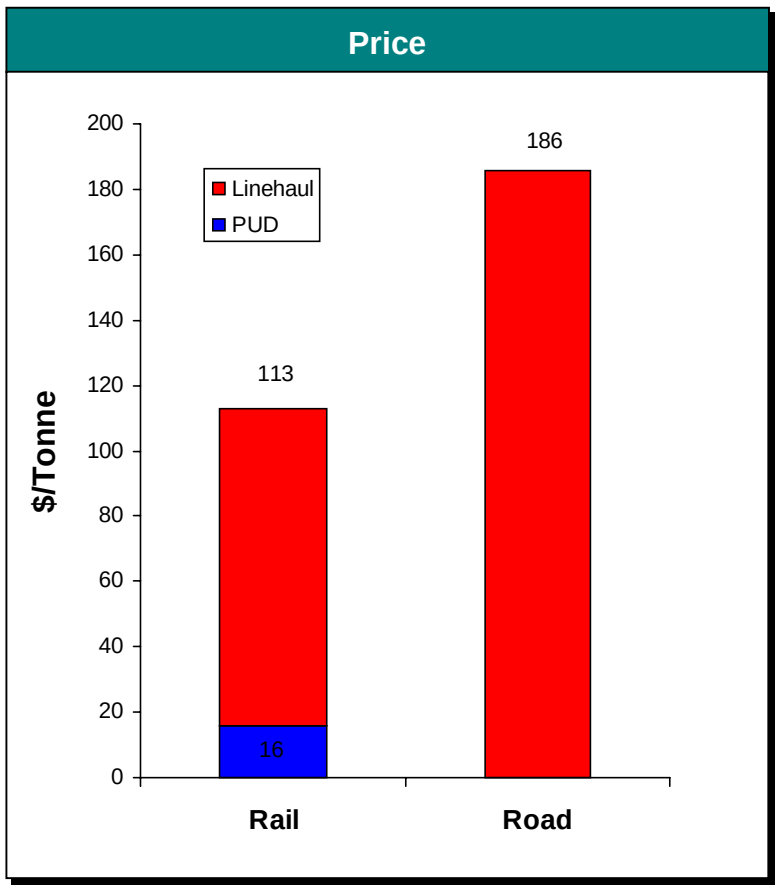
Current cut-off times dictate the % of market rail currently services

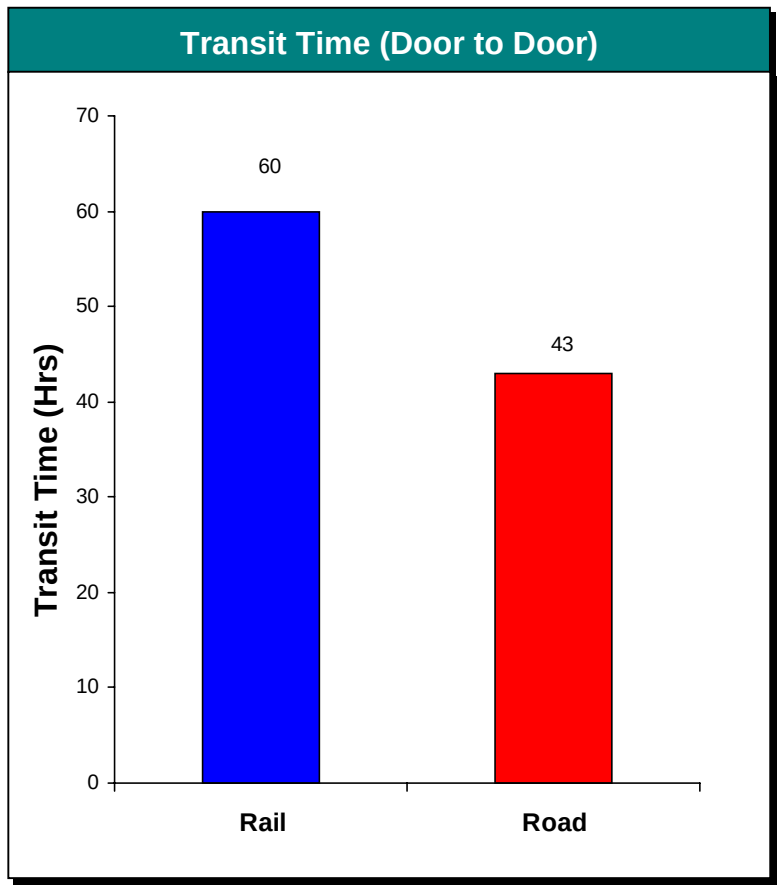
Rail is expected to maintain its competitive position in the future

ITEM	TRENDS	INFRASTRUCTURE	ABOVE RAIL/ROAD	REGULATION/POLICY
General Market	Rail • Market share has increased slightly • Market share expected to remain constant • Crossing loop extensions planned	**Road** • Western Hwy upgrade strategy • No major travel times savings anticipated Rail • Reduction in temporary speed restrictions : 20% in 1997 to less than <2% • Restricted number of 1,500 m train paths have been provided	Road • Highly competitive corridor • Similar issues to the Melbourne – Sydney corridor Rail • Operational benefits from servicing Perth corridor • Highly competitive corridor	Rail • Single train control operation has seen schedules and timetables regularly meet
Transit Time & Distance	Rail • Track improvements have reduced transit times by approximately 1 hr • The variation in rail travel times reflect different path schedules • Patricks transit time has reduced by 1.5 hrs in the last 3 yrs & is expected to fall by another 1 hr	Road • Travel times are not expected to improve Rail • Transit times improved with increases in maximum speeds & with the dramatic reduction in temporary speed restrictions	Rail • NR operational changes required to provide overnight delivery service	Rail • Further improvement in travel times for Patrick's & NR may be achieved by refining the master schedule
Service availability	Road • Provides an overnight service Rail • Toll is currently the only rail operator providing an early morning delivery service • Patricks delivery requirements varies according to shipping schedules • SCT also compete in the corridor	Rail • Infrastructure upgrades have provided opportunities for sprinter train services	Rail • With the improvements in travel time Toll have been able to develop an overnight service	Rail • Changes to the master schedule may improve NR's overnight service
Price	Rail • NR's book rates have remained unchanged	Rail • An increase in the number of 1,500 train paths will reduce operating costs	Rail • Cost savings with the removal of temporary speed restrictions	Rail • Streamlining of train control & documentation requirements have create further cost savings
Reliability	Rail • Patrick's key service requirement in meeting ships schedule	Rail • Reliability increased with travel time improvements providing additional dwell time		Rail • ARTC train control has improved the reliability of services

Rail has a significant price advantage in the Melbourne - Perth market corridor

Melbourne - Perth



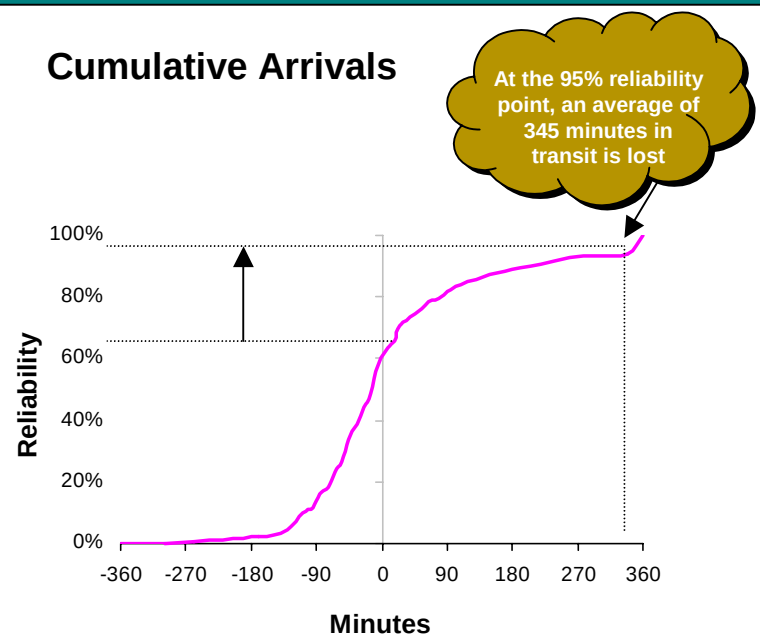


Reliability improvements would strengthen rail's competitive position

Melbourne - Perth

Reliability

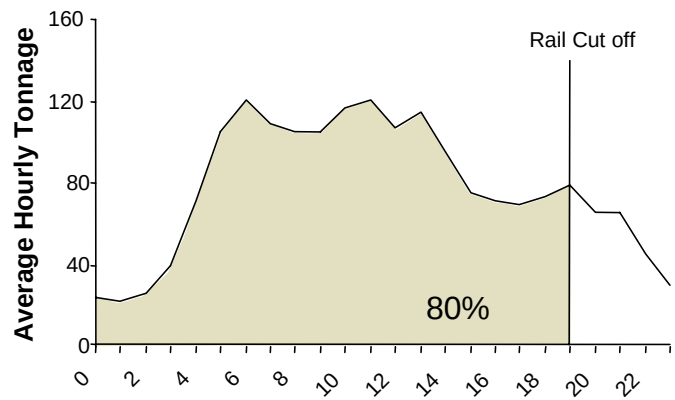
Cumulative Arrivals



	Rail	Road
% within 15 mins	66%	95%

Service Availability

Current Distribution of Road Departures



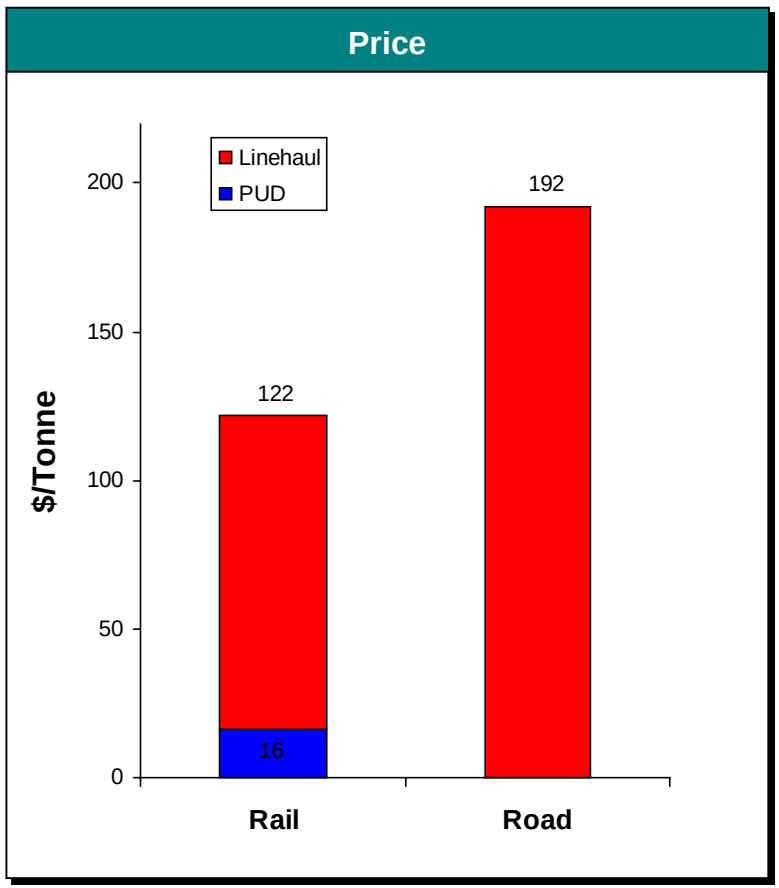
Current cut-off times dictate the % of market rail currently services

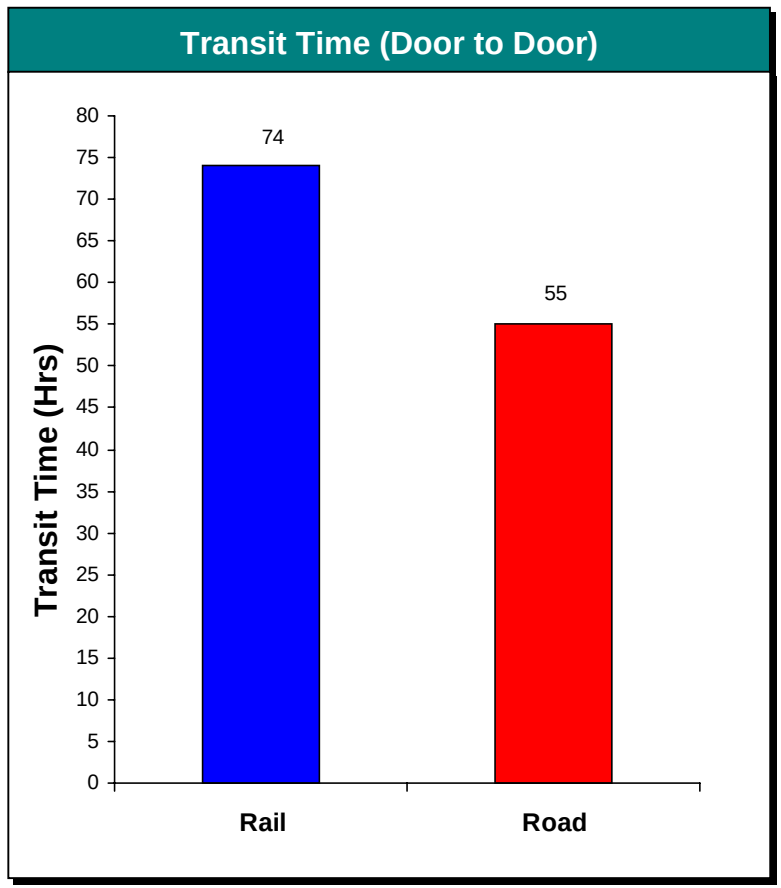
In the future, rail is expected to consolidate its market position

ITEM	TRENDS	INFRASTRUCTURE	ABOVE RAIL/ROAD	REGULATION/POLICY
General Market	Rail • Market share has increased • Market share increase expected to continue • Operators have increased the number of weekly services • Toll perceive shipping to be the greatest potential threat in the corridor and say it has been gaining market share from rail	Rail • Dramatic reduction in temporary speed restrictions from 20% in 1997 to less than 2%	Rail • Australia's most competitive & efficient freight corridor • 1,800m train lengths & double stacking between Adelaide - Perth	Rail • Number of different track providers & train control centres
Transit Time & Distance	Road • Transit time is significantly less than rail Rail • Further transit improvements would not be beneficial as rail currently satisfies market delivery requirements • No justification for the construction of an Adelaide by-pass	Road • Travel times are not expected to improve Rail • Transit times improved with increases in maximum speeds & with the dramatic reduction in temporary speed restrictions		Road • Truck driving regulations require 2 drivers over such distances
Service availability	General • Both road and rail offer a 3rd day delivery service • Sea is suitable for non-time sensitive bulk products	Rail • Infrastructure upgrades have increased the service availability by pushing back the cut off times		
Price	Rail • 30% reduction in rates over the last 3 years • The cheaper price for sea has encouraged Toll to move volumes from rail to sea • NR's book rates have reduced slightly • Natural competitive advantage in longer corridors	Rail • Improvements in axle loads, maximum speeds and increases in crossing loops have reduced operating costs • No real gains in double stacking containers between Melbourne & Adelaide	Rail • Major productivity gains through removal of temporary speed restrictions • Productivity benefits by allowing the double stacking of containers	Rail • Streamlining of train control & documentation requirements have created cost savings
Reliability	Rail • Increased dwell times have improved reliability		Rail • Disciplined rail operations have also helped improve reliability	Rail • Access charges between Perth & Kalgoorlie are high in relation to ARTC network

A similar price advantage exists for rail in the Sydney - Perth market corridor

Sydney - Perth

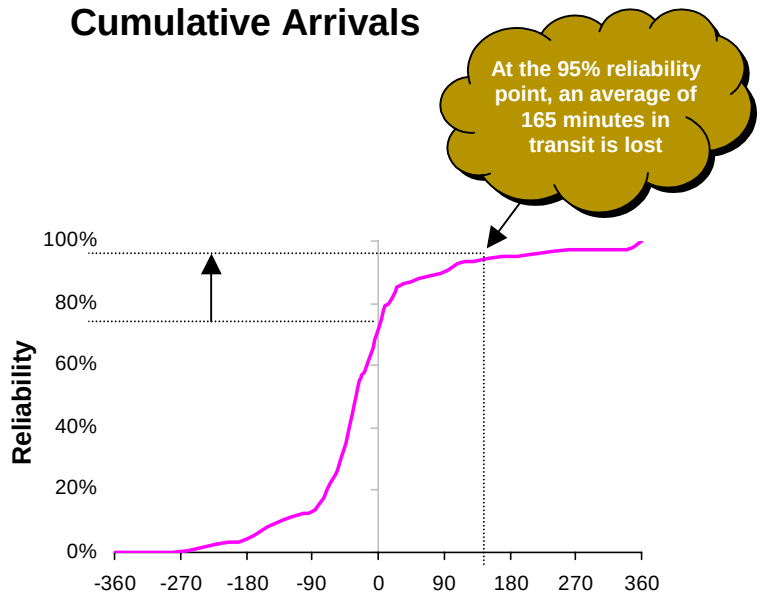




Rail currently provides a highly reliable service ...

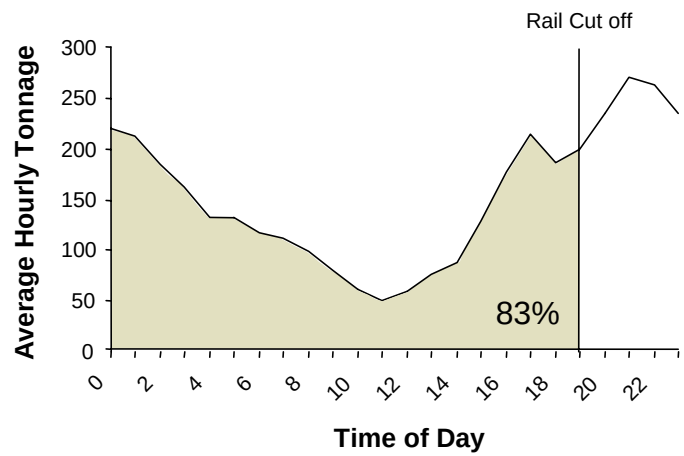
Sydney - Perth

Reliability



	Rail	Road
% within 15 mins	70%	95%

Service Availability



Current cut-off times dictate the % of market rail currently services

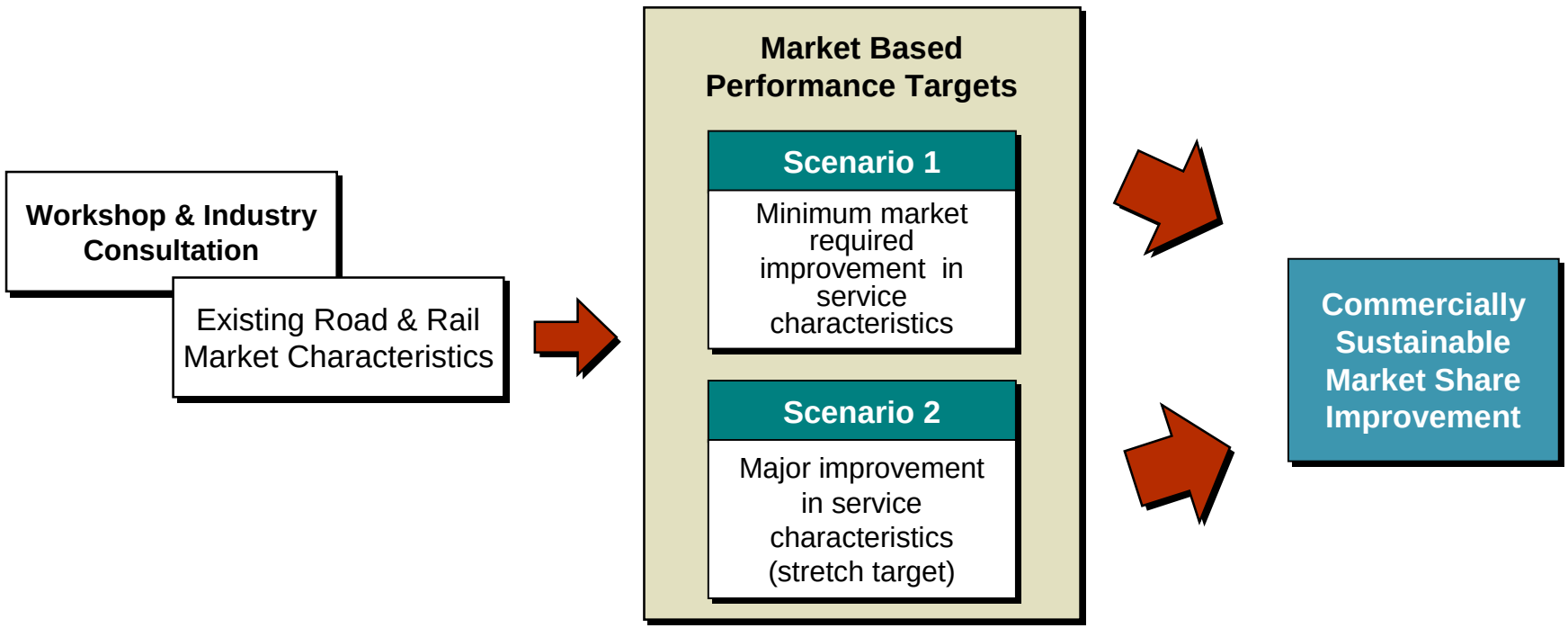
… and is expected to improve its competitive position considerably

ITEM	TRENDS/ISSUES	INFRASTRUCTURE	ABOVE RAIL/ROAD	REGULATION/ POLICY
General Market	Road • Drop off in the number of truck counts on the Adelaide & Perth Hwy Rail • Unprecedented growth in volumes • Expect to capture 10% in market share within the next 12 months • NR Sprinter service introduced in 1999 • Parkes not a primary rail strategic hub. Some interest in developing this site	Rail • Track performance characteristics have improved dramatically • The NSW track is still well below standard via the direct Perth route • The route via Lithgow can save 4-6 hrs travel time, yet limits train length and requires an additional locomotive. Alternatively, via Cootamundra, longer trains can run yet travel time is higher	Rail • Most competitive rail freight route	Rail • Number of different track providers & train control centres • Single train control operation would result in significant cost savings
Transit Time & Distance	Rail • Sprinter train offers the only direct service (via Parkes & Broken Hill) • All other services pass through Melbourne & Adelaide • Further improvements in travel time is unlikely to substantially increase market share • A 12 hr reduction in travel time will enable a 2nd day delivery service	Road • Travel times are not expected to improve Rail • Transit times have reduced with improved track speeds & the removal of temporary speed restrictions • New track at Parkes has reduced travel time by up to 3hrs for the direct S-P services • Speed restrictions still exist between Kalgoorlie & Perth	Rail • NR expect transit time can be reduced by 4 hours with better train operations between Sydney and Broken Hill	Road • Driving regulations require 2 drivers to service corridor
Service availability	General • Road & rail offer a 3rd delivery service, with late cut off & morning delivery Rail • The number of services on the corridor has increased dramatically	Rail • Infrastructure upgrades have provided opportunities for sprinter train services		
Price	Rail • NR's book price has reduced slightly from 1997 • Natural competitive price advantage	Rail • Improvements in axle loads & maximum speeds have reduced charges	Rail • Major productivity gains through removal of temporary speed restrictions	Rail • Streamlining of train control & documentation requirements may create further cost savings
Reliability	Rail • Reliability has improved dramatically in recent years	Rail • Travel time improvements have led to improved reliability and additional dwell time	Rail • Disciplined rail operations have also helped improve reliability	

Performance and Engineering Targets

- Performance Targets by Market segment
- Engineering Targets
- Engineer’s Template

The competitive analysis was used to identify two market scenarios which could deliver a wide range of market share outcomes



The Melbourne - Sydney stretch target was equivalent to road's service offering

	Performance Targets	Investment Option: Base Case	S1	S2
Service Offering	Transit Time (hrs)	13.5	11	9
Service Offering	Reliability (%)	55%	75%	95%
Service Offering	Service Availability (%)	50%	70%	85%
Infrastructure	Unrestricted Train Paths (length m)	-	1,500	1,500
Infrastructure	Double Stacking	-	no	no

Market Share (%)	11%	19%	26%

Rationale	Road
Competitive with road	11
Road target	95%
Resultant cut-off time	99%
ATC objective	-
-	-

The Sydney - Brisbane stretch target was also equivalent to road's service offering

	Performance Targets	Investment Option: Base Case	S1	S2
Service Offering	Transit Time (hrs)	21	19	16
Service Offering	Reliability (%)	50%	75%	95%
Service Offering	Service Availability (%)	25%	50%	70%
Infrastructure	Unrestricted Train Paths (length m)	-	1,500	1,500
Infrastructure	Double Stacking	-	no	no

Rationale	Road
Competitive with road	15
Road target	95%
Resultant cut-off time	99%
ATC objective	-
-	-

Market Share (%)	19%	27%	36%

Performance targets in the Melbourne - Brisbane market corridor extend beyond road's current service offering

		Investment Option			
Performance Targets		Base Case	S1	S2	Inland
Service Offering	Transit Time (hrs)	36	32	27	27
	Reliability (%)	45%	80%	95%	95%
	Service Availability (%)	60%	85%	90%	90%
Infrastructure	Unrestricted Train Paths (length m)	-	1,500	1,500	1,800
	Double Stacking	-	no	no	yes
			Coastal		
Market Share (%)		21%	32%	39%	54%

Rationale	Road
Competitive with road	33
Road target	95%
Resultant cut-off time	99%
ATC and inland objective	-
Pre-feasibility investment option	-

Service improvements in the Melbourne - Adelaide market corridor are limited

	Performance Targets	Investment Option: Base Case	S1	S2
Service Offering	Transit Time (hrs)	13	12	9
Service Offering	Reliability (%)	74%	80%	95%
Service Offering	Service Availability (%)	70%	75%	80%
Infrastructure	Unrestricted Train Paths (length m)	-	1,500	1,500
Infrastructure	Double Stacking	-	no	no
	Market Share (%)	21%	24%	28%

Rationale	Road
Competitive with road	9
Road target	95%
Resultant cutoff time	99%
ATC and inland objective	-
-	-

Reliability is the focus of improvements in the Melbourne - Perth market corridor

		Investment Option		
Performance Targets		Base Case	S1	S2
Service Offering	Transit Time (hrs)	58	57	52
	Reliability (%)	66%	80%	95%
	Service Availability (%)	80%	85%	90%
Infrastructure	Unrestricted Train Paths (length m)	1,800	1,800	1,800
	Double Stacking	-	no	yes

Market Share (%)	70%	74%	78%

Rationale	Road
Improvement in reliability	43
Road target	95%
Resultant cutoff time	99%
ATC and inland objective	-
Assessment option	-

Improvements are limited in the Sydney - Perth market corridor

	Performance Targets	Investment Option: Base Case	S1	S2
Service Offering	Transit Time (hrs)	72	69	69
	Reliability (%)	70%	80%	95%
	Service Availability (%)	83%	95%	95%
Infrastructure	Unrestricted Train Paths (length m)	-	1,800	1,800
	Double Stacking	-	no	yes
	Market Share (%)	65%	69%	71%

Rationale	Road
Slight service improvement	55
Road target	95%
Resultant cutoff time	99%
ATC and inland objective	-
To enable DS to Perth	-

The improvements to key drivers were translated into performance and engineering targets in the North South ...

North - South Corridors												
			1. Melbourne - Brisbane (Coastal)			2. Melbourne - Brisbane (Inland)						
			Base Case	Scenario 1	Scenario 2	Base Case	Scenario 1	Scenario 2				
Item	**Units**	***Notes***	*2000*			*2000*						
Market Data												
Market Share	*(%)*		*21%*	33%	40%	*21%*	42%	46%				
Volume	*Tonnes ('000)*	Forward Haul	*499*	784	950	*499*	1,001	1,095				
	Tonnes ('000)	Back Haul	*332*	522	633	*332*	668	730				
	(%)	Change from Base Case		57%	90%		101%	120%				
Parameters												
Reliability	*(%)*	Within 15 min of schedule	*45%*	80%	95%	*45%*	80%	95%				
Transit Time	*(hrs)*	Average Actual Rail Transit Time	*36.0*	32.0	27.0	*36.0*	27.0	27.0				
	(hrs)	Timetabled Rail Transit Time	*34.0*			*34.0*						
Service Avaliablity	(%)	Service available to % of total market	*60%*	85%	90%	*60%*	90%	90%				
	24 hr time	Service cut-off time for AM delivery (forward direction)	*17:30*	20:30	22:00	*17:30*	22:00	22:00				
Infrastructure												
Unrestricted Train Paths (End to End)			-	1,500	1,500	-	1,800	1,800				
Double Stacking			-	no	no	-	no	yes				

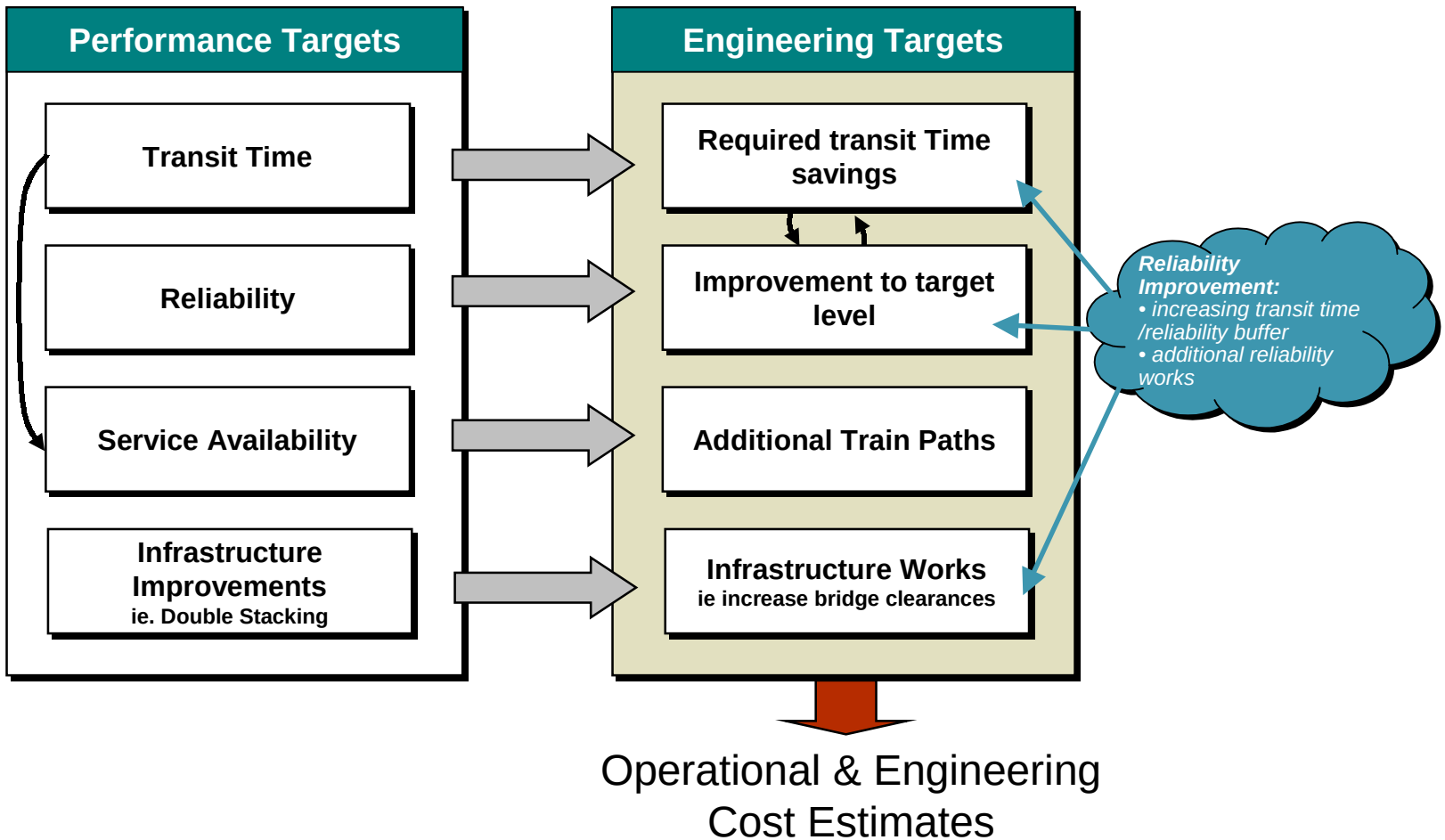
			3. Sydney - Brisbane (Coastal)			4. Sydney - Brisbane (Inland)			5. Melbourne - Sydney		
			Base Case	Scenario 1	Scenario 2	Base Case	Scenario 1	Scenario 2	Base Case	Scenario 1	Scenario 2
Item	**Units**	***Notes***	*2000*			*2000*			*2000*		
Market Data											
Market Share	*(%)*		*19%*	27%	36%	*19%*	25%	31%	*11%*	19%	25%
Volume	*Tonnes ('000)*	Forward Haul	*671*	981	1,299	*669*	889	1,122	*501*	859	1,122
	Tonnes ('000)	Back Haul	*467*	682	902	*465*	618	779	*463*	793	1,036
	(%)	Change from Base Case		46%	93%		32%	67%		71%	124%
Parameters											
Reliability	*(%)*	Within 15 min of schedule	*50%*	75%	95%	*50%*	75%	95%	*55%*	75%	95%
Transit Time	*(hrs)*	Average Actual Rail Transit Time	*21.0*	19.0	15.0	*21.0*	19.0	16.5	*13.5*	11.0	9.0
	(hrs)	Timetabled Rail Transit Time	*19.0*			*19.0*			*13.5*		
Service Avaliablity	(%)	Service available to % of total market	*25%*	50%	75%	*25%*	50%	65%	*50%*	70%	85%
	24 hr time	Service cut-off time for AM delivery (forward direction)	*11:30*	12:30	16:00	*11:30*	12:30	15:00	*15:30*	18:00	20:00
Infrastructure											
Unrestricted Train Paths (End to End)			-	1,500	1,500	-	1,500	1,800	-	1,500	1,500
Double Stacking			-	no	no	-	no	no	-	no	no

… and the East West

East - West Corridors												
			6. Sydney - Perth			7. Melbourne - Adelaide			8. Melbourne - Perth		
			Base Case	Scenario 1	Scenario 2	Base Case	Scenario 1	Scenario 2	Base Case	Scenario 1	Scenario 2
Item	**Units**	***Notes***	*2000*			*2000*			*2000*		
Market Data											
Market Share	*(%)*		*65%*	70%	72%	*21%*	24%	28%	*70%*	73%	78%
Volume	*Tonnes ('000)*	Forward Haul	*499*	539	554	*492*	576	700	*938*	974	1,016
	Tonnes ('000)	Back Haul	*184*	200	205	*437*	511	620	*421*	438	456
	(%)	Change from Base Case		8%	11%		17%	42%		4%	8%
Parameters											
Reliability	*(%)*	Within 15 min of schedule	*70%*	80%	95%	*74%*	80%	95%	*66%*	80%	95%
Transit Time	*(hrs)*	Average Actual Rail Transit Time	*63.5**	60.5*	60.5*	*13.0*	12.0	9.0	*54.0**	53.0*	48.0*
	(hrs)	Timetabled Rail Transit Time				*13.0*			*51.0**		
Service Avaliablity	(%)	Service available to % of total market	*83%*	95%	95%	*70%*	75%	80%	*80%*	85%	90%
	24 hr time	Service cut-off time for AM delivery (forward direction)	*20:30*	22:00	22:00	*17:30*	18:30	19:00	*19:00*	20:00	21:00
Infrastructure											
Unrestricted Train Paths (End to End)			-	1,800	1,800	1,500	1,500	1,800	1,800	1,800	1,800
Double Stacking			-	no	yes	-	no	yes	-	no	yes

- For the proposed Inland route:
  - a single inland investment option was assessed
  - the Sydney - Brisbane inland route was not seen as a viable investment route with distance and travel time in excess of the existing Sydney - Brisbane route

The performance targets were used by the engineer consultants ...



… to determine the optimal least capital cost required to achieve the targets

- The following Engineering templates were provided to the engineer consultants
- The objective of the templates were to :
  - standarise the output of the engineering results
  - emphasis the importance of achieving the performance targets in an optimal least cost manner
  - provide specific detail on the projects which collectively made up the investment scenario
- The engineers were asked to estimate the cost of achieving the service characteristic targets as an independent basis firstly, and then as a combined set of targets
- All assumptions were to be noted

CORRIDOR -

ATC Track Objectives achieved

Service Characteristics
Transit Time (Linehaul - Hours : Mins)
Reliability (% of trains arriving within 15 mins of their scheduled arrival time)
Service Availability (number of train paths)

Project #	Project Description	Optimal Least Cost ($)	Translated Benefits		
			Transit Time	Train Paths	Reliability
TOTAL					

CORRIDOR -

Scenario 1. – Minor Improvement in Market Share

Service Characteristics	*Existing*	*Target*
Transit Time (Linehaul - Hours : Mins)		
Reliability (% of trains arriving within 15 mins of their scheduled arrival time)		
Service Availability (number of train paths)		
Volumes (000 Tonnes) • Forward haul • Back haul		

In costing improvements required to achieve the above transit time, reliability and service availability targets :

- Firstly, determine the costs required to achieve each of the service characteristic targets independently; and
- Secondly, determine the costs required to achieve all of the service characteristic targets together.

Assumptions associated with developing costs for each project need to be identified.

TRANSIT TIME			
Project #	**Project Description**	**Transit Time Saving (Minutes)**	**Optimal Least Cost ($)**
OPERATIONAL IMPROVEMENTS			
TOTAL			
INFRASTRUCTURE IMPROVEMENTS			
TOTAL			

RELIABILITY			
Project #	**Project Description**	**Reliability Improvement (%)**	**Optimal Least Cost ($)**
OPERATIONAL IMPROVEMENTS			
TOTAL			
INFRASTRUCTURE IMPROVEMENTS			
TOTAL			

SERVICE AVAILABILITY			
Project #	**Project Description**	**Additional Paths (%)**	**Optimal Least Cost ($)**
OPERATIONAL IMPROVEMENTS			
		[redacted]	
TOTAL			
INFRASTRUCTURE IMPROVEMENTS			
		[redacted]	
TOTAL			

TOTAL COST FOR ALL SERVICE CHARACTERISTIC TARGETS					
Project #	**Project Description**	**Transit Time Saving (Minutes)**	**Additional Paths (%)**	**Reliability Improvement (%)**	**Optimal Least Cost ($)**
OPERATIONAL IMPROVEMENTS					
TOTAL					
INFRASTRUCTURE IMPROVEMENTS					
TOTAL					

CORRIDOR -

Scenario 2. – Major Improvement in Market Share

Service Characteristics	*Existing*	*Target*
Transit Time (Linehaul - Hours : Mins)		
Reliability (% of trains arriving within 15 mins of their scheduled arrival time)		
Service Availability (number of train paths)		
Volumes (000 Tonnes) • Forward haul • Back haul		

In costing improvements required to achieve the above transit time, reliability and service availability targets :

- Firstly, determine the costs required to achieve each of the service characteristic targets independently; and
- Secondly, determine the costs required to achieve all of the service characteristic targets together.

Assumptions associated with developing costs for each project need to be identified.

TRANSIT TIME			
Project #	**Project Description**	**Transit Time Saving (Minutes)**	**Optimal Least Cost ($)**
OPERATIONAL IMPROVEMENTS			
TOTAL			
INFRASTRUCTURE IMPROVEMENTS			
TOTAL			

RELIABILITY			
Project #	**Project Description**	**Reliability Improvement (%)**	**Optimal Least Cost ($)**
OPERATIONAL IMPROVEMENTS			
		[redacted]	
TOTAL			
INFRASTRUCTURE IMPROVEMENTS			
		[redacted]	
TOTAL			

SERVICE AVAILABILITY			
Project #	**Project Description**	**Additional Paths (%)**	**Optimal Least Cost ($)**
OPERATIONAL IMPROVEMENTS			
TOTAL			
INFRASTRUCTURE IMPROVEMENTS			
TOTAL			

TOTAL COST FOR ALL SERVICE CHARACTERISTIC TARGETS					
Project #	**Project Description**	**Transit Time Saving (Minutes)**	**Additional Paths (%)**	**Reliability Improvement (%)**	**Optimal Least Cost ($)**
OPERATIONAL IMPROVEMENTS					
			[redacted]		
TOTAL					
INFRASTRUCTURE IMPROVEMENTS					
			[redacted]		
TOTAL					