REPORT

Measuring cost recovery of NSW public transport services

Prepared for
IPART

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THE CENTRE FOR INTERNATIONAL ECONOMICS
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Executive summary

The CIE has been asked to develop then apply a methodology for measuring cost recovery of NSW public transport services. This report sets out the approach taken and our findings. The purpose of this exercise is to gain an understanding of how cost recovery differs across transport modes and changes over time. The NSW Government is currently continuing to grow the transport network with over $50 billion worth of construction planned over the next ten years on the transport network[1]. This will mean significantly higher whole of life costs for the transport network – capital, operating, maintenance and disposal.

Results

Tables 1 and 2 present the estimated costs and revenue for the most recent available year of data by transport mode as well as the cost recovery estimates based on total costs and operating costs. The aim of this exercise is to provide an overall indication of the level of cost recovery, and to allow for the change in cost recovery (by mode) to be measured over time. This provides information to all stakeholders (policy makers, public transport users, taxpayers and operators) on how much fares contribute to the cost of providing the public transport network.

The methodology used is fit for the purpose of providing an overall indication of the level of cost recovery and for measuring changes in cost recovery over time. However, we have not been asked to establish regulatory capital asset valuations, which means that the level of cost recovery has a margin of error.

At this stage we have not included a cost recovery estimate for metro services due to these services having only been operating since May 2019. Similarly, the cost recovery estimate for light rail services does not include the CBD and South East light rail have only recently become operational and is not included in the current estimate. However, going forward our proposed methodology can be used in future periods to estimate cost recovery for all new services.

1 Costs and revenue estimates for most recent year by mode

Mode	Base year	Operating costs	Capital costs	Total Costs	Revenue
	FY	$m	$m	$m	$m
Metropolitan rail	2018-19	2 429	1 453	3 882	1 051
Intercity rail	2018-19	588	311	899	97
Light rail[a]	2017-18	39	17	57	15

1 NSW Government Infrastructure statement 2018-19, Budget Paper No.2, p1

Mode	Base year	Operating costs	Capital costs	Total Costs	Revenue
	FY	$m	$m	$m	$m
Bus	2017-18	1 325	85	1 410	493
Ferry	2017-18	119	8	127	52

a. Inner West Light rail (Dulwich Hill to Pyrmont and Central).

Source: The CIE.

2 Cost recovery estimates for most recent year by mode

Mode	Year	Cost recovery – total costs	Cost recovery – opex only
	FY	Per cent	Per cent
Metropolitan rail	2018-19	27.1	43.2
Intercity rail	2018-19	10.8	16.5
Light rail	2017-18	26.1	37.4
Bus	2017-18	35.0	37.2
Ferry	2017-18	41.1	43.7
Overall cost recovery	Latest year	26.8	37.9

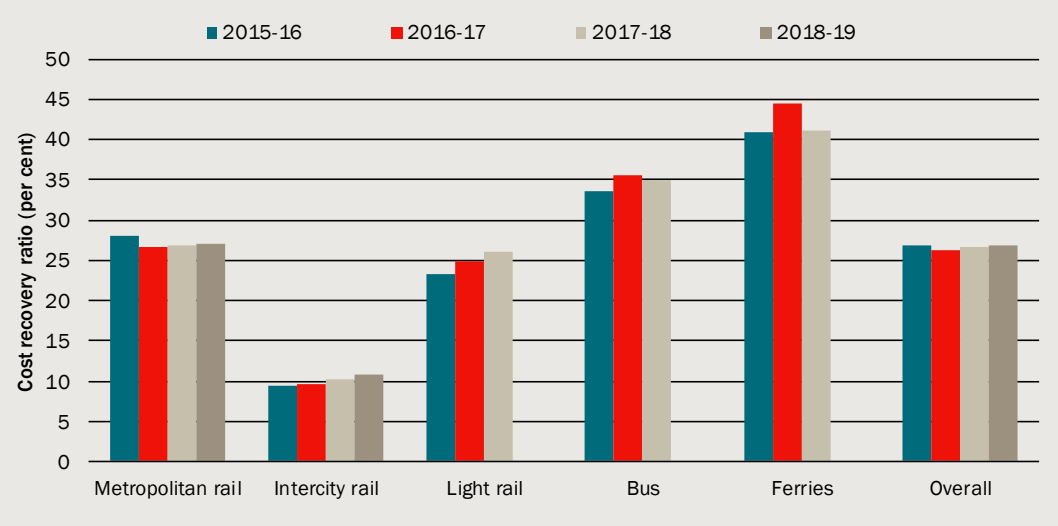
Note: The overall cost recovery for 2018/19 combines 2018/19 data for metropolitan and intercity rail with 2017/18 data for light rail, bus and ferries.

Source: The CIE.

Where data was available, we have estimated cost recovery for multiple years (charts 3 and 4). Overall, the results indicate that:

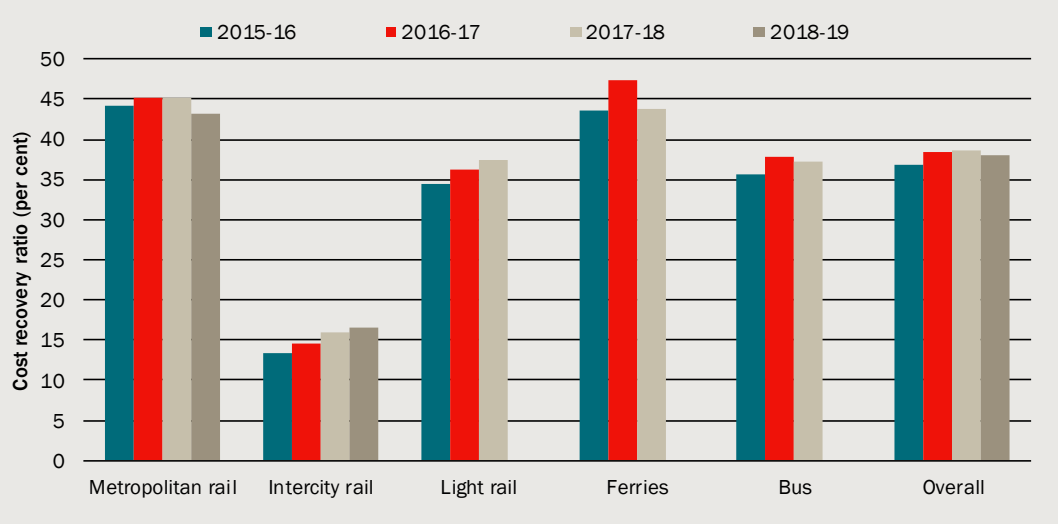
- the overall level of cost recovery across the transport services measured is ~27 per cent for 2018/19 and has been stable over time
- ferries and buses have higher levels of cost recovery compared to rail and light rail, and particularly intercity rail
- cost recovery of total costs for rail services has been relatively stable over time, while intercity services have seen small increases in the share of cost recovery, from a low base
- metropolitan rail services and ferry services have tended to recover a higher proportion of their operating costs compared to other modes.

3 Cost recovery over time by mode – estimates using total costs



Note: The overall cost recovery for 2018/19 combines 2018/19 data for metropolitan and intercity rail with 2017/18 data for light rail, bus and ferries.
Data source: The CIE.

4 Cost recovery over time by mode – estimates using opex only



Data source: The CIE.

Another way of representing cost recovery is at the passenger/user level. Table 5 represents the total cost and revenue of each service as total cost and revenue per trip, as well as total cost and revenue per trip kilometre (or passenger kilometres for roads), which provide a useful benchmark for comparing the cost and revenue associated with moving a passenger one kilometre. For instance:

- for light rail it costs $2.65 per trip km, while revenue per trip km is 69 cents (2017-18)
- for metropolitan rail services it costs 66 cents per trip km, while revenue per trip km is 18 cents (2018-19).

5 Cost and revenue per trip and trip kilometres

Service	Year	Cost per trip	Revenue per trip	Cost per trip km	Revenue per trip km
	Fy	$/trip	$/trip	$/trip km	$/trip km
Metropolitan rail	2015-16	12.37	3.48	0.62	0.17
Metropolitan rail	2016-17	13.07	3.47	0.65	0.17
Metropolitan rail	2017-18	13.26	3.57	0.66	0.18
Metropolitan rail	2018-19	13.28	3.60	0.66	0.18
Intercity rail	2015-16	22.97	2.16	0.48	0.05
Intercity rail	2016-17	23.88	2.30	0.52	0.05
Intercity rail	2017-18	23.63	2.42	0.52	0.05
Intercity rail	2018-19	22.68	2.44	0.50	0.05
Light rail	2015-16	5.77	1.34	2.96	0.69
Light rail	2016-17	5.69	1.41	2.78	0.69
Light rail	2017-18	5.80	1.51	2.65	0.69
Bus	2015-16	5.52	1.85	1.04	0.35
Bus	2016-17	5.57	1.98	1.04	0.37
Bus	2017-18	6.08	2.12	1.14	0.40
Ferries	2015-16	10.46	4.29	1.76	0.72
Ferries	2016-17	9.28	4.13	1.56	0.69
Ferries	2017-18	10.01	4.12	1.68	0.69

Source: The CIE.

Differences across modes

Each transport mode has different operational and procurement models and accounting practices. It is beyond the scope of this project to standardise accounting. Rather we have used available data (cost data provided to IPART as part of its fare reviews, Opal data and in some cases annual reports) to provide reasonable estimates of the costs of providing the transport services. In some cases, we are able to estimate operating costs and capital costs but in other cases (e.g. buses) we can only provide an estimate of the total costs of providing the service.

We have not been asked to undertake an asset valuation exercise for any of the modes. For those covered by contracts (e.g. ferries and buses), a large part of capital costs is recovered via the contract payments (although we use operator cost reports as an indicator of these payments). For rail and light rail, we have used the value of assets from annual financial statements and valuation reports to estimate depreciation and return on capital. While there are published asset values in annual reports and audited financial statements, the accounting value of assets is not necessarily the appropriate capital value

for estimating cost reflective fares, depending on how this value is developed and adjusted over time.

The rest of this report discusses in more detail how the data sources were used to estimate cost recovery for each of the service types.

1 Introduction

The CIE has been asked to develop and implement a methodology for measuring cost recovery of NSW public transport services. This report sets out our approach and findings.

Public transport services in NSW

There are a wide range of public transport services in NSW, as set out in chart 1.1. Fares for most of these are reviewed by IPART periodically:

- services covered by the Opal ticketing system are reviewed by IPART
- rural and regional bus services are reviewed by IPART
- seven private ferries that provide regular passenger services under contract to the NSW government are reviewed by IPART.

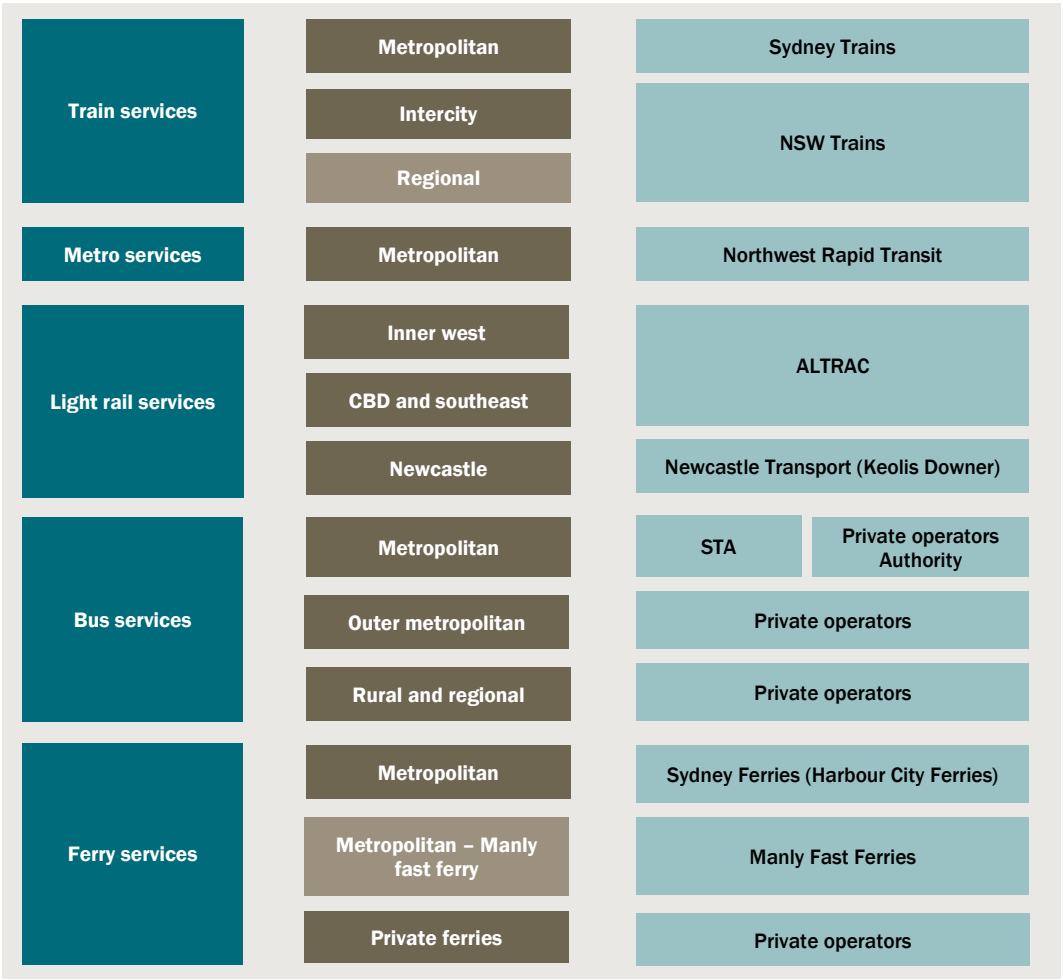
There are a small number of services whose fares are not subject to IPART review, such as regional train fares and Manly Fast Ferry fares.

Public transport services that are subject to IPART review are provided by a range of Government and private operators, under different financial arrangements. The most common model is for fare revenue to be paid to TfNSW and for TfNSW to pay the operator of a service to provide services. For rural and regional buses and private ferries, operators receive fare revenue directly.

There are a range of services for which cost recovery was not estimated in this report, either because they are out of scope of the IPART review or lack data (e.g. due to the services being new or not yet completed). These include:

- the Newcastle-Hunter integrated transport network
- regional train services
- rural and regional bus services
- CBD and South-East light rail
- Manly Fast ferry services
- other private ferry operators
- Metro services.

1.1 Overview of public transport services in NSW



Note: Light brown are services not covered by IPART reviews.
Data source: CIE; TfNSW website.

What is a measure of cost recovery?

The costs of providing a transport service have to be funded by someone. These costs can be funded by:

- users of the service — users contribute to costs through the fares that they pay to use a service
- other beneficiaries — this could include businesses that advertise on a service and contributions from developers for new infrastructure or new services
- taxpayers — the remainder is funded by taxpayers.

Cost recovery seeks to measure how much of the costs of a particular service are paid for by these different groups. Cost recovery from fares, which is what is typically the focus of a measure of cost recovery, is the revenue from fares divided by the costs of providing the service.

Defining services for cost recovery

Cost recovery relates to **the provision of a service**, not to a particular operator. This means that costs for providing a service can be 'owned' by a number of different entities. All costs required to provide the service should be measured, including operating and capital costs.

Services could be defined in a variety of ways. For example, cost recovery could be measured for each individual bus service, for all services in a contract region or for all bus services in metropolitan Sydney. The more disaggregated the measure of cost recovery the more information it contains.

Current measures of cost recovery for NSW transport services

There are a number of organisations that measure cost recovery for NSW public transport operators.

- IPART measures cost recovery as part of its periodic reviews into public transport pricing
- The NSW Audit Office (AO) measures cost recovery annually as part of its annual Audit of the transport cluster
- ISBeRG measures cost recovery for Sydney Trains as part of international benchmarking — this is reported on an ad hoc basis by Sydney Trains.

The cost recovery approaches and assessments are different across these organisations. Examples of findings are shown in table 1.2.

- The services that are included can make a large difference to the estimated cost recovery. For example, when the Audit Office restricts bus services to STA buses only, the cost recovery reported is much higher.
- The way cost recovery is estimated is important. ISBeRG reports much higher levels of cost recovery than IPART, because it only uses operating costs. These estimates are also higher than the opex only estimates we have produced[2].

1.2 Cost recovery measures for NSW public transport services

Measured by	Mode	Year	Cost recovery
IPART	Sydney Trains and NSW Trains	2015/16	20%
IPART	Metro and Outer Metro buses	2015/16	25%
IPART	Ferries	2015/16	32%
IPART	Light Rail	2015/16	27%
IPART	Total	2015/16	22%
AO	Rail	2017/18	19%
AO	Rail	2016/17	20%

2 While we do not know the scope of what was included in the ISBeRG estimates, one possibility is the use of broader revenue categories that we have excluded in our analysis (such as Government subsidies to operators).

Measured by	Mode	Year	Cost recovery
AO	Rail	2015/16	20%
AO	Rail	2014/15	18%
AO	Rail	2013/14	20%
AO	STA bus	2017/18	48%
AO	STA bus	2016/17	51%
AO	Buses	2016/17	24%
AO	Buses	2015/16	22%
AO	Buses	2014/15	21%
AO	Buses	2013/14	21%
AO	Ferries	2016/17	43%
AO	Ferries	2015/16	38%
AO	Ferries	2014/15	35%
AO	Ferries	2013/14	33%
ISBeRG	Sydney Trains	2016	40%
ISBeRG	Sydney Trains	2015	40%
ISBeRG	Sydney Trains	2014	40%
ISBeRG	Sydney Trains	2013	40%

Source: NSW Audit Office 2018, *Transport 2018,* November; NSW Audit Office 2017, *Transport 2017,* December; IPART 2016, *Cost recovery information paper 2,* Final report information papers; Sydney Trains 2017, Sydney Trains performance update: comparison with international benchmarking groups (2016 data).

Key issues in consistently measuring cost recovery

The key issues in developing and implementing a cost recovery approach for NSW public transport providers are:

- ensuring that the measures are able to withstand organisational changes in how services are delivered
- providing a robust but practical approach to incorporating costs associated with long-lived assets.

This study

Under the *Passenger Transport Act 2014*:

> IPART is to consider the following matters in making a determination or recommendation under this Part:
>
> (a) the cost of providing the services,
>
> (b) the need for greater efficiency in the supply of services so as to reduce costs for the benefit of consumers and taxpayers,
>
> (c) the protection of consumers from abuses of monopoly power in terms of prices, pricing policies and standards of service,
>
> (d) the social impact of the determination or recommendation,

(e) the impact of the determination or recommendation on the use of the public passenger transport network and the need to increase the proportion of travel undertaken by sustainable modes such as public transport,

(f) standards of quality, reliability and safety of the services (whether those standards are specified by legislation, agreement or otherwise),

(g) the effect of the determination or recommendation on the level of Government funding,

(h) any matter specified in the referral to IPART,

(i) any other matter IPART considers relevant.

The cost recovery of a public transport service is one overall indicator of matters (a), (b), (c) and (g), although in practice, the protection of consumers from abuses of monopoly power is not a major concern as cost recovery levels are very low and fares for each mode are harmonised across services. Cost recovery indicates how much of the costs of service are being borne by taxpayers and others, as against users of the service.

This study aims to provide a practical and long-lasting approach that can be used to measure cost recovery for NSW transport services over time and across modes. This is a challenging objective, given that relatively frequent organisational structure changes occur for NSW transport providers. To meet the objective we have sought to draw on data that is provided to IPART for the fare reviews and that is publicly available, and to minimise the need for additional data requests to transport providers.

2 Measuring cost recovery

Categorisation of costs

Costs for providing a public transport service can be categorised by the time period over which they produce a service and whether they are solely for one service or jointly produce a number of services, as show in table 2.1. The most difficult costs to allocate for a cost recovery exercise are costs of long-lived assets, also known as capital costs.

2.1 Categorisation of costs

		Joint or separable cost	
		Cost solely for service	Cost shared with other services
Temporal nature of cost	Ongoing costs associated with service	For example: train crew costs	For example: ongoing ticketing system costs
	Cost associated with long lived asset required for the service	For example: bus fleet cost	For example: capital expenditure on ticketing system

Source: The CIE.

To seek to ensure a consistent collation of costs across different services, we have categorised costs as set out in table 2.2. Importantly, costs to provide a service can be borne by a number of different organisations. The purpose of a cost recovery measure is to measure the costs associated with the service, not the costs associated with an operator.

2.2 Types of costs incurred in providing services

Cost category	Type of cost	What is included
Ongoing	Operations	Cost for drivers, operational staff, operational management, fuel
Ongoing	Vehicle maintenance	Vehicle maintenance parts and labour, and other costs of maintenance depots.
Ongoing	Infrastructure maintenance	Parts and labour to maintain track/road, electrical, signalling
Ongoing	Station/stop maintenance	Maintenance of stations, stops, wharves
Ongoing	Customer interface	Station/stop/wharf staffing
Ongoing	Ticketing	Ongoing costs for ticketing machines and facilities

Cost category	Type of cost	What is included
Ongoing	Service overheads	Human resources, IT, financial, administration and marketing, legal
Ongoing	Network overheads	Contract management, strategic planning
Long-lived assets	Vehicles	Cost or purchasing or leasing vehicles, rolling stock, ferries
Long-lived assets	Stations/stops	Cost of developing stations, stops, wharfs specific to provision of transport services
Long-lived assets	Depots/maintenance facilities	Construction costs for depots and maintenance facilities
Long-lived assets	Access infrastructure	Car parking, interchanges
Long-lived assets	Land	Land for depots, stops/stations and track
Long-lived assets	Infrastructure	Track/road, electrical, signalling infrastructure construction costs
Long-lived assets	Ticketing infrastructure	Capital costs for ticketing infrastructure (such as machines, system development)

Source: The CIE.

Approaches to measuring cost recovery

Depending on the information available, different methods can be used to measure costs. Broadly speaking, ongoing costs are easier to measure than the costs of long-lived assets. This is because they can simply be summed and allocated to the year in which they are incurred. For a lot of the services, ongoing costs are either directly measured by the reporting entity or specified in contract payments to service operators. The costs for long-lived assets are typically more difficult to define as they need to be allocated over the full life of the investment, which usually requires measuring asset values and manually calculating the cost of capital over time.

The main ways of measuring ongoing costs are:

- contract payments made from the NSW Government to a private company who is contracted to provide services
- expenditure by Government owned entities who provide services directly.

For long-lived assets, the annual cost associated with an asset may be measured by:

- a contract payment made from the NSW Government to a private company to compensate the company for having built the asset. For example, under a PPP arrangement where a private company builds an asset, the NSW Government might pay the company in increments.
  - alternatively, in some cases where a private operator uses Government funded assets to provide services there may be a contract payment made by the operator to the NSW Government for the lease of those assets, such as for ferries
- using historical capital expenditure to either:

  - measure the overall historical costs of long-lived assets, and then allocate this to each year over which the assets provide a service
  - if capital expenditure is stable over time, use the average capital expenditure to represent the average cost associated with long-lived assets
- using measures of the asset value from balance sheets of TfNSW and other organisations. These measures can be derived in a number of different ways by the agencies. Note that they are accounting measures, and may not account for factors such as inflation and may also be subject to periodical revaluations. These costs are then allocated across the years over which services are provided
- using benchmarks of asset values, such as taking the kilometres of bus lanes and multiplying this by a unit cost per kilometre, and then allocating this cost across the years over which services are provided.

The methodologies we have used for the different services are shown in table 2.3.

2.3 Summary of methods used for each service

	Metropolitan and intercity Rail	Bus	Ferries	Light rail	Metro [a]
Ongoing costs	Costs allocated to service	Operator cost report	Operator cost report	Contract payment	Contract payment
Ongoing joint costs	Costs allocated to service Ticketing costs allocated by TfNSW	Ticketing costs allocated by TfNSW	Ticketing costs allocated by TfNSW	Ticketing costs allocated by TfNSW	Not measured
Costs for long-lived assets	Asset values allocated to service	Operator cost report	Operator cost report	Asset values allocated to service	Capital costs used to estimate asset base

[a] Metro has not been measured fully for this study as it has not been operational for a sufficiently long period of time.

Note: Ongoing joint costs can include costs share by multiple service types. For rail, this includes costs shared between Sydney Trains and NSW Trains (e.g. for maintenance). Where these costs are clearly stated, they are allocated to the appropriate service. For other modes, shared costs are not easily identifiable.

Source: The CIE. Data sources and assumptions.

3 Data sources and assumptions

This chapter sets out the main data sources, methods and assumptions for each of the different transport service types.

Rail

Rail services refer to the metropolitan train network (operated by Sydney Trains) and the intercity network (operated by NSW Trains). Cost and revenue items for rail are well documented, and as a result a fairly complete estimate of cost recovery is possible.

The main data sources for rail include:

- data provided to IPART as part of the fare reviews — which includes operating costs as well as some capital expenditure across the four main entities that are involved in the provision of rail services (Sydney Trains, NSW Trains, TfNSW and Railcorp). These were used as the primary source of information. This dataset was used for ongoing costs as well as joint ticketing costs.
- Railcorp annual reports — these were used as a more reliable and complete source of information on asset values, from which the annual costs of holding these assets were derived. Data provided for fare reviews provided information on capital expenditure, but not over a sufficiently long time period to estimate overall asset values
- Opal data and historic fare revenue estimates provided to IPART — extracts from the Opal database provided information on train fare revenue as well as patronage data (number of trips and trip kilometres)

Ongoing costs are reported by individual cost item, rather than as a sum. The treatment of ongoing costs is straightforward, as all that is needed is the reported yearly cost for all opex items.

Costs for long-lived assets have been included by using an estimate of the depreciation and return on capital of rail assets, while joint costs across modes were allocated to rail using the allocations provided by Transport for NSW.

Buses

Bus services refer to the metropolitan buses as well as outer metropolitan bus services. Bus services are divided into contract regions, with contracts awarded to a mix of bus operators.

The two main data sources for bus services include:

- data provide to IPART as part of the fare reviews — which provided bus operator cost reports. These costs cover numerous cost items, including ongoing and capital costs. This data also provide joint ongoing costs (namely ticketing maintenance costs) allocated to buses, and
- Opal dataset and historic fare revenue estimates provided to IPART — extracts from the Opal database provided information on bus fare revenue as well as patronage data (number of trips and trip kilometres).

Bus operator cost reports include a detailed breakdown of costs by line item. While the reports include detailed itemised costs, it is not clear what constitutes an operating expense or a capital expense. As such, we have only produced a cost recovery measure using total costs for buses.

Ferries

There are two categories of ferry services provided by both State Government and privately-owned operators across the state:

- Sydney Ferries network — operated by Harbour City Ferries (a subsidiary of Transdev) under a contract arrangement with Transport for NSW (TfNSW), Sydney Ferries and Roads and Maritime Services, and
- Stockton ferry service — this is part of an integrated transport service provided in Newcastle and is treated separately.

For this measure of cost recovery, we have focused on the Sydney Ferries Network operated by Harbour City Ferries. Harbour City Ferry cost reports were provided to IPART for the fare reviews, while fare revenue data was provided by the Opal dataset and historic fare revenue estimates provided to IPART.

The cost data include both ongoing costs (e.g. operations and maintenance) as well as the costs for long-lived assets (such as the cost of leasing vessels as well as Circular Quay and Manly Wharf). Since these costs reflect a per year cost of using the assets, they were included in the cost recovery estimate any further adjustment.

Light rail

The light rail services included in the cost recovery measure refer to the Inner West Light rail (Dulwich Hill to Pyrmont and Central). The CBD and South East light rail have only recently become operational and is not included in the current estimate.

The main data sources used include:

- data provided to IPART as part of the fare reviews— which include the light rail contract payments to the operator Transdev. These contract payments only cover the operating costs, however. This data also provide joint ticketing ongoing costs assigned to light rail services
- TfNSW asset valuation report — a TfNSW commissioned report in 2014 estimated the value of light rail assets (including the recently completed Inner West Extension).

These asset values were used to estimate the annual cost of long-lived assets (depreciation and return on capital), and

- Opal dataset and historic fare revenue estimates provided to IPART — extracts from the Opal database provided information on light rail fare revenue as well as patronage data (number of trips and trip kilometres).

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