

Yarra Trams Load Standards Survey Report

May 2014



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1 Summary and Key Results

1.1 Introduction

The Metropolitan Tram Load Standards Surveys are conducted twice yearly, in May and October, to measure passenger loads against desired load standards.

The survey's findings help pinpoint at which sections on each route and at which times loads exceed the desired standards. Surveying is undertaken during the AM and PM peaks.

This bulletin reports on the May 2014 survey which was conducted from 5 May to 27 May 2014

Note: See Section 2 **Background and Definitions** for explanations on routes and corridors.

1.2 Key Results

Table 1 Rolling hour average loads above desired standards recorded in May 2014 survey

	Number of Rolling Hour Average Loads above desired standards	Number of Routes	Number of Corridors
AM Peak	27	6	3
PM Peak	14	5	4
Total	41		

In May 2014, a total of 41 rolling hour average loads above desired standards were recorded, 27 of those were observed in the AM peak, and 14 in the PM peak.

During the May 2014 Load Standard Survey, a total of 28 locations were surveyed while 39 locations were surveyed in May 2014.

At locations surveyed in 2014 there were a total of 41 rolling hour average loads above desired standards; 27 in the AM peak and 14 in the PM peak.

When comparing locations observed in both the May 2013 and May 2014 Load Standards Surveys, there was an increase from 32 to 39 rolling hour average loads above desired standards.

When comparing cordon locations observed in both the May 2013 and May 2014 Load Standards Surveys, there was an increase from 22 to 26 rolling hour average loads above desired standards.

2 Background and Definitions

2.1 Background

Metropolitan Tram Passenger Load Standards Surveys have been conducted since 2000 as part of the Franchise Agreement (the Agreement) between the metropolitan tram operator and the State Government.

Up until 2009, the surveys were conducted annually in October. A second yearly survey was introduced from May 2009. Traditionally the October survey has been larger in scope, however in 2011 the decision was made to increase the May survey so that it could inform the annual Strategic Operations Plan.

When developing the survey, locations previously recording load breaches or rolling hour average loads close to breach are included. In addition, locations impacted by service changes either to the tram or train timetables may be included.

The survey results have an important role in the examination of the allocation of tram capacity across the network.

2.2 Data Collection and Analysis

Data was collected over weekdays between 5 May to 27 May 2014, by independent surveyors from a contracted labour supply company.

Passenger counts were undertaken between 7.00 am and 10.00 am and between 3.00 pm and 7.00 pm at selected tram stops across the network, with all services under the Master Timetable surveyed.

In accordance with the Agreement each survey location was surveyed at least three times, on different weekdays, to form a Sampled Service Set.

At most locations passenger counts were conducted in the direction of heading into the city in the morning and heading out of the city in the evening. However, at specific locations where high bi-directional passenger loads are known to occur surveying was conducted in both directions.

Between one and six surveyors counted loads at each tram stop, depending on the frequency and volume of services at the stop. If more than one surveyor was present, surveyors worked in pairs with one recording the information and the other conducting the passenger count.

The surveyors recorded the tram number, route number, arrival time and arrival or departure load. Arrival loads were recorded for morning shifts and departure loads for evening shifts, except at selected locations as specified by stakeholders, where exceptions to this rule applied. (See Appendix 2 on page 14 for more details)

On lightly loaded trams, each passenger was counted. On heavily loaded trams, the number of people standing and the empty seats were counted. The number of standing passengers was added to the known number of seats on the tram and the number of empty seats subtracted. Information on the seating capacity of each tram type is included in the table at Appendix 4.

Most routes passing through the CBD, and other routes that share substantial sections of track, have been combined into corridors. A list of the routes aggregated into corridors is at Appendix 3.

The average load for a route or corridor at each survey location was calculated by adding together the total number of passengers on each service surveyed in a rolling hour, and dividing

that by the number of services in that rolling hour. The average passenger loads are then measured against desired load standards.

The average maximum capacity is calculated by totalling the individual maximum capacities of each service on each route and dividing that by the number of services for each rolling hour. Maximum capacity for each tram class is considered greater at CBD locations than at non-CBD locations (refer to Appendix 4).

2.3 Terminology

AM Peak – the period on a weekday between 7.31 am and 9.30 am. The period of surveying for the May 2013 survey, 7.00 am to 10.00 am, included the peak and an extra half-hour before and after the peak.

Corridor – the aggregation of Rolling Hour survey results is performed across tram routes at locations where the routes share substantial sections of track and travel to the same destination.

CBD monitoring point – means any point in the Central Business District (CBD), or any other point determined by the Director, at which passenger counts are conducted in accordance with the Agreement.

Load – the number of passengers travelling on a tram.

Location – a generic term indicating a monitoring point, with CBD or Non CBD as context requires.

Maximum capacity – the desired maximum capacity of a tram in service. (See Appendix 4 for details of capacities for each tram class). The maximum capacity is higher for trams operating in the CBD than for trams operating outside the CBD. This is also referred to as *desired standard* in this report. This standard does not relate to a safety requirement but to the relative comfort level.

Non-CBD monitoring point – means any point outside the CBD at which passenger counts are conducted in accordance with the Agreement.

PM Peak – the period on a weekday between 3.31 pm and 6.30 pm. The period of surveying for the May 2012 survey, 3.00 pm to 7.00 pm, included the peak and an extra half-hour before and after the peak.

Peak – either or both the AM Peak and the PM Peak, as the context requires.

Rolling hour – each hour from 6.01am to 12 midnight, commencing on each hour and each half-hour during that period.

Survey direction – the direction of travel of services that are to be included in passenger counts conducted in accordance with the Agreement.

3 Results

3.1 Rolling hour average loads above and within 10% of desired standards

There were 41 observed rolling hour average loads above desired standards in the May 2014 survey.

- > Of these, 27 were during the AM peak and 14 during the PM peak.
- > In addition, there were 36 rolling hour average loads within ten per cent of desired standard, 18 in the AM peak, and 18 in the PM peak.

Table 2 below shows a comparison of the monitoring points (locations) at which rolling hour average loads exceeded or were within 10% desired standards in either May 2013 or May 2014.

Note: Locations falling within these criteria in May 2013, but not surveyed in May 2014 were not included in this table.

Table 2 Comparison of routes and locations/directions with rolling hour average loads above and within 10% desired standards, May 2013 and 2014

	Below 80% of Load Standard
	Within 20% of Load Standard
	Within 10% of Load Standard
	Load Standard Breach

Location	Route	Direction	Rolling Hour	2013			2014		
				Rolling Hour Average Load	Average Maximum Capacity	% Average Maximum Capacity	Rolling Hour Average Load	Average Maximum Capacity	% Average Maximum Capacity
Non-CBD Locations - AM Peak									
Dandenong Rd / Hornby St	5, 64	West Bound	7:31-8:30	68.7	65.6	104.8%	69.4	68.0	102.1%
			8:01-9:00	73.2	64.1	114.3%	69.7	61.3	113.8%
Dawson St/Daly St	55	South Bound	7:01-8:00	--	--	--	60.6	73.0	83.1%
			7:31-8:30	--	--	--	73.1	78.1	93.6%
			8:01-9:00	--	--	--	60.4	66.4	91.0%
Elgin St / Lygon St	1, 8	South Bound	7:31-8:30	70.8	77.6	91.3%	78.6	76.6	102.7%
			8:01-9:00	88.6	81.6	108.6%	96.3	77.6	124.1%
			8:31-9:30	81.0	74.5	108.7%	83.3	68.8	121.0%
			9:01-10:00	60.9	67.9	89.7%	67.7	66.3	102.0%
Errol St / Victoria St	57	South Bound	7:31-8:30	60.1	60.0	100.2%	51.2	60.0	85.3%
			8:01-9:00	63.3	60.0	105.5%	52.8	60.0	87.9%
			8:31-9:30	51.6	60.0	86.0%	47.3	60.0	78.8%
Flemington Rd / Abbotsford St	55	South Bound	7:01-8:00	52.8	68.2	77.4%	65.9	71.3	92.5%
			7:31-8:30	75.2	78.1	96.3%	87.2	80.5	108.3%
			8:01-9:00	80.8	72.4	111.5%	81.1	71.6	113.3%
			8:31-9:30	67.1	65.4	102.6%	65.6	64.2	102.1%

Location	Route	Direction	Rolling Hour	2013			2014		
				Rolling Hour Average Load	Average Maximum Capacity	% Average Maximum Capacity	Rolling Hour Average Load	Average Maximum Capacity	% Average Maximum Capacity
	59	South Bound	7:01-8:00	73.7	100.0	73.7%	87.4	100.0	87.4%
			7:31-8:30	88.0	100.0	88.0%	101.4	100.0	101.4%
			8:01-9:00	93.9	100.0	93.9%	108.2	98.9	109.4%
			8:31-9:30	98.0	100.0	98.0%	108.1	98.6	109.6%
			9:01-10:00	93.6	100.0	93.6%	95.3	100.0	95.3%
Grantham St / Brunswick Rd	55	South Bound	7:01-8:00	61.8	71.7	86.3%	61.0	72.6	84.1%
			7:31-8:30	80.2	77.8	103.1%	74.1	76.7	96.6%
			8:01-9:00	76.0	69.2	109.8%	64.2	67.1	95.7%
			8:31-9:30	61.0	65.0	93.8%	56.2	66.9	84.1%
Haymarket (Elizabeth St)	19	South Bound	8:01-9:00	80.7	103.8	77.8%	90.2	105.3	85.7%
			8:31-9:30	78.1	103.4	75.5%	94.5	105.0	90.0%
	59	South Bound	7:31-8:30	75.2	100.0	75.2%	86.9	100.0	86.9%
			8:01-9:00	77.7	100.0	77.7%	97.4	100.0	97.4%
			8:31-9:30	77.6	100.0	77.6%	105.7	98.7	107.1%
			9:01-10:00	72.0	100.0	72.0%	100.4	98.4	102.0%
Peel St / Victoria St	55	South Bound	7:01-8:00	54.9	68.0	80.7%	60.8	68.6	88.6%
			7:31-8:30	73.7	78.0	94.5%	86.6	79.5	108.9%
			8:01-9:00	80.6	74.0	108.9%	86.6	74.5	116.2%
			8:31-9:30	64.9	64.3	101.0%	67.6	63.0	107.3%
			9:01-10:00	50.1	71.0	70.6%	59.4	71.6	83.0%
Queensbridge St (Casino East)	55	North Bound	7:31-8:30	55.1	64.8	85.1%	58.0	65.0	89.2%
			8:01-9:00	53.2	76.4	69.6%	66.1	75.6	87.4%
Royal Pde / Grattan St (Royal Melbourne Hospital)	19	South Bound	8:01-9:00	75.2	103.6	72.6%	88.5	105.3	84.1%

Location	Route	Direction	Rolling Hour	2013			2014		
				Rolling Hour Average Load	Average Maximum Capacity	% Average Maximum Capacity	Rolling Hour Average Load	Average Maximum Capacity	% Average Maximum Capacity
			8:31-9:30	73.8	103.2	71.5%	91.3	105.0	86.9%
South Melbourne Market (South Melbourne LRS)	96	North Bound	7:31-8:30	110.4	121.8	90.7%	112.5	138.2	81.4%
			8:01-9:00	117.1	121.3	96.5%	114.9	135.2	85.0%
St Kilda Rd / Commercial Rd	3, 5, 16, 64, 67	North Bound	7:31-8:30	61.0	69.7	87.5%	67.6	70.2	96.2%
			8:01-9:00	71.9	63.4	113.5%	70.8	62.6	113.0%
			8:31-9:30	53.9	63.1	85.4%	53.8	62.3	86.4%
	6	North Bound	7:31-8:30	57.2	77.8	73.5%	64.2	78.9	81.3%
			8:01-9:00	62.8	76.7	81.9%	65.6	76.7	85.6%
	72	North Bound	7:31-8:30	47.3	72.5	65.3%	59.7	72.9	82.0%
8:01-9:00			57.0	66.2	86.2%	60.3	69.2	87.1%	
St Kilda Rd / High St	3, 5, 16, 64, 67	North Bound	7:31-8:30	61.0	68.9	88.6%	68.1	69.4	98.1%
			8:01-9:00	74.4	63.0	118.0%	73.2	61.9	118.2%
			8:31-9:30	56.8	63.5	89.5%	52.8	62.7	84.3%
	6	North Bound	7:31-8:30	59.7	77.8	76.7%	65.5	78.9	82.9%
			8:01-9:00	62.7	75.8	82.8%	63.9	75.8	84.3%
St Vincents Plaza	24	West Bound	7:31-8:30	50.1	64.0	78.2%	56.3	64.6	87.1%
			8:01-9:00	52.7	64.0	82.3%	64.3	71.1	90.5%
			8:31-9:30	46.2	62.5	73.9%	61.8	70.0	88.3%
	109	West Bound	8:01-9:00	77.5	96.8	80.1%	80.5	94.8	84.9%
	112	West Bound	7:31-8:30	58.7	73.3	80.2%	68.4	71.6	95.6%
			8:01-9:00	70.2	80.6	87.1%	75.8	69.9	108.4%

Location	Route	Direction	Rolling Hour	2013			2014		
				Rolling Hour Average Load	Average Maximum Capacity	% Average Maximum Capacity	Rolling Hour Average Load	Average Maximum Capacity	% Average Maximum Capacity
			8:31-9:30	66.2	73.6	89.9%	71.8	66.5	108.0%
			9:01-10:00	57.0	62.1	91.8%	56.2	65.0	86.4%
Toorak Rd / Punt Rd	8	West Bound	7:31-8:30	--	--	--	78.9	68.0	116.1%
			8:01-9:00	--	--	--	73.9	68.9	107.2%
Victoria St/Peel St	57	South Bound	7:31-8:30	--	--	--	50.0	60.0	83.4%
			8:01-9:00	--	--	--	53.3	60.0	88.8%
			8:31-9:30	--	--	--	51.7	60.0	86.2%
Wellington Pde / Jolimont Rd	48	West Bound	7:01-8:00	57.2	57.1	100.1%	59.3	67.9	87.4%
			7:31-8:30	69.6	56.6	123.0%	73.4	72.7	101.0%
			8:01-9:00	80.5	61.0	132.0%	80.1	71.5	112.0%
			8:31-9:30	75.8	62.5	121.2%	72.8	65.4	111.4%
			9:01-10:00	62.3	57.4	108.6%	55.0	64.8	84.9%
	75	West Bound	7:31-8:30	79.5	98.0	81.1%	94.6	95.9	98.6%
			8:01-9:00	88.7	96.3	92.2%	102.2	96.3	106.2%
8:31-9:30			78.4	95.5	82.0%	95.6	100.0	95.6%	
CBD Locations - AM Peak									
Clarendon St (Crown Casino)	96	North Bound	8:01-9:00	114.4	132.6	86.3%	127.9	145.2	88.1%
	109	North Bound	8:01-9:00	81.3	108.7	74.8%	88.2	105.6	83.5%
	112	North Bound	7:31-8:30	55.3	65.0	85.1%	66.2	77.9	85.0%
			8:01-9:00	65.4	65.0	100.7%	86.3	88.1	98.0%
			8:31-9:30	47.6	75.4	63.1%	62.1	71.9	86.4%
Collins St West End (Southern Cross Station)	All routes (CBD)	West Bound	8:01-9:00	65.0	79.3	81.9%	65.0	84.1	77.3%
			8:31-9:30	62.9	78.4	80.2%	58.6	77.3	75.9%
Swanston St / Flinders St (Federation Sq)	1	North	7:31-8:30	58.6	82.8	70.7%	65.4	75.3	86.8%

Location	Route	Direction	Rolling Hour	2013			2014			
				Rolling Hour Average Load	Average Maximum Capacity	% Average Maximum Capacity	Rolling Hour Average Load	Average Maximum Capacity	% Average Maximum Capacity	
	3, 5, 6, 16, 64, 67, 72	Bound	8:01-9:00	62.4	80.5	77.5%	64.5	75.9	84.9%	
		South Bound	7:31-8:30	82.2	79.7	103.1%	76.0	79.8	95.2%	
			8:01-9:00	94.7	83.6	113.4%	83.6	84.3	99.2%	
	8:31-9:30		66.3	77.5	85.5%	62.3	78.6	79.2%		
	1	South Bound	7:31-8:30	72.4	82.6	87.6%	68.9	84.0	82.0%	
			8:01-9:00	88.5	92.0	96.2%	90.8	90.9	99.9%	
			8:31-9:30	65.4	92.1	71.0%	80.4	88.3	91.0%	
	8	South Bound	8:01-9:00	71.6	84.2	85.1%	54.7	82.3	66.4%	
	Non-CBD Locations - PM Peak									
	Dandenong Rd / Hornby St	5, 64	East Bound	17:01-18:00	60.1	65.5	91.8%	60.8	65.0	93.6%
17:31-18:30				61.8	69.7	88.7%	67.7	64.4	105.1%	
18:01-19:00				54.3	70.8	76.7%	53.7	65.0	82.6%	
Dawson St/Daly St	55	North Bound	15:01-16:00	--	--	--	53.1	62.2	85.3%	
Elgin St / Lygon St	1, 8	North Bound	16:31-17:30	57.9	74.1	78.2%	66.8	71.8	93.0%	
			17:01-18:00	71.1	73.5	96.7%	78.7	75.3	104.5%	
			17:31-18:30	81.5	76.7	106.3%	82.7	73.3	112.8%	
			18:01-19:00	72.6	78.4	92.5%	83.0	72.3	114.8%	
Errol St / Victoria St	57	North Bound	18:01-19:00	50.1	60.0	83.4%	45.3	60.0	75.5%	
Flemington Rd / Abbotsford St	55	North Bound	15:01-16:00	51.6	68.4	75.5%	55.8	68.9	81.0%	
			16:31-17:30	65.2	77.6	84.0%	67.5	73.8	91.6%	
			17:01-18:00	73.4	71.7	102.3%	72.8	72.2	100.8%	
			17:31-18:30	72.7	75.8	95.9%	76.1	79.5	95.7%	
			18:01-19:00	68.8	85.7	80.3%	68.3	82.7	82.6%	
	59	North	15:01-16:00	61.0	100.0	61.0%	83.6	100.0	83.6%	

Location	Route	Direction	Rolling Hour	2013			2014		
				Rolling Hour Average Load	Average Maximum Capacity	% Average Maximum Capacity	Rolling Hour Average Load	Average Maximum Capacity	% Average Maximum Capacity
		Bound	16:31-17:30	77.1	100.0	77.1%	97.7	100.0	97.7%
			17:01-18:00	84.6	100.0	84.6%	110.6	100.0	110.6%
			17:31-18:30	87.5	100.0	87.5%	97.2	100.0	97.2%
			18:01-19:00	78.4	100.0	78.4%	89.0	100.0	89.0%
Grantham St / Brunswick Rd	55	North Bound	15:01-16:00	41.4	68.0	60.8%	55.8	68.0	82.1%
			15:31-16:30	46.2	69.5	66.5%	57.8	70.4	82.1%
			17:01-18:00	55.9	73.3	76.2%	64.7	71.6	90.3%
			17:31-18:30	62.9	75.4	83.4%	68.9	76.8	89.7%
			18:01-19:00	65.4	80.7	81.0%	66.1	78.1	84.6%
Haymarket (Elizabeth St)	19	North Bound	17:01-18:00	95.5	103.5	92.3%	87.8	106.1	82.7%
			17:31-18:30	92.6	102.4	90.5%	89.8	106.7	84.2%
			18:01-19:00	82.0	101.9	80.5%	76.4	104.0	73.5%
	59	North Bound	16:31-17:30	80.4	100.0	80.4%	73.7	100.0	73.7%
			17:01-18:00	86.1	100.0	86.1%	92.6	100.0	92.6%
			17:31-18:30	79.8	100.0	79.8%	86.7	100.0	86.7%
18:01-19:00	83.3	100.0	83.3%	80.0	100.0	80.0%			
Peel St / Victoria St	55	North Bound	17:01-18:00	67.6	72.2	93.5%	68.4	76.0	89.9%
			17:31-18:30	69.5	78.2	88.9%	72.8	81.6	89.2%
			18:01-19:00	59.1	83.7	70.7%	63.3	78.5	80.7%
Royal Pde / Grattan St (Royal Melbourne Hospital)	19	North Bound	16:31-17:30	81.0	102.9	78.7%	84.1	104.2	80.6%
			17:01-18:00	99.8	104.4	95.6%	100.3	105.7	94.9%
			17:31-18:30	92.6	103.0	89.9%	98.8	107.0	92.3%
			18:01-19:00	82.5	102.9	80.2%	83.3	104.0	80.1%
South Melbourne Market (South Melbourne LRS)	96	South Bound	17:01-18:00	99.0	122.0	81.2%	99.1	126.5	78.4%
			17:31-18:30	110.4	122.3	90.3%	102.7	131.5	78.1%

Location	Route	Direction	Rolling Hour	2013			2014		
				Rolling Hour Average Load	Average Maximum Capacity	% Average Maximum Capacity	Rolling Hour Average Load	Average Maximum Capacity	% Average Maximum Capacity
St Kilda Rd / Commercial Rd	3, 5, 16, 64, 67	South Bound	17:01-18:00	59.7	67.8	88.1%	59.9	67.2	89.1%
			17:31-18:30	57.7	71.5	80.7%	59.0	69.2	85.3%
	6	South Bound	17:01-18:00	52.2	63.0	82.8%	54.1	65.7	82.4%
	72	South Bound	17:01-18:00	67.4	73.8	91.4%	58.5	76.3	76.7%
St Kilda Rd / High St	3, 5, 16, 64, 67	South Bound	17:01-18:00	60.4	66.4	90.9%	60.1	67.3	89.3%
			17:31-18:30	59.2	71.8	82.5%	56.5	69.2	81.6%
	6	South Bound	17:01-18:00	59.8	63.0	94.9%	57.3	66.3	86.4%
			17:31-18:30	56.8	64.8	87.6%	53.8	66.7	80.7%
St Vincents Plaza	109	East Bound	16:31-17:30	70.1	98.3	71.3%	81.3	96.3	84.4%
			17:01-18:00	68.3	97.8	69.8%	77.2	94.4	81.8%
	112	East Bound	15:31-16:30	56.3	60.0	93.9%	50.7	73.0	69.3%
			17:01-18:00	63.2	68.0	92.9%	63.2	72.1	87.6%
			17:31-18:30	62.6	66.3	94.4%	63.0	70.6	89.3%
			18:01-19:00	62.5	65.8	95.0%	55.8	76.4	73.0%
Swan St / Punt Rd	70	East Bound	17:31-18:30	57.5	57.3	100.3%	42.5	60.4	70.3%
			18:01-19:00	49.5	55.0	89.9%	35.7	59.5	59.9%
Toorak Rd / Punt Rd	8	East Bound	15:01-16:00	--	--	--	59.7	70.5	84.7%
Victoria St/Peel St	57	North Bound	17:01-18:00	--	--	--	52.2	60.0	87.1%
			17:31-18:30	--	--	--	56.5	60.0	94.1%
			18:01-19:00	--	--	--	57.4	60.0	95.7%
Wellington Pde / Jolimont Rd	48	East Bound	16:01-17:00	48.4	55.0	88.0%	55.4	61.4	90.2%
			16:31-17:30	57.2	55.0	104.0%	65.0	60.9	106.8%
			17:01-18:00	65.3	58.2	112.1%	71.8	72.1	99.7%
			17:31-18:30	64.7	58.0	111.6%	76.2	73.0	104.3%

Location	Route	Direction	Rolling Hour	2013			2014		
				Rolling Hour Average Load	Average Maximum Capacity	% Average Maximum Capacity	Rolling Hour Average Load	Average Maximum Capacity	% Average Maximum Capacity
	75	East Bound	18:01-19:00	64.6	55.0	117.4%	76.3	57.0	133.8%
			17:01-18:00	79.8	96.1	83.1%	96.1	94.7	101.4%
			17:31-18:30	80.5	93.6	86.1%	88.0	91.8	95.8%
CBD Locations - PM Peak									
Clarendon St (Crown Casino)	96	South Bound	17:01-18:00	111.4	133.9	83.2%	107.6	135.8	79.2%
			17:31-18:30	115.0	133.9	85.9%	106.8	142.0	75.2%
	112	South Bound	17:01-18:00	55.1	68.8	80.2%	64.0	83.9	76.3%
			17:31-18:30	61.0	74.0	82.4%	58.1	72.8	79.8%
Collins St West End (Southern Cross Station)	All routes (CBD)	East Bound	15:31-16:30	64.5	68.5	94.3%	57.7	71.9	80.3%
			16:01-17:00	59.9	73.7	81.2%	57.6	77.7	74.1%
			16:31-17:30	65.0	71.7	90.7%	71.0	76.6	92.7%
			17:01-18:00	76.9	68.3	112.5%	83.1	81.6	101.8%
			17:31-18:30	81.3	67.4	120.6%	75.4	80.9	93.2%
			18:01-19:00	68.1	65.0	104.8%	58.5	73.5	79.5%
Swanston St / Flinders St (Federation Sq)	3, 5, 6, 16, 64, 67, 72	North Bound	16:31-17:30	63.5	79.5	79.8%	67.9	79.3	85.7%
			17:01-18:00	76.2	81.5	93.5%	81.0	80.0	101.3%
			17:31-18:30	71.4	78.2	91.3%	80.1	77.5	103.4%
	1	North Bound	16:31-17:30	71.4	82.5	86.6%	80.1	80.4	99.6%
			17:01-18:00	80.1	89.0	89.9%	97.9	90.5	108.2%
			17:31-18:30	81.7	100.6	81.2%	77.5	97.2	79.7%
	8	North Bound	17:01-18:00	73.3	83.6	87.6%	64.7	83.2	77.8%
			17:31-18:30	48.4	74.0	65.3%	61.6	73.9	83.4%

3.1.1 Key Results

- When comparing locations observed in both the May 2013 and May 2014 Load Standards Surveys, there was an increase from 32 to 39 rolling hour average loads above desired standards (breaches).
- The corridor of routes 1 and 8 at Elgin St / Lygon St
 - In the AM peak there were four breaches, one in each rolling hour. There were two observed in 2013. The average arrival load increased by 11.6 per cent year on year
 - In the PM peak there were three breaches and one within ten per cent of desired standards. The average arrival load increased by 19.1 per cent year on year
- The Route 57 tram heading south bound, at Errol St/Victoria St, recorded no rolling hour breaches in the peaks. In May 2013 there were two rolling hour breaches in the AM peak. However the average load decreased in the AM and PM peaks by 6.6 per cent and 4.9 per cent respectively.
- The Route 55 tram heading south bound towards the CBD was observed with six breaches over two locations in the AM peak
 - The breaches at Flemington Rd / Abbotsford St increased from two to three. They were observed in the same rolling hours were there were previous breaches or within 10 per cent of a breach.
 - Similarly for breaches at Peel St / Victoria St, the number of breaches increased from two to three in the AM peak. The average load increased by 16.3 per cent year on year.

For more details of changes from 2013 to 2014 at locations where breaches occurred see the charts in Appendix 5.

3.2 Rolling hour average loads above desired standards – Cordon locations

There are twelve cordon locations that have been consistently surveyed since October 2011. These locations represent entry or exit points for all routes through the CBD.

Table 3 below shows where breaching at cordon locations were observed in either May 2013, or May 2014.

Table 3 Breaches observed at Cordon locations in May 2013 or 2014

Location	Routes	May 2013 AM	May 2013 PM	May 2014 AM	May 2014 PM
Bourke St / Spring St	86, 96	--	--	--	--
Clarendon St (Crown Casino)	96, 109, 112	1	--	--	--
Collins St West End (Southern Cross Station)	11, 31, 48	--	3	--	1
Docklands (LaTrobe St West End)	30, 86, City Circle	--	--	--	--
Elgin St / Lygon St	1, 8	2	1	4	3
Errol St / Victoria St	50, 57	2	--	--	--
Flinders St / Russell St	70, 75	--	--	--	--
Haymarket (Elizabeth St)	19, 59	--	--	2	--
Peel St / Victoria St	55	2	--	3	--
Queensbridge St (Casino East)	55	--	--	--	--
St Vincents Plaza	24, 30, 109, 112	--	--	2	--
Swanston St / Flinders St (Federation Sq)	1,3,5,6,8,16,64,67,72	2	--	--	3
Wellington Pde / Jolimont Rd	48, 75	5	4	4	4
Subtotal		14	8	15	11
TOTAL		22		26	
* 'Swanston St / Flinders St (Federation Sq)' includes trams travelling in both directions during both peaks.					

3.2.1 Key Results

- In May 2014, 26 rolling hour average loads above desired standards were observed at seven of the cordon locations, the same number as May 2013.
- In May 2014, 15 rolling hour average loads above desired standards were observed in the AM peak, an increase of one from May 2013.
- In May 2014, 11 rolling hour average loads above desired standards were observed in the PM peak, an increase of three from May 2013.

3.3 Average Daily Observed Loads

The cordon locations enable an estimate of the number of people arriving in the CBD by tram in the morning¹ and the number of people departing the CBD by tram during the evening².

Table 4 Average Daily Arrival Load at Locations surrounding CBD in the morning (7:01-10:00am)

Location	Routes	Direction	Average Daily Arrival Load		Change in Load from May 2013	% Change in Load from May 2013
			May 2013	May 2014		
Bourke St / Spring St	86, 96	West	3,791	4,049	258	6.8
Clarendon St (Crown Casino)	96, 109, 112	North	5,006	5,443	437	8.7
Docklands (LaTrobe St West End)	30, 86, City Circle	East	485	527	42	8.7
Elgin St / Lygon St	1, 8	South	2,810	3,137	327	11.6
Errol St / Victoria St	50, 57	South	1,168	1,091	-77	-6.6
Flinders St / Russell St	70, 75	West	1,528	1,710	183	11.9
Haymarket (Elizabeth St)	19, 59	South	4,302	5,046	744	17.3
Peel St / Victoria St	55	South	2,107	2,451	344	16.3
Queensbridge St (Casino East)	55	North	1,201	1,314	113	9.4
St Vincents Plaza	24, 30, 109, 112	West	4,720	4,580	-141	-3.0
Swanston St / Flinders St (Federation Sq)	1,3,5,6,8,16,64,67,72	North	5,883	6,521	639	10.9
Wellington Pde / Jolimont Rd	48	West	1,600	1,638	38	2.4
Total AM Arrival Load			34,116	36,980	2,864	8.4

¹ "Morning" refers to the time period 7.01 – 10.00am, the hours surveyed. This definition is broader than that of AM peak, which refers to the period between 7.31 am and 9.30 am.

² "Evening" refers to the time period 3.01 – 7.00pm, the hours surveyed. This definition is broader than that of PM peak, which refers to the period between 3.31 pm and 6.30pm.

Table 5 Average Daily Departure Load at Locations surrounding CBD in the evening (3.01 - 7:00pm)

Location	Routes	Direction	Average Daily Departure Load		Change in Load from May 2013	% Change in Load from May 2013
			May 2013	May 2014		
Bourke St / Spring St	86, 96	East	4,434	5,323	888	20.0
Clarendon St (Crown Casino)	96, 109, 112	South	5,843	6,048	204	3.5
Docklands (LaTrobe St West End)	30, 86, City Circle	West	1,005	1,063	58	5.8
Elgin St / Lygon St	1, 8	North	3,085	3,674	588	19.1
Errol St / Victoria St	50, 57	North	1,300	1,236	-64	-4.9
Flinders St / Russell St	70, 75	East	2,434	2,671	237	9.7
Haymarket (Elizabeth St)	19, 59	North	5,647	5,512	-135	-2.4
Peel St / Victoria St	55	North	1,983	2,085	103	5.2
Queensbridge St (Casino East)	55	South	782	892	110	14.0
St Vincents Plaza	24, 30, 109, 112	East	5,184	5,211	27	0.5
Swanston St / Flinders St (Federation Sq)	1,3,5,6,8,16,64,67,72	South	8,407	9,173	766	9.1
Wellington Pde / Jolimont Rd	48	East	1,622	1,866	244	15.0
Total PM Departure Load			40,722	43,690	2,968	7.3

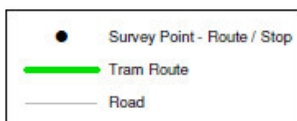
3.3.1 Key Results

- In May 2014, the observed average daily arrival load at locations surrounding the CBD (cordons) in the morning was 36,980 representing a 8.4 per cent increase (an increase of 2,864) from May 2013
- Similarly, the observed average daily departure load at locations surrounding the CBD in the evening was 43,690, an increase of 7.0 per cent (an increase of 2,968).
- The Swanston St / Flinders St location continues to be the most heavily loaded, representing 17.6 per cent of passengers arriving into the CBD in the morning, and 11.9 per cent of passengers departing the CBD in the evening.

Appendix 1 Map of survey locations



**Yarra Trams Load Standards
Survey Locations May 2014**



Mapfile: J1269-05 Revision Date: 7/07/14
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Prepared by CIO
 Bill Fish: 9027 4099



Appendix 2 List of survey locations

Routes	Stop	Location	Tram Tracker ID
86,95,96	9	Bourke St / Spring St (To Bundoora RMIT/East Brunswick/Melbourne Museum)	3309
86,95,96	9	Bourke St / Spring St (To Docklands/St Kilda Beach/City-Latrobe St)	3209
96, 112, 109	124A	Clarendon St (Crown Casino) (To East Brunswick/West Preston/Box Hill)	3357
96, 112, 109	124A	Clarendon St (Crown Casino) (To St Kilda Beach, St Kilda (Fitzroy St)/Port Melbourne)	3257
11,31,48	D14	Collins St West End (Southern Cross Station) (To North Balwyn/St Vincents)	3400
11,31,48	D14	Collins St West End (Southern Cross Station) (To Victoria Harbour)	3500
5, 64	33	Dandenong Rd / Hornby St (To Malvern/East Brighton)	2103
5, 64	33	Dandenong Rd / Hornby St (To City/University)	1103
55	33	Dawson St/Daly St (Brunswick West) (To Domain Interchange)	1263
55	33	Dawson St/South Daly St (Brunswick) (To West Coburg)	2263
3,5,6,8,16,55*,6 4,67,72	20	Domain Interchange (St Kilda Rd - From City)	3020
3,5,6,8,16,55*,6 4,67,72	20	Domain Interchange (St Kilda Rd - To City)	3120
1,8	112	Elgin St / Lygon St (To East Coburg/Moreland)	2224
67	44	Elsternwick Railway Station/Glenhuntly Rd (Elsternwick) (To Carnegie)	2044
67	44	Elsternwick Railway Station/Glenhuntly Rd (Elsternwick) (To Melbourne University)	1044
57	11	Errol St / Victoria St (To City)	3921
55, 59	19	Flemington Rd / Abbotsford St (To City)	3177
55, 59	19	Flemington Rd / Abbotsford St (To West Coburg/Airport West)	3074
35,70,75	6	Flinders St / Russell St (To Docklands Drive/City-Latrobe St/Harbour Esplanade)	3706
35,70,75	6	Flinders St / Russell St (To Wattle Park/Vermont South)	3606
35,70, 75	D6	Flinders St West End (To Docklands)	3700
35,70, 75	D6	Flinders St West End (To Wattle Park)	3600
55	29	Grantham St / Brunswick Rd (To Domain Interchange)	1259
55	29	Grantham St / Brunswick Rd (To West Coburg)	2259
19,59	9	Haymarket (Elizabeth St/Pelham St) (To City)	3909
19,59	9	Haymarket (Elizabeth St/Pelham St) (To North Coburg/Airport West)	3809
24,30,35,86,95	D1	Latrobe St West End (Etihad Stadium) (To Bundoora RMIT/St Vincents Plaza/North Balwyn)	3550
24,30,35,86,95	D1	Latrobe St West End (Etihad Stadium) (To Docklands)	3650
1,8	112	Lygon St/Elgin St (To Sth Melb Beach/Toorak)	1224
55	10	Peel St / Victoria St (To Domain Interchange)	3169
55	10	Peel St / Victoria St (To West Coburg)	3067
55	112	Queensbridge St (Casino East) (To Domain Interchange)	3159

Routes	Stop	Location	Tram Tracker ID
55	112	Queensbridge St (Casino East) (To West Coburg)	3057
19	10	Royal Pde / Grattan St (Royal Melbourne Hospital) (to CBD)	3910
19	10	Royal Pde / Grattan St (Royal Melbourne Hospital) (to North Coburg)	3810
96	127	South Melbourne Market LRS (To East Brunswick)	1532
96	127	South Melbourne Market LRS (To St Kilda Beach)	2532
3, 5, 6, 16, 64, 67, 72	25	St Kilda Rd / Commercial Rd (From CBD)	2025
3, 5, 6, 16, 64, 67, 72	25	St Kilda Rd / Commercial Rd (To CBD)	1025
3, 5, 6, 16, 64, 67	27	St Kilda Rd / High St (from CBD)	2027
3, 5, 6, 16, 64, 67	27	St Kilda Rd / High St (to CBD)	1027
16, 3, 79	36	St Kilda Town Hall (Carlisle St) (To Kew/East Malvern/North Richmond)	2071
3, 16	36	St Kilda Town Hall (Carlisle St) (To Kew/East Malvern/North Richmond)	2071
3, 16	36	St Kilda Town Hall (Carlisle St) (To University/St Kilda)	1071
16, 3, 79	36	St Kilda Town Hall (Carlisle St) (To University/St Kilda)	1071
11,24,30*,31,10 9,112	12	St Vincent's Plaza (To Box Hill, West Preston, North Balwyn, St Vincents Plaza)	3412
11,24,30*,31,10 9,112	12	St Vincent's Plaza (To Port Melbourne, St Kilda - Fitzroy St, Docklands, La Trobe St - West End, Victoria Harbour)	3512
70	7E	Swan St / Punt Rd (to Waterfront City)	3727
70	7E	Swan St / Punt Rd (to Wattle Park)	3627
1,3,5,6,8,16,64,6 7,72	13	Swanston St / Flinders St (Fed Sq side)	3013
1,3,5,6,8,16,64,6 7,72	13	Swanston St / Flinders St (Station side)	3113
8	28	Toorak Rd/Punt Rd (South Yarra) (To Melbourne University - Moreland)	1563
8	28	Toorak Rd/Punt Rd (South Yarra) (To Toorak)	2563
57	11	Victoria St/Errol St (To West Maribyrnong)	3821
57	8	Victoria St/Peel St (Melbourne City) (To City)	3918
57	8	Victoria St/Peel St (Melbourne City) (To West Maribyrnong)	3818
48,75	10	Wellington Pde / Jolimont Rd (To North Balwyn/Vermont South)	3610
48,75	10	Wellington Pde / Jolimont Rd (To Victoria Harbour/City - Latrobe St)	3710

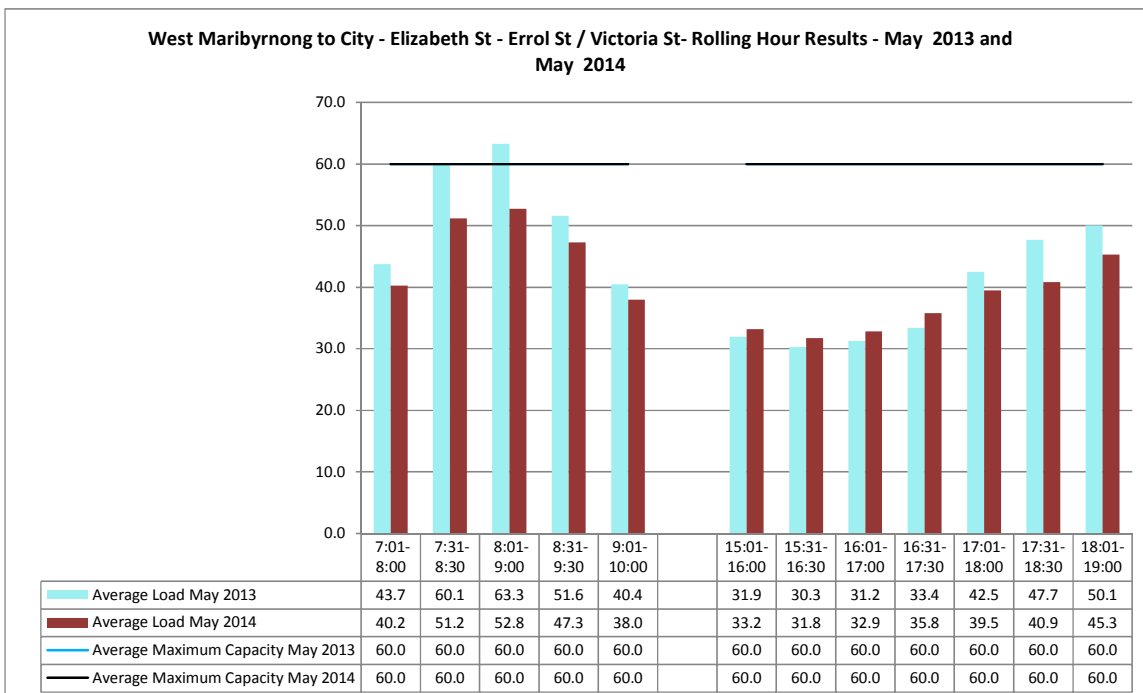
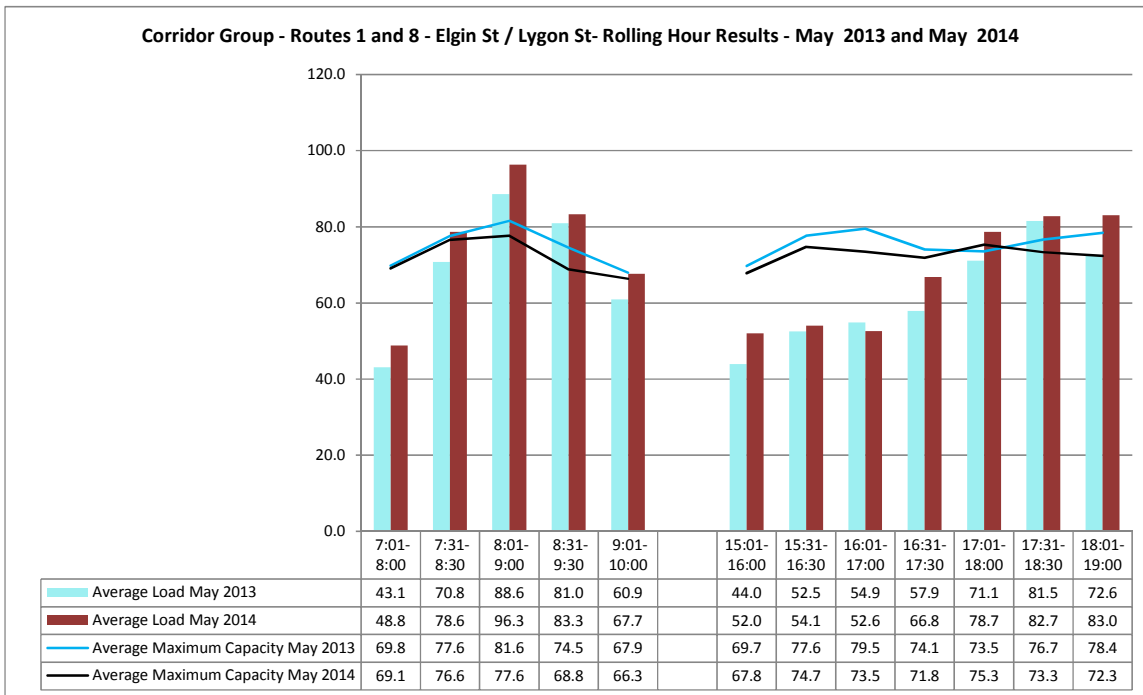
Appendix 3 Locations where routes are combined into corridors

Aggregated Routes	Location	CBD	Direction
Routes 1 and 8	Elgin St / Lygon St	No	South Bound
		No	North Bound
Routes 3, 5, 6, 16, 64, 67, 72	Swanston St / Flinders St (Federation Sq)	Yes	North Bound
		Yes	South Bound
All CBD Routes	Bourke St / Spring St	Yes	West Bound
		Yes	East Bound
All CBD Routes	Clarendon St (Crown Casino)	No	North Bound
		No	South Bound
All CBD Routes	Collins St West End (Southern Cross Station)	Yes	East Bound
		Yes	West Bound
All CBD Routes	Docklands (Flinders St West End)	Yes	East Bound
		Yes	West Bound
All CBD Routes	Docklands (La Trobe St West End)	Yes	East Bound
		Yes	West Bound
All CBD Routes	Flinders St / Russell St	Yes	West Bound
		Yes	East Bound
All CBD Routes	Latrobe St / King St	Yes	East Bound
		Yes	West Bound

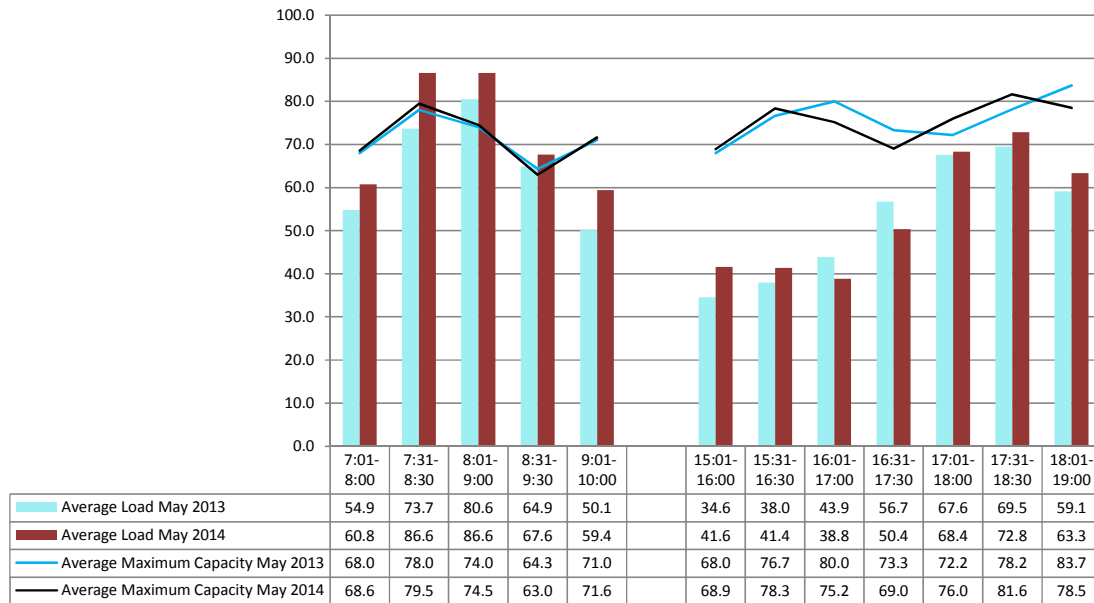
Appendix 4 Maximum capacities by tram type

Tram type	Seating Capacity	Non-CBD maximum capacity	CBD maximum capacity
A-Class	40	55	65
Z-Class	40	60	70
W-Class	46	65	75
B-Class	74	100	110
Three section C-Class Citadis	40	100	110
Three section D-Class Combino	36	80	90
Five section D-Class Combino	58	120	130
B-Class Modified (Apollo)	40	110	120
Five section C2-Class Citadis	54	130	150
E-Class	64	180	180

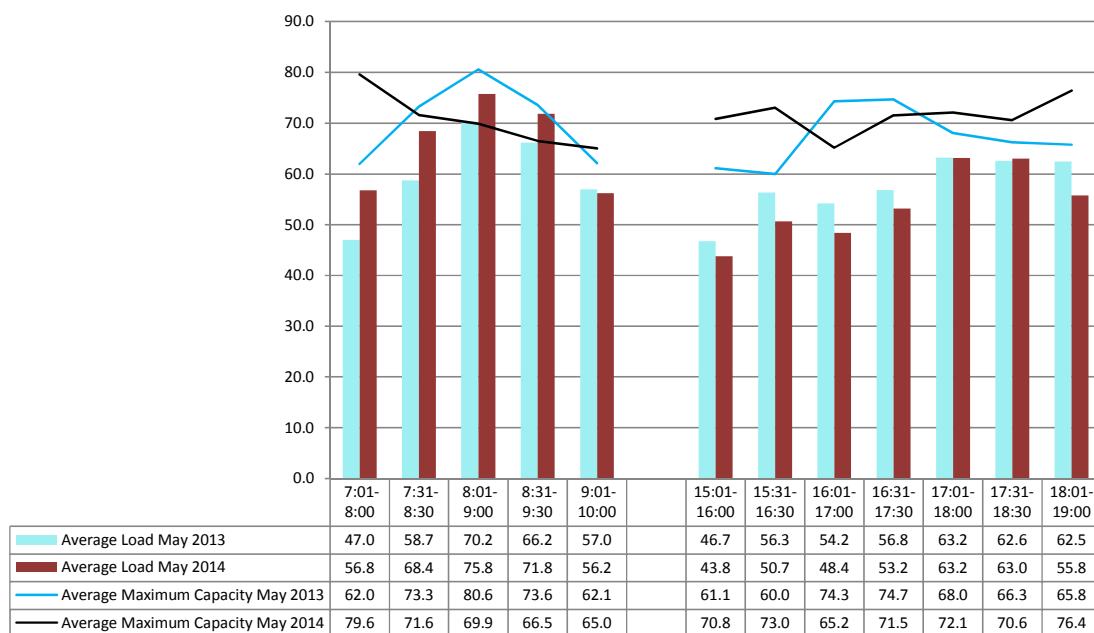
Appendix 5 Comparison of May 2012 and May 2013 average load and average maximum capacity rolling hour results at locations with breaches in May 2013



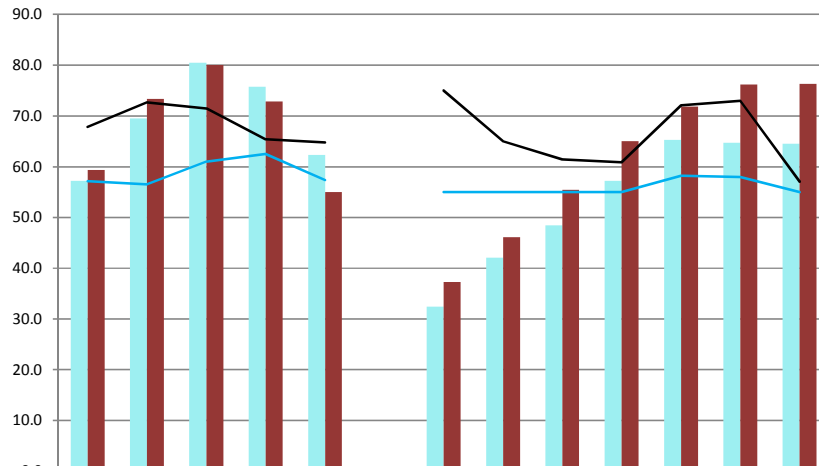
West Coburg to Domain Interchange - Peel St / Victoria St- Rolling Hour Results - May 2013 and May 2014



112 - St Vincents Plaza- Rolling Hour Results - May 2013 and May 2014

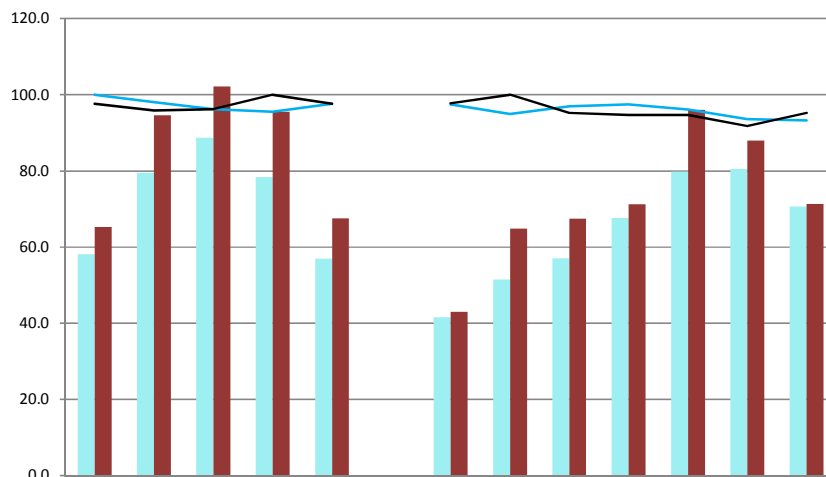


48 - Wellington Pde / Jolimont Rd- Rolling Hour Results - May 2013 and May 2014



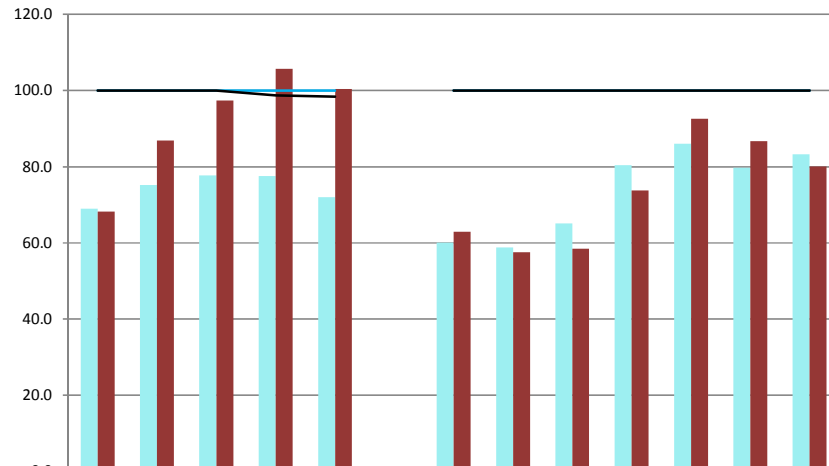
	7:01-8:00	7:31-8:30	8:01-9:00	8:31-9:30	9:01-10:00		15:01-16:00	15:31-16:30	16:01-17:00	16:31-17:30	17:01-18:00	17:31-18:30	18:01-19:00
Average Load May 2013	57.2	69.6	80.5	75.8	62.3		32.4	42.1	48.4	57.2	65.3	64.7	64.6
Average Load May 2014	59.3	73.4	80.1	72.8	55.0		37.3	46.1	55.4	65.0	71.8	76.2	76.3
Average Maximum Capacity May 2013	57.1	56.6	61.0	62.5	57.4		55.0	55.0	55.0	55.0	58.2	58.0	55.0
Average Maximum Capacity May 2014	67.9	72.7	71.5	65.4	64.8		75.0	65.0	61.4	60.9	72.1	73.0	57.0

75 - Wellington Pde / Jolimont Rd- Rolling Hour Results - May 2013 and May 2014



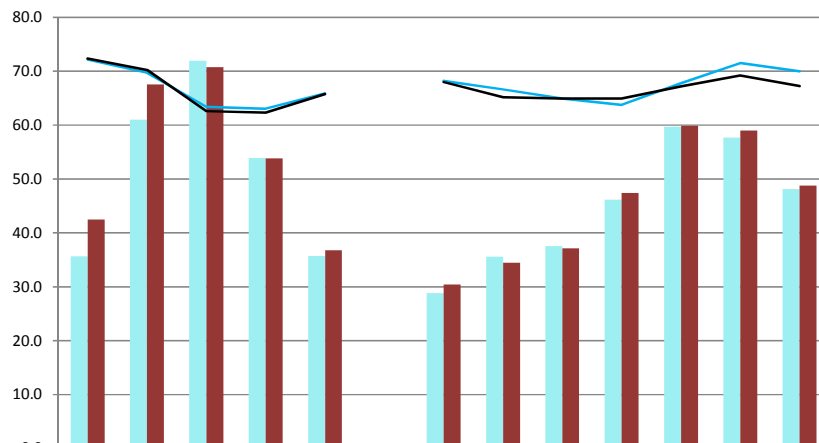
	7:01-8:00	7:31-8:30	8:01-9:00	8:31-9:30	9:01-10:00		15:01-16:00	15:31-16:30	16:01-17:00	16:31-17:30	17:01-18:00	17:31-18:30	18:01-19:00
Average Load May 2013	58.1	79.5	88.7	78.4	56.9		41.6	51.4	57.1	67.6	79.8	80.5	70.7
Average Load May 2014	65.3	94.6	102.2	95.6	67.6		43.0	64.8	67.4	71.2	96.1	88.0	71.3
Average Maximum Capacity May 2013	100.0	98.0	96.3	95.5	97.6		97.5	95.0	97.0	97.5	96.1	93.6	93.3
Average Maximum Capacity May 2014	97.6	95.9	96.3	100.0	97.6		97.8	100.0	95.3	94.7	94.7	91.8	95.3

59 - Haymarket (Elizabeth St)- Rolling Hour Results - May 2013 and May 2014



	7:01-8:00	7:31-8:30	8:01-9:00	8:31-9:30	9:01-10:00		15:01-16:00	15:31-16:30	16:01-17:00	16:31-17:30	17:01-18:00	17:31-18:30	18:01-19:00
Average Load May 2013	69.0	75.2	77.7	77.6	72.0		60.1	58.8	65.1	80.4	86.1	79.8	83.3
Average Load May 2014	68.2	86.9	97.4	105.7	100.4		62.9	57.5	58.4	73.7	92.6	86.7	80.0
Average Maximum Capacity May 2013	100.0	100.0	100.0	100.0	100.0		100.0	100.0	100.0	100.0	100.0	100.0	100.0
Average Maximum Capacity May 2014	100.0	100.0	100.0	98.7	98.4		100.0	100.0	100.0	100.0	100.0	100.0	100.0

Corridor Group - Routes 3, 5, 16, 64, 67 - St Kilda Rd / Commercial Rd - Rolling Hour Results - May 2013 and May 2014

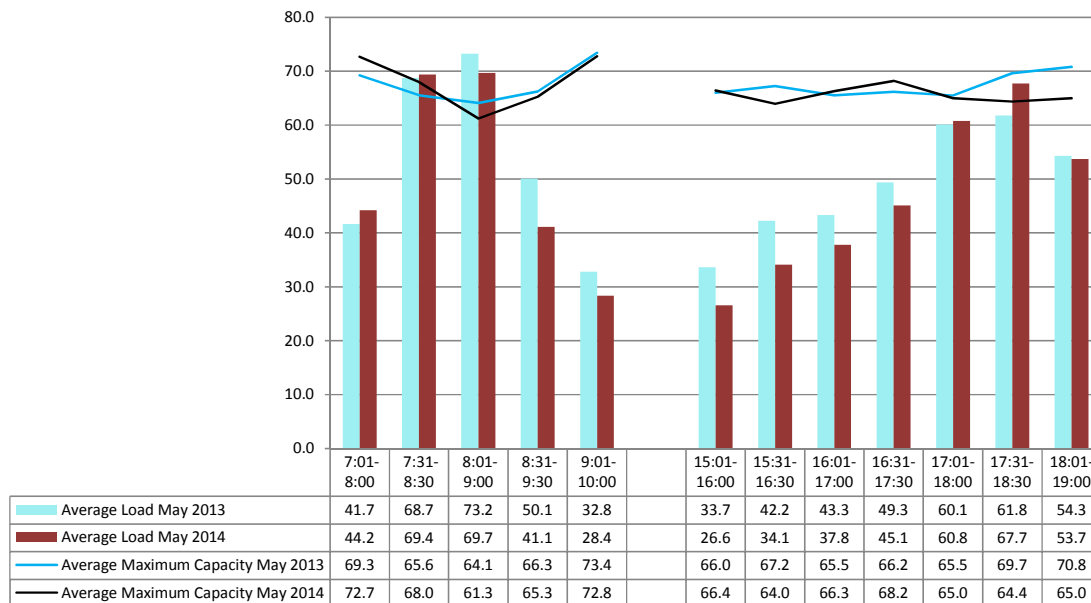


	7:01-8:00	7:31-8:30	8:01-9:00	8:31-9:30	9:01-10:00		15:01-16:00	15:31-16:30	16:01-17:00	16:31-17:30	17:01-18:00	17:31-18:30	18:01-19:00
Average Load May 2013	35.7	61.0	71.9	53.9	35.7		28.8	35.6	37.5	46.2	59.7	57.7	48.2
Average Load May 2014	42.5	67.6	70.8	53.8	36.8		30.5	34.4	37.2	47.4	59.9	59.0	48.8
Average Maximum Capacity May 2013	72.2	69.7	63.4	63.1	65.9		68.2	66.6	64.9	63.8	67.8	71.5	70.0
Average Maximum Capacity May 2014	72.4	70.2	62.6	62.3	65.8		68.0	65.2	64.9	64.9	67.2	69.2	67.2

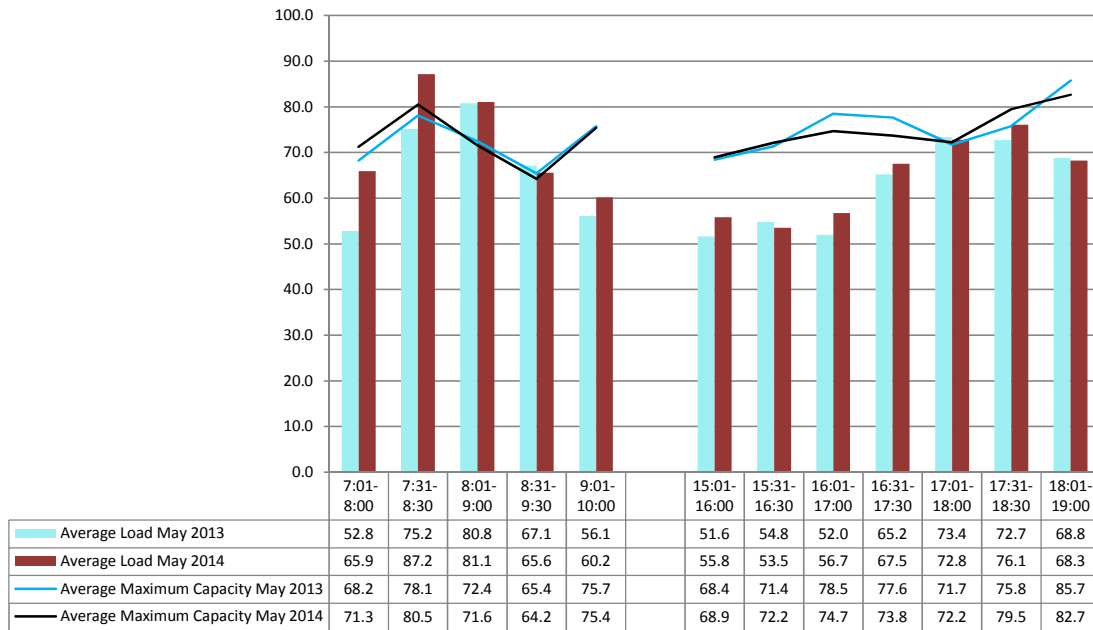
Corridor Group - Routes 3, 5, 16, 64, 67 - St Kilda Rd / High St - Rolling Hour Results - May 2013 and May 2014



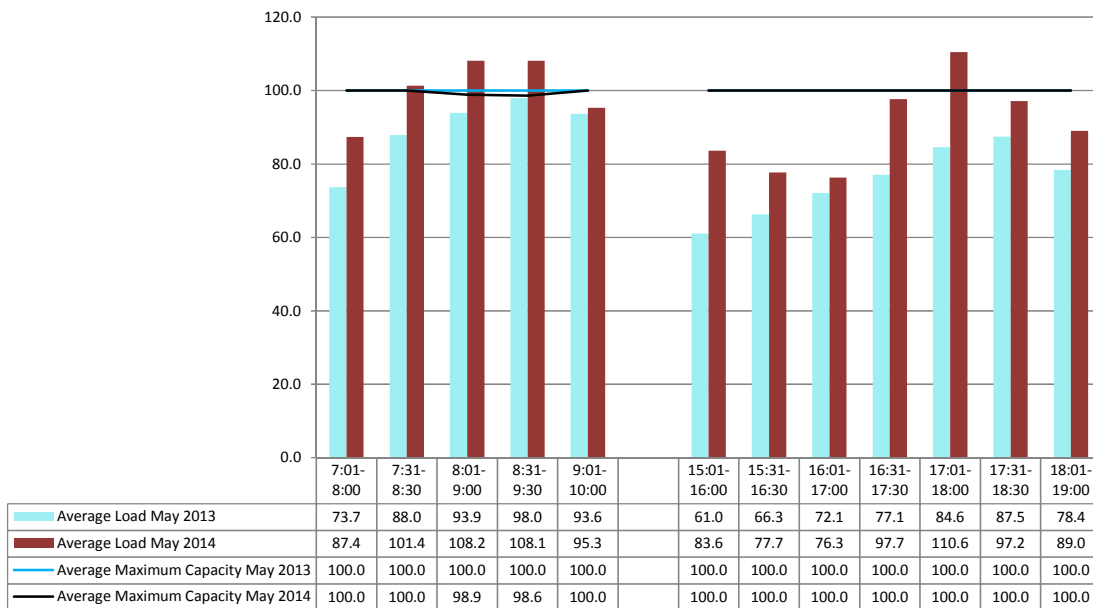
Corridor Group - Routes 5 and 64 - Dandenong Rd / Hornby St - Rolling Hour Results - May 2013 and May 2014



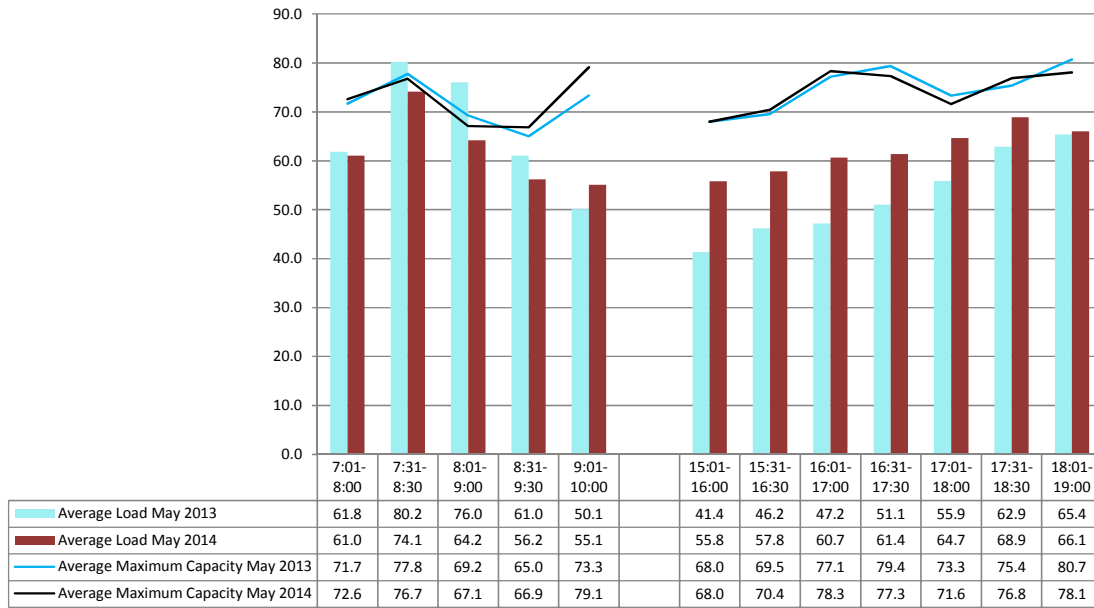
55 - Flemington Rd / Abbotsford St- Rolling Hour Results - May 2013 and May 2014



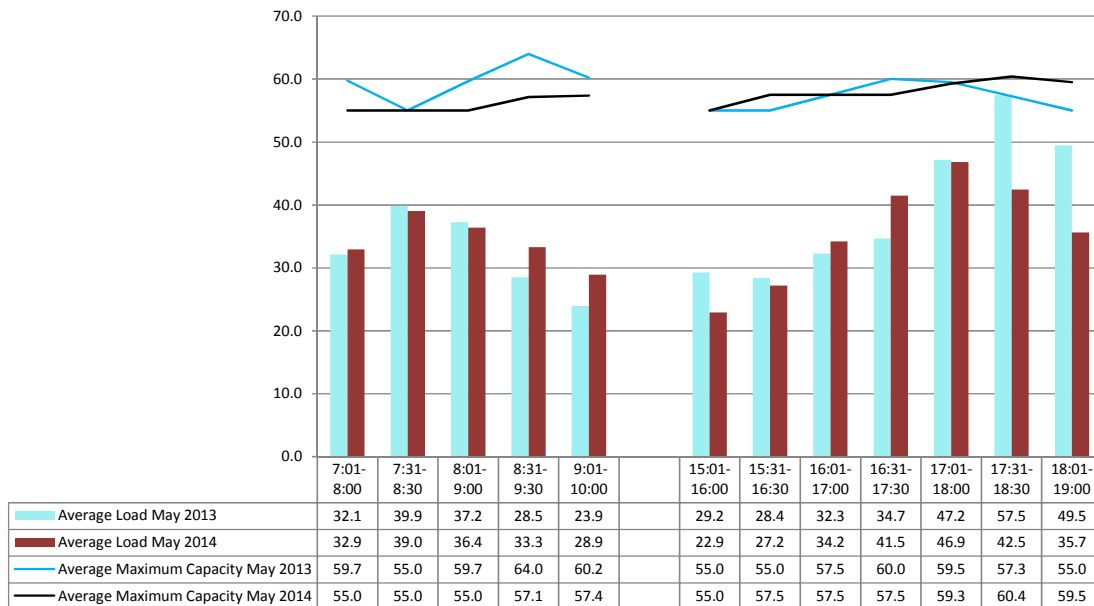
59 - Flemington Rd / Abbotsford St- Rolling Hour Results - May 2013 and May 2014



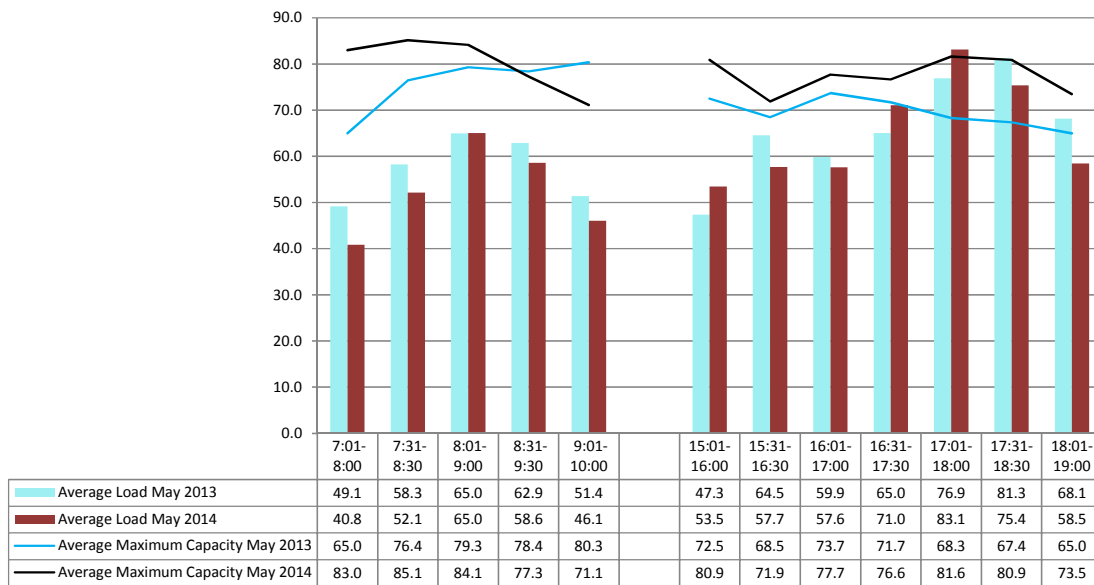
59 - Grantham St / Brunswick Rd- Rolling Hour Results - May 2013 and May 2014



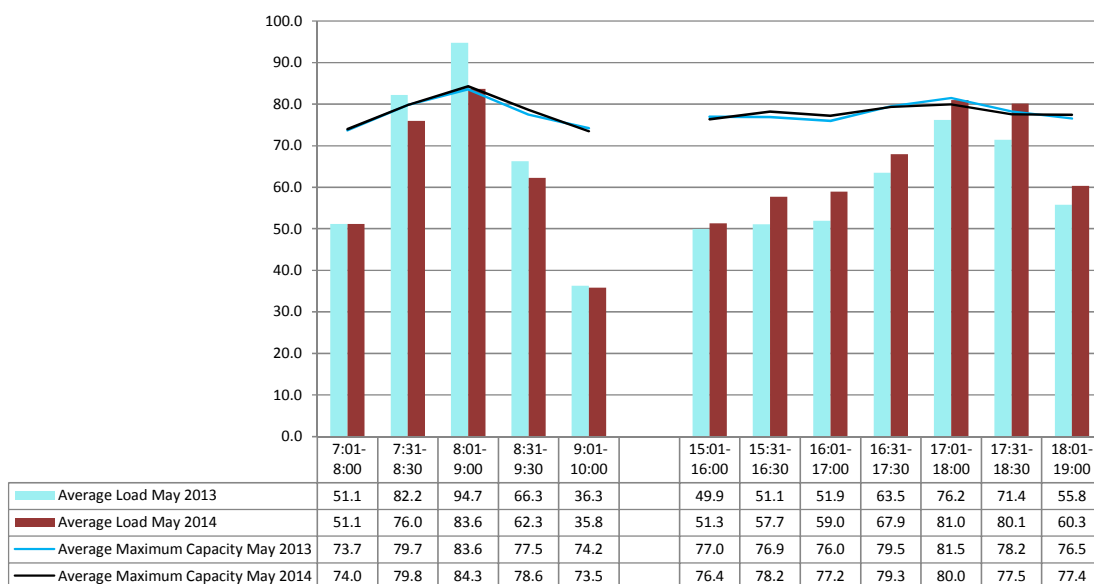
70 - Swan St / Punt Rd- Rolling Hour Results - May 2013 and May 2014



All Routes - CBD Locations - Collins St West End (Southern Cross Station)- Rolling Hour Results - May 2013 and May 2014



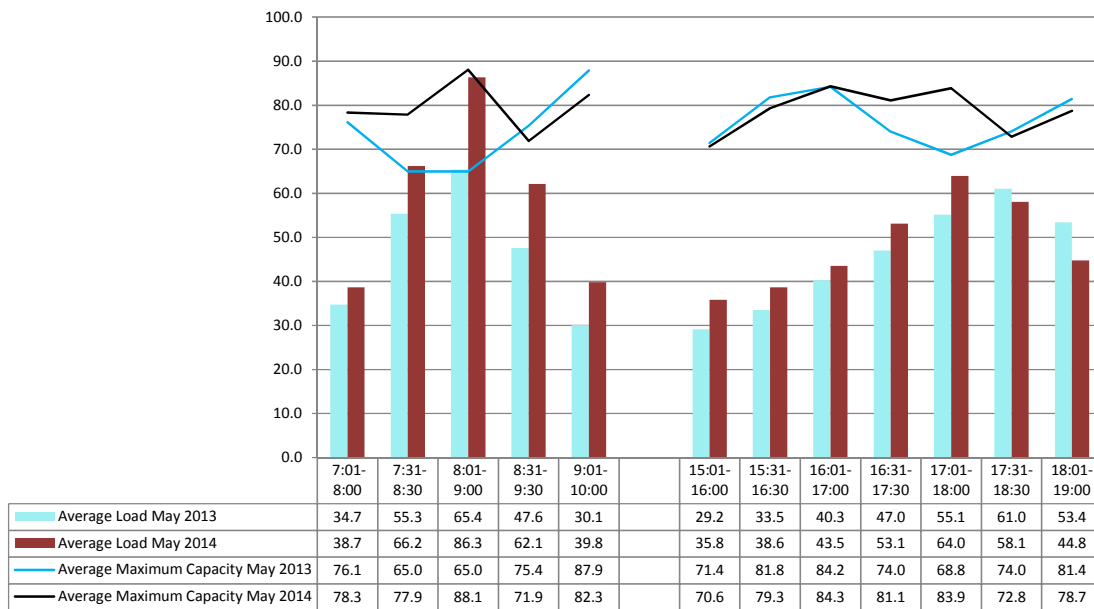
Corridor Group - Routes 3, 5, 6, 16, 64, 67, 72 - Swanston St / Flinders St (Federation Sq)- Rolling Hour Results - May 2013 and May 2014



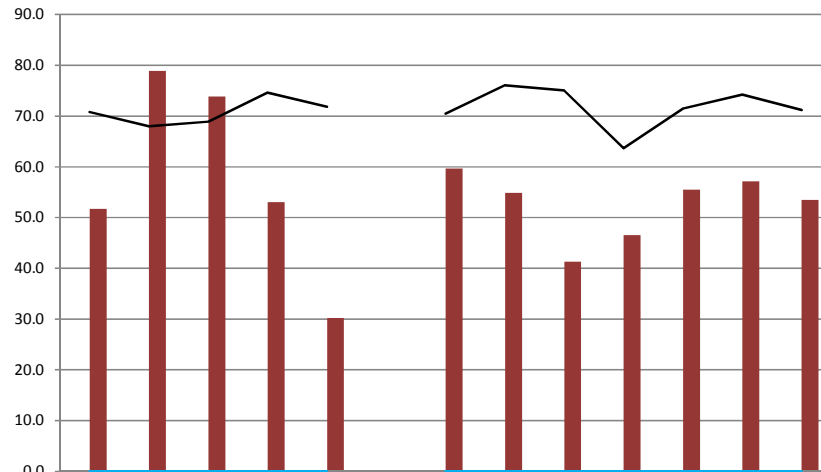
1 - Swanston St / Flinders St (Federation Sq)- Rolling Hour Results - May 2013 and May 2014



112 - Clarendon St (Crown Casino)- Rolling Hour Results - May 2013 and May 2014



8 - Toorak Rd / Punt Rd- Rolling Hour Results - May 2013 and May 2014



Time Interval	Average Load May 2013	Average Load May 2014	Average Maximum Capacity May 2013	Average Maximum Capacity May 2014
7:01-8:00	0.0	51.7	0.0	70.8
7:31-8:30	0.0	78.9	0.0	68.0
8:01-9:00	0.0	73.9	0.0	68.9
8:31-9:30	0.0	53.0	0.0	74.6
9:01-10:00	0.0	30.2	0.0	71.8
15:01-16:00	0.0	59.7	0.0	70.5
15:31-16:30	0.0	54.8	0.0	76.1
16:01-17:00	0.0	41.3	0.0	75.0
16:31-17:30	0.0	46.5	0.0	63.7
17:01-18:00	0.0	55.5	0.0	71.5
17:31-18:30	0.0	57.1	0.0	74.2
18:01-19:00	0.0	53.5	0.0	71.2

Appendix 6 Charts of services observed in rolling hours where load is more than 90 per cent of capacity available

