



Independent Pricing and Regulatory Tribunal

Review of maximum fares for CityRail services from January 2013

Transport — Final Report
November 2012



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The Tribunal members for this review are:

Mr Peter J Boxall AO, Chairman

Mr James Cox PSM, Chief Executive Officer and Full Time Member

Mr Simon Draper, Part Time Member

Inquiries regarding this document should be directed to a staff member:

Brett Everett (02) 9290 8423

Fiona Towers (02) 9290 8420

Independent Pricing and Regulatory Tribunal of New South Wales

PO Box Q290, QVB Post Office NSW 1230

Level 8, 1 Market Street, Sydney NSW 2000

T (02) 9290 8400 F (02) 9290 2061

www.ipart.nsw.gov.au

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1 Executive summary

The Independent Pricing and Regulatory Tribunal of NSW (IPART) is responsible for regulating the maximum fares RailCorp charges for the railway passenger services it provides under the name “CityRail”.¹ We are required to review these fares in line with the requirements set out in section 15(1) of the *Independent Pricing and Regulatory Tribunal Act 1992* (IPART Act) as well as section 16AE(5) and 28J(5) of the *Passenger Transport Act 1990* (PTA Act),² and determine **maximum** fares or fare increases. However, Government can set fares below the levels allowed under our determination.³

We have undertaken a review of these fares and have made a final determination to apply for the 3-year period January 2013 to December 2015. The purpose of this report is to explain the final determination, and the decisions and analysis that support it.

Note that the determination applies only to the maximum fares for CityRail single, return, periodical and off-peak return tickets, and for multi-modal tickets that can be used on CityRail services (MyMulti and Newcastle TravelPass). It does not apply to fares for Pensioner Excursion Tickets (PETs) and the other concession fares that can be used on CityRail services, as these are set by the NSW Government.

¹ Excluding services supplied in accordance with the ticket known as the “SydneyPass” - see *Independent Pricing and Regulatory Tribunal (Passenger Transport Services) Order 1998*.

² The requirements included in this section are listed in Appendix A.

³ By section 18(2) of the *Independent Pricing and Regulatory Tribunal Act 1992* (IPART Act), RailCorp may only fix a price below that determined by IPART with the approval of the Treasurer.

1.1 How do fares change under our final determination?

Under the final determination, CityRail's current fares can increase in nominal terms by an average of 3.6% in 2013 and 3.8% per year for 2014 and 2015 (or 1.3% per year above the expected rate of inflation⁴). This is lower than the fare increase in our draft determination.

The main change between our draft and final determinations is that we updated the inputs used in estimating the feasible range for CityRail's WACC to reflect prevailing market conditions. We used a real post-tax WACC of 4.4% in making our final determination, compared to 5.1% for the draft determination. This reduces the amount passengers should fund through fares and so a lower fare increase is required than our draft determination. We also updated our forecasts of capital expenditure and other income based on more recent information from Transport for NSW but the impact of these changes was small.

The final determination gives Transport for NSW the flexibility to change the price of individual CityRail tickets as it sees fit, provided that it ensures the **overall average increase** in prices is not more than 1.3% plus inflation per year. We have chosen to set a maximum average increase rather than setting maximum fares for individual tickets to facilitate the introduction of Opal – the Government's electronic ticket for public transport services in the greater Sydney area. The Government plans to introduce Opal progressively over the next 2 years.⁵ In our view, the structure and level of some current fares may need to be adjusted to optimise the efficiency of e-ticketing, and a determination that sets individual fares would prevent Transport for NSW from doing this without foregoing revenue.

1.2 Why do fares need to increase?

Like most public transport providers in the world, CityRail does not generate enough income from passenger fares to recover the costs of providing its services. Therefore, the NSW Government – or taxpayers – subsidise these costs. In our last review of CityRail fares,⁶ we developed an approach for setting fares that ensures passengers and taxpayers each fund a fair share of the costs.

Under this approach, we estimate the **efficient costs** of providing CityRail's services, and the value of the **external benefits** these services generate for the community as a whole (such as reduced road congestion and greenhouse gas emissions) in each year of the determination period. We consider that taxpayers should fund a share of the efficient costs that is broadly equal to the value of the external benefits. We set maximum fares to reflect our estimate of the efficient costs **minus** the value of the external benefits and the costs of Government

⁴ We have used an estimate 2.5% for the expected rate of inflation for 2014 and 2015.

⁵ Transport for NSW, *Final NSW Long Term Transport Master Plan*, September 2012, p 65.

⁶ IPART, *Review of CityRail fares, 2009 -2012*, December 2008 (2009 determination).

providing concession fares, taking into account the forecast number of passenger journeys per year.

We have used this same approach for this review, using updated data on the costs and external benefits where it was available. As we did in our current review of Sydney Ferries fares, we have considered the costs and benefits for the next 7 years to provide a longer-term view of how fares need to change and used a 'glide path' approach to set fares. We found:

- ▼ The value of the external benefits generated by CityRail services in 2019 (\$2.2 billion) is almost 5% higher than our previous estimate for 2012. This is mainly because the estimated value of reduced road congestion has increased.
- ▼ The efficient costs of providing CityRail's services in 2019 are slightly higher (just over 5%) than our previous allowance for 2012. Both our allowances for return on and of capital are slightly higher. While the required rate of return is lower (reflecting updated financial market conditions) and we have adopted longer asset lives that better reflect the expected useful life of CityRail assets, they are applied to a larger capital base.

Based on our updated values of CityRail's efficient costs and external benefits we consider that passengers' should fund 28% of the efficient costs and taxpayers should fund 72%. We have set fares using a 'glide path' approach to recover these amounts. This approach takes a medium-term view of how fares need to change and provides for a stable, gradual transition to the passenger share.

The Government has indicated that fares for public transport will increase by no more than inflation until service quality improves.⁷ We consider that our approach to setting maximum fares by setting the appropriate balance between taxpayers and passengers is should be maintained and our analysis implies that real fare increases are needed. Therefore we have made a determination of maximum fares that includes real fare increases. However, under the legislative framework the Government can set actual fares below the maximum we have determined.

We note that while CityRail's performance can vary by line, the data available to us indicates that CityRail has broadly maintained the quality of service over the past 4 years. Over this same period CityRail has also has increased the number of services.

⁷ Transport for NSW, Media Release – Public transport fare rise half IPART's recommendation, Available from: <http://www.transport.nsw.gov.au/media-releases/public-transport-fare-rise-half-iparts-recommendation>, Accessed 29 March 2012.

1.3 How does our determination affect the NSW Government and taxpayers?

As noted above, we have decided to set the maximum average change in fares, rather than a maximum fare for each ticket that can be used on CityRail services as we have done in the past. This approach gives Transport for NSW the flexibility to set the fare for individual tickets, which should help facilitate the introduction of Opal.

If the Government chooses to increase fares in line with the maximum average increase allowed under the final determination, the fares collected from CityRail passengers should recover 28% of CityRail's estimated efficient costs in each of the next 3 years. If the Government chooses to increase fares in line with inflation, as it did this year, we estimate that it will forego approximately \$56 million of farebox revenue over this time.

In addition, if CityRail continues to spend more than the allowances we consider efficient, we estimate that over the next 3 years NSW taxpayers will also need to subsidise CityRail services by around \$1.5 billion more than is justified by the value of external benefits generated by CityRail services.

We note that the Government's contribution to CityRail on behalf of taxpayers also includes the cost of social policies that involve the provision of free or reduced fares for some passengers (such as pensioners and school students). While these social policies are a matter for Government and the costs fall outside the scope of our review, we consider that it is appropriate that these costs be paid for by taxpayers rather than passengers.

1.4 Structure of this report

The following chapters explain how and why we reach our final determination in detail:

- ▼ Chapter 2 sets out the scope, context and process for this review
- ▼ Chapter 3 explains the approach we used to make this determination and why we consider this approach to be the best way to set maximum fares for CityRail's services at this time
- ▼ Chapter 4 describes the quantity and quality of the services CityRail provides
- ▼ Chapter 5 provides an overview of our final decision on the efficient costs of providing CityRail's services, and discusses the individual components of this final decision
- ▼ Chapter 6 discusses our final decision on the forecast patronage growth and how this decision influences the value of the external benefits and level of fares

- ▼ Chapter 7 discusses our final decision on the value of external benefits generated by the provision and use of CityRail's services
- ▼ Chapter 8 explains our final decision on how much of the efficient costs of providing CityRail's services passengers should fund through fares, and the average increase required to recover this amount
- ▼ Chapter 9 discusses our final decision to determine the maximum average change in fares for CityRail's services, rather than set a maximum fare for individual tickets
- ▼ Chapter 10 discusses the implications of the final determination for the affordability of fares, the Government and the environment.

2 Scope, context and process for this review

This review focuses on the maximum fares for CityRail services from January 2013. Its scope includes:

- ▼ single, return and periodical rail tickets (MyTrain1-5)
- ▼ off peak return tickets
- ▼ multi-mode tickets (MyMulti1-3 and the Newcastle TravelPass).

It does not include fares for the pensioner excursion ticket (PET), School Student Transport Scheme (SSTS) or other concession fares, as these fares are set by the NSW Government.

The sections below discuss the matters we considered in reviewing and making our final decisions on CityRail's fares – particularly the contextual factors – and sets out the process we followed in conducting the review.

2.1 Matters we considered in making this final determination

In making CityRail determinations, we are required to consider a range of matters listed in section 15(1) of the IPART Act and sections 16AE(5) and 28J(5) of the PTA Act for multi-modal tickets – such as the cost of providing the services concerned, the protection of consumers from abuses of monopoly power, and the need for greater efficiency in the supply of services – and to set maximum fares in a way that appropriately balances these matters.

However, we also need to take into account the specific context of each review, as contextual factors influence what we can achieve through our determination, and place constraints on the approach we can feasibly use to make the determination. These factors generally relate to Government policy decisions.

For this review, the most important contextual factors we need to take into consideration are:

- ▼ the fare setting approach we used in our last review of CityRail's fares
- ▼ the planned introduction of an electronic ticketing system for Sydney's public transport services
- ▼ the NSW Government's Long-Term Transport Master Plan and Sydney's Rail Future

- ▼ that CityRail's services are provided under a service contract
- ▼ the current structure and level of fares for CityRail's services, and
- ▼ the extent to which current fares recover the costs of providing CityRail's services.

2.1.1 IPART's approach to setting fares for the 2009 determination

Our 2009 determination on CityRail fares represented a major revision of the approach we had previously used to set fares. To help create the right incentives for CityRail to improve its efficiency, we adopted a 'building block' approach⁸ that involved:

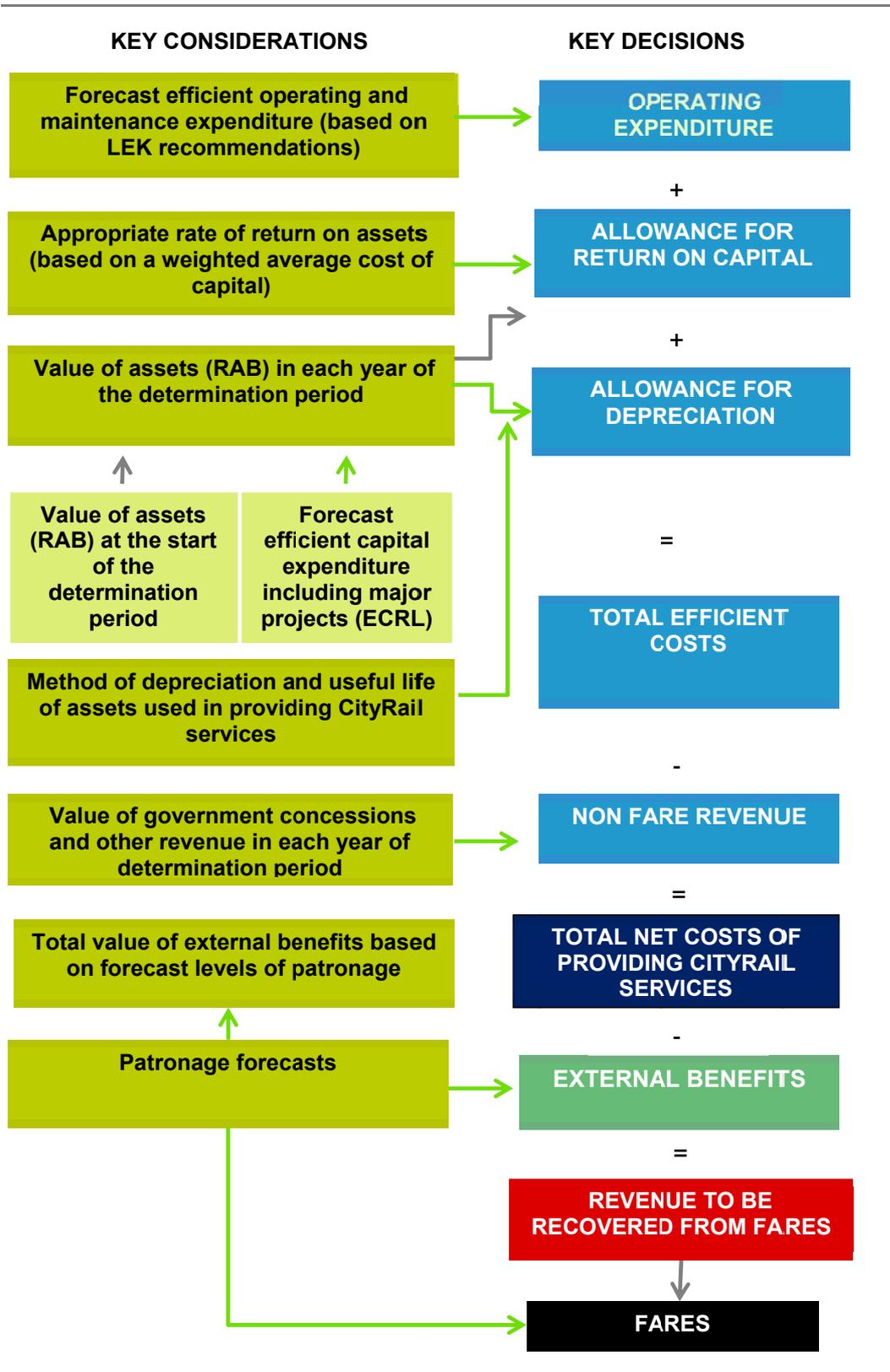
- ▼ using efficiency reviews based on benchmarking to establish the efficient costs of providing railway passenger services
- ▼ forecasting patronage growth over the determination period
- ▼ establishing the appropriate shares of the efficient costs to be recovered from CityRail passengers and from taxpayers by estimating the value of external benefits generated by CityRail services, and considering potential impacts on fare affordability and patronage levels
- ▼ converting the share of the efficient costs to be recovered from passengers into fares by setting a maximum fare for each CityRail ticket type.

This approach ensures that the maximum fares for CityRail's services we determine reflect the efficient costs of providing those services – so that passengers are not required to fund the costs of inefficient management decisions and work practices, and CityRail has greater incentive to improve its efficiency. It also ensures that the size of the taxpayer subsidy implied by those maximum fares reflects the level of subsidy that is justified by the external benefits CityRail services generate for the wider community (as opposed to the internal benefits it provides to passengers). In addition, this approach creates transparency around the costs of and benefits of CityRail services and how they should be shared between passengers and taxpayers. (Figure 2.1 summarises the key considerations and decisions involved in this approach.)

Given these benefits, we consider that it is important to maintain this approach for the 2013 determination. We also note that it is consistent with the approaches we have used in our most recent determinations on fares for Sydney bus and Sydney Ferries services.

⁸ The building block approach 'builds up' the revenue required by the business to cover the efficient costs of providing services that meet the contracted requirements. This is a rigorous, transparent approach that is consistent with the approach we use in regulating other industries.

Figure 2.1 IPART'S 2009 fare setting approach



2.1.2 The introduction of electronic ticketing

Transport for NSW is currently working with the Pearl Consortium to introduce the Opal card - an electronic ticketing (e-ticketing) product for public transport services in the greater Sydney area.⁹ On 25 November 2012, the Minister for Transport announced that the Opal card will launch with a customer trial from 7 December 2012 on the Neutral Bay ferry route. It will then be rolled out across greater Sydney for all Sydney Ferries, train, bus and light rail customers through to 2015.¹⁰

A customer will use their Opal to 'tap on' at a reader or gate at the start of their journey and 'tap off' at the end of that journey. Under this 'pay-as-you-go' system, the fare will be calculated and deducted from the money stored on the card. Customers will be able to top up the money on their Opal online, or move money from a linked bank account or credit/debit card. They will also be able to load money at a wide network of retail outlets.¹¹

2.1.3 The Government's Long-Term transport Master Plan and Sydney's Rail Future

In September 2012, the NSW Government released its Draft Transport Master Plan. The plan includes policies previously announced in June 2012 Sydney's Rail Future - a long-term plan to increase the capacity of Sydney's rail network through investment in new services and upgrading of existing infrastructure. This includes investment in network capacity, North West and South West Rail Links (NWRL and SWRL), rolling stock upgrades, services with more frequent and faster journey times, and a second tunnel under Sydney Harbour as part of a new CBD rail link.¹²

As part of Sydney's Rail Future, the Government plans to develop a 3-tiered rail system, outlined in Table 2.1.

⁹ See <http://www.transport.nsw.gov.au/content/opal-ticketing-system> (accessed 6 September 2012).

¹⁰ See <http://www.transport.nsw.gov.au/media-releases/introducing-opal-card-transforming-way-we-move-around> (accessed 27 November 2012).

¹¹ Transport for NSW, *The Opal ticketing system - How Opal cards will work*, Available from <http://www.transport.nsw.gov.au/content/opal-ticketing-system> (accessed 17 September 2012).

¹² Premier of NSW, *Rebuilding NSW: 20-year vision for transport*, 4 September 2012, Available from: <http://www.transport.nsw.gov.au/media-releases/rebuilding-nsw-20-year-vision-transport> (accessed 8 September 2012).

Table 2.1 Sydney's Rail Future 3-tier system

Tier 1: Rapid Transit	Tier 2: Suburban	Tier 3: Intercity
<ul style="list-style-type: none"> ▼ Frequent 'turn up and go' services without the need for consulting a timetable ▼ Fast single-deck trains, with plenty of seats, more doors, designed for easy boarding and alighting 	<ul style="list-style-type: none"> ▼ Timetabled services ▼ Double-deck trains with more seats per train 	<ul style="list-style-type: none"> ▼ Timetabled services ▼ Double-deck trains for Central Coast, Newcastle, Wollongong and Blue Mountains services ▼ Comfortable services for long-distance commute and leisure travel

Source: Transport for NSW, *Sydney's Rail Future – Modernising Sydney's Trains*, June 2012, p 10.

As part of its 'Fixing the Trains' initiative, the Government also announced several reform initiatives. These include:

- ▼ Restructuring RailCorp into 2 organisations – Sydney Trains and NSW Trains. Sydney Trains will serve customers that currently use CityRail's suburban network. NSW Trains will serve customers that currently use CityRail's intercity and regional networks as well as country customers that currently use CountryLink services.
- ▼ Offering up to 750 voluntary redundancies to RailCorp middle management.
- ▼ Creating a specialist cleaning unit to address graffiti and rubbish on trains and stations.¹³

We have had regard to these Government announcements and reform initiatives as part of our review. Many of the capital projects referred to in the Government's Final Transport Master Plan are being undertaken after this 3-year determination period. We also note that there is still further progress to be made to reduce costs to the efficient levels we identified as part of our last determination.

2.1.4 Current fare structure and levels for CityRail's services

Our 2009 determination allowed for maximum fares to increase by an average of around 6% (including the expected rate of inflation) (or 3% plus inflation) in each year of the 4-year determination period.¹⁴ However, most CityRail fares are currently set below the maximum levels allowed under this determination.¹⁵

¹³ Minister for Transport, *Fixing the trains*, 15 May 2012, Available from <http://www.transport.nsw.gov.au/media-releases/fixing-trains> (Accessed 17 September 2012).

¹⁴ IPART, *Review of CityRail fares, 2009-2012*, December 2008.

¹⁵ By section 18(2) of the *Independent Pricing and Regulatory Tribunal Act 1992* (IPART Act), RailCorp may fix a price below that determined by IPART with the approval of the Treasurer.

On 18 April 2010, the Government introduced a new fare structure for public transport services in Sydney and the surrounding regions called 'MyZone'.¹⁶ Under MyZone, the majority of CityRail tickets have a distance-based fare structure, with 5 fare bands instead of the previous 20. CityRail now offers the following single, return, off-peak return and periodical (weekly, fortnightly, monthly, quarterly and yearly) tickets:

- ▼ MyTrain1, for distances up to 10 km
- ▼ MyTrain2, for distances 10-20 km
- ▼ MyTrain3, for distances 20-35 km
- ▼ MyTrain4, for distances 35-65 km
- ▼ MyTrain5, for distances greater than 65 km.

MyZone also introduced 3 multi-modal tickets (MyMulti1-3) that can be used on rail, bus and ferry services. To implement these changes, Government issued an amendment order to temporarily remove our responsibility for determining maximum prices for some tickets.¹⁷ The amendment order expires when IPART issues a replacement determination as part of this review.

Since 2010, there have been no real increases in fares because:

- ▼ for 2011, the Government decided not to increase fares above the levels implemented for MyZone¹⁸
- ▼ in July 2011, the Government reduced the price of periodical (monthly, quarterly and annual) tickets by a further 9%¹⁹
- ▼ for 2012, Government decided to increase fares only by the change in the Consumer Price Index (CPI) since 2010 (ie, no real increase).²⁰

In announcing the fare increases for 2012, the Government noted that it would only increase fares in line with the CPI unless there are improvements in the public transport system.

¹⁶ IPART, *Statement on MyZone fare changes*, April 2010.

¹⁷ *Independent Pricing and Regulatory Tribunal (Passenger Transport Services) Amendment Order 2010*.

¹⁸ IPART, *CityRail and Metropolitan and Outer Metropolitan Bus Services: Prices and Services Report 2010*, December 2010, p 5.

¹⁹ Transport for NSW, Media Release – Cheaper rail fares head July 1 tax and charges cuts, Available from: <http://www.transport.nsw.gov.au/media-releases/cheaper-rail-fares-head-july-1-tax-and-charges-cuts>, Accessed 29 March 2012.

²⁰ Transport for NSW, Media Release – Public transport fare rise half IPART's recommendation, Available from: <http://www.transport.nsw.gov.au/media-releases/public-transport-fare-rise-half-iparts-recommendation>, Accessed 29 March 2012.

Transport for NSW can set fares below the maximum levels allowed under our determinations to reflect its policies and priorities.

In making our determinations we must meet the requirements of the IPART Act and the Passenger Transport Act. As noted above, these requirements include considering a wide range of matters, not only the quality of the public transport system. In general, we are required to set fares that balance the competing needs and interests of the different stakeholders affected by our determination, who include taxpayers as well as passengers.

2.1.5 CityRail services are provided under a rail service contract

On 1 July 2010, RailCorp and Transport for NSW entered a rail services contract.²¹ The service contract sets out the train services that must be delivered, and the service standards (KPIs) that must be met. The contract also imposes safety obligations on RailCorp, and requires it to report on its service performance regularly. Transport for NSW pays RailCorp to provide the services and service standards specified in the service contract. It then retains the revenue generated by fares, to offset some of the costs of these payments.

We note that RailCorp's service standards (KPIs) have been revised with updated KPIs taking effect from 1 July 2011. The full set of revised KPIs and targets are not publicly available at this time. We consider that the revised service contract should be made publicly available and that RailCorp should report publicly against the revised KPIs and targets.

The rail services contract affects the extent to which we can create incentives to improve the efficiency of service provision through our fare determinations. In particular, the payment arrangements under the service contract mean that our fare determinations do not directly affect the revenue CityRail receives. Therefore, our fare determination cannot provide signals or incentives to CityRail to increase its efficiency or restructure its services to better meet the needs of its passengers. Instead, these incentives are provided through the terms of the service contract with Transport for NSW. We have no role in setting or enforcing the service contract.

2.1.6 The existing level of cost recovery through fares

Currently, the fares paid by CityRail passengers do not fully recover the costs of providing the services. Rather, the Government bears these costs, and CityRail's farebox revenue offsets some of them.

²¹ The Director General of Transport NSW on behalf of the Crown in right of New South Wales and Rail Corporation NSW South Wales, *Rail Services Contract*, Executed 1 July 2010, Available from: <http://www.transport.nsw.gov.au/sites/default/files/b2b/rail/Rail-Services-Contract-Executed1July2010.pdf>

The farebox cost recovery ratio can be measured in a number of ways, depending on whether or not the costs of providing free and concession fares are explicitly identified. For our last review, we calculated CityRail's farebox cost recovery ratio using the following method:

Farebox revenue	Divided by	Costs
Reported fare revenue from passengers		Operating expenditure, return on capital, return of capital (depreciation) less non fare revenue (government concessions and other revenue)

CityRail's cost recovery can be calculated on both its actual costs and the efficient costs of providing services. In making our 2009 determination, we set maximum fares to target a cost recovery ratio of 28.5%, in line with our decision that this represented passengers' fair share of the efficient costs.²²

However, CityRail's cost recovery ratio has not reached this targeted level – in fact, as Table 2.2 shows, it has declined. This is due to the combined effect of the Government's decisions to set fares below the maximum levels set in the 2009 determination (discussed in section 2.1.4 above), and the lower than forecast patronage growth over the 2009 determination period.

Table 2.2 CityRail farebox cost recovery ratio 2008/09-2011/12 (\$ real 2011/12 million)

	2008/09	2009/10	2010/11	2011/12
Revenues	670	686	670	720
Actual costs ^a	2,540	2,811	3,016	3,226
Actual cost recovery	26%	24%	22%	22%
IPART efficient costs	2,520	2,740	2,785	2,845
IPART cost recovery of efficient costs	27%	25%	24%	25%

^a Actual costs are calculated as actual operating expenditure plus a return on and of capital allowance based on actual capital expenditure incorporated into CityRail's regulatory asset base (RAB). They are also net of non-fare revenue (government concessions and other revenue).

Source: IPART calculations.

The decline in the farebox cost recovery ratio is significant, because it means over the past 4 years, the Government – and thus NSW taxpayers – have been paying an increasingly large share of the costs of providing CityRail's services.

Over the past 4 years, we estimate that CityRail received an average subsidy of around \$150 a year from each household in NSW more than is justified by the value of external benefits generated by CityRail services.²³

²² IPART, *Review of CityRail fares, 2009-2012*, December 2008.

²³ IPART calculation.

2.2 Process for this fare review

The process we followed in conducting this fare review included public consultation and detailed analysis. As part of this process, we:

- ▼ released an issues paper in April 2012, which outlined our proposed approach to the review, discussed the key issues to be considered, and invited all interested parties to make a submission in response to this paper
- ▼ considered all submissions and stakeholder comments, and
- ▼ engaged consultants Sapere Research Group (SRG) to re-estimate the value of the external benefits generated by CityRail's services
- ▼ released a draft report in October 2012, which explained our draft determination, and the decisions and analysis that support it, and sought comments from interested parties
- ▼ held a public roundtable on 17 October to provide stakeholders with a further opportunity for input
- ▼ considered all of the information and comments received through the review and public consultation processes before making our final decisions and determination.

All the publication associated with the review, including reports, submissions and a transcript of the public hearing, are available on our website, www.ipart.nsw.gov.au.

3 The approach we used to set fares

The approach we used to make our final determination on CityRail fares takes account of all the matters we are required by legislation to consider in determining these fares, as well as the contextual factors discussed in Chapter 2. This approach is consistent with the approach we used in making our 2009 determination, as it continues to set fares based on the efficient costs of providing CityRail's services and the value of the external benefits of these services. As Chapter 2 indicated, we prefer this approach because it ensures passengers and taxpayers each pay a fair share of CityRail's costs, and is both rigorous and transparent. However, we have adjusted the 2009 approach to take account of the particular context for the 2013 determination.

The sections below provide an overview of our approach and discuss the key decisions we made in relation to it, including decisions on:

- ▼ the length of the 2013 determination period
- ▼ our approaches for estimating the efficient costs of providing CityRail services and the external benefits of these services over this determination period, and for deciding how much of the efficient costs it is appropriate for passengers to fund through fares
- ▼ whether to calculate the fare change required to recover this passenger share of costs by the end of this determination period, or over a longer price path
- ▼ whether to set a maximum fare for each individual ticket, or a maximum average fare change.

3.1 Overview of our approach

The approach we used for this determination includes 5 key steps. The first of these was to decide on the appropriate length for the 2013 determination period. We decided that this length is 3 years, from 1 January 2013 to 31 December 2015.

Our second step was to determine the target revenue to be recovered through CityRail fares. This involved:

1. considering the quantity and quality of services CityRail is required to provide
2. estimating the efficient costs of providing these services in each year of the determination period based on our 2009 decision on CityRail's efficient costs and updating this decision where new information is available
3. forecasting the growth in the patronage of CityRail's services over this period
4. re-estimating the value of the external benefits generated by providing these services
5. calculating the passenger share of efficient costs by subtracting the estimated value of the external benefits, and the estimated revenue CityRail receives from the Government for providing concession fares from the efficient costs to get a passenger share.

Next, we decided how fares should transition towards the passenger share and hence the amount passengers should fund through fares during this transition. We decided to use a 7-year 'glide path' approach with a constant increase in fares (before inflation) to transition to the passenger share of efficient costs by 2019. In our draft report we used an NPV approach to set fares. We have reconsidered this approach and decided to use a 7-year 'glide path' for our final report. A 7-year 'glide path' takes a medium term view of how fares need to change and provides for a stable, gradual transition to the passenger share. It is also consistent with the approach we used to set fares for Sydney Ferries services.

Our fourth step was to set a maximum average annual change in fares for each of the next 3 years in line with this price path.

Finally, we considered whether this average annual change in fares was reasonable in terms of its implications for the affordability of fares and potential impacts on patronage, the Government, and the environment.

At the public hearing on 17 October 2012, stakeholders generally expressed support for our approach to setting maximum fare levels and we have maintained this approach for our final report and determination.²⁴

3.2 Length of the determination period

Final Decision

- 1 IPART's final decision is to make a 3-year determination, from 1 January 2013 to 31 December 2015.

²⁴ Mr Allan Miles (Action for Public Transport), Transcript of 17 October 2012 public hearing, p 52; Mr Tim Reardon (Transport for NSW), Transcript of 17 October 2012 public hearing, p 54.

In our draft report, we proposed making a 3-year determination, because we consider that a longer determination period, combined with determining the average change in fares (rather than setting individual fares) provides certainty to Government about the maximum fare levels it must work within to scope and implement Opal. No stakeholders commented on the length of the determination period, either through submissions to the draft report or at the public hearing, and we have maintained our approach for the final report and determination.

3.3 Approach for estimating the efficient costs of providing CityRail services

Final Decision

- 2 IPART's final decision is to estimate the costs of providing CityRail's services over the 2013 determination period using a building block approach, and to:
- roll forward the efficient operating expenditure allowances we used in making the 2009 determination, keeping them constant in real terms
 - update the allowances for a return on assets and depreciation where new information is available.

In our Issues Paper, we proposed using an indexing approach to estimate the costs of CityRail's services over the 2013 determination period. We considered this simpler, less resource-intensive approach was more proportionate than a building block approach, given our proposal to set a 1-year determination period. We also considered that it was not prudent to undertake a major review of CityRail's efficiency this time, because RailCorp is undergoing a reform program informed by an efficiency review undertaken by Booz and Co.

However, following further analysis of CityRail's costs, patronage and external benefits, we decided to update our building block approach where new information is available rather than use indexing. Since CityRail continues to spend above the efficient levels we identified in our last determination, we decided to roll forward our previous estimates of its efficient operating expenditure for each year of the determination period, keeping them constant in real terms. We decided to update our allowances for return on and of capital by:

- ▼ estimating forecast capital expenditure based on a 5-year rolling average of CityRail's historic expenditure and including a proportion of the expenditure associated with the South West Rail Link (SWRL) when this project comes online in 2016
- ▼ updating the estimated value of CityRail's Regulatory Asset Base (RAB) to reflect our previous decision to apply a post-tax weighted average cost of capital (WACC) to all of the industries we regulate using a building block approach

- ▼ updating the asset lives used to calculate CityRail's depreciation allowance based on new information provided by RailCorp.

We consider this approach provides a more accurate estimate of CityRail's costs over the determination period. It is also more appropriate in light of our final decision to set a 3-year determination, yet still allows us to avoid undertaking a major efficiency review while Government is undertaking its 'Fixing the Trains' initiative.

This approach is unchanged from our draft report. However, we have updated our estimates of forecast capital expenditure based on a 5-year rolling average using actual expenditure for 2011/12.²⁵

3.4 Approach for estimating the value of the external benefits

Final Decision

- 3 IPART's final decision is to update the value of the external benefits generated by CityRail services for the 2013 determination period.

We also proposed using an indexing approach to estimate the value of the external benefits generated by CityRail services for the 2013 determination, for essentially the same reasons as outlined above. However, we decided it was more appropriate and accurate to engage the same consultant we used for the 2009 determination to re-estimate this value. We consider that this provides a more accurate estimate, and is more appropriate in light of our final decision to set a 3-year determination.

3.5 Approach for deciding on the passenger share of efficient costs

Final Decision

- 4 IPART's final decision is to determine the passenger share of efficient costs by deducting from these costs:
 - the value of the external benefits generated by CityRail services
 - the payments CityRail receives from the Government for providing concession fares, and
 - other revenue generated by CityRail.

²⁵ Actual expenditure for 2011/12 was not available for our draft determination.

This approach is essentially the same as the approach we used to decide how much of the efficient costs passengers should fund for our 2009 determination. As our Issues Paper and Chapter 2 of this final report indicated, we favour this approach as it ensures passengers and taxpayers each fund a fair share of the costs of providing CityRail services.

We consider that the value of the external benefits should be deducted from the costs to be recovered through fares because, in our view, the external benefits generated by public transport services (including rail services) justify government subsidisation of the fares for these services. In addition, the level of government subsidisation should be linked to the value of the external benefits generated by the services concerned.

We also consider that the estimated payments from the Government to CityRail for providing concession fares should be deducted from the costs to be recovered through fares. The provision of concession fares is part of the Government's social policy, and therefore it is appropriate for the associated costs to be funded through a taxpayer subsidy, and not through the fares for full-fare-paying passengers.

3.6 Whether to set maximum fares or a maximum average fare change

Final Decision

- 5 IPART's final decision is to set a maximum average fare change for each year of the determination period.

As discussed above, we wish to provide Transport for NSW flexibility to assist it in implementing Opal. In light of this, we have decided to provide Transport for NSW with the flexibility it needs by determining the average change in fares rather than maximum individual fares. We consider that together, these final decisions provide both certainty to Transport for NSW regarding the maximum average fare levels they must work within, and sufficient flexibility to implement the Opal effectively.

If Transport for NSW increases fares by less than the maximum average increase in one year, in the following year Transport for NSW can increase fares so that the revenue forgone in the previous year is recovered²⁶.

²⁶ Revenue foregone in one year will be added to the revenue allowance in the next year and increased by the average allowed increase (see Appendix D).

4 The quantity and quality of CityRail's services

As Chapter 2 discussed, the service quantity and quality standards CityRail is required to meet are set out in the rail services contract between RailCorp and Transport for NSW. IPART has no role in setting or enforcing this contract. These arrangements limit the extent to which we can create incentives for CityRail to increase its efficiency or restructure its services to better meet the needs of its passengers.

Nevertheless, we are required to take account of CityRail's service standards in making our determinations (under section 15(1) of the IPART Act). The main way we do this is by estimating the efficient costs of providing CityRail's services (discussed in Chapter 5) based on the quantity and quality of services specified in the service contract. That is, we ensure that our estimate of these costs is sufficient for CityRail to meet its service targets.

We also assess how CityRail has performed against its service targets over the last determination period. As noted in Chapter 2, RailCorp's service standards (KPIs) have been revised since the rail services contract commenced on 1 July 2010 and that the full set of revised KPIs are not publicly available or fully available to IPART at this time. For this report, we have based our assessment on information provided by Transport for NSW and our previous prices and services reports, as well as the targets set out in the original service contract executed 1 July 2010.²⁷ We encourage Transport for NSW to publish the current complete set of service indicators and report publicly on RailCorp's performance against all KPIs, in particular those that directly impact on customers.

The section below provides an overview of our assessment of CityRail's service quality and quantity performance. The subsequent sections provide more detail on CityRail's performance against some key service quality measures – on time running, service cancellations and crowding on trains – and summarise the results of the most recent survey of public transport customer satisfaction. Appendix C provides a more detailed discussion of our assessment.

²⁷ IPART, *CityRail and Metropolitan and Outer Metropolitan Bus Services: Prices and Services Report 2011*, December 2011. References in this chapter and Appendix C to CityRail's performance against service contract targets relate to those set out in: The Director General of Transport NSW on behalf of the Crown in right of New South Wales and Rail Corporation NSW South Wales, *Rail Services Contract*, Executed 1 July 2010, Available from: <http://www.transport.nsw.gov.au/sites/default/files/b2b/rail/Rail-Services-Contract-Executed1July2010.pdf>

4.1 Overview of CityRail's service quantity and quality performance

In general, the data available to us indicates that over the 4 years to 2011/12, CityRail has broadly maintained the quality of service. Over this period, CityRail has also increased the number of services. In terms of quantity, CityRail's number of passenger journeys (or patronage) grew by 7.2% from 2007/08 to 2011/12. Over the 4 years to 2011/12, its total number of timetabled services increased by 10.7% and its total carriage service kilometres increased by 14.1%. The increase in carriage service kilometres was partly due to the replacement of 6-car trains with 8-car trains on selected services on the Newcastle, Central Coast, and Blue Mountains lines.

In relation to quality, CityRail's on time running performance varies over time and across different lines. However, in general, it met or exceeded its target of 92% of peak period services running on time in each of the last 4 years.²⁸ It also performed better than its targets for the number of peak hour trains cancelled and the percentage of stops measured over the year. In addition, the percentage of am peak hour trains greater than 135% loading fell from 16% to 11% over this period. However, we note that performance by line and in individual months has varied and at some times has dropped below targets.

4.2 On time running

CityRail's contract requires that at least 92% of its peak period services run on time after the figures are adjusted for force majeure events. At the network-wide level, it generally met or exceeded this target on average in each of the past 4 years.²⁹ The percentage of peak period services running on time reached 96.3% in 2009/10, and was 94.2% in 2011/12.³⁰

However, on time running performance varied across the different lines.³¹ We do not currently have data for OTR by line after adjusting for force majeure events. On an unadjusted basis, the Illawarra, Airport and East Hills, Eastern Suburbs, Bankstown, North Shore and Inner West lines met or exceeded 92% in each year. The performance of the North via Strathfield, Western and South lines varied considerably over this period, and in some years it dropped 92%.

²⁸ After the figures are adjusted for force majeure events.

²⁹ We note that OTR dropped below the target to 91.9% in February 2012.

³⁰ After adjusting for force majeure.

³¹ We note that analysis by line is based on data not adjusted for force majeure.

Outside of peak periods, on time running is generally better than the performance in peak periods.

4.3 Service cancellations and stops missed

CityRail's original service contract requires that less than 0.5% of peak hour services are cancelled, and less than 0.5% of peak hour stops are missed at both a network-wide and individual line level. The percentage of peak hour trains cancelled measured over the year fell from 0.54% in 2007/08³² to 0.38% in 2011/12. The percentage of peak hour stops missed measured over the year also fell over this period, from 0.48% to 0.36%.

4.4 Crowding on trains

Prior to CityRail's services contract its performance targets were set under the Rail Performance Agreement³³ which stated that no more than 5% of AM peak period services should exceed 135% of passenger seating capacity. Although this is not the official loading target for CityRail it is still a good measure of crowding on the network.

In the past 4 years, CityRail has improved its performance against this measure, but still did not meet its target in some hours of the peak periods. During the hours 7am to 10am, services exceeding 135% seating capacity fell from 16% in March 2008 to 11% in March 2012. The highest levels of overcrowding occurred between 8am and 9am. In September 2011, the latest period for which we have hourly data, 12% of services exceeded 135% of seating capacity during this hour.

During the hours 4pm to 7pm, services exceeding 135% seating capacity fell from 9% in March 2008 to 5% in March 2012, with the highest levels of overcrowding between 5pm and 6pm. In September 2011, 6% of services exceeded 135% of seating capacity during this hour.

³² Prior to 2010, CityRail's target was higher at 1.0% of peak hour trains cancelled.

³³ Until 31 December 2008, RailCorp was a state owned corporation with benchmarks and targets set in a Statement of Corporate Intent and in the Rail Performance Agreement which was agreed to by the board and the portfolio Minister. On 1 January 2009 RailCorp became a statutory authority subject to the direction and control of the Minister for Transport. From 1 July 2009, the Statement of Business Intent and Rail Services contract are the relevant agreements with Treasury and Transport NSW.

4.5 Customer satisfaction

In 2011, the Bureau of Transport Statistics (BTS) surveyed users of train³⁴, bus and ferry services, using similar questions for each mode.³⁵ It found that 81% of train passengers were satisfied overall with train service. This is a lower incidence of satisfaction than for ferry passengers (96%) and bus passengers (86%). It also found that 36% of train passengers thought the train service was better or much better than 12 months ago, and 7% thought it was worse or much worse.

Train passengers expressed highest levels of satisfaction with the:

- ▼ ability to catch the train you intended to (87% satisfied)
- ▼ ease of boarding the train (86%)
- ▼ ease of understanding signage (83%)
- ▼ ease of purchasing your ticket (81%).

They expressed highest levels of dissatisfaction with the:

- ▼ cleanliness of the train (32% dissatisfied)
- ▼ availability of parking near the station (32%)
- ▼ ease of understanding announcements on trains (22%)
- ▼ comfort at the station (22%)
- ▼ frequency of service (21%).

Train travellers on the Eastern suburbs, Blue Mountains, Central Coast and South Coast lines were the most satisfied overall with the rail service (with 85% or more people satisfied). Train travellers on the Carlingford and Cumberland lines were the most dissatisfied (22% and 10% dissatisfied respectively).³⁶ The Carlingford and Cumberland lines have low frequency services which do not proceed to Central.

³⁴ The survey was conducted by means of on-board self-completion survey forms in May 2011. The method achieved a response rate of 60%, resulting in a sample of 12,323 train customers (all CityRail lines), 6,325 bus customers (metropolitan bus contract regions), and 3,946 ferry customers (Sydney Ferries). *BTS customer survey final report, 2011.*

³⁵ The BTS survey findings cannot be compared to the previous surveys conducted by ITSRR as the survey methodology, some of the questions and the satisfaction rating scale differ.

³⁶ Bureau of Transport Statistics, *2011 Transport customer survey - customer satisfaction with Public Transport Services*, 2011, p 27.

5 Efficient costs of providing CityRail's services

As Chapter 3 explained, to estimate the efficient costs of providing CityRail's services, we used a building block approach. However, as we considered it would be imprudent for us to conduct a thorough cost review at the same time as the Government's consultant (Booz & Co) is examining RailCorp's costs and developing a reform program, we decided to update the efficient cost building blocks we used in making the 2009 determination, incorporating new information where available. As Chapter 3 also explained we estimated the efficient costs (and the external benefits and forecast patronage) for the next 7 years (to 2019) even though the determination period is only 3 years).

To update the efficient operating expenditure building block, we rolled forward our decision on this expenditure for 2011/12 for each year, keeping them constant in real terms. To update the allowances for a return on assets and regulatory depreciation, we:

- ▼ estimated CityRail's forecast capital expenditure based on a 5-year rolling average of its historic expenditure, and included a proportion of the expenditure associated with the South West Rail Link (SWRL) when this project comes on line in 2016
- ▼ updated the value of CityRail's regulatory asset base and the rate of return used to calculate the allowance for a return on assets in line with our 2011 decision to base the rate of return on a post-tax weighted average cost of capital (WACC) for all the industries we regulate using a building block approach³⁷
- ▼ updated the asset lives used to calculate the allowance for regulatory depreciation based on new information provided by RailCorp.

We also calculated a separate allowance for taxation, in line with our decision to base the rate of return on a post-tax WACC.

The section below provides an overview of our final decision on CityRail's efficient costs. The subsequent sections explain how we updated or calculated each of the costs blocks in more detail.

³⁷ IPART, *The incorporation of company tax in pricing determinations – Final Decision*, December 2011.

5.1 Summary of final decision on efficient costs

Final Decision

- 6 For the purpose of making the final determination, IPART's final decision is that the efficient costs of providing CityRail services are as shown in Table 5.1.

Table 5.1 Final decision on efficient costs of providing CityRail services (2011/12 \$ million)

	2012/13	2013/14	2014/15	2015/16
Efficient operating expenditure	2,001	2,001	2,001	2,001
Allowance for regulatory depreciation	349	383	417	450
Allowance for a return on assets ^a	475	510	543	575
Allowance for taxation	33	37	41	46
Total efficient costs	2,858	2,931	3,002	3,072

^a Includes an allowance for a return on working capital (less than \$1million per year).

Note: Totals may not add due to rounding.

The approach we used to estimate efficient costs in our final decision is unchanged from the draft decision. However, we have updated the inputs used in CityRail's WACC to reflect prevailing market conditions as well as included updated new information from Transport for NSW on capital expenditure in 2011/12. These updates have resulted in changes to the return on capital, regulatory depreciation and taxation allowances for our final decision.

5.2 Efficient operating expenditure

Operating expenditure includes the day-to-day costs incurred by CityRail in conducting its business and maintaining its assets, such as wages, electricity, mechanical repairs and maintenance. For our 2009 determination, we engaged L.E.K. Consulting Pty Ltd (L.E.K.) to undertake a thorough review of CityRail's past and forecast costs, and recommend the efficient levels of expenditure CityRail would need to incur to provide passenger rail services in line with its rail service contract over the 2009 determination period.

As part of this review, L.E.K. benchmarked CityRail's operating and maintenance practices and costs against those of other urban passenger rail system operators, and identified opportunities to bring its costs into line with more efficient operators. It concluded that it was both reasonable and achievable for RailCorp to reduce CityRail's operating costs by 18% per annum by 2011/12 while maintaining or improving its service standards.³⁸ It recommended efficient levels of expenditure in line with this conclusion. We accepted L.E.K.'s recommendations and allowed for efficient operating expenditure in line with those recommendations in making our determination.

³⁸ IPART, *Review of CityRail fares, 2009-2012*, December 2008, p 53.

While RailCorp has pursued some of the opportunities L.E.K. identified and achieved some efficiency gains, CityRail's operating expenditure continues to be above the efficient levels we allowed for in the 2009 determination. We consider the efficient levels recommended by L.E.K. remain appropriate estimates CityRail's efficient operating costs for the next 7 years. We extended our estimate of CityRail's efficient operating costs to 2019/20 by assuming that they would remain at 2011/12 levels in real terms.

5.3 Allowances for depreciation and return on assets

A range of assets are used in providing rail services – including rolling stock, maintenance facilities, ticketing infrastructure and stations. We have included an allowance for a return of these assets – that is, for depreciation – in the total efficient costs to provide a means of spreading the net cost of the assets over their estimated life. We have also included an allowance for a return on these assets in the total efficient costs to recognise the opportunity cost of the capital invested in them. This return represents compensation for the NSW Government for bearing the risks associated with providing rail services.

To make our final decisions on these allowances for the 2013 determination period, we took the following main steps. We:

- ▼ calculated an annual value for the assets used in providing rail services (the Regulatory Asset Base, or RAB)
- ▼ decided on the appropriate methodology for depreciating the RAB and the associated asset lives
- ▼ decided on an appropriate rate of return for CityRail.

We then calculated the allowances for regulatory depreciation and a return on assets using the outputs of these steps.

5.3.1 Calculating an annual value for the RAB

To calculate an annual value for CityRail's RAB over the 2013 determination period, we first established the methodologies for calculating this value at the start of this period (the opening value of the RAB), and for rolling forward the opening RAB to the end of the determination period. We then made some further adjustments.

The sections below set our final decision on annual value of the RAB, then outline these methodologies and adjustments, and 2 of the key decisions we made in applying these methods (on the adjusted value of the 1 July 2008 RAB and the capital expenditure to be incorporated when rolling forward the RAB).

Final decision on annual value of the RAB

Final Decision

- 7 IPART's final decision is that the value of the assets used in providing CityRail services over the 2013 determination period is as shown in Table 5.2.

Table 5.2 Final decision on the annual value of CityRail's RAB (2011/12 \$ million)

	2012/13	2013/14	2014/15	2015/16
Regulatory asset base	11,295	12,037	12,784	13,478

Our final decision on the annual value of the regulatory asset base has changed slightly since the draft decision because we have updated capital expenditure for 2011/12. This update results in a small change to the 5-year rolling average that is used to estimate forecast capital expenditure.

Methodology for establishing opening value of the RAB

To establish the opening value of CityRail's RAB (ie, as at 1 July 2012), we:

- ▼ adjusted CityRail's 1 July 2008 RAB to reflect our decision to use a post-tax WACC
- ▼ rolled forward this adjusted RAB to 30 June 2012 by including the actual capital expenditure over this period
- ▼ made other necessary adjustments, including:
 - deducting regulatory depreciation as allowed for in the 2009 determination (see section below)
 - deducting asset disposals
- ▼ indexed the annual closing RAB for actual/forecast inflation.

Methodology for rolling forward the RAB

To roll forward the RAB to the end of the 2013 determination period (ie, 30 June 2016) and beyond, we:

- ▼ added the forecast capital expenditure to the closing value of the RAB for the previous year
- ▼ made other necessary adjustments to the value of the RAB for each year, including:
 - deducting regulatory depreciation
 - deducting forecast disposals of assets.

As previously discussed, we based our calculation of the required fare change on the cost and external benefits over the next 7 years. Therefore, we extended the roll forward of the RAB to 30 June 2020.

Final decision on the adjusted value of the 1 July 2008 RAB

Final Decision

8 IPART's final decision is that the adjusted value of CityRail's 1 July 2008 RAB is \$4.39 billion.

For the 2009 determination, we established the opening value of the RAB (as at 1 July 2008) using a 'deprival value' approach (ie, the lower of the optimised depreciated replacement cost (ODRC) or economic value). We used the economic value of the assets, being the discounted value of the cash flows (DCF) generated by the assets. This involved:

- ▼ estimating the free cash flow generated by CityRail as the sum of free cash flows³⁹ into the future
- ▼ calculating the value of CityRail assets as the net present value (NPV) of these future estimates of free cash flow.⁴⁰

However, in December 2011, after consultation, we made a decision to adopt a post-tax WACC approach to calculate the allowance for a return on assets for all future determinations that use a building block approach. Among other things, this post-tax WACC approach affects the way the value of the RAB is calculated. Therefore, for this 2013 determination, we have recalculated the value of CityRail's 1 July 2008 RAB to be consistent with a post-tax WACC approach. This involved:

- ▼ using a post-tax WACC to calculate the NPV of the future estimates of free cash flow, and
- ▼ calculating a notional tax allowance for CityRail as part of the free cash flow.

We used a post-tax WACC of 6.5%, which is consistent with the 7.2% pre-tax WACC that we used for our 2009 determination (see section below). We calculated the notional tax allowance using the method described in the section below. This change in methodology resulted in an increase in the value of the 1 July 2008 RAB from \$4.25 billion to \$4.39 billion.

³⁹ A DCF approach values a business based on its ability to generate free cash flows in the future, where free cash flow is calculated as the net of cash inflows and cash outflows. In the case of CityRail, cash inflows include items such as farebox revenue and government subsidies, while cash outflows include items such as operating expenses and capital expenditure. If all other factors remain constant, increases in future cash inflows will increase the future free cash flow available to the business (and thus the value of the business), while increases in future cash outflows will have the opposite effect.

⁴⁰ As part of our 2009 determination we provided a full explanation of how we calculated the ICB (IPART, *Review of CityRail fares, 2009-2012 – Final Report and Determination*, December 2008).

Final decisions on capital expenditure to be incorporated when rolling forward the RAB

9 IPART's final decisions are that the value of the capital expenditure to be incorporated when rolling forward the RAB:

- from 1 July 2008 to 1 July 2012 is as shown in Table 5.3
- from 1 July 2012 to 30 June 2016 is as shown in Table 5.4.

Table 5.3 Capital expenditure to be incorporated when rolling forward the RAB to 1 July 2012 (nominal \$ million)

	2008/09	2009/10	2010/11	2011/12
Major projects ^a	2,350	0	0	0
Other capital expenditure	870	1,199	1,273	997

^a Epping-Chatswood rail link (ECRL).

Table 5.4 Capital expenditure to be incorporated when rolling forward the RAB to 30 June 2016 (real 2011/12 \$ million)

	2012/13	2013/14	2014/15	2015/16
Major projects	0	0	0	0
Other capital expenditure	1,183	1,134	1,173	1,155

The capital expenditure to be incorporated in 2011/12 has been updated for our final decision. This update results in a small change to the 5 year rolling average that is used to estimate forecast capital expenditure to be incorporated when rolling forward the RAB to 30 June 2016.

We did not conduct a review of CityRail's capital expenditure for this determination. Instead, we used our previous assessment of CityRail's efficient costs as the basis for the costs of providing CityRail services for the 2013 determination period.

In our 2009 determination we accepted that CityRail's forecast capital expenditure was efficient, in light of L.E.K.'s recommendation that efficiency savings were not achievable. Therefore, for capital expenditure not associated with major projects, we used:

- ▼ CityRail's actual capital expenditure to roll forward the RAB from 1 July 2008 to 30 June 2011
- ▼ CityRail's forecast capital expenditure to roll the RAB forward from 1 July 2011 to 30 June 2012⁴¹
- ▼ a 5-year rolling average of actual capital expenditure (expressed in 2011/12 prices) to roll forward the RAB from 1 July 2012 to 30 June 2020.

⁴¹ CityRail's actual capital expenditure was slightly lower than forecast capital expenditure over the period.

The only major project to be completed during the 2009 determination period was the Epping-Chatswood rail link. We included this project in the middle of the 2008/09 financial year, when it came on line, at the 2009 determination value of \$2.35 billion.

The next major project to be completed will be the South West Rail Link (SWRL). This project has an estimated total budget of \$2.3 billion (nominal, including land acquisition costs). It is scheduled to be completed in 2016, which is within the 7-year period that we are using to assess CityRail's costs and benefits.

The project is being undertaken in 2 stages. Stage 1 involves station upgrades and improvements that will provide immediate benefits to passengers once the project comes on stream. Stage 1 is estimated to cost \$0.8 billion with stage 2 estimated to cost \$1.3 billion (nominal).⁴²

It is our view that the costs of the SWRL should be spread across passengers from 2016 when the project comes on line, as well as future passengers that benefit from the capacity enhancement that this project provides to south west Sydney. Therefore, rather than including the full cost of the project in 2016, we have included only 40% of this cost. We have phased in the remaining value of the project over a period of 30 years from completion, on an NPV neutral basis.

5.3.2 Deciding on the appropriate methodology for depreciating the RAB and associated asset lives

Final Decision

10 IPART's final decision is to use the straight line depreciation method and the asset lives shown in Table 5.5 below to calculate the depreciation to be deducted when rolling forward the RAB, and the allowance for depreciation.

Table 5.5 Final decision on asset lives for purpose of calculating depreciation to be deducted from the RAB and the allowance for depreciation

	Remaining lives	Expected lives
Initial Capital Base	23	na
Major projects	97	100
Plant and equipment	8	11
Buildings	50	52
Rolling stock	33	35
Infrastructure	35	37

⁴² These values exclude land acquisition costs.

To roll forward the RAB as discussed above, we needed to decide on the methodology we would use to calculate the depreciation to be deducted from the RAB in each year of the determination period. In particular, we needed to decide on what depreciation method we would use, and the useful lives of the assets included in the RAB. These decisions are also used to calculate the allowance for depreciation.

To roll forward the RAB from 1 July 2008 to 30 June 2009, we used the depreciation allowances from our 2009 determination (adjusted for inflation).

To roll forward the RAB from 1 July 2012, we retained the straight line depreciation method that we used for our 2009 determination. We then established appropriate asset lives (and thus depreciation rates) for the groups of existing and new assets used to provide CityRail services and multiplied the annual value of each asset group by the appropriate depreciation rate (using the asset lives in Table 5.5).

To adjust the 1 July 2008 RAB, we used a remaining life of 23 years on 1 July 2012. This is consistent with our decision for the 2009 determination that 1 July 2008 RAB had a remaining life of 27 years.

For both major projects (ECRL and SWRL), we have used an expected life of 100 years. We based the lives of other assets on those provided to us by RailCorp.

5.3.3 Deciding on the appropriate rate of return for CityRail

Final Decision

- 11 Our final decision is that for the purposes of calculating the allowance for a return on assets, a real post-tax WACC of 4.4% is appropriate.

Table 5.6 sets out our final decision on the WACC, compared to our draft decision and 2009 determination for CityRail.

In determining a point estimate WACC for CityRail, we calculated a range for CityRail's real post-tax WACC, and then made a judgement on the most appropriate rate of return within this range. We selected the upper bound of the range (4.4%), which is consistent with our recent decisions on the WACC. This recognises that yields on the risk-free securities remain at record lows, resulting in a discrepancy between the WACC calculated using long term averages of market data and 20 day averages (ie, IPART's current approach). Conversely, our 2009 determination was that a point estimate *below* the midpoint was appropriate.

The main change between our draft and final decision is that we updated the market-based inputs used in calculating for CityRail's WACC to reflect prevailing market conditions. The WACC range has decreased since our draft report because of a significant reduction in the debt margin range. For our draft decision, the interquartile range of the debt margin was 3.2% to 4.2%. For our final decision the interquartile range of the debt margin was 2.7% to 3.4%.

As noted in our draft report, there is a discrepancy between the WACC calculated using 20-day averages compared to long term averages, and this discrepancy has further increased since mid-2012 (which was the basis for our WACC estimate in the draft determination). As shown in Table D.1, the midpoint WACC obtained using short-term averages of market data (3.8%) is significantly lower than the midpoint WACC calculated using long-term averages (6.2%). In the current market circumstances, there is some evidence to support the view that expectations for the market risk premium have risen as bond yields have fallen. However, it is difficult to measure these short term variations in expectations for the Market Risk Premium (MRP).

In light of this, and consistent with our recent decisions for other industries on the WACC, we consider that the upper bound of the WACC range is appropriate for the assets used to provide CityRail services. We therefore made a final decision to use a real post-tax WACC of 4.4% to calculate the return on assets.

Table 5.6 Final decision on the rate of return and the parameters used to calculate the WACC

Parameter	Final decision	Draft decision	2009 determination
Nominal risk-free rate	2.6%	2.6%	5.2%
Inflation adjustment	2.6%	2.5%	2.7%
Debt margin	2.7% to 3.4%	3.2% to 4.2%	2.9% to 6.0%
Market risk premium	5.5% to 6.5%	5.5% to 6.5%	5.5% to 6.5%
Debt to total assets (gearing)	60%	60%	60%
Equity beta	0.8 to 1.0	0.8 to 1.0	0.8 to 1.0
Cost of equity (nominal post-tax)	7.0% to 9.1%	7.0% to 9.1%	9.6% to 11.7%
Cost of debt (nominal pre-tax)	5.3% to 6.0%	5.9% to 6.8%	8.1% to 11.2%
WACC range (real pre-tax)	4.0% to 5.5%	4.6% to 6.2%	6.5% to 9.7%
WACC midpoint (real pre-tax)	4.7%	5.3%	8.0% ^a
WACC range (real post-tax)	3.2% to 4.4%	3.8% to 5.1%	5.8% to 8.5% ^b
WACC midpoint (real post-tax)	3.8%	4.4%	7.1% ^b
WACC point estimate (real post-tax)	4.4%	5.1%	-

^a The midpoint WACC value of the 2009 determination was 8.0% real post-tax. The point estimate WACC that was selected (7.2% real pre-tax) was below the midpoint.

^b The 2009 determination did not use a real post-tax WACC estimate. The pre-tax WACC has been converted into a real post-tax WACC as a guide only.

We have used the same industry-specific parameters as were used in our draft determination and the 2009 determination. We did not find any significant change in CityRail's exposure to systematic risk since the last determination. Our analysis of comparator companies for CityRail did not produce sufficient evidence to warrant a change in industry-specific parameters.

Further details on our final decision for the WACC to apply to CityRail are provided in Appendix B.

5.4 Allowance for taxation

As noted above, in December 2011, after consultation, we decided to calculate a more accurate and commercially based tax allowance as a discrete building block, and to use a post-tax WACC. The tax allowance is intended to more accurately reflect the tax liability for a comparable commercial business. Our previous approach used a pre-tax WACC with an assumed statutory tax rate. In most cases, this overstated the tax that would be paid by a comparable commercial business.⁴³

For the 2013 determination, we estimated the notional amount of tax that RailCorp would need to pay if it were taxed like a commercial business. Box 5.1 explains how we calculated this tax allowance.

Box 5.1 Calculation of CityRail's tax allowance

The notional tax allowance is calculated by applying a 30% statutory corporate tax rate adjusted for gamma^a to CityRail's nominal taxable income. To calculate the nominal taxable income we deduct CityRail's operating cost allowance, tax depreciation, and interest expenses from CityRail's notional revenue requirement (excluding tax).

We calculated tax depreciation and the interest expense as follows:

- ▼ RailCorp does not pay tax, nor does it do tax accounting. Therefore, to estimate CityRail's tax depreciation we calculated a tax asset base (TAB) from 1 July 2008 using the ICB and the RAB values for capital expenditure, disposals and asset lives.^b
- ▼ We calculated CityRail's interest expenses using the same parameters used for the WACC (Table 4.8):
 - a 60% notional gearing ratio (ie, Borrowings = 0.6 x RAB)
 - a nominal risk free rate of 2.6%
 - a debt margin of 4.2%.

^a Under the Australian dividend imputation system, investors receive a tax credit (franking credit) for the company tax paid before the dividend. Under a post-tax framework, the value of franking credits (gamma) enters the regulatory decision only through the estimate of the tax liability.

^b The only difference between the RAB and the TAB is that the latter is calculated in nominal terms but is not indexed for inflation.

⁴³ For a full explanation of why we adopted a post-tax WACC approach, see IPART, *The incorporation of company tax in pricing determinations – Final Decision*, December 2011.

6 Forecast patronage growth

Once we estimated the costs of providing CityRail's services over the determination period, we considered how the number of passenger journeys (or patronage) was likely to grow over this period. Our decision on this forecast patronage growth has a major impact on the maximum average fare change we determine, because the fare change required to recover passengers' share of CityRail's costs depends on the forecast number of passenger journeys. In general, a higher patronage growth forecast will lead to a lower fare increase, because the passengers' share of costs can be recovered from a higher number of ticket sales.

Our decision on forecast patronage growth also affects our decision on the value of the external benefits generated by CityRail services because these benefits primarily arise when people choose to use CityRail services instead of cars (see Chapter 7). Generally, a higher patronage growth forecast will lead to a higher value for the external benefits, because more passenger journeys should lead to a greater reduction in the costs associated with private vehicle use. In turn, a higher value for the external benefits will lead to a lower fare increase, because it suggests that a higher share of CityRail's annual efficient costs should be recovered from taxpayers through Government subsidies rather than passengers.

To make our final decision on forecast patronage growth we considered the long run forecast of rail patronage growth in the Greater Metropolitan Area (GMA) produced by the Bureau of Transport Statistics (BTS), together with the historical trends in CityRail's patronage levels and a range of factors that influence its patronage growth. These factors include Sydney's forecast employment and population growth, the CityRail network's capacity constraints and service performance, fare increases, and petrol prices and road congestion.

The sections below provide an overview of our final decision and discuss each of these considerations.

6.1 Overview of final decision on forecast patronage growth

Final Decision

12 IPART's final decision is to assume a forecast patronage growth of 1.3% per annum over the determination period.

Historically, the level of patronage on CityRail services has fluctuated from year to year. Over recent years, for example, it grew by 3.2% in 2008/09, then fell by 1.1% in 2009/10, then grew again by 1.8% in 2010/11 and 3.1% in 2011/12. In light of this, we consider it most appropriate to base our decision on its forecast patronage growth on a long-term forecast. We have decided to use BTS' long run forecast of rail patronage growth in the GMA⁴⁴ of 1.3% per annum, produced using its Strategic Travel Model. We consider this to be a robust estimate of future rail journey growth in Sydney.

6.2 BTS' long run forecast of rail patronage growth

BTS has forecast an annual average growth rate for rail patronage of 1.3% for the 30 years to 2036. This is slightly below the historical growth in CityRail's patronage over the 23 years to 2011/12 (1.5%) and slightly higher than the forecast population and employment growth for this period (discussed below).

BTS produced this forecast using its Strategic Travel Model (STM).⁴⁵ This model projects travel patterns in Sydney under different land use, transport and pricing scenarios. It is made up of a series of models and processes that attempt to replicate people's travel choices and behaviour under given scenarios. It combines an understanding of travel behaviour with likely population and employment size and distribution, and likely road and public transport networks and services, to estimate future travel under different strategic land use and transport scenarios.⁴⁶

The STM also incorporates forecasts of employment growth (1.0% per annum) and population growth (1.1% per annum).⁴⁷ These forecasts are consistent with those calculated by the NSW Department of Planning and Infrastructure, and those included in the NSW and Commonwealth Government budgets for 2012/13.⁴⁸

It is our view that the STM produces a robust estimate of future rail journey growth in Sydney. In addition, its long run forecast smooths out fluctuations in patronage caused by short-term macroeconomic fluctuations.

⁴⁴ Total patronage change is the BTS long term forecast annual average growth rate for the 30 years to 2036.

⁴⁵ Bureau of Transport Statistics, *BTS InfoSheet - Strategic Travel Model Assumptions*, February 2012.

⁴⁶ BTS, *Sydney Strategic Travel Model (STM)-Modelling future travel patterns*, February 2011, p 7.

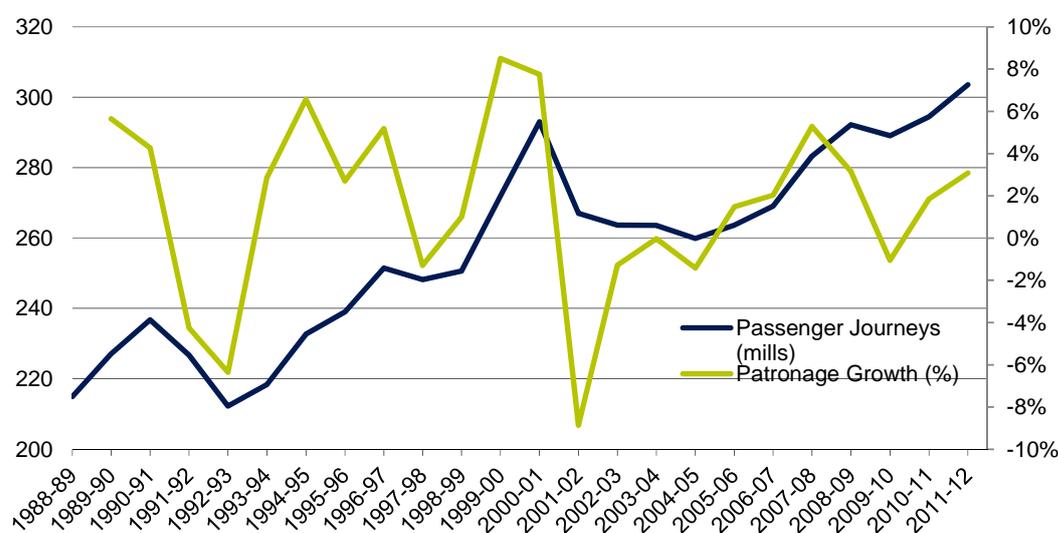
⁴⁷ BTS, *Travel Forecasts 2006-2036*, February 2012, p 1.

⁴⁸ See section 6.4 below for NSW DPI and Commonwealth and state budget forecasts.

6.3 Historical trends in CityRail's patronage

Recent historical trends in patronage levels can provide a reasonable indication of future growth, provided that historical patterns of population settlement, macroeconomic conditions and travel behaviour remain reasonably consistent. Figure 6.1 shows the changes in CityRail's number of passenger journeys and patronage growth over the period 1988/89 to 2010/11.

Figure 6.1 CityRail passenger journeys, 1988/89 to 2011/12



Note: Rail journey numbers have been updated to reflect BTS's new method of estimating journeys for certain ticket types. We also note that the peak in 2000/01 was caused by the Sydney Olympics and as such is considered anomalous.

Data source: BTS, 2010/11.

Over this 23 years to 2011/12, CityRail has achieved modest patronage growth, with average annual growth of 1.5%. During the period 2007/08 to 2011/12, its average annual patronage growth was 1.7%.

On a year to year basis, CityRail's patronage growth has been volatile. During the last determination period, it grew by 3.2% in 2008/09, then fell by 1.1% in 2009/10, and grew by 1.8% in 2010/11 and 3.1% in 2011/12. The reason for this volatility is that patronage is affected by a range of macro and micro-economic factors. For example:

- ▼ The negative or flat patronage growth between 2002 and 2005 coincided with a period of poor service quality performance (eg, on-time running).

- ▼ Negative patronage growth in 2009/10 coincided with the instability in global financial markets and a decrease in CBD employment. Unemployment in the Sydney statistical division increased from 4.2% in 2008 to 5.6% in 2009/10.⁴⁹

6.4 Forecast employment and population growth

Strong growth in employment in Sydney's CBD has previously been a major contributor to growth in CityRail's patronage. Around half of all passenger journeys on the CityRail network are made by people commuting from the suburbs to their jobs in the CBD.

We have examined the most recent NSW and Commonwealth government budget forecasts for employment and population growth. These forecasts indicate that low employment and population growth is expected in coming years:

- ▼ The 2012/13 Commonwealth Government budget forecasts that national employment is expected to grow 1.25% through the year to the June quarter of 2013 and 1.5% through the year to the June quarter of 2014.⁵⁰
- ▼ The 2012/13 NSW State budget forecasts NSW employment to grow by 1% in 2012/13 and 1.25% in 2013/14, as projected economic activity increases and conditions gradually improve in the non-mining sectors.⁵¹
- ▼ The NSW Department of Planning and Infrastructure has developed detailed annual population growth forecasts for the period 2006-2036, which indicate an annual average growth rate of:
 - 1.0% for all NSW
 - 1.1% for Sydney
 - 0.7% for Wollongong
 - 0.9% for Newcastle.⁵²

⁴⁹ ABS, Sydney Statistical Division Regional Profile:
<http://www.abs.gov.au/AUSSTATS/abs@nrp.nsf/Latestproducts/105Economy12006-2010?opendocument&tabname=Summary&prodno=105&issue=2006-2010>

⁵⁰ Commonwealth Government 2012-13 Budget, Paper 1, Statement 2: Economic Outlook, May 2011.

⁵¹ NSW Government 2012-13 Budget, Paper 2, Ch2: The Economy, June 2012, p 2-10.

⁵² NSW Department of Planning and Infrastructure, NSW State and Regional Population projections, 2006-2036, 2008. Forecasts were released in 2008 and were based on the 2006 census data.

6.5 Network capacity constraints

Capacity constraints on the CityRail network affect its patronage growth. As the network approaches full capacity, the quality of services may decline – for example, crowding on trains and in stations is likely to increase – along with the reliability of services. This is likely to lead to a reduction in patronage growth.

The Government is continuing to take steps to address capacity constraints on the CityRail network. In June 2012, the NSW Government released the report *Sydney's Rail Future: Modernising Sydney's Trains*.⁵³ Included in this report is an outline of the government's long term plan for increasing and managing rail capacity. Some of these improvements include:

- ▼ consolidation works to improve the operability of the rail network
- ▼ purchase of additional rolling stock
- ▼ completion of South West Rail link and Rail Clearways projects
- ▼ introduction of rapid transit trains and services (single-deck train services)
- ▼ a second harbour crossing (a new harbour tunnel and CBD line connecting with the North West Rail Link)
- ▼ extension and improvement of single-deck train services.

We note that the BTS has taken account of many of these improvements in its long-term forecast of CityRail's patronage growth to 2036.

6.6 Service standards

In our last CityRail review we noted that at the prevailing fare levels, quantity and quality of service provide a more important influence on demand for CityRail's services than price. Previous results on internal RailCorp surveys have supported this view.

We have observed this relationship since 2004/05, when patronage increased sharply after the introduction of the new timetable. We note that in general, the data available to us indicates that over the 4 years to 2011/12, CityRail has broadly maintained the quality of service (see Chapter 4).

⁵³ NSW Government, *Sydney's Rail Future: Modernising Sydney's Trains*, June 2012.

6.7 Fare increases

Our decision on maximum average fare changes may affect patronage growth on CityRail services over the determination period. However, as we have noted in previous reports, the demand for public transport is relatively inelastic, and many factors influence people's decisions to use these services.⁵⁴ Therefore, modest fare increases are unlikely to have a significant impact on CityRail patronage.

In 2008, we considered the price elasticity of demand estimates provided by the stated preference work of Booz and Co (Booz) and the econometric modelling of LECG as measures of the price sensitivity of commuters.⁵⁵ These measures indicate that demand is not particularly responsive to changes in price.

In 2008, in our last CityRail review, we put the view that CBD employment growth and service outcomes have a greater influence on patronage levels than price. We maintain this view. For example, as we have previously noted that between 2003 and 2006, fares were frozen (and fell in real terms), CityRail's patronage either fell or remained stable. In 2007, average fares rose by 5.9% (nominal), CBD employment grew strongly and patronage grew by around 5%. This suggests that strong CBD employment growth has a greater impact on patronage than price.⁵⁶

6.8 Petrol price and road congestion

Stakeholders have previously argued that high petrol prices and increased levels of road congestion also have an impact on patronage growth. However, based on the available evidence, we maintain that while these factors may contribute to patronage growth, their effects are not as likely to be as significant as factors such as CBD employment and service performance.

⁵⁴ See IPART, *Review of fares for metropolitan and outer metropolitan bus services from January 2010 - Final Report*, December 2009.

⁵⁵ See Booz and Co, *CityRail Fare Elasticities*, May 2008 and LECG, *An empirical estimate of CityRail's marginal costs and externalities*, November 2008.

⁵⁶ Ibid.

7 Value of the external benefits of CityRail's services

After making our final decision on the efficient costs of providing CityRail services over the determination period, the next step in our approach was to estimate the annual value of the external benefits generated by these services. This value was one of the key factors we considered in making final decisions on how much of the efficient costs passengers should fund through rail fares, and what fare change is required to recover that share of those costs (discussed in Chapter 8).

In general, the external benefits of a service are indirect benefits that accrue to the wider community as a result of the availability and use of that service (as opposed to the internal benefits, which accrue to the individuals who use the service). For example, the external benefits of public transport services may include reduced road congestion, reduced traffic accidents and reduced air pollution.

IPART considers, in line with the general view in Australia and other jurisdictions, that the external benefits generated by public transport services (including rail services) justify government subsidisation of the fares for these services. We also consider that the level of government subsidisation should be linked to the value of the external benefits generated by the services concerned.

We engaged a consultant, Sapere Research Group (SRG), to re-estimate the value of the external benefits generated by CityRail services.⁵⁷ We considered SRG's findings and recommendations, and the views on external benefits expressed in stakeholder submissions, to make our final decision.

The section below sets out our final decision on the estimated value of the external benefits of CityRail services over the determination period. The subsequent sections discuss our considerations in reaching our final decision.

⁵⁷ See SRG, *External benefits of CityRail services – Final report to IPART*, September 2012. SRG first estimated the external benefits associated with CityRail's services in 2008 for our 2009 determination.

7.1 Final decision on value of external benefits

Final Decision

13 IPART's final decision is that the value of the external benefits of CityRail services is as shown in Table 7.1.

Table 7.1 Final decision on the value of the external benefits generated by providing CityRail services (\$million, real \$2011/12)

	2012/13	2013/14	2014/15	2015/16
Total external benefits	1,949	1,981	2,012	2,044

This final decision is in line with SRG's recommendation on the value of the external benefits. It reflects SRG's quantification of the total external benefits generated by people choosing to travel by a CityRail service rather than by an alternative mode of transport (or the costs that would be imposed on the community if the existing rail services were not available).

The final decision is also in line with our draft decision. However, we note that the final decision on value of external benefits differs slightly to our draft decision because we are using an updated CPI. As discussed in section 7.5, our forecast values of external benefits are estimated by adjusting Sapere's estimate using 75% Wage Price Index (WPI) and 25% CPI.

7.2 What external benefits should be included?

It is relatively easy to identify the direct benefits that passengers receive from public transport services. For example, the se generally include access to their place of work, essential services, and shopping and leisure facilities, plus the personal benefits that flow from this level and type of mobility. However, the external benefits of those services – those that accrue to the wider community – are not always as clear. These benefits can also be difficult to quantify.

In our view, the most significant, quantifiable and relevant types of external benefits generated by rail services are the same as those generated by other public transport services, including bus and ferry services. These benefits arise from the reduction in the number of people using cars in the metropolitan region due to the availability and use of public transport services. Our last review of CityRail fares found that the major external benefits generated by CityRail services fall into 2 categories:

- ▼ reduced (or avoided) road congestion, and
- ▼ reduced (or avoided) general air pollution and greenhouse gas emissions.⁵⁸

⁵⁸ Other potential external benefits, including avoided road accidents and social and agglomeration benefits were considered but were not directly quantified. See IPART, *Review of CityRail fares, 2009-2012 - Final Report and Determination*, December 2008.

7.3 SRG's analysis and recommendation on the value of the external benefits

SRG has re-estimated the value of the external benefits generated by CityRail services using 2011 data and incorporating improvements to the methodology and other input data used. To analyse this value, SRG quantified the external costs that are avoided when people travel by rail instead of car. To do this it obtained information from the Bureau of Transport Statistics (BTS). Based on the existing level of rail service, SRG asked the BTS to:

- ▼ provide information on how many people currently travel by car, train, bus and ferry, how long their trips are, and how much time these trips take
- ▼ model what would happen if the existing rail services were not available or were significantly more expensive – in particular, how many extra people would travel by car, bus and ferry under these circumstances, how long their trips would be, and how much time they would take.

Using this information, SRG estimated the external cost of the extra car travel that would occur if rail was not available.⁵⁹ Specifically, SRG estimated:

- ▼ the costs associated with increased traffic congestion (a function of how many extra people travel by car and the change in the speed of car trips)
- ▼ the costs of increased air pollution and greenhouse gas emissions from cars (a function of how many people travel by car and how far they travel) less the cost of pollution caused by ferries.

SRG also estimated the additional benefit society would receive from collecting more revenue from the fuel excise, Sydney Harbour Bridge tolls and parking space levies if rail was not available. It then totalled the costs and subtracted the benefits to derive an estimated value for the total external benefits of CityRail services.

In the current study, SRG estimates the value of the total external benefits of CityRail's services to be \$1.9 billion - around 13% higher than the value calculated in 2008. Part of this increase reflects increased patronage on the CityRail network. However, the external benefits **per rail passenger journey** have increased by around 8% since the last study (in real terms – see Table 7.3 below), largely due to an increase in the estimated congestion benefit of rail services.

⁵⁹ The external benefits of rail use primarily results from people choosing to travel by rail instead of driving a car because it avoids the external costs associated with car travel. There are no external benefits from people catching a train if they chose to catch the train instead of walking, cycling or catching the bus because unlike car travel, these alternative forms of transport do not impose costs on other people.

SRG's re-estimate of the external benefits (both in total and per rail passenger journey) and its components is summarised in Table 7.2 and 7.3 and compared to the previous estimate made in 2008 for our 2009 determination. The components (and the changes since the previous estimate) are discussed in detail in the sections below. If you want more information, SRG's final report on its analysis and recommendations is available on our website.⁶⁰

Table 7.2 Comparison of estimates of aggregate external benefits of CityRail services (\$million, real \$2011/12)

	2012 determination	2009 determination	Change
	\$2011/12	\$2011/12	%
Avoided road congestion costs	1,857.6	1,505.2	23%
Reduced air pollution costs	38.2	120.8	-68%
Reduced greenhouse gas costs	10.9	28.0	-61%
Reduced fuel excise & parking levy	(40.0)	n.c.	n.c.
Total external benefits	1,866.6	1,654.0	13%

Note: Reduced fuel excise and parking levy was not calculated for the 2009 determination.

Source: SRG, *External benefits of CityRail services – Final Report to IPART*, August 2012, p 18. IPART calculations.

Table 7.3 Comparison of estimates of external benefits per passenger journey of CityRail services (\$per journey, real \$2011/12)

	2012 determination	2009 determination	Change
	\$2011/12	\$2011/12	%
Avoided road congestion costs	6.31	5.35	18%
Reduced air pollution costs	0.13	0.43	-70%
Reduced greenhouse gas costs	0.04	0.10	-63%
Reduced fuel excise & parking levy	(0.14)	n.c.	n.c.
Total external benefits per passenger journey	6.34	5.88	8%

Note: Reduced fuel excise and parking levy was not calculated for the 2009 determination.

Source: SRG, *External benefits of CityRail services – Final Report to IPART*, August 2012, p 35. IPART calculations.

7.3.1 Avoided road congestion costs

The availability of rail services makes it possible for many people in the greater Sydney area to travel by public transport rather than use their own car. Thus, the provision of these services reduces the number of individual cars on the road. Fewer cars mean less road congestion, which benefits road users by reducing their travel time and fuel costs.

⁶⁰ See SRG, *External benefits of CityRail services – Final report to IPART*, September 2012.

SRG estimated the value of avoided road congestion costs using data on traffic patterns for a typical work day provided by the BTS. SRG found that the reduced road congestion across the greater Sydney area is worth \$6.31 per passenger journey (or \$1,858 million per year in 2010/11).

The congestion benefits of rail are greater under the current study compared to the study commissioned for the 2009 determination. This difference is driven by a new version of the Sydney Strategic Travel Model (SSTM) used by the BTS to estimate mode-switching behaviour of travellers (if rail were suddenly unavailable) and the resulting traffic flow patterns.

The new version of the SSTM incorporates changes in traffic flow patterns since the Household Travel Survey of 2006 (on which the earlier version of the SSTM was based). It also has an improved treatment of car journeys that are made for purposes other than work (the amount of these journeys was overestimated for the previous study).

This improved modelling of traffic flow patterns produces a higher estimate of the number that measures the relationship between car traffic and congestion effects. This increases the marginal external cost of congestion and therefore the congestion benefits that rail services provide. However, the lower number of car journeys for non-work purposes resulting from the new model offsets some of this increase.

7.3.2 Reduced air pollution (including greenhouse gas emissions) costs

Every litre of fuel consumed by motorised transport (including trains) contributes to air pollution, including greenhouse gas emissions. This pollution imposes a cost on society. SRG quantified the value of the reduction in air pollution and greenhouse gas pollution when CityRail services are used instead of cars. It also quantified the value of the additional air pollution and greenhouse gas pollution generated by CityRail itself.

SRG found that the estimated value of reduced air pollution and greenhouse gas pollution costs is 17 cents per passenger journey, or a total of \$49 million per year in 2010/11.

The emission benefits of rail are lower under the current study compared to the study commissioned for the 2009 determination. There are 2 reasons for this result. Firstly, the emissions benefit of rail compared to *buses* is smaller now compared to the previous study. This is driven by a better understanding of the emissions performance of Sydney's bus fleet now compared to under the previous study. That is, buses have a better emissions performance than previously thought, which reduces the relative emissions benefit of rail.

Secondly, the emissions benefit of rail compared to *cars* is also smaller now compared to the previous study. The improved treatment of non-work car journeys in the revised SSTM means there is now less estimated car travel (in the absence of rail services) and less associated car emissions than estimated previously.

7.3.3 Reduced fuel excise and parking levy

For this study, SRG updated its analysis to take into account the existing fuel excise and other usage-related taxes on car travel.⁶¹ SRG's study for the 2009 determination did not include any adjustment for these taxes. However, SRG's 2010 review of bus externalities made an adjustment to the total external benefits by deducting an estimate of the revenue raised by the fuel excise and other taxes related to car usage.⁶² SRG recommends that the same adjustment be made to the estimate of the external benefits of CityRail services.

In SRG's view, the key problem in pricing various forms of transport is that there is a difference between the private (financial) cost of car travel and the social and economic costs, including the external costs. This problem can be addressed through taxes, such as a tax on car usage, or through a Government subsidy of rail and other public transport services.

The fuel excise and other taxes related to car usage raise the cost of a car trip over and above the private cost to the individual, which offsets some of the external costs the individual imposes on the community when they choose to drive their car. These taxes make people take into account some of the costs they impose on other people when they decide how they will travel. SRG's view is that because these taxes increase the price of car use relative to rail use, they reduce the extent to which the Government needs to subsidise rail services.

Including the fuel excise, Sydney Harbour Bridge tolls and parking levy, SRG calculates that the marginal external cost of this lost taxation revenue per rail passenger journey is approximately 14 cents (or a total of \$40 million per year in 2010/11). We agree that this value should be subtracted from the total value of the external benefits, as it represents the external cost of car travel that has already been taken into account when people decide how to travel and therefore should not be included in the external benefits of CityRail services.

⁶¹ For example, Sydney Harbour Bridge tolls and parking space levies.

⁶² See IPART, *Review of fares for metropolitan and outer metropolitan bus services from January 2010 - Final Report*, December 2009, pp 82-84.

7.3.4 The excess burden of taxation

Achieving the external benefits identified by SRG requires the Government to provide a significant subsidy to CityRail to cover the cost of its operations. Taxation is needed to fund this subsidy, which leads to distortions in the decisions of individuals and firms and impacts on living standards or the level of consumer welfare. The extent to which a tax reduces overall consumer welfare is referred to as the excess burden of taxation.⁶³

Ideally, all transport services (private and public) would be priced at their own marginal social costs. Under this approach, there would be a system of road pricing under which motorists pay the full marginal costs of usage including the marginal external costs of congestion and pollution. In the absence of an effective road pricing system, SRG has developed a fare optimisation approach that sends the right relative price signal at the margin. SRG's approach to calculating the optimal fare has been to optimise net welfare, defined as the sum of consumer surplus, producer surplus and external benefits less the deadweight loss of the taxation needed for Government to subsidise CityRail services.

We note that in theory an adjustment could be made so that the size of the subsidy justified by the external benefits of CityRail services reflects the net benefits to society, rather than the total benefit. However, we consider that there is a beneficiary pays argument against making this adjustment.

The net external benefit consists of 2 components:

- ▼ the total value of the benefit
- ▼ the costs associated with funding this benefit by means of taxation, (ie, the excess burden of taxation).

It is our view that the excess burden of taxation can be seen as a type of 'transaction' cost. The question is, who should bear this cost: rail passengers or taxpayers (largely as a proxy for road users)? By definition, the value of the external benefit generated by rail services accrues to the general public (in particular road users), and not to rail passengers. Under a beneficiary pays approach, the general public (as a proxy for road users) should bear the cost and hence no adjustment should be made to the total external benefits when estimating the appropriate Government subsidy of CityRail services.

⁶³ See, for example, KPMG Econtech, *The excess Burden of Australian Taxes – Report prepared for the Department of Treasury*, March 2010, Chapter 3.

7.3.5 SRG's estimate of optimal rail fares

SRG also used the framework underpinning its estimate of the total value of the external benefits generated by CityRail services to estimate the optimal level for rail fares. The external benefits arising from CityRail services can be thought of as the optimal level of taxpayer subsidy of these services. Optimal fares are then calculated as the difference between the external benefit per train trip and the cost of that train trip.

Optimal fares are 29% to 49% higher than current average fares (depending on the assumption made regarding the marginal excess burden of taxation).⁶⁴ However, we note this result includes an assumption regarding the long run capital cost of expanding CityRail's CBD infrastructure capacity, and is very sensitive to the value used. We also note that SRG's previous study did not explicitly include an estimate of the long run capital cost of rail in its optimisation of fares.

7.4 Stakeholder views on additional external benefits

In its submission to the Issues Paper and at the public hearing, NCOSS argued that we should:

- ▼ update our assessment of the external costs and benefits associated with transport services to incorporate new research findings
- ▼ assess the level of external benefits based on the original patronage forecasts used in the 2009 determination and
- ▼ take account of the social benefits resulting from public transport usage eg, community benefits of access to employment, education, health services and social networks.⁶⁵

This review involves re-estimating the value of the external benefits generated with CityRail services to update the estimate for more current information.

⁶⁴ Optimal fares are 29% higher than current fares where the marginal excess burden of taxation is zero, and 49% higher when the marginal excess burden of taxation is 0.1. See SRG, *External benefits of CityRail services – Final report to IPART*, September 2012.

⁶⁵ See Council of Social Services of New South Wales submission to Review of fares for CityRail services from January 2013, May 2012, p 2.

We accept that rail services provide a benefit to society by improving access to transport for those who are less mobile and have lower incomes, and consider that these benefits may be significant. However, as these social benefits are largely due to improving access to transport services for particular and identifiable groups within society, we are not convinced that these benefits can be used to justify increasing government subsidy of rail fares for all passengers, including those who are outside of these groups. We consider improved access for passengers within these groups is best achieved through a targeted concession program. This approach is also more consistent with our approach of ensuring passengers make a fair contribution to the efficient costs of rail services.

Under the current regulatory framework, concession policy is determined by the Government, not by IPART. Our view is that the social benefits of improving mobility **for specific groups** are best considered by the Government when it determines the availability of services and formulates its concession policies, rather than through an increase in the subsidy **for all passengers**. This approach enables the Government to deliver a suitable regime that is tailored to the needs of particular groups.

7.5 IPART's considerations

In general, when we make a public transport fare determination, we consider the value of the external benefits generated by that public transport service to help us decide what level of taxpayer subsidy of fares is justified on economic grounds. When this amount is subtracted from the total efficient costs of providing the service, the remainder provides us with a target level of revenue to be recovered through maximum fares. This approach assumes that taxpayers should pay a share of the efficient costs that is roughly equal to the value of the external benefits that accrue to the general community. Therefore, maximum fares should be set to recover the remaining share of the efficient costs.

After considering SRG's analysis and stakeholder comments on the external benefits of CityRail services, we decided to accept SRG's recommended value for these benefits. Furthermore, we consider that the value of the external benefits over the determination period should be calculated by adjusting the previous year's value:

- ▼ to reflect our decision on forecast patronage growth (see Chapter 6) and
- ▼ by a weighted average of the forecast annual change in the Wage Price Index (75%) and the Consumer Price Index (25%).

This approach is consistent with our 2009 determination.

8 How much of the efficient costs should be funded by passengers through fares

The next step in our approach for setting fares was deciding how much of the costs of providing CityRail services should be funded by passengers. To do this, we considered how much government subsidy of CityRail services is justified, given the value of the external benefits generated by these services (discussed in Chapter 7) and other factors. We then subtracted this amount from the total efficient costs of providing CityRail services. We also subtracted the estimated cost to the Government of providing concession fares and a proportion of non-fare revenue generated by CityRail. This gave us an estimate of the passenger share of the efficient costs of providing CityRail services.

Once we had these amounts, we considered how fares should change, and hence how much passengers should fund, to transition towards the passenger share. We decided to use a 7-year 'glide path' approach with a constant increase in fares (before inflation) to transition to the passenger share of efficient costs by 2019. This approach takes a medium-term view of how fares need to change and provides for a stable, gradual transition to the passenger share. It is also consistent with the approach we used to set fares for Sydney Ferries services. Under our approach, passengers should fund 28% of CityRail's efficient costs. However, we have made a 3-year determination and will make a new determination of maximum fares from January 2016 to update our analysis for any changes.

The sections below set out our final decision on how much of the efficient costs should be funded by passengers through fares.

8.1 Final decision on how much of the efficient costs passengers should fund through fares

Final Decision

- 14 IPART's final decision is that passengers should contribute the amounts shown in Table 8.1 in each calendar year of the determination towards the cost of providing CityRail services.

Table 8.1 Final decision on the how much of the efficient costs passengers should fund through fares (\$2012 \$ million, calendar years)

	2013	2014	2015	2016	2017	2018	2019
Amount passengers should fund through fares	739	757	775	794	814	834	854
Amount passengers should fund as % of costs to be shared	28%						

Note: In addition to the increases shown above, fares will be adjusted by the change in CPI each year.

8.2 Estimating how much of the efficient costs passengers should fund through fares

To estimate how much of the efficient costs passengers should fund through fares we:

- ▼ estimated the passenger share of efficient costs for the next 7 years by subtracting the external benefits from the efficient costs to be shared between passengers and taxpayers
- ▼ decided how fares should change to transition towards the passenger share and hence the amount passengers should fund through fares during this transition.

The following sections explain these steps in more detail.

8.2.1 Estimating the passenger share of efficient costs

As Chapter 7 discussed, we consider that government subsidy of CityRail fares is justified because CityRail services generate external benefits, and that the level of subsidy should be related to the value of the external benefits. Therefore, to estimate the passenger share of the efficient costs of providing CityRail services we subtracted the value of the external benefits from the costs of providing CityRail services.

In addition, we note that the Government's policy of providing concession fares further subsidises CityRail fares. We consider that this subsidy should be funded by taxpayers and not passengers. Therefore, to estimate the passenger share, we also deducted the estimated costs to the Government of providing concession fares from the costs of providing CityRail services.

We also subtracted 65% of the revenue CityRail earns from advertising, property rental, outsourcing of maintenance labour and other sources/activities.⁶⁶ This revenue is considered unregulated income as it is not set or determined by IPART. However, we consider that deducting some of this revenue from the total efficient costs provides an appropriate balance between passing the benefits of additional revenue onto customers (through lower prices) and providing the business with an incentive to pursue further opportunities.

Fares are determined on a calendar year basis (fares apply from January to December) but our estimates for the costs and external benefits were calculated on a financial year basis. To estimate the passenger share, we converted our estimates of the costs and benefits from financial years to calendar years.⁶⁷

8.2.2 Deciding how fares should transition to the passenger share

Once we estimated the passenger share of the efficient costs for the next 7 years, we then considered how fares should be set to transition towards this share.

We decided to adopt the following approach:

- ▼ We used a starting point of CityRail's revenue from fares in 2012 based on ticket sales and current ticket prices.⁶⁸
- ▼ We used an end point of the passenger share in 2019 (ie, a 7-year glide path)
- ▼ We calculated an average annual change in maximum CityRail fares to move from the starting point to the end point, using our patronage growth assumption of 1.3% per annum and a constant increase in fares (before inflation).

In our draft determination, we used a 7-year NPV approach to set fares. We have reconsidered this approach and decided to use a 7-year 'glide path' approach for our final report. A 7-year 'glide path' provides for a stable, gradual transition to the passenger share in 2019. It is also consistent with the approach we decided to

⁶⁶ For most sources of non-fare revenue, such as rental income and advertising income, we consider it appropriate to allow CityRail to keep 50% of the revenue and to give passengers the benefit of the other 50%. The main exception we have made is for the outsourcing of labour for maintenance services to third parties that makes up 40% of other revenue. This activity involves work done for other parties, that does not involve maintaining CityRail's network. Recent examples include track reconstruction for light rail extension and work on the freight network. The costs of providing these services are included in CityRail's cost base, but the activities do not benefit rail passengers. We estimated that about 75% of the revenue from these services represents the additional costs and should be subtracted from the costs to be recovered from fares.

⁶⁷ We have allocated costs to calendar years by assuming that 50% of the costs for each financial year occur between 1 July and 31 December, and 50% occur between 1 January and 30 June. We have also converted the costs from 2011/12 prices to 2012 prices by adding forecast inflation for a further 6-month period.

⁶⁸ Current ticket prices are below the maximum levels we set in our 2009 determination.

use for Sydney Ferries. Under this approach, passengers should fund 28% of CityRail's efficient costs.

We note that, since we have made a three-year determination, we will make a new determination of maximum fares from January 2016 to update our analysis for any changes.

Table 8.2 shows the resulting efficient costs, external benefits, estimated Government cost of providing concession fares, other revenue, passenger share and the amount that passengers should fund through fares.

Table 8.2 Estimated amount passenger should fund through fares (2012 \$ million, calendar year)

	2013	2014	2015	2016	2017	2018	2019
Total efficient costs of providing CityRail services	2,929	3,002	3,073	3167	3259	3327	3395
Less Non-fare revenue ^a	100	100	100	100	100	100	100
Less estimated Government costs of providing concession fares ^b	211	218	225	232	239	247	254
Costs to be shared between passengers and taxpayers	2,619	2,684	2,749	2835	2920	2981	3041
Less external benefits	1,988	2,020	2,052	2085	2118	2152	2186
Costs to be shared less external benefits (passenger share)	630	664	697	750	802	829	854
Costs to be shared less external benefits (passenger share) (%)	24%	25%	25%	26%	27%	28%	28%
Annual real increase in fares required to recover passenger share in 2019	1.3%	1.3%	1.3%	1.3%	1.3%	1.3%	1.3%
Amount passengers should fund through fares	739	757	775	794	814	834	854
Amount passengers should fund as % of costs to be shared	28%	28%	28%	28%	28%	28%	28%

^a We estimated non-fare revenue by taking 65% of the average of the last 4 years and maintaining this in real terms.

^b We estimated this by calculating the difference between the fares that concession passengers actually pay and the fares they would pay if they made the same number of trips but did not have access to a concession.

9 Maximum average change in fares

Once we decided how much fares need to change per year to recover passengers' share of the estimated costs (see Chapter 8), our next step would normally have been to set a maximum fare for each ticket, based on our decisions on the necessary fare change and forecast patronage growth. However, as Chapter 3 indicated, for the 2013 determination we decided to set the maximum average change in fares instead. We also considered whether it was necessary to set any limits on the price increase for individual fares, to provide additional protection to passengers.

The sections below summarise our decisions on the maximum average change in fares and price limits, then explain why we chose to set average fare changes instead of individual fares and our decision on price limits in more detail.

9.1 Overview of final decisions on maximum average fare change and price limits

Final Decision

15 IPART's final decisions are that:

- the maximum average fare change for the 2013 determination period is 1.3% plus an adjustment for inflation per year
- there are no limits on the change in individual fares.

These decisions mean that Transport for NSW has the discretion to set the fares for all tickets that can be used on CityRail services but must ensure the average fare increase across all these tickets is equal to or less than 1.3% plus an adjustment for inflation per year (when each ticket type is weighted by sales).

This approach gives Transport for NSW the flexibility to restructure fares and adjust the relative price of individual tickets without limiting its ability to recover the passengers' share of revenue we have targeted in our determination. We consider this flexibility is necessary, as the Government plans to introduce Opal over the determination period.

We decided not to impose price limits on individual fares as it would lessen Transport for NSW's flexibility in reforming fares. We also consider that additional consumer protection is unlikely to be necessary given that governments are accountable to their constituents for decisions on individual fare increases. However, we have developed a set of pricing objectives we believe Transport for NSW should adhere to in setting fares for CityRail services. We have also established a compliance process to check that Transport for NSW's fares are within the determined maximum average increase. These are both discussed in Appendix D.

9.2 Why we set a maximum average fare change rather than individual fares

In our 2009 determination on CityRail fares, we set around 200 different maximum fares, depending on where passengers travelled to and the number of journeys or time period allowed by the ticket (single, return, weekly, fortnightly, monthly, yearly). The Government set around 180 additional concession fares, such as those for pensioners and concession card holders.

In 2010, the Government reduced the number of tickets used for CityRail services to around 50⁶⁹ when it introduced MyZone – a new fare structure for rail, bus and ferry services in Sydney. It also adjusted the relative price of different tickets to reflect the new fare structure. However, because the 2009 determination set maximum fares for individual tickets, the Government was only able to do this by setting some fares lower than the maximum level allowed under the determination. As a result, CityRail has not been able to recover the amount of farebox revenue the determination targeted, and which we considered was passengers' fair share of CityRail's efficient costs⁷⁰ (see Box 9.1 for more information). And taxpayers have been required to contribute more than their share of these costs over the determination period.

We consider that further reforms to CityRail and multimode tickets are likely to be necessary as Transport for NSW introduces Opal. To ensure these reforms can be achieved without CityRail foregoing farebox revenue, we decided to set maximum average fare changes instead of individual fares over the 2013 determination period.

In making this decision, we noted the view expressed by Transport for NSW in its submission to our issues paper that the introduction of Opal may require different approaches to fare setting.⁷¹ We also noted that stakeholders at the public hearing were generally supportive of our approach.⁷²

⁶⁹ Excluding concession fares set by the Government.

⁷⁰ The impact of this was amplified in 2012, when the Government decided to increase fares by the CPI rather than in line with the 2009 determination.

⁷¹ Transport for NSW submission to IPART's Issues Paper, April 2012, p 5.

⁷² Mr Tim Reardon (Transport for NSW), Transcript of 17 October 2012 public hearing, p 60.

Box 9.1 Impact of fare restructuring when determination sets maximum fares for individual tickets – MyZone example

In introducing the MyZone fare structure in 2010, the Government consolidated the 20 distance-based bands for CityRail fares into 5 bands, and created a new 'MyTrain' ticket product for each band. However, because the 2009 determination specified a maximum fare for individual CityRail tickets based on the original 20 fare bands, the fares for MyTrain tickets could not exceed the lowest fare in the new consolidated distance bands.

For example, the new MyTrain4 ticket applies to journeys of 35–65 km, where previously there were 3 separate tickets for journeys of 35–45 km, 45–55 km, and 55–65 km. Under the 2009 determination, the maximum weekly fares for these journeys in 2010 were \$50, \$52 and \$56 respectively. To comply with the determination, the fares for MyTrain4 weekly tickets had to be set at or below \$50.

As the table below shows, this resulted in CityRail **forgoing** approximately \$14 million in revenue from weekly ticket sales in 2010 (across all 5 MyTrain bands). If the determination had set maximum average fare changes instead of individual fares, the revenue forgone due to the restructuring could have been a much lower (around \$78,000).

Old distance bands (km)	Annual ticket sales	Maximum fare set in determination 2010	New fare structure	Maximum fare under determination	Possible fare if determination had set average fare change
0 - 5	322,293	\$25.00	MyTrain1	\$25.00	\$28.00
5 - 10	753,153	\$29.00			
10 - 15	1,210,542	\$31.00	MyTrain2	\$31.00	\$32.00
15 - 20	920,131	\$34.00			
20 - 25	817,284	\$38.00	MyTrain3	\$38.00	\$40.00
25 - 30	822,306	\$40.00			
30 - 35	610,373	\$43.00			
35 - 45	637,406	\$47.00	MyTrain4	\$47.00	\$49.00
45 - 55	351,084	\$49.00			
55 - 65	183,242	\$54.00			
65 - 75	163,939	\$56.00	MyTrain5	\$56.00	\$60.00
75 - 85	79,933	\$60.00			
85 - 95	62,319	\$62.00			
95 - 105	21,227	\$63.00			
105 - 115	15,416	\$66.00			
115 - 125	5,113	\$69.00			
125 - 135	3,274	\$74.00			
135 - 155	2,628	\$81.00			
155 - 175	1,894	\$84.00			
175+	208	\$92.00			
Revenue		\$267,142,622		\$253,440,256	\$267,064,460
Revenue forgone				\$13,702,366	\$78,162

Note: This analysis assumes that ticket sales remain constant.

Source: IPART, *CityRail and Metropolitan and Outer Metropolitan Prices and Services Report 2009*, http://www.ipart.nsw.gov.au/files/66d69c89-a21c-477c-8d45-9f2400b64802/Final_Report_-_CityRail_prices_and_services_report_2009_-_December_2009_-_Website_Version.pdf

9.3 Why we set no price limits on individual fares

In making our final determination, we are required to consider the protection of consumers from abuses of monopoly power in terms of prices and pricing policies and to consider the social impact of our determination.

We recognise that substantial fare changes for individual fares can impose significant adjustment costs on passengers. Therefore we considered whether to place price limits on individual fares – for example, by determining that no individual fare can increase by more than a certain percentage or a certain dollar amount. In particular, we considered:

- ▼ whether the price limit would hinder the Government in undertaking fare reform
- ▼ the likely additional protection it would provide passengers.

In response to our draft report, one individual argued that a cap of 33.3% should be applied to the non-discounted current fare.⁷³

We considered views expressed by stakeholders in submissions and at the public hearing and concluded any cap on individual fares would limit Transport for NSW's flexibility in reforming fares. We also concluded that imposing price limits is unlikely to provide additional consumer protection in this instance, as in setting individual fares, governments are accountable to their constituents. In the past governments have proposed small increases for individual fares. For example, over the 2009 determination, the largest increases in individual fares in a single year were:

- ▼ 60 cents for single fares (increasing the fare for journeys between 0–5 km from \$3.40 to \$4)
- ▼ \$8 for weekly fares (increasing the fare for journeys of 195+ km from \$101 to \$109).

In addition, we note that pricing can play an important role in signalling the costs of providing rail services and any change in service quality or quantity. We support the use of public transport pricing to provide signals to passengers about their travel behaviours. For example, we consider that higher than average fare increases for some individual tickets can assist to manage demand during peak times.

As Chapter 4 discussed, there is significant crowding on some CityRail services to the CBD during peak periods – particularly between 8 am and 9 am. This means it takes much longer for passengers to board and alight the trains during this time, which slows down these services and affects the on timing running of

⁷³ Individual (R Banyard) submission to Draft Report, 25 October 2012, p 1.

later trains. It can also mean that passengers are not able to board some services because they are too full. Given that expanding the capacity of CityRail's network will require large capital investments – which will need to be funded through significant fare increases and/or taxpayer subsidies – it is sensible to use pricing to manage demand and thus postpone the need for this investment.

Many passengers are willing and able to shift their travel by 30 minutes.⁷⁴ Research shows that if passengers have to pay a 30% premium on fares during the busiest peak hour (8 am - 9 am), around 8% of passengers will shift to earlier or later services. It also suggests that peak premiums are likely to be more effective than off peak discounts. The research shows that a 30% discount on services before 8 am and after 9 am has roughly the same impact as a 10% premium on peak hour services – around 3% of customers would shift from the peak hour period.⁷⁵

We also consider that higher than average fares may be appropriate for phasing out products where there are alternative fares (in order to simplify the ticketing system), and where the fares significantly understate the relative costs of particular services.

While we have not imposed price limits on individual fares, setting the maximum average fare increase ensures that, on average, fare increases will be limited to 1.3% (plus an adjustment for inflation) to ensure that prices reflect the changes in costs and benefits of providing CityRail services. This means that if Transport for NSW decided to add a peak premium to peak services, these increases will need to be offset by other fare increases that are lower than the average (or fare reductions).

Transport for NSW will balance the pricing objectives (efficiency, revenue sufficiency, price stability and equity) when it sets the individual fares. As we explain in Appendix D, as part of its pricing proposals to IPART, Transport for NSW should explain how it has taken these factors into account.

⁷⁴ Henn et al, 2011, "Surveying Sydney rail commuters' willingness to change travel time" in *Australian Transport Research Forum 2011 Proceedings 28 - 30 September 2011*, Adelaide, p 12, http://www.atrf11.unisa.edu.au/assets/papers/atrf11_0101_final.pdf

⁷⁵ Douglas et al, 2011, "Modelling the ability of fare to spread AM peak passenger loads using rooftops" in *Australian Transport Research Forum 2011 Proceedings 28 - 30 September 2011*, Adelaide, p 15, http://www.atrf11.unisa.edu.au/Assets/Papers/ATRF11_0176_final.pdf.

10 Implications of fare changes for passengers, Government and the environment

Before finalising our final determination, we considered its implications for stakeholders, as required by section 15 of the IPART Act and section 28J of the Passenger Transport Act. In particular, we assessed the likely impact of the maximum average fare change we determined on the affordability of fares for passengers and the patronage of CityRail services. We also assessed the likely impact this fare change has on the Government (and taxpayers), and considered its likely implications for the environment. We aimed to ensure that the likely impacts of the final determination are reasonable, and the effects on different stakeholders are balanced.

The sections below provide an overview of our conclusions, and then set out the data and analysis which lead to these conclusions.

10.1 Overview of conclusions on implications of final determination

We found that our final decision to allow average fare increases of 1.3% above inflation per year is not likely to significantly reduce the affordability of fares or CityRail patronage. We note that the majority of passengers use CityRail services for non-discretionary travel for work or education purposes, and have a higher median household income than the residential population of Sydney as a whole. We also note that as a proportion of average weekly wages in NSW, weekly fares for most distances will remain lower than they were in 2000/01 (see Figure 10.7). Further, we consider that the concession fares available will mitigate the impact of the proposed fare increases on lower income passengers.

In relation to the implications for the Government, we found that if fares increase by the maximum average amount allowed under the final determination, the fare revenue collected from CityRail passengers should recover 28% of CityRail's estimated efficient costs. However, if the Government chooses to increase fares in line with inflation, as it did this year, the Government will forego approximately \$56 million of farebox revenue over the next 3 years.

In relation to the environment, we consider that the potential for our decisions on CityRail fares to help protect the environment is limited. The relatively inelastic demand for rail services means that different fare levels and structures are unlikely to create significantly different environmental outcomes. Therefore, we consider that our final determination is unlikely to have significant implications (either positive or negative) for the environment.

Overall, we are satisfied that the impacts of the determination on passengers are balanced with those on the NSW Government and taxpayers. We note that our approach for making the determination aims to ensure that passengers and taxpayers each pay a fair share of the efficient costs of providing CityRail services, and establishes taxpayers' share with reference to the external benefits the services provide the community as a whole.

10.2 Implications for passengers

In assessing the implications for passengers, we considered:

- ▼ the use of CityRail services
- ▼ the employment and income profile of CityRail passengers, and of periodical ticket users in particular⁷⁶
- ▼ fares as a proportion of average ordinary time weekly earnings in NSW, and
- ▼ the use of concession fares.

We concluded that the maximum average fare increase of 1.3% above inflation per year allowed under the final determination is not likely to significantly reduce the affordability of fares or the level of patronage.

⁷⁶ We note that much of the analysis in this chapter is based on data from BTS Household Travel Survey. This survey collects information on rail users in the Greater Metropolitan Area (GMA) which largely correspond to CityRail users.

10.2.1 Use of CityRail services

Around 20% of residents of the Sydney Greater Metropolitan Area (GMA)⁷⁷ use CityRail services on at least one day per week, and around 6% use them on 5 or more days per week (Table 10.1). These percentages have remained reasonably constant over time and are consistent with historical data which show that around 40% of Greater Sydney's population use CityRail services less than once a month, and more than 30% never use these services.⁷⁸

Table 10.1 CityRail usage by residents aged 15 and over of Sydney Greater Metropolitan area^a 2008/09

Days used train last week	Persons	Proportion
0	3,356,789	80%
1	323,113	8%
2	131,831	3%
3	80,291	2%
4	67,575	2%
5	193,896	5%
6	31,503	1%
7	18,312	0%
Total	4,203,310	100%

^a Greater Metropolitan Area Residents includes the Sydney and Illawarra Statistical divisions and the Newcastle Statistical subdivision.

Note: Numbers may not add due to rounding.

Source: RailCorp, *A compendium of CityRail travel statistics*, 7th edition, June 2010.

10.2.2 Employment profile of CityRail passengers

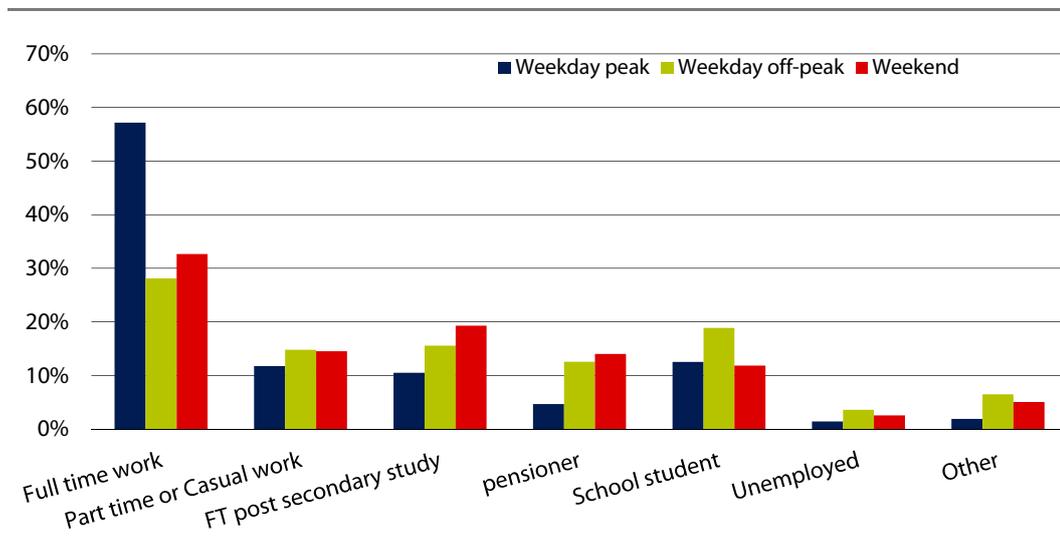
During peak periods, 57% of CityRail passengers are full-time workers, while 23% are full-time students (school or post-secondary) and 12% are part-time or casual workers (Figure 10.1). During off peak periods, a lower but still significant proportion of passengers are workers (43% including full-time, part-time and casual), and a higher proportion are full-time students (34%).

These statistics suggest that the primary market for CityRail is the commuter market, which is made up of passengers who use its services for non-discretionary travel for work or education purposes. The Bureau of Transport Statistics (BTS) 2011 Household Travel Survey findings on the purpose of CityRail trips support this view (Figure 10.2).

⁷⁷ The Sydney Greater Metropolitan Area includes Sydney and Illawarra Statistical Divisions and Newcastle Statistical Subdivision.

⁷⁸ RailCorp, *A Compendium of CityRail Travel Statistics*, Fifth edition 2006, p 26.

Figure 10.1 Labour Force Status of CityRail passengers, 2010/11

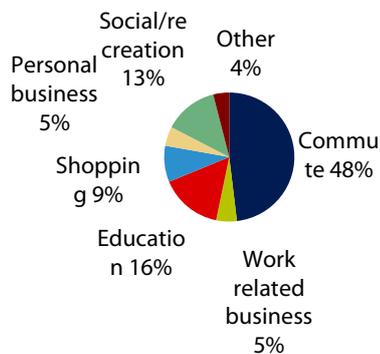


Note: Users may be counted twice or 3 times if they have travelled in more than 1 time period (peak/off peak and weekend).

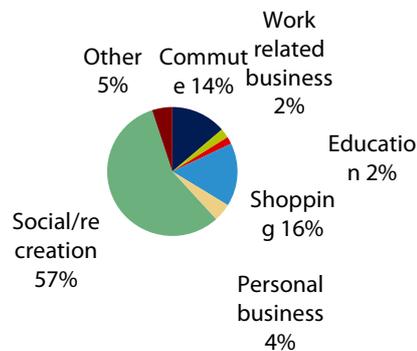
Data source: Bureau of Transport Statistics, Household Travel Survey, includes 5 waves (2006/07 to 2010/11) of pooled data.

Figure 10.2 CityRail users–Purpose of weekday and weekend trips, 2010/11

weekday train trips by purpose



weekend train trips by purpose



Note: 'Education' category includes childcare.

Data source: Bureau of Transport Statistics, Household Travel Survey, 2010/11. Includes 5 waves (2006/07 to 2010/11) of data weighted to the June 2010 population.

10.2.3 Income profile of CityRail passengers

The BTS Household Travel Survey 2011 found that CityRail weekday passengers' median household income was around \$83,668 pa (\$2006), and their median personal income was around \$33,942 pa (Table 10.2).⁷⁹ This is higher than the median household and median personal incomes for Sydney's resident population as a whole (\$73,521 pa and \$26,071 pa respectively). The survey also found that 80% of CityRail passengers have household incomes of more than \$39,743 pa (\$2006), compared to \$30,958 for all GMA residents.

Table 10.2 Annual income of CityRail passengers 2010/11 weekday (real \$2006)

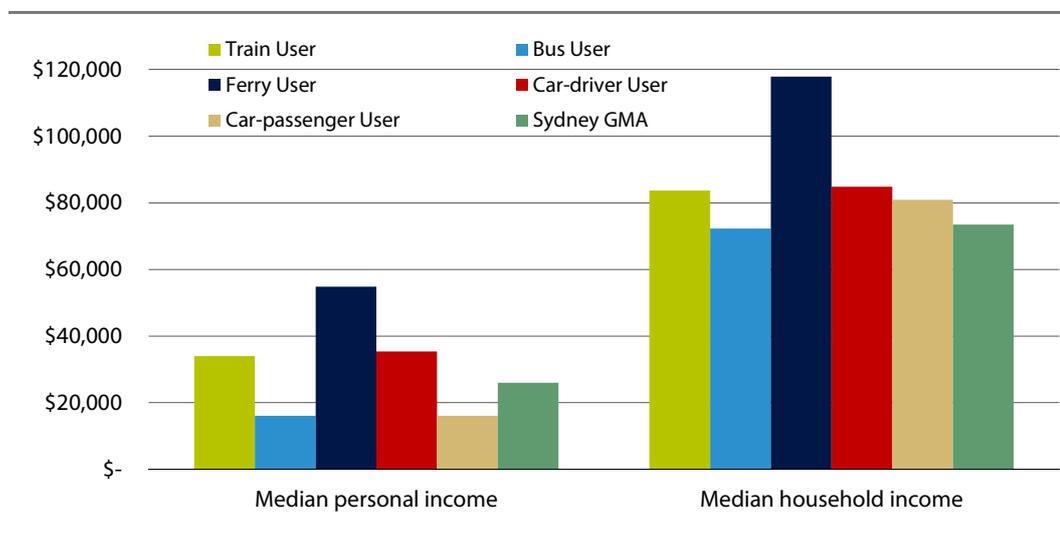
	Percentile 20	Percentile 40	Percentile 60	Percentile 80	Mean	Median
Household income	\$39,743	\$68,393	\$98,858	\$143,106	\$94,306	\$83,668
Personal income	\$9,429	\$24,578	\$43,616	\$68,393	\$41,086	\$33,942

Source: Bureau of Transport Statistics, Household Travel Survey, 2010/11. Includes 5 waves (2006/07 to 2010/11) of data weighted to the June 2010 population.

In addition, the survey found that CityRail passengers' median household and personal incomes were higher than those of bus users, similar to those of car drivers, and lower than those ferry users (see Figure 10.3).

⁷⁹ The median income is the income in the middle of the distribution of survey customers, so that half the incomes are above the median and half are below the median. The median is less sensitive than the average (mean) to outlying values – for example, the very high incomes of a small group of people increase the average, but not the median. The average household income of CityRail passengers was \$94,306 (\$2006) and the average personal income was \$41,086 (\$2006).

Figure 10.3 Median income of Sydney residents by transport mode, 2010/11 (real \$2006)



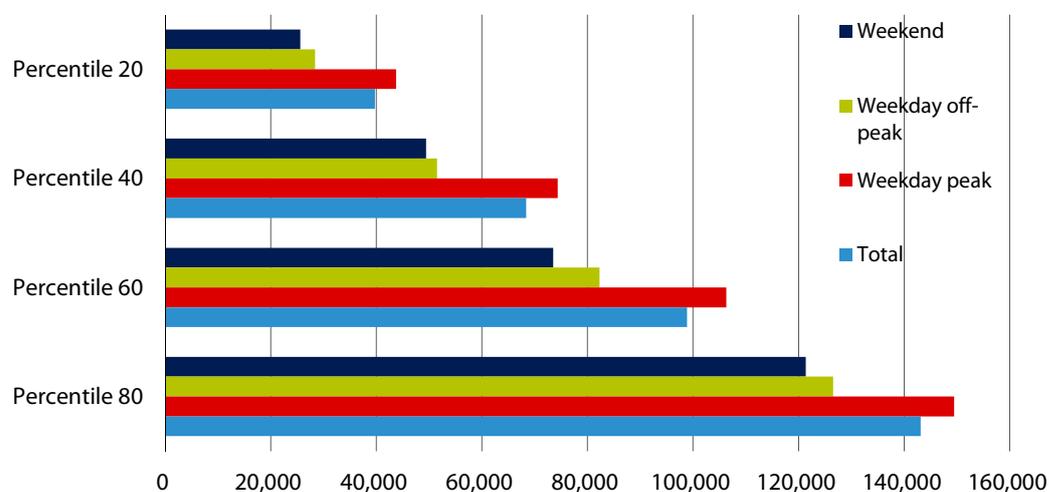
Note: A person may be more than 1 type of user. Excludes children under 15.

Data source: Bureau of Transport Statistics, Household Travel Survey, 2010/11. Includes 5 waves (2006/07 to 2010/11) of data weighted to the June 2010 population. Income profiles vary between peak and off peak users.

CityRail passengers' median household income varies by when they use the train services. Passengers who use weekday peak services have a higher median household income (\$88,680 pa) than those who use weekday off peak services (\$65,404 pa) or weekend services (\$61,611 pa).⁸⁰

⁸⁰ All Income levels are expressed in real \$2006. Bureau of Transport Statistics, Household Travel Survey, 2010/11. Includes 5 waves (2006/07 to 2010/11) of data weighted to the June 2010 population.

Figure 10.4 Household incomes of CityRail users, 2010/11 (real \$2006)



Note: Weekday users can be in more than one category of traveller (eg peak and off-peak). Excludes children under 15.

Data source: Bureau of Transport Statistics, Household Travel Survey, 2010/11. Includes 5 waves (2006/07 to 2010/11) of data weighted to the June 2010 population.

We note that part-time and casual workers and unemployed people make up 18% of weekday off-peak users, which may reflect that many of these users are in a position to take advantage of cheaper off-peak fares. School and full-time post-secondary students make up another 34% of weekday off-peak CityRail users, and these users are eligible for cheaper child and student fares.⁸¹

10.2.4 Profile of periodical ticket users

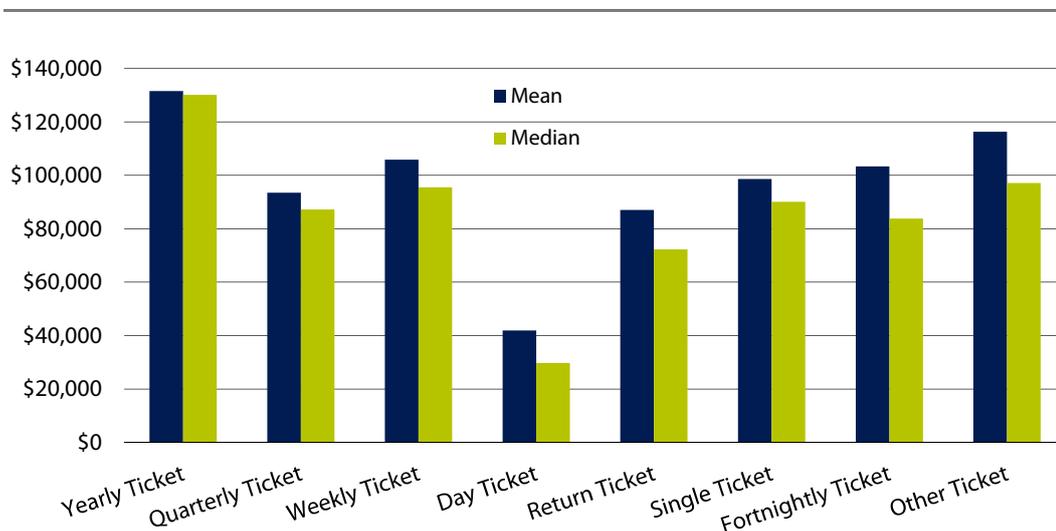
The BTS Household Travel Survey found that weekday passengers who use CityRail's periodical tickets (weekly/fortnightly/quarterly/yearly tickets) typically earn higher incomes than those who use single and return tickets (Figure 10.5). These periodical tickets attract a discount that increases with the time period of the ticket.

The survey also indicates that 76% of people using a periodical ticket are full-time workers,⁸² while 10% are in part-time or casual employment and 13% are full-time post-secondary students (Figure 10.6).

⁸¹ Bureau of Transport Statistics, Household Travel Survey 2010/11. A person may be counted in more than one category, for example if he or she travelled in both peak and off-peak.

⁸² Bureau of Transport Statistics, Household Travel Survey 2010/11. A person may be counted in more than one category, for example if he or she travelled on both a periodical ticket and a single ticket.

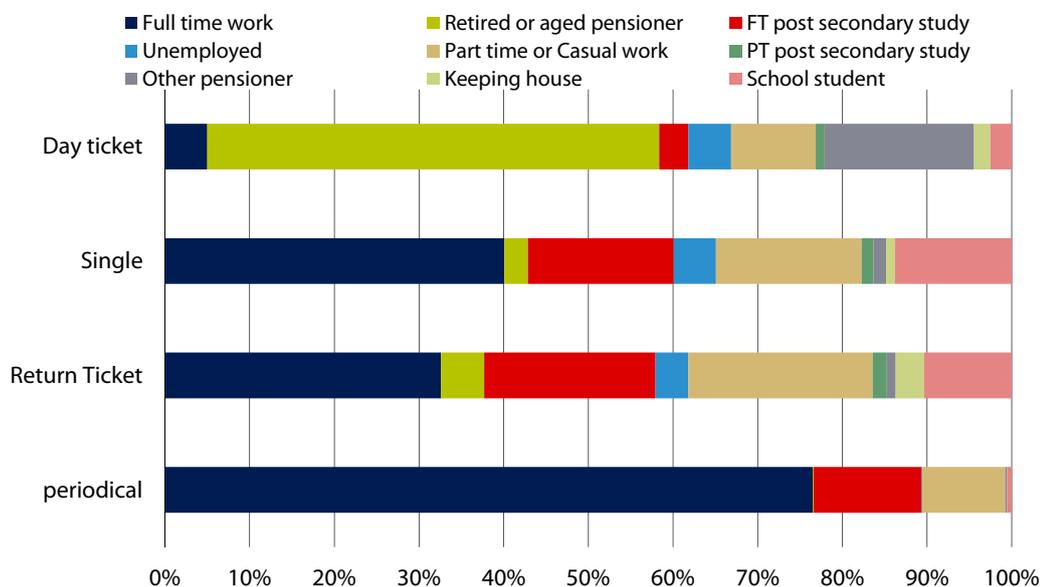
Figure 10.5 Weekday CityRail users – household income by ticket type, 2010/11 (\$2006)



Note: Chart relates to weekday CityRail users. Excludes children under 15.

Data source: Bureau of Transport Statistics, Household Travel Survey, 2010/11. Includes 5 waves (2006/07 to 2010/11) of data weighted to the June 2010 population.

Figure 10.6 Labour force status by ticket type, 2010/11



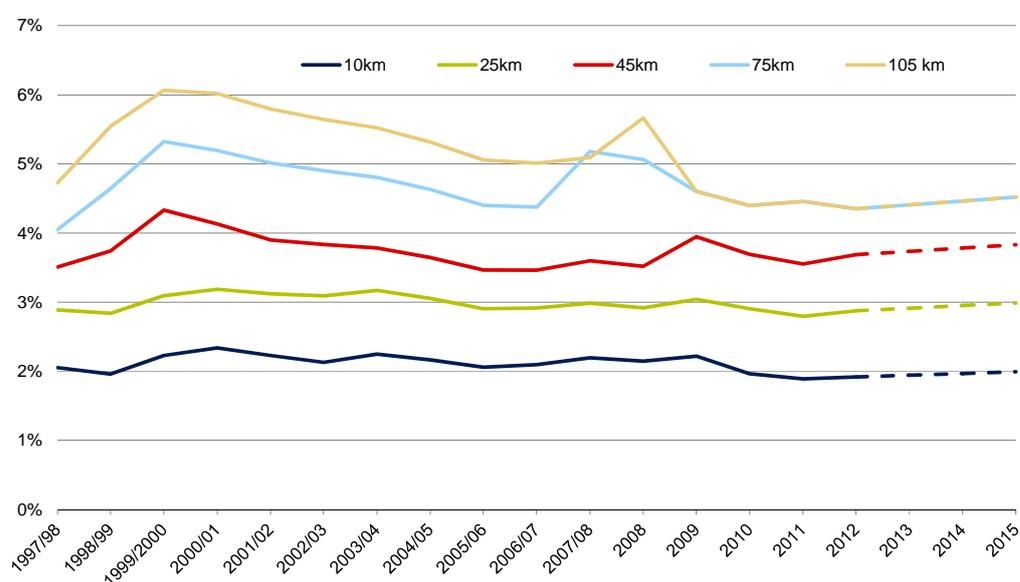
Note: A user may be counted more than once if they used more than 1 ticket type

Data source: Bureau of Transport Statistics, Household Travel Survey, 2010/11. Includes 5 waves (2006/07 to 2010/11) of data weighted to the June 2010 population.

10.2.5 Fares as a proportion of average adult ordinary time weekly earnings in NSW

Our analysis indicates that if the maximum average fare increases allowed under the final determination are applied, weekly fares for most distances will increase slightly as a proportion of average adult weekly earnings in NSW (Figure 10.7). Current weekly fares represent between 2% and 4.4% of these earnings, and we expect that by the end of the determination period this will represent between 2.0% and 4.5%. This proportion is higher than in 1997/98 but lower than in 2000/01.

Figure 10.7 Selected CityRail weekly fares as a proportion of average adult ordinary time weekly earnings 1997/98 – 2015, by distance bands



Note: The timing of fare changes is approximate between 1997/98 and 2007/08.

Data source: ABS, RailCorp and IPART.

10.2.6 Use of concession tickets

As Figure 10.8 shows, only around 60% of all trips on CityRail services are made for the full fare. Passengers using pensioner or student concessions⁸³ make around 23% of all trips, while children paying child fares or travelling for free⁸⁴ make around 13%.

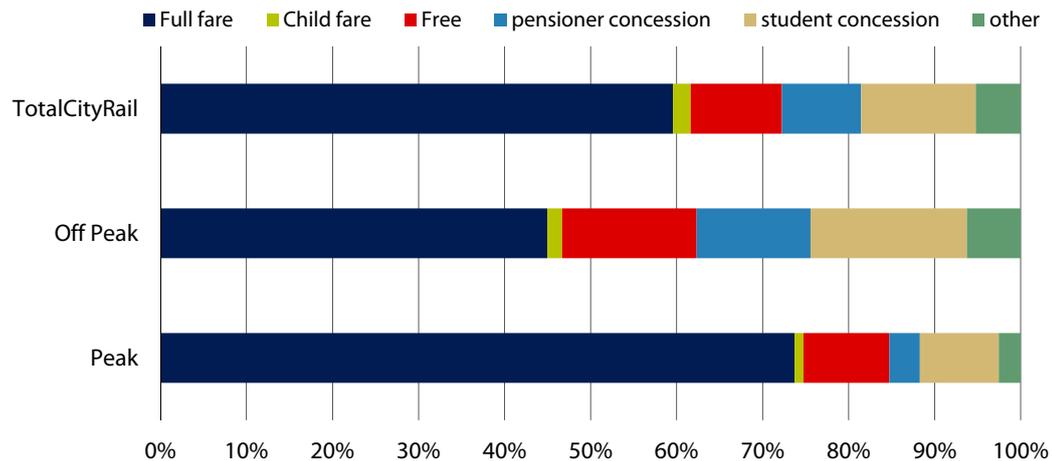
During weekday peak periods, a higher proportion of trips are made on full fare tickets (74%). Passengers travelling on pensioner or student concession fares make 13% of trips, and children paying child fares or travelling free make 11%.

⁸³ Access to concession tickets depends on the particular circumstances of the traveller and the level of concession varies across these groups.

⁸⁴ Either because they are too young to pay or have a school pass.

In the weekday off peak period, only 45% of trips are made on full fare tickets. Those using pensioner or student concessions make 31% of trips, and children paying child fares or travelling free make 17%.

Figure 10.8 CityRail weekday trips by fare type, 2011



Data source: Bureau of Transport Statistics, Household Travel Survey, 2010/11. Includes 5 waves (2006/07 to 2010/11) of data weighted to the June 2010 population.

While our fare determination does not affect pensioner concession tickets,⁸⁵ it does affect some other concession fares as these are generally linked to the prices we set. We consider that the impact of the final determination on these fares, and the passengers that have access to them, is reasonable. In our view, the current concession program will mitigate the impact of the proposed fare increases for lower income passengers.

10.3 Implications for the NSW Government

Under our approach to this determination, the level of government subsidisation we have assumed reflects our view on the value of external benefits to the broader community (and not just passengers) that are provided by CityRail services.

If the Government chooses to increase fares in line with the maximum average increase allowed under the final determination, the fares collected from CityRail passengers should recover 28% of CityRail's estimated efficient costs. However, if the Government chooses to increase fares in line with inflation, as it did this year, the Government will forego approximately \$56 million of farebox revenue over the next 3 years (Table 10.3). Should fares only increase in line with

⁸⁵ As these fares are set by the Government.

inflation over the longer term, the fares collected from CityRail passengers will recover an increasingly small proportion of CityRail's efficient costs (Table 10.3).

In addition to this, if CityRail also continues to spend more than the allowances we consider appropriate, we estimate that foregone fare revenue and inefficient expenditure would amount to a total of \$1.5 billion which need not be collected as taxes or could be spent on other services, such as health and education.

**Table 10.3 Expected revenue from fares and passenger shares
(2012 \$ million, calendar years)**

	2013	2014	2015	2016	2017	2018	2019
Amount passengers should fund through fares (1.3% real increases)	739	757	775	794	814	834	854
Revenue from fares with no real increases	729	738	747	756	765	774	783
Revenue foregone with no real increases	9	18	28	38	49	60	71
Amount passengers should fund through fares as a % of costs to be shared	28%	28%	28%	28%	28%	28%	28%
Revenue from fares with no real increases as % of costs to be shared	28%	28%	27%	27%	26%	26%	26%

We note that the Government's contribution to CityRail on behalf of taxpayers also includes the cost of social policies that involve the provision of free or reduced fares for some passengers (such as pensioners and school students). While these social policies are a matter for Government and the costs fall outside the scope of our review, we consider that it is appropriate that these costs be paid for by taxpayers rather than passengers.

10.4 Implications for the environment

Section 15 of the IPART Act requires that we consider ecologically sustainable development in determining fares for train services.

In our view, the potential for pricing policies such as the structure and level of CityRail fares to help protect the environment is limited. There is no evidence that any alternative fare structure better encourages train usage than others. In addition, the relatively inelastic demand for rail services means that different fare policies are unlikely to create significantly different environmental outcomes. We consider that our decision to determine the maximum average price increase and our decision on the level of this increase are unlikely to lead to a significant change (either positive or negative) in the use of CityRail services.

However, we note that the *Protection of the Environment Administration Act 1991* (PEA Act) indicates that achieving ecologically sustainable development requires “the effective integration of economic and environmental considerations in decision-making processes”.⁸⁶ Our approach for making the final determination integrates these considerations by valuing the external benefits of CityRail services (which include environmental benefits) and using this value to guide our decision on how much of the efficient costs of these services should be funded by the Government. This placed economic and environmental impacts on a comparable footing, allowing for integrated decision making.

We also note that according to the PEA Act, ecologically sustainable development can be achieved through improved valuation, pricing and incentive mechanisms for incorporating environmental factors into valuation of assets and services. Our approach explicitly valued environmental factors such as reduced greenhouse gas emissions and air pollution and incorporated these values into the valuation of the external benefits of CityRail services.

⁸⁶ *Protection of the Environment Administration Act 1991*.



Appendices

A Matters to be considered

The *Independent Price and Regulatory Tribunal Act 1992* (IPART Act) requires the Tribunal to have regard to a number of factors when making determinations:

- ▼ the cost of providing the services concerned
- ▼ the protection of consumers from the abuse of monopoly power in terms of prices, pricing policies and standards of services
- ▼ the appropriate rate of return on public sector assets, including appropriate payment of dividends to the Government for the benefit of the people of New South Wales
- ▼ the effect on general price inflation over the medium term
- ▼ the need for greater efficiency in the supply of services so as to reduce costs for the benefit of consumers and taxpayers
- ▼ the need to maintain ecologically sustainable development
- ▼ the impact on pricing policies of borrowing, capital and dividend requirements of the government agency concerned and, in particular the impact of any need to renew or increase relevant assets
- ▼ the impact on pricing policies of any arrangements that the government agency concerned has entered into for the exercise of its functions by some other person or body
- ▼ the need to promote competition in the supply of services concerned
- ▼ considerations of demand management (including levels of demand) and least cost planning
- ▼ the social impact of the determination and recommendations
- ▼ standards of quality, reliability and safety of services concerned (whether those standards are specified by legislation, agreement or otherwise)
- ▼ any matter the Tribunal considers relevant.

Sections 16AE(5) and 28J(5) of the *Passenger Transport Act 1990* (PTA Act) require IPART to have regard to a number of factors when making determinations

- ▼ the cost of providing the services concerned
- ▼ the protection of consumers from abuses of monopoly power in terms of prices, pricing policies and standards of service
- ▼ the need for greater efficiency in the supply of services so as to reduce costs for the benefit of consumers and taxpayers
- ▼ the need to maintain ecologically sustainable development (within the meaning of section 6 of the *Protection of the Environment Administration Act 1991*) by appropriate pricing policies that take account of all of the feasible options to protect the environment
- ▼ the social impact of the determination
- ▼ standards of quality, reliability and safety of the services concerned (whether those standards are specified by legislation, agreement or otherwise) and any suggested or actual changes to those standards
- ▼ contractual arrangements prevailing in the industry
- ▼ such other matters as the Tribunal considers relevant.

B WACC

Determining the allowance for a return on assets to be included in CityRail's efficient costs is an important step in our review. The WACC for a regulated business is the expected cost of raising debt and equity, weighted to take into account their proportions in the capital structure. To determine this cost for CityRail, we used our usual approach for price setting purposes. This approach involves 2 steps:

1. Estimating the possible range for the WACC, by calculating values for each of the parameters that influence the cost of debt and the cost of equity in the regulated business.
2. Making a judgement on the appropriate point estimate for the regulated business' WACC within this range.

We then calculated the return on assets by multiplying the regulated asset base by this point estimate WACC value.

We last made a determination for a WACC to apply to CityRail in 2009. Since the 2009 determination, we have developed our approach to setting the WACC in a number of ways. We have adopted a post-tax financial model and WACC as it more accurately estimates the tax liability for a similar well-managed, privately-owned business.⁸⁷ Instead of accounting for company tax through the rate of return, tax is estimated as a separate cost building block. While CityRail (and RailCorp) do not pay tax we think it is important to apply the same approach to all the businesses we regulate. We have also changed our method to estimate the debt margin including Australian bonds issued in the US market and shortened the term-to-maturity assumption for the market-based parameters (ie, risk-free rate, debt margin and inflation adjustment) from 10 years to 5 years.

B.1 Summary of our final decision

We found that the real post-tax WACC range is 3.2% to 4.4% based on market conditions to 19 October 2012. The WACC range has decreased since our draft report decision because of a significant reduction in the debt margin.

⁸⁷ IPART, *The incorporation of company tax in pricing determinations – Final Decision*, December 2011, p 1.

As noted in our draft report, there is a discrepancy between the WACC calculated using 20-day averages compared to long term averages, and this discrepancy has further increased since mid-2012 (which was the basis for our WACC estimate in the draft determination). As shown in Table B.1, the midpoint WACC using the 20-day average of the market-based parameters (3.8%) is significantly lower than the midpoint WACC calculated using long-term averages (6.2%). In the current market circumstances, there is some evidence to support the view that expectations for the market risk premium have risen as bond yields have fallen. However, it is difficult to measure these short term variations in expectations for the Market Risk Premium (MRP).

In light of this, and consistent with our recent decisions for other industries on the WACC, we consider that the upper bound of the WACC range is appropriate for the assets used to provide CityRail services. We therefore made a final decision to use a real post-tax WACC of 4.4% to calculate the return on assets.

Our final decision on the industry-specific parameters is unchanged from our draft decision. Our final decision is to use the same industry-specific parameters – ie, equity beta, gearing and credit rating assumption – as were used in our 2009 determination. In coming to this view we considered evidence from publicly-listed companies that provide passenger and commuter rail services. We also considered the risks faced by an urban rail service provider, compared to operators of other modes of transport.

Our final decision on the WACC is summarised in Table B.1. Our final decision on the individual parameters is discussed below.

Table B.1 Rate of return range and parameters

Parameter	Final decision	Draft decision	Long-term average
Nominal risk-free rate	2.6%	2.6%	5.3%
Inflation adjustment	2.6%	2.5%	2.5%
Debt margin	2.7% to 3.4%	3.2% to 4.2%	2.3%
Market risk premium	5.5% to 6.5%	5.5% to 6.5%	5.5% to 6.5%
Debt to total assets (gearing)	60%	60%	60%
Equity beta	0.8 to 1.0	0.8 to 1.0	0.8 to 1.0
Cost of equity (nominal post-tax)	7.0% to 9.1%	7.0% to 9.1%	9.7% to 11.8%
Cost of debt (nominal pre-tax)	5.3% to 6.0%	5.9% to 6.8%	7.6%
WACC range (real pre-tax)	4.0% to 5.5%	4.6% to 6.2%	6.9% to 7.9%
WACC midpoint (real pre-tax)	4.7%	5.3%	7.4%
WACC range (real post-tax)	3.2% to 4.4%	3.8% to 5.1%	5.8% to 6.6%
WACC midpoint (real post-tax)	3.8%	4.4%	6.2%
WACC point estimate (real post-tax)	4.4%	5.1%	-

^a The midpoint WACC value of the 2009 determination was 8.0%. The points estimate WACC that was selected (7.2%) was below the midpoint.

^b The 2009 determination did not use a real post-tax WACC estimate. The pre-tax WACC has been converted into a real post-tax WACC as a guide only.

B.2 Nominal risk-free rate

The risk-free rate is used as a point of reference in determining both the return on equity and the cost of debt within the WACC. In both the cost of equity and the cost of debt calculation, the risk-free rate is the base to which a premium or margin is added to reflect the riskiness of the specific business for which the rate of return is being derived.

We have estimated the risk-free rate as the 20-day average of the yield on the nominal 5-year Commonwealth Government bond. As at 19 October 2012, this 20-day average is 2.6%. This approach results in decisions that best reflect prevailing market conditions.

B.3 Inflation adjustment

The inflation adjustment is used to convert nominal parameters into real parameters. We estimate forward inflation using the zero-coupon inflation-linked swap market data. We consider that using swap market data has several advantages over other approaches.⁸⁸ Our primary reason is that it is based on market observations and is therefore objective, repeatable and transparent.

As at 19 October 2012, the 20-day average of the Australian swap market implied inflation is 2.6%.

B.4 Debt margin

The debt margin is a premium that is added to the risk free rate of return to calculate the cost of debt. For a regulated business, the debt margin is influenced by the credit worthiness of the business, the gearing level, the maturity of the debt being issued, the supply and demand of the relevant debt markets at the time the debt is being raised and debt raising costs.

Since the 2009 determination, we have developed our approach to estimating the debt margin.⁸⁹ Consistent with our new approach, we have estimated the debt margin using the Australian 5-year Bloomberg fair value curve with BBB rating and Australian corporate bonds issued in the domestic and the US markets with BBB/BBB+ ratings by S&P. We have calculated 20-day averages for the sample of bonds and computed a median and an interquartile range.⁹⁰

⁸⁸ IPART, *Adjusting for expected inflation in deriving the cost of capital – Final Decision*, May 2009, p 2.

⁸⁹ IPART, *Developing the approach to estimating the debt margin – Final Decision*, April 2011.

⁹⁰ The interquartile range approach defines the upper bound using the top quartile, or top 25% of observations in our sample. Similarly, the lower bound of the range is defined by the lower quartile, or the bottom 25%. We then used the median observation as the midpoint of the range.

The debt margin values include the debt raising costs of 20 basis points. The interquartile range and median debt margin values as at 19 October 2012 are set out in Table B.2.

Table B.2 Debt margin calculation (20-day average to 19 October 2012)

	Low	High	Median
Debt margin (basis points)	270	342	302

Note: Includes 20 basis points for debt raising costs.

Source: Bloomberg.

As noted above, there has been a significant reduction in the debt margin between our draft and final decisions. For our draft decision, the interquartile range of the debt margin was 3.2% to 4.2% with a median of 3.6%. For our final decision, the interquartile range of the debt margin is 2.7% to 3.4% with a median of 3.0%.

B.5 Equity beta

The equity beta measures the extent to which the return of a particular security varies in line with the overall return of the market. It represents the systematic or market-wide risk of a security that cannot be avoided by holding it as part of a diversified portfolio. It is important to note that the equity beta does not take into account business-specific or diversifiable risks.

We have calculated the WACC using a range of 0.8 to 1.0 for the equity beta. Combined with a gearing assumption of 60% and compared to our past decisions for other modes of transport, our final decision implies that the level of systematic risk faced by CityRail is higher than the systematic risk faced by a bus service operator, but lower than that faced by a ferry operator. Once de-levered, the asset beta implied by our final decision is higher than the asset beta implied by our decision for buses⁹¹, and lower than that implied by our final decision for Sydney Ferries.⁹² We have used the Monkhouse formula to de-lever asset beta values to equity beta values.

Our assessment of the systematic risk faced by an urban rail service provider versus those faced by operators of other modes of transport confirm this position. Urban rail service providers have a large proportion of fixed costs, compared to bus and ferry companies, which means that hypothetically, they are unable to readily adjust their operations according to the level of economic activity. This characteristic results in a higher level of profit variability in the medium term. On the other hand, half of journeys made on CityRail are regular commuters.

⁹¹ IPART, *Review of fares for metropolitan and outer metropolitan bus services from January 2010 – Final Report*, December 2009, p 60.

⁹² IPART, *Review of fares for Sydney Ferries' services from January 2013 – Final Report*, September 2012.

Sydney Ferries has greater exposure to the tourism industry through its high proportion of tourist patronage.

We also considered evidence from publicly-listed companies that operated urban rail services when determining the industry-specific parameters. Our analysis of publicly-listed companies was inconclusive for a number of reasons. Firstly, there are limited relevant proxies for CityRail. There are no companies listed on the Australian stock exchange with a significant proportion of their revenue from urban rail services. Few are listed on overseas exchanges. Secondly, the market data is insufficiently reliable to empirically derive beta values and gearing levels for CityRail. This is because beta values and gearing levels of the companies within the sample ranged widely. Further, the beta values of overseas companies are relative to the market of issue, rather than the Australian market.

B.6 Market risk premium

The market risk premium (MRP) is the additional return over the risk-free rate of return that an investor requires for the risk of investing in a diversified equity portfolio. Our current approach is to estimate the MRP based on the long-term historical arithmetic average market returns over the risk-free rate. For this final decision and in other recent determinations, this approach values the MRP within the range of 5.5% to 6.5%.

We note that there may be an inconsistency between using short-term data for the market-based parameters and using long-term data for the MRP. In particular, there may be an inverse relationship between the MRP and the risk-free rate. In periods of high investor risk aversion, there is a flight from risky assets to safe assets. This tends to push up the price and push down the yields on safe assets. For this reason, falling risk-free rates tend to be associated with rising investor risk premiums (and vice versa).

As the size of any adjustment to the MRP is not clear at this stage, we have used our best estimates for each parameter, and have made a judgement when selecting the point estimate within the range. This helps maintain a consistent regulatory environment.

B.7 Gearing

The gearing ratio is the ratio of debt to total assets in the business' capital structure. In determining this ratio, our current practice is to adopt a benchmark capital structure (rather than the actual capital structure of the regulated entity) to ensure that customers will not bear the costs associated with an inefficient capital structure. This is consistent with regulatory practice in Australia.

In our final decision, we have assumed that a suitable level of gearing for an efficiently-run privately-owned urban rail company is 60%. We typically adopt a gearing level of 60% for other regulated transport companies. As noted in Section B.5, evidence from publicly-listed companies that provide urban rail services is inconclusive. We consider that a gearing level of 60% combined with an equity beta of 0.8 to 1.0 appropriately recognises the risks faced by an urban rail service provider.

C Quantity and quality of CityRail services

As Chapter 4 discussed, as part of our review, we looked at how CityRail performed against its service targets over the last determination period. As noted in Chapter 2, RailCorp's service standards (KPIs) have been revised since the rail services contract commenced on 1 July 2010 and that the full set of revised KPIs are not publicly available at this time. For this final report, we have based our assessment on information that is publicly available or has been provided to us by Transport for NSW and the targets set out in the original service contract executed 1 July 2010.⁹³ The sections below summarise our findings.

C.1 Quantity of services

The key indicators of service quantity are the number of passenger journeys (patronage), the number of services, and the number of service kilometres.

C.1.1 Patronage

Over the past 4 years, CityRail's patronage increased by 7.2% - from an estimated 283.3 million passenger journeys in 2007/08 to 303.5 million in 2011/12.⁹⁴ This equates to an annual average growth rate of 1.7%, which is above its 1.1% target. As Chapter 6 noted, patronage growth is primarily driven by population and CBD employment growth, factors which CityRail has no control over.

⁹³ IPART, *CityRail and Metropolitan and Outer Metropolitan Bus Services: Prices and Services Report 2011*, December 2011. References in this appendix to CityRail's performance against service contract targets relate to those set out in: The Director General of Transport NSW on behalf of the Crown in right of New South Wales and Rail Corporation NSW South Wales, *Rail Services Contract*, Executed 1 July 2010, Available from: <http://www.transport.nsw.gov.au/sites/default/files/b2b/rail/Rail-Services-Contract-Executed1July2010.pdf> unless otherwise stated.

⁹⁴ Patronage data provided by BTS upon request.

In 2010/11 Transport for NSW and RailCorp reviewed the methodology for measuring rail patronage.⁹⁵ The new method results in lower patronage figures but did not materially change historical growth patterns. The patronage data here are based on the new methodology.

C.1.2 Number of services

CityRail increased its total number of services per week by 10.7% (or 1,743 services) from 2007/08 to 2011/12. The largest increase was on the Northern line with a total increase of 863 services per week, but this includes the reclassification of some North Shore services to the Northern line.

The change in the number of services arriving in the city per weekday from 2007/08 to 2011/12 varied widely across lines – from an increase of 74 services per day (into the city) on the Northern line, to a decrease of 4 services a day on the Inner West Line.⁹⁶ In total, there were 75 extra services across the network into the city per weekday. The number of services arriving in the city per weekend day increased substantially on most lines, with the largest increase on the Eastern Suburbs line (46 services). In total, there were 167 additional services into the city on weekend days from 2007/08 to 2011/12.

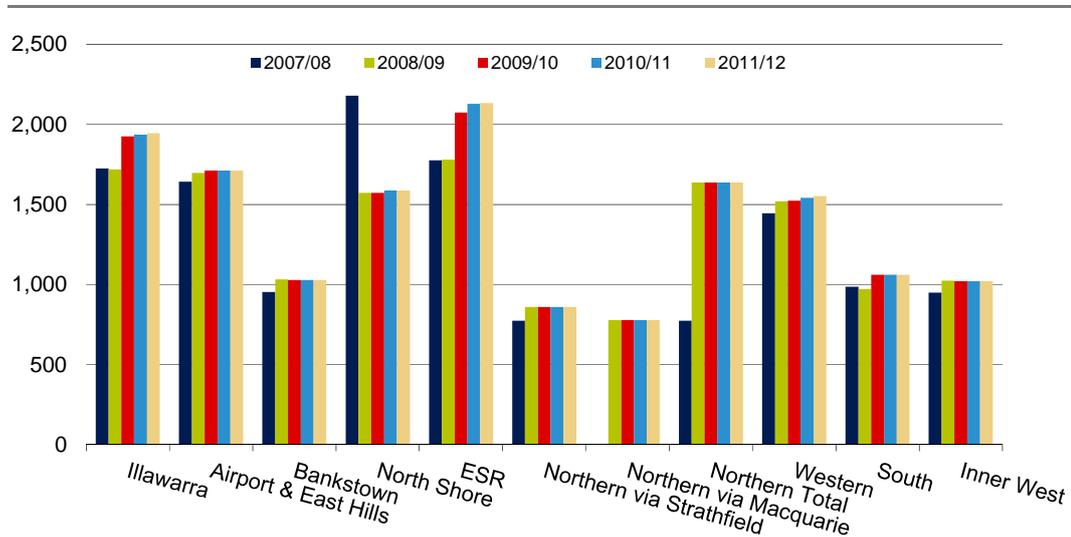
Figure C.1 and Figure C.2 show the change in the total number of services per week on each suburban and intercity line. Figure C.3 and Figure C.4 show the change in the number of services to the city per weekday and weekend day by line.⁹⁷

⁹⁵ Estimates of CityRail patronage are based on estimates of paid and unpaid journeys. Paid journeys are calculated from ticket sales and journey multipliers derived from surveys and automatic gate analysis. Unpaid journeys include free school passes, fare evasion, employee/Gold pass, ex-servicemen, disabled and police. Unpaid journeys had been treated as a constant for the past 10 years. Estimates of unpaid journeys are now based on the number of passes issued and usage rates as revealed by surveys and use of automatic gates. For further information see Bureau of Transport Statistics (BTS) Infosheet, *Enhanced methodology for rail patronage measurement*, October 2011.

⁹⁶ The number of services measured on the North Shore Line also fell. But this includes the integration of the Epping Chatswood Rail Link into the timetable, which meant that some services previously classified as North Shore line are now classified as Northern line services travelling from Hornsby to the City via Macquarie Park. These services continue to operate on the North Shore line south of Chatswood.

⁹⁷ The trends in timetabled services from the city are broadly the same.

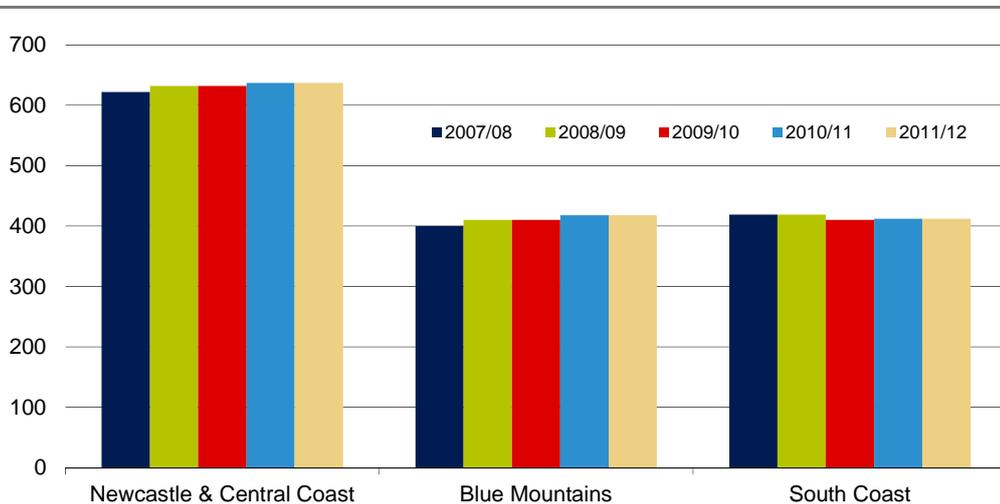
Figure C.1 CityRail number of services per week by suburban line, 2007/08 to 2011/12



Note: For 2008/09 onwards the Northern line has been reported as total northern line as well as broken into Northern line via Strathfield and Northern line via Macquarie Park (ie, via the Epping-Chatswood line). This Northern total has been included to provide some historical context. The services covered are only those going to and from the city. Some services previously allocated as North Shore services have been allocated to Northern via Macquarie since 2008/09.

Data source: Transport for NSW.

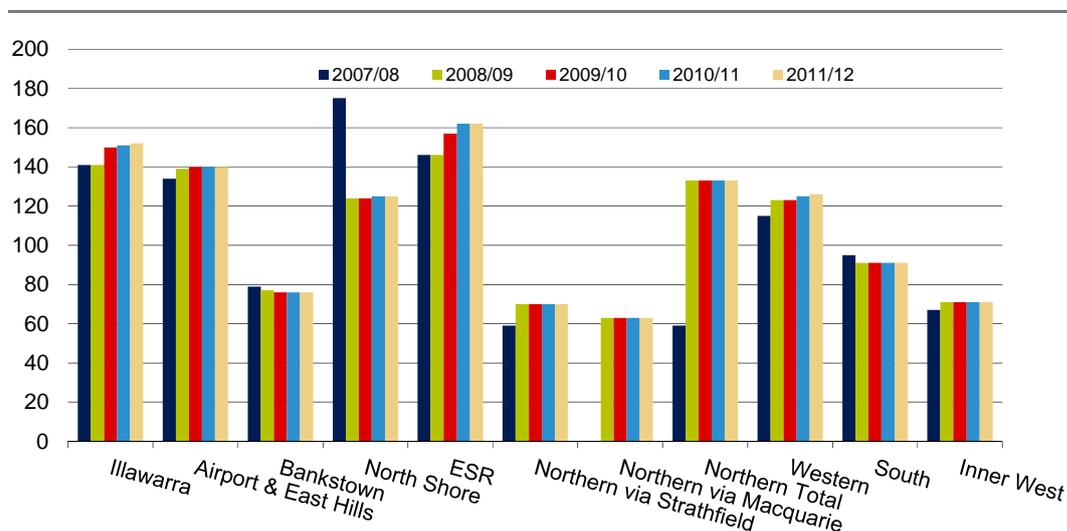
Figure C.2 CityRail number of services per week by intercity line, 2007/08 to 2011/12



Note: The services covered are only those going to and from the city.

Data source: Transport for NSW.

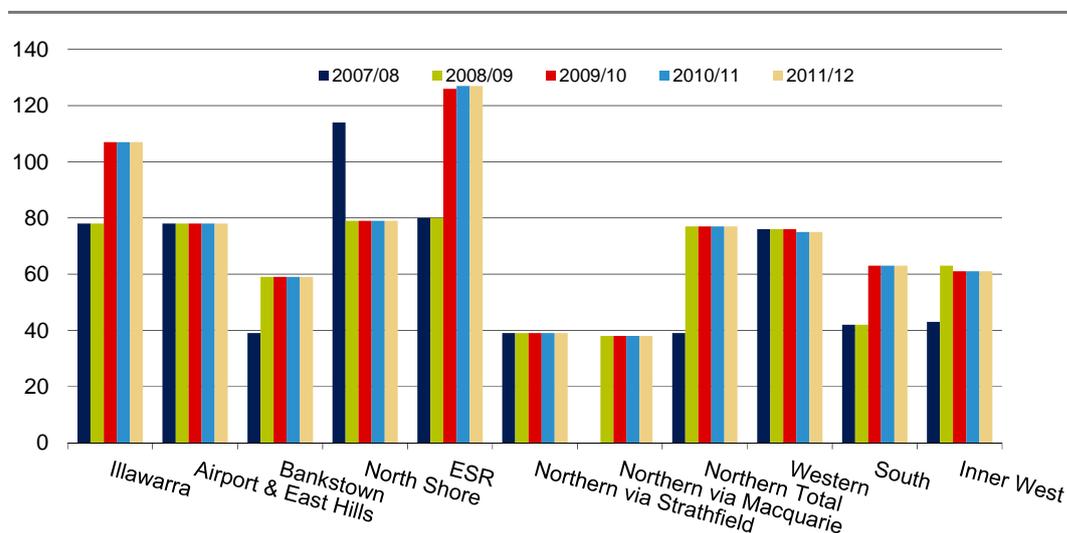
Figure C.3 CityRail number of services to the city per weekday, suburban lines, 2007/08 to 2011/12



Note: For 2008/09 onwards the Northern line has been reported as total northern line as well as broken into Northern line via Strathfield and Northern line via Macquarie Park (ie, via the Epping-Chatswood line). This Northern total has been included to provide some historical context. Some services previously allocated as North Shore services have been allocated to Northern via Macquarie since 2008/09.

Data source: Transport for NSW.

Figure C.4 CityRail number of services to the city per weekend day, suburban lines, 2007/08 to 2011/12



Note: For 2008/09 onwards the Northern line has been reported as total northern line as well as broken into Northern line via Strathfield and Northern line via Macquarie Park (ie, via the Epping-Chatswood line). This Northern total has been included to provide some historical context. Some services previously allocated as North Shore services have been allocated to Northern via Macquarie since 2008/09.

Data source: Transport for NSW.

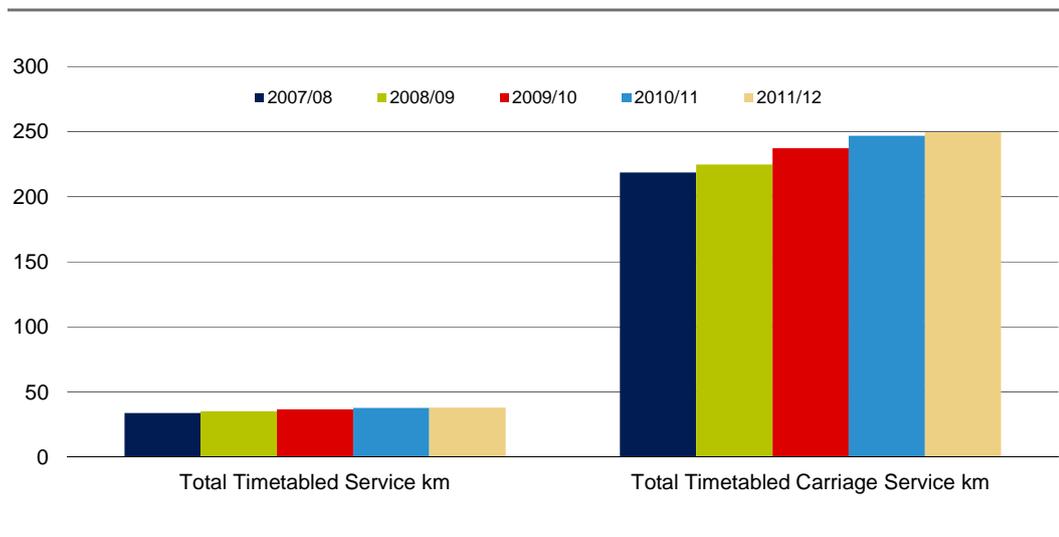
C.1.3 Service kilometres

The number of timetabled train and carriage service kilometres⁹⁸ increased over the 4-year period to 2011/12 (see Figure C.5). Train service kilometres increased by 12.2% and carriage service kilometres increased 14.1% from 2007/08 to 2011/12. Contributors to this growth were:

- ▼ a 10.7% increase in the number of timetabled services
- ▼ the extension of some Sutherland services to commence at Cronulla, and
- ▼ the replacement of 6-car trains with 8-car trains on selected services on the Newcastle and Central Coast, South Coast and Blue Mountains lines.

Values provided by Transport for NSW show that train service kilometres increased by 0.6% and carriage service kilometres increased by 1.0% in 2011/12.

Figure C.5 CityRail annual train and carriage service kilometres, 2007/08 to 2011/12



Data source: Transport for NSW.

⁹⁸ Service kilometres refer to the total kilometres that timetabled revenue generating services travel. Carriage service kilometres are the total kilometres travelled by all carriages on timetabled revenue generating CityRail services.

C.2 Quality of services

The indicators of service quality include:

- ▼ reliability of services, which is measured by on time running, and cancelled services and missed stops
- ▼ journey delays and journey time, based on average timetabled train speed and total annual delay minutes
- ▼ crowding on trains in peak periods for each line of the CityRail network
- ▼ passenger security estimated by offences against the person per million passenger journeys⁹⁹, derived from the Bureau of Crime Statistics and Research data
- ▼ passenger comfort – estimated by the percentage of fleet less than 10 years old.

Note that not all information is collected or can be reliably disaggregated by line or by time of day (peak versus off-peak).

C.2.1 Reliability of services – on time running, cancelled services and missed stops

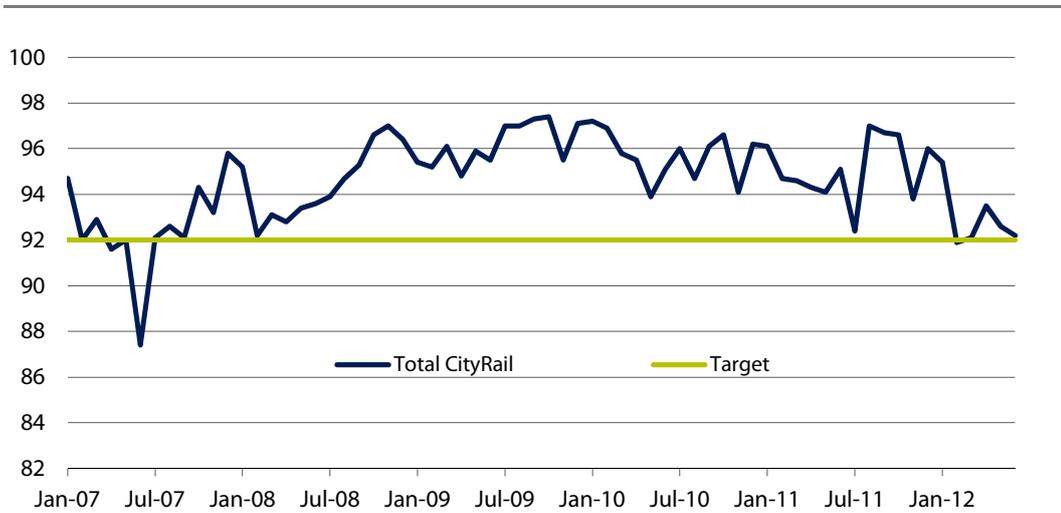
CityRail peak hour on time running¹⁰⁰ (OTR) improved across the network as whole, from 93.4% in 2007/08 to 96.3% in 2009/10, declining to 94.2% in 2011/12, remaining above the target of 92% after the figures are adjusted for force majeure events.

OTR performance can vary widely throughout the year and on different lines. Peak OTR only fell below the target of 92% briefly in February 2012 when it dropped to 91.9% (see Figure C.6).

⁹⁹ 'Offences against the person' includes assault, robbery, sexual offences and stealing from a person which occurs on or next to railway property. Statistics reflect incidents reported and recorded by NSW Police.

¹⁰⁰ On time is defined as the percentage of CityRail trains arriving at, or departing from Central station that are on time at their destination. 'On time' is defined as within 5 minutes of the timetabled time for suburban services and within 6 minutes of the timetabled time for intercity services.

Figure C.6 CityRail peak on-time running, January 2007 to June 2012

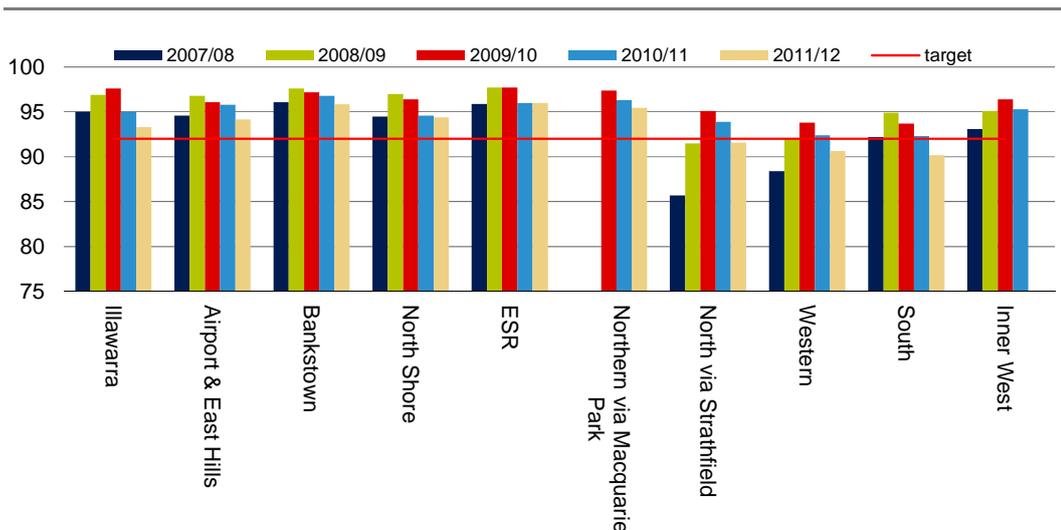


Note: All numbers in this figure have been adjusted for Force Majeure.

Data source: CityRail website.

OTR has varied across the network over the last few years (Figure C.7 and Figure C.8).¹⁰¹ As noted in Chapter 4, we do not currently have data for OTR by line after adjusting for force majeure events. On an unadjusted basis, Figure C.7 indicates that OTR improved to 2009/10 and has since declined, across all lines. In 2011/12 the South (90.2%), Western (90.6%) and North via Strathfield (91.6%) lines fell below 92%.

Figure C.7 CityRail peak hour on-time running by suburban line, 2007/08 to 2011/12^a



Note: OTR data is unadjusted for Force Majeure.

Data source: Transport for NSW.

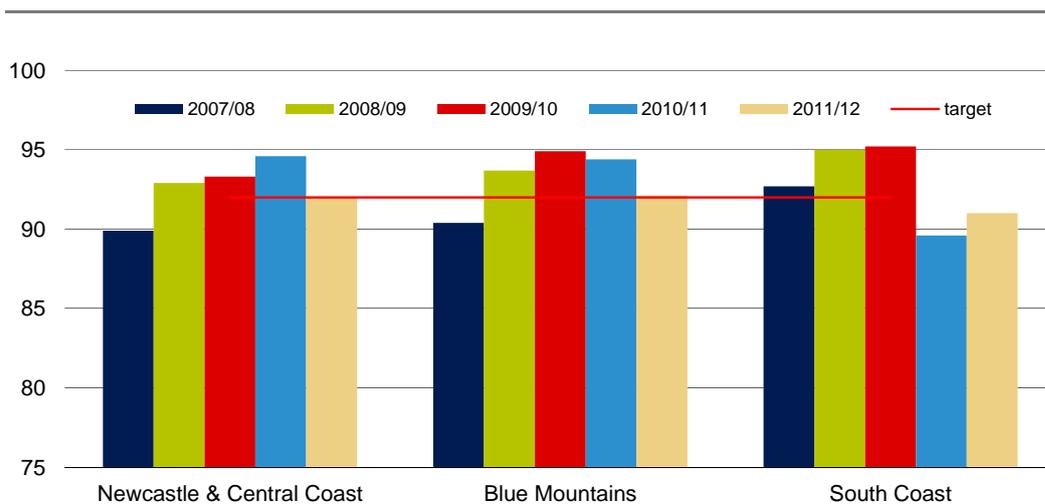
¹⁰¹ We note however that OTR by line is presented unadjusted for force majeure.

Peak period OTR performance for the intercity lines generally followed the same trend as the suburban lines (increasing to 2009/10 and has since declined). In 2011/12, the South Coast (91% of peak period trains on time) was below 92%. The Newcastle and Central Coast line peak on time recorded 92% of peak hour trains on time in 2011/12, which is a decline from 2010/11 (94.6%).

Transport for NSW has indicated that the low performance of the South Coast line in 2010/11 (89.6%) was due to timetable changes in October 2010, which meant that on the South Coast line there were tight timeframes for trains crossing the path of another train. This resulted in delays whenever trains were running slightly behind schedule and subsequently caused knock-on delays. It has also indicated that this problem has now been corrected resulting in the improvement in peak on time running in 2011/12.

The Blue Mountains line achieved peak hour on time running above 92% target (92.1%). This is a decline from its performance in 2010/11 (94.4%).

Figure C.8 CityRail % of peak hour on time running by intercity line, 2007/08 to 2011/12



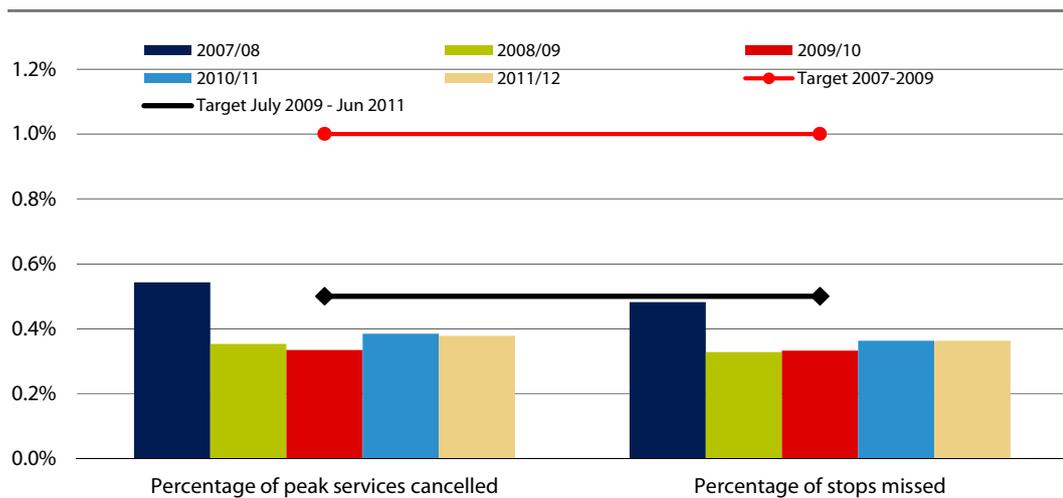
Note: OTR numbers are not adjusted for Force Majeure.

Data source: Transport for NSW.

The 2011 BTS survey found that 74% of CityRail passengers were satisfied with CityRail services being on time. This is higher than the level of satisfaction among bus passengers (55% satisfied), but lower than that among ferry passengers (91% satisfied).¹⁰² As the BTS used a new survey methodology it's not possible to comment on trends over time. The Cumberland¹⁰³ and South lines had the lowest levels of satisfaction on this aspect of service – with around two thirds of respondents satisfied and 21% and 17% respectively dissatisfied.¹⁰⁴

The percentage of peak hour services cancelled at a network level measured over the year fell to 0.33% in 2009/10 (from 0.54% in 2007/08) then increased to 0.38% in 2010/11 and 2011/12. Scheduled peak hour train stops missed at a network level measured over the year fell to 0.33% in 2008/09 (from 0.48% in 2007/08) before rising to 0.36% in 2010/11 and 2011/12. From July 2009 to June 2011, the targets for these measures were less than 0.5% of peak hour train services cancelled and 0.5% peak hour stops skipped. In prior years, the target was a maximum of 1% of peak hour trains cancelled or stops skipped (See Figure C.9).

Figure C.9 CityRail peak hour service cancellations and skipped stops, 2007/08 to 2011/12



Data source: Transport for NSW.

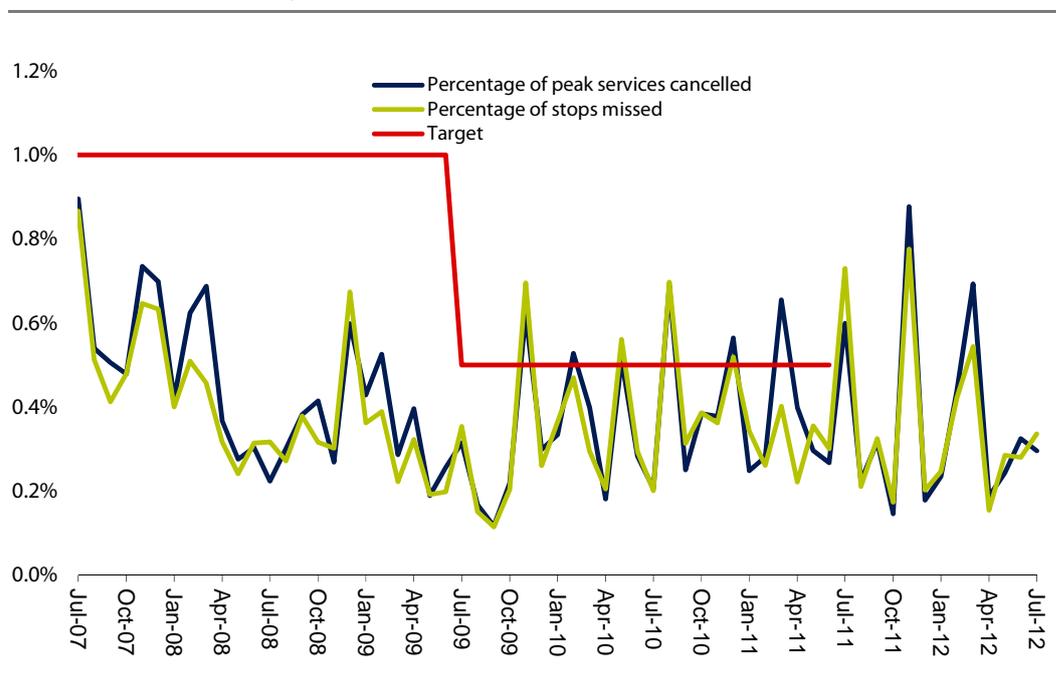
Over the period 2007/08 to 2010/11 CityRail has not met its monthly target for peak service cancellations and skipped stops several times.

¹⁰² Bureau of Transport Statistics, 2011 Transport customer survey - customer satisfaction with Public Transport Services, 2011, p 15.

¹⁰³ The Cumberland line operates between Blacktown and Campbelltown. Trains on this line do not travel into the Sydney CBD where on time running performance is assessed. Consequently reliability of services on this line is not currently captured in these statistics.

¹⁰⁴ Bureau of Transport Statistics, 2011 Transport customer survey - customer satisfaction with Public Transport Services, 2011, p 53.

Figure C.10 CityRail peak hour service cancellations and skipped stops monthly performance, 2007/08 to 2011/12

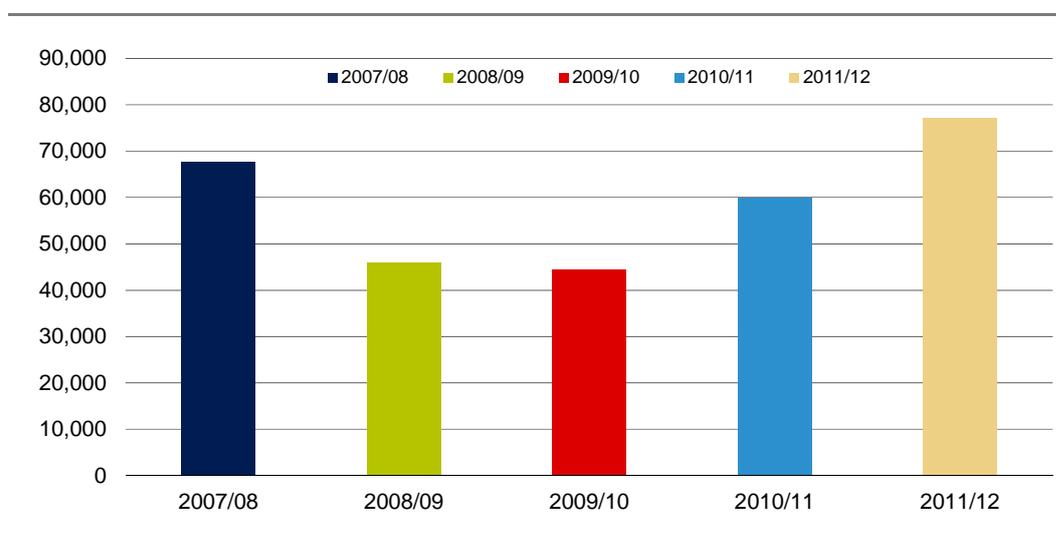


Data source: Transport for NSW.

Journey delays and journey time

Total minutes of delay during peak periods and average speed of trains as scheduled in the timetable can be used as proxy measures of journey delays and journey times. The total annual minutes of peak hour delays decreased by 34% from 2007/08 to 2009/10, then increased by 73% over the two years to 2011/12.

Figure C.11 CityRail total annual minutes of delay, peak services, 2007/08 to 2011/12



Data source: Transport for NSW.

Average timetabled train speeds have not changed much over the last few years – suggesting no change in timetabled journey times.

The BTS survey found 71% of train passengers were satisfied with travel times considering the distance travelled. This was a lower satisfaction level than among bus and ferry passengers.¹⁰⁵

C.2.2 Crowding on trains

As explained in Chapter 4 we will be reporting on their previous service standard under the Rail Performance Agreement,¹⁰⁶ which stated that no more than 5% of peak hour services should exceed 135% of passenger seating capacity. Although this is not the official loading target for CityRail it is still a measure of crowding on the network.

Services that exceed 135% of passenger seating capacity are equivalent to fewer than 2 people standing per square metre of standing space, well within the global benchmark of no more than 4 passengers standing per square metre.

In the past 4 years, CityRail has improved its performance against this measure. During the morning peak (7am-10am), services exceeding 135% seating capacity fell from 16% in March 2008 to 11% in March 2012. The highest levels of overcrowding occurred between 8am and 9am, with 25% of services exceeding 135% of seating capacity. (See Figure C.12 and C.13.)

In the afternoon peak hours (4pm-7pm), services exceeding 135% seating capacity fell from 9% in March 2008 to 5% in March 2012, with the highest levels of overcrowding between 5pm and 6pm. For this hour, 10% of services exceeded 135% of seating capacity.

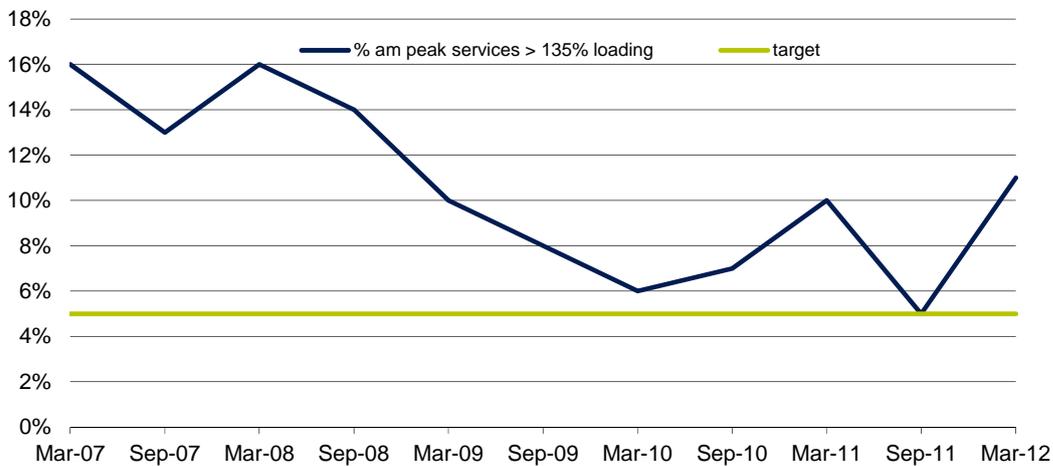
The BTS survey found that 19% of train passengers were dissatisfied with crowding, compared with 11% of bus passengers.¹⁰⁷

¹⁰⁵ Bureau of Transport Statistics, *2011 Transport customer survey - customer satisfaction with public transport services*, 2011, p 15.

¹⁰⁶ Until 31 December 2008, RailCorp was a state owned corporation with benchmarks and targets set in a Statement of Corporate Intent and in the Rail Performance Agreement which was agreed to by the board and the portfolio Minister. On 1 January 2009, RailCorp became a statutory authority subject to the direction and control of the Minister for Transport. From 1 July 2009, the Statement of Business Intent and Rail Services contract are the relevant agreements with Treasury and Transport NSW.

¹⁰⁷ Bureau of Transport Statistics, *2011 Transport customer survey- customer satisfaction with Public Transport Services*, 2011, p 19.

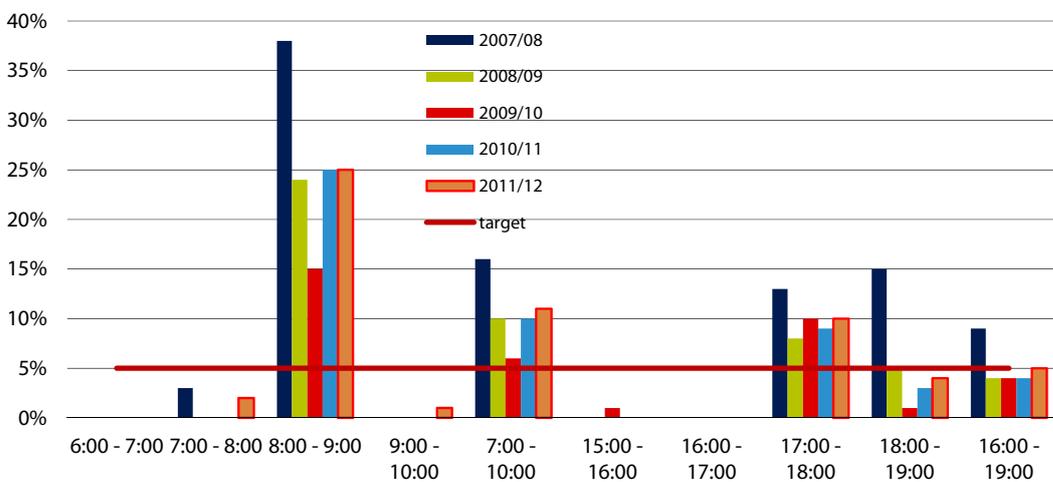
Figure C.12 Crowding of CityRail services in the am peak 2007-2012



Note: AM peak services above 135% loading are measured in March and September.

Data source: Transport for NSW.

Figure C.13 CityRail crowding of services by time of day 2007/08 to 2010/12



Note: Crowding is measured twice per year, in March and September. This graph is based on March data. Note target applies to average crowding across the whole peak.

Data source: Transport for NSW and CityRail website.

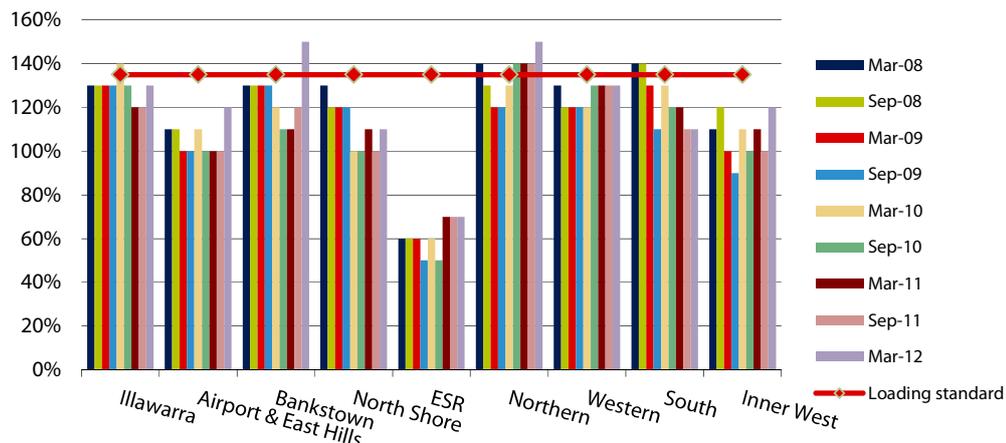
Crowding by line

Over the past 4 years, there was wide variation in the average load factor by line. However, during the business morning peak hour (Figure C.14), on most suburban lines, there were only a few instances where this average factor was above the RailCorp’s loading standard of 135% (with the exception of the Northern line). These include:

- ▼ In March and September 2008, the South line had an average load factor of 140%.
- ▼ In March 2010, the Illawarra line had an average load factor of 140%.
- ▼ In March 2012, the Bankstown line had an average load factor of 150%.

During the busiest afternoon peak hour (Figure C.15), the average load factor did not exceed 135% on any of the suburban lines.

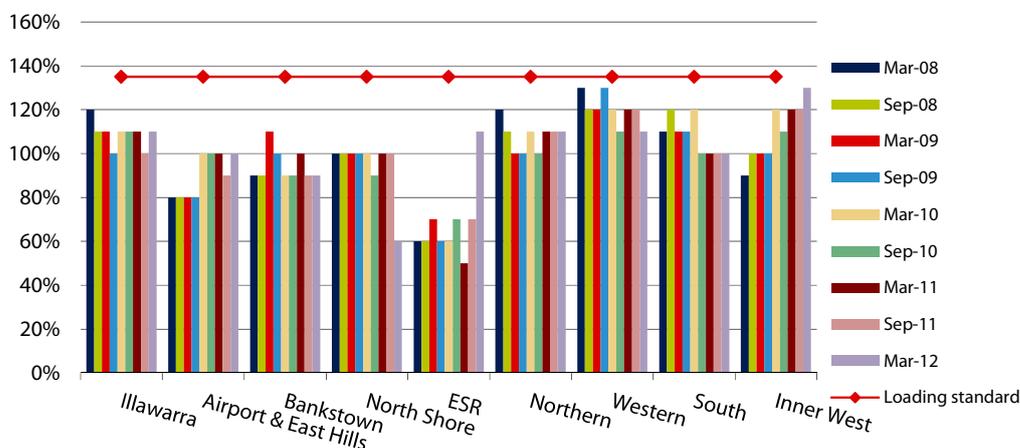
Figure C.14 Average load factors by suburban line in busiest am peak hour, March 2008 to March 2012



Note: North Shore includes Northern via Macquarie Parl and Central Coast via North Shore services. Northern includes Northern via Strathfield only.

Data source: Transport for NSW and CityRail website.

Figure C.15 Average load factors by suburban line in busiest pm peak hour, March 2008 to March 2012



Note: North Shore includes Northern via Macquarie Parl and Central Coast via North Shore services. Northern includes Northern via Strathfield only.

Data source: Transport for NSW and CityRail website.

Although only the Northern line experienced average crowding above 135%, the BTS survey shows more than 1 in 5 passengers were dissatisfied with seat availability on the Cumberland line (36%), South (23%), Western (22%), East Hills (21%) and Bankstown (21%) lines.¹⁰⁸ Note that crowding is not measured on the Cumberland Line in the figures provided above, as it does not go into the city.

Transport for NSW advised¹⁰⁹ that to address crowding levels:

- ▼ extra services will be added during the high peak wherever track capacity permits
- ▼ extra services will be added during shoulder peaks, and
- ▼ stopping patterns will be redesigned to facilitate more balanced passenger loads on trains.

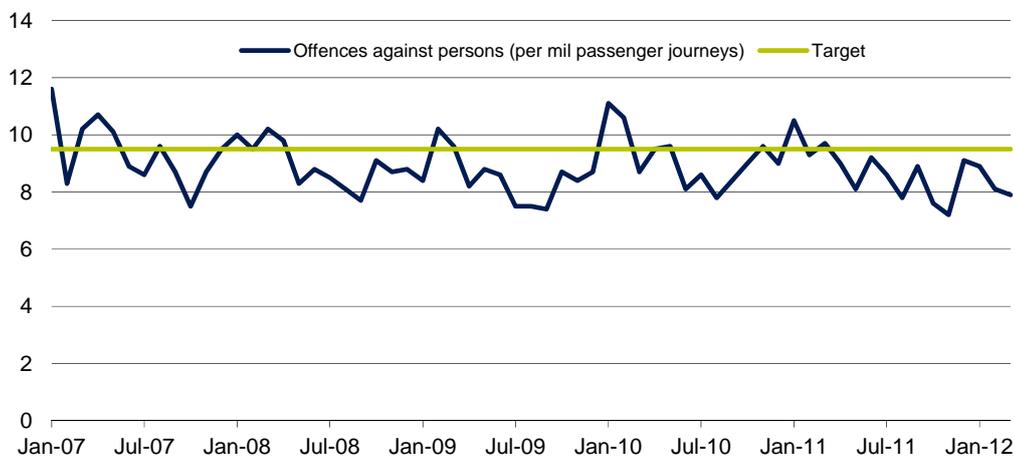
¹⁰⁸ Bureau of Transport Statistics, 2011 Transport customer survey- customer satisfaction with Public Transport Services, 2011, p 53.

¹⁰⁹ Correspondence with Transport for NSW, December 2011.

C.2.3 Passenger security

CityRail reports on the average monthly number of offences against persons occurring on or adjacent to railway property per million passenger journeys. CityRail's target is for there to be less than 9.5 offences per million passenger journeys.¹¹⁰ Over the past 4 years, the number of reported incidences of these offences has increased, from 8.8 per million passenger journeys in 2008/09 to 9 per million passenger journeys in 2010/11.¹¹¹

Figure C.16 CityRail reported offences against persons, January 2007 to March 2012



Note: Offences against persons includes assault, robbery, sexual offences and stealing from a person which occurs on or next to railway property. Statistics reflect incidents reported and recorded by NSW Police.

Data source: Transport for NSW, based on Bureau of Crime Statistics and Research data.

C.2.4 Customer perceptions of security, train cleanliness and provision of information to passengers

In the absence of a more targeted indicator, we used the percentage of the fleet less than 10 years old as an indicator of trends in passenger comfort. In general, more modern carriages are air-conditioned and more comfortable than older carriages. Transport for NSW has also provided information about the proportion of the fleet which is air-conditioned. Figure C.17 indicates 25% of the fleet is less than 10 years old, a substantial increase over the previous year. We note that in 2011/12, 72 Waratah cars (or nine 8 car sets) and 42 OSCAR cars were brought into service.¹¹²

CityRail also reports on the share of cars cleaned daily. This has been 100% of cars for each of the past 4 years.

¹¹⁰ RailCorp, *Annual Report 2009-10*, p 19, also see the Rail Service Contract, p 47.

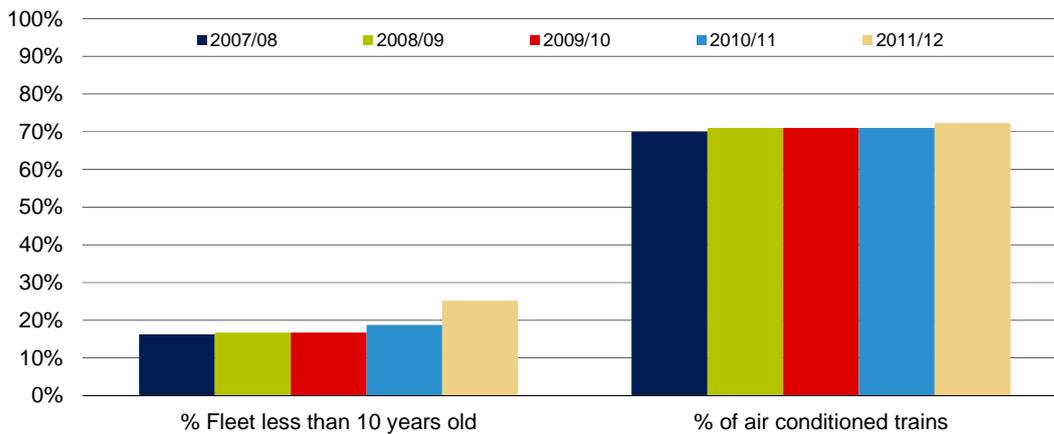
¹¹¹ These statistics are based on Bureau of Crime Statistics and Research (BOSCAR) data.

¹¹² Information provided by RailCorp.

The BTS survey indicates:

- ▼ 22% of train passengers are dissatisfied with comfort at the station (higher than for bus passengers, 20%)
- ▼ 20% of train passengers are dissatisfied with temperature level on trains (higher than for buses, 10%).¹¹³

Figure C.17 CityRail age of fleet and air conditioned trains 2007/08 to 2011/12



Data source: Transport for NSW.

¹¹³ Bureau of Transport Statistics, *2011 Transport customer survey- customer satisfaction with Public Transport Services*, 2011, p 27.

D Applying the average fare increase to individual fares

As Chapter 9 discussed we decided to set a maximum average increase in fares rather than maximum fares for all tickets. We have developed a set of pricing objectives Transport for NSW should adhere to in setting fares for CityRail services and multi-mode tickets. We have also established a compliance process to check that Transport for NSW's fares are within the determined maximum average increase. This section explains the process for ensuring that the individual fares proposed by Transport for NSW comply with our determination, including:

- ▼ how we measure the average fare increase
- ▼ the pricing objectives the Transport for NSW should have regard to when setting individual fares
- ▼ the process for fare changes, including:
 - the timing for fare changes
 - the information we require as part of Transport for NSW's pricing proposal.

D.1 IPART determines the maximum average fare increase

Our final decision is to determine the maximum average increase for fares. Transport for NSW will then set the fares for individual tickets so that the average fare increase is equal to, or below the average increase set by IPART (weighted by ticket sales).

Transport for NSW can choose to increase all fares by the average fare increase. Alternatively, it may increase some fares by more than the average, provided that these increases are offset by changes in other fares that are lower than the average increase.

Our determination allows fares to increase by an average of 3.6% nominal in 2013 and 3.8% nominal per year in 2014 and 2015.¹¹⁴ We will check that the fare increase does not exceed IPART's maximum by calculating the revenue generated in the current year with current prices and ticket sales, and making sure the increase in revenue generated in the next year from the proposed prices and current ticket sales does not exceed our average increase. Section D.4.1 explains how fares are weighted when there are significant changes to rail fares, for example where fares are added, removed, or the relativities between fares change so that customers would use different tickets.

If Transport for NSW increases fares by less than the allowed increase in one year, in the following year Transport for NSW can increase fares by the allowed increase for that year compared to the average fare that would have been charged **had Transport for NSW increased fares by the maximum increase**. In practice, this means that the revenue forgone in one year will be added to the revenue allowance in the next year (and increased by the average allowed increase).

Box D.1 provides a worked example of how we ensure that the proposed fares do not exceed our average fare increase.

¹¹⁴ 1.3% real increase + inflation. The level of inflation may vary in each year of the determination period.

Box D.1 How we check that the proposed fares do not exceed our average fare increase

Consider CityRail has 3 different hypothetical fares. In year 1 the revenue is calculated by multiplying the fares by the number of ticket sales made on each fare during that year.

Fares for year 1

Fare	Price	Number of ticket sales (year 1)	Revenue
	a	b	a * b
Single	\$4	300	\$4*300 = \$1,200
Return	\$8	140	\$8*140 = \$1,120
Weekly	\$32	80	\$32*80 = \$2,560
Total revenue			\$4,880

To set fares for year 2, we increase the total revenue in year 1 by the average fare increase allowed to calculate the revenue allowed for year 2. For an average increase in year 2 of 3.6%, the total revenue allowed in year 2 will be $\$4880 * (1 + 3.6\%) = \$5,056$

The fares for year 2 must be set so that the revenue does not exceed this amount. The table below shows that the revenue for year 2 is the product of the proposed fares, and the number of ticket sales for each fare from **year 1**.

Fares for year 2

Fare	Proposed price year 2	Number of boardings (year 1)	Revenue
	c	d	c * d
Single	\$4.20	300	\$1,260
Return	\$8.20	140	\$1,148
Weekly	\$33	80	\$2,640
Total revenue			\$5,048

The proposed fares for year 2 in the table above would comply with our average fare increase because the total revenue is less than the allowed revenue - \$5,048 is less than \$5,056. In year 3, the revenue forgone in year 2 (\$8) will be increased by the average increase allowed for year 3 and added to the revenue allowance for year 3.

D.1.1 Which fares are included in the average increase calculation?

All fares will contribute to the average increase except:

- ▼ Pensioner excursion ticket (PET) and Family Funday Sunday. These fares are set separately by Transport for NSW.
- ▼ Trial products.¹¹⁵

Concession fares

IPART does not set concession fares. However, all ticket sales for concession fares will be added to the ticket sales for the equivalent adult fare for the purposes of calculating the average change in fares.

MyMulti fares

MyMulti fares can be used across all modes of public transport in Sydney (except the monorail, and private ferry services). The fares for MyMulti products are set under the CityRail determination. In calculating the average change in fares we will include 50% of total MyMulti ticket sales as this represents the usage of MyMulti products on CityRail's network.

D.2 Pricing objectives the Transport for NSW should have regard to when setting individual fares

Setting individual fares involves balancing a competing set of objectives - economic efficiency, revenue sufficiency, affordability, equity, and simplicity. A wide range of fare outcomes can be contemplated depending on the weight assigned to these policy objectives. These are explained in further detail below:

Efficiency

- ▼ For efficiency reasons it is important that the prices charged reflect the efficient cost of providing the services. Generally, the cost of providing public transport services such as CityRail services increases with the distance. Therefore, to be cost reflective the fares should also increase with the distance travelled.
- ▼ Fares can assist in alleviating congestion on trains in peak periods, and they can demonstrate where money should be invested in the future. For example, public transport services travelling into and from the Sydney CBD during peak periods are becoming increasingly congested. To ease this congestion

¹¹⁵ A trial fare is a fare:

- that is forecast to contribute less than 0.1% of ticket sales and 0.1% of fare revenue
- for which there is already an approved product that can be used on the route.

A fare will cease to be a 'trial fare' if it exceeds the revenue or ticket sales thresholds, or is continued in the next pricing period.

peak period pricing could be used to incentivise passengers to change travel times. In addition, peak period pricing can also highlight that the existing system is meeting its capacity constraints and that future investment is needed.

- ▼ The Opal will have the ability to provide further options for price signalling including peak and off-peak pricing. The effectiveness of these types of price signals depend on passengers' willingness to shift travel to off-peak periods. This depends on several factors such as passengers' ability to shift travel patterns, price elasticities and the relativities of off-peak discounts to weekly and other periodical ticket discounts.

Revenue sufficiency

- ▼ Fares need to increase above CPI in the 2013 determination period to transition to a level that ensures passengers and taxpayers each fund a fair share of the costs. We consider that passengers should fund 28% of CityRail's efficient costs.

Price stability and simplicity

- ▼ Large increases or 'price shocks' for individual tickets should be avoided.

Equity and affordability

- ▼ Usage patterns (frequency, length of journey and time of day) should be considered when pricing tickets.
- ▼ Frequency discounts may be appropriate to encourage usage.
- ▼ Equity and affordability involves considering the impact of fare changes on households. Impacts will vary between regular commuters and occasional passengers.

D.3 Process for fare changes

D.3.1 Annual fare change

Under our final determination, Transport for NSW can change fares at any time up to the maximum average increase allowed by IPART, however we expect normally that fares would change only once a year. Typically, public transport fares (bus, rail and ferries) change each January.

Before the annual price change, Transport for NSW is required to submit a pricing proposal to IPART. Table D.3 shows the timing for the 2013 fare change for CityRail.

Table D.1 Compliance and fare change process 2013

	Date
IPART publishes our final determination on the average fare change	28 November 2012
Transport for NSW submits its pricing proposal to IPART	Early December 2012
IPART approves the new fares where they comply with the determination and publishes the new fares on its website	Mid December 2012
New fares apply	6 January 2012

D.3.2 Information that will be required in the pricing proposal

For each proposed fare change we will require Transport for NSW to submit a pricing proposal that proposes fares that comply with our average price cap.

As part of each pricing proposal Transport for NSW will be required to provide sufficient information to explain its fares and how they:

- ▼ pursue economic efficiency, for example, how the prices:
 - reflect fixed and marginal costs
 - send signals about services that are close to capacity and locational congestion and related capital investment the is required across the network
 - reflect the level of service, including data on performance measured against key service standard indicators
- ▼ target the revenue requirement, for example:
 - if the average fare increase is lower than the maximum average fare increase determined by IPART, an explanation as to why it has chosen to forgo revenue, and the impact on the level of subsidy per household in NSW
- ▼ address affordability issues.

The pricing proposal should explain the reasons for any large relative movements in individual fares and the impact it is expected to have on customers. It should also clearly set out the medium term directions for prices and standards of service in order to allow current and potential users to take account of prices and service standards in their usage and locational decisions. It should indicate whether the medium term pricing strategies are likely to create material adjustment costs for some users.

D.3.3 Other fare changes

As previously mentioned, under our determination fares can be changed at any time up to the maximum average increase allowed by IPART. We expect normally that fares would change only once a year. However if Transport for NSW proposes to change fares more than once a year (for example by adding a new fare or removing a fare) we will review compliance in order to ensure that fare levels do not exceed the increases allowed under our determination.

Transport for NSW must submit a pricing proposal to IPART whenever:

- ▼ any new fares are introduced¹¹⁶
- ▼ any fares are removed
- ▼ any of the prices for existing fares increase.

Pricing proposals must be received by IPART 20 business days before a proposed change, and approved by IPART before the changes apply.

When Transport for NSW proposes to introduce or removes fares, Transport for NSW should explain the changes (in accordance with the D.3.2), and include:

- ▼ details of any proposed new fare, including the routes on which it is valid, the number of journeys included (or a “journey multiplier”), the period for which it is valid, and any other conditions of use
- ▼ details of any removed fare
- ▼ information on how the addition or removal of fares will affect the number of journeys made on other fares
- ▼ forecast revenue impacts.

D.4 Weightings for proposed fares when there are substantial changes to fares

D.4.1 Adding and removing fares

For the introduction of any new fares, we will require Transport for NSW to make a reasonable estimate of the number of journeys that would have been taken in the previous financial year had the fare existed. Transport for NSW should reasonably reallocate existing journeys taken in the previous year, so that the total number of journeys taken on CityRail is held constant across all products. This will involve downward adjustments in the number of journeys made on other fares.

¹¹⁶ Pricing proposals will be not required for the introduction of a “trial product.” Where a trial fare is introduced, Transport for NSW should notify IPART of the trial fare, its conditions of use, and the forecast revenue impacts.

Similarly, if a fare is removed, Transport for NSW should reallocate those journeys that were taken on that fare to fares that would have been used, had the ticket not existed. This will increase the ticket sales for other fares.

The reallocations of journeys must be approved by IPART.

D.4.2 Substantial changes in the relativities between fares

If the fare offerings do not change between price changes, fares should be weighted by the number of journeys in the most recent financial year. However, if the relativities between fares after the price change are significantly altered, some passengers may switch between ticket types. For example, if the MyMulti1 weekly is reduced below the price of a MyTrain2 fare, many passengers may switch from buying the MyTrain2 to the MyMulti1 weekly. In this hypothetical situation it would be appropriate to reallocate journeys (and ticket sales) made on MyTrain2 to the MyMulti1 Weekly.

An explanation of the substitution between ticket types must be provided, and the new weighting must be approved by IPART. The reallocations of journeys must be approved by IPART.

D.4.3 How CityRail journeys must be reallocated

The total number of journeys – the total patronage - is calculated by multiplying the number of ticket sales by the number of journeys taken on each ticket.¹¹⁷ The table below shows how many CityRail journeys (on average) that are taken on each ticket. When fares are added or removed, or when there are substantial changes in the relativities between fares, the CityRail journeys associated with these fares need to be reallocated to other fares using the number of journeys shown in Table D.2. For example, if the Transport for NSW were to remove the 14 day pass, for each ticket sale, it may reallocate the 22 journeys to the weekly pass, so that 2 additional weekly tickets would be sold.

¹¹⁷ Of all tickets sold, not just tickets sold by CityRail. For example, many MyMulti tickets are sold by Sydney Ferries and newsagencies.

Table D.2 Number of CityRail journeys per ticket

Ticket	Number of journeys
Single	1
Return	2
7 day pass	11.0
14 day pass	22.0
28 day pass	42.6
90 day pass	137.0
365 day pass	517.0
MyMulti DayPass	1.4
MyMulti weekly	
MyMulti1	6.4
MyMulti2	10.5
MyMulti3	11.0
MyMulti monthly	
MyMulti1	37.4
MyMulti2	40.6
MyMulti3	42.6
MyMulti quarterly	
MyMulti1	120.9
MyMulti2	130.6
MyMulti3	137.0
MyMulti annual	
MyMulti1	449.2
MyMulti2	490.9
MyMulti3	517.0
Newcastle TravelPass	
Weekly	11.0
Quarterly	137.0
Annual	517.0
PET	1.1
Family Funday Sunday	1.1

