Green Star

Commuting Mass Transport Calculator Guide

Date Issued: September 2013

Changelog

Version	Release Date	Description of Changes
A	July 2010	released for public comment period
B	December 2010	Public release for all Green Star rating tools
C	January 2011	Errors in 'figure 9: Data entry for example 1 and example 2' (pp22) and 'Bus, Tram and Ferry Services' (pp24) example in Appendix C have been fixed.
C1	August 2011	Launch for Green Star - Custom
D	April 2013	Launch for Green Star – Public Building
E	September 2013	Added additional postcodes in the 'Deemed to Satisfy' list

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1. Introduction

The Green Building Council of Australia (GBCA) has developed a Commuting Mass Transport Calculator ('the Calculator') that is used in all Green Star rating tools to assess how well a building can be accessed using commuting mass transport.

The Calculator determines the number of points awarded out of the five available for the Green Star credit Tra-4 'Commuting Mass Transport'. This Calculator Guide ('the Guide') should be used in conjunction with the Calculator in the Green Star – rating tool.

The Calculator determines the number of points awarded based on the type of Mass Transport; the 'Average Interval Between Services During Peak Periods'; and the proximity of the Commuting Mass Transport stops to the development.

2. Glossary of Terms

The following terminology is used this Guide and in the Calculator:

Afternoon Peak Period

Refers to the afternoon period where masstransportation is mostly used. For the purposes of Green Star, this is between 4:30pm and 6:30pm.

Bus route

The path regularly followed by a passenger bus.

Bus bay

A bus stop for a 25m bus that allows for "independent" operation of the bus so that arrivals and departures of the vehicle are not constrained (in a physical sense) by other vehicles. For the purposes of Green Star, a bus bay servicing multiple routes is considered as only as one.

ferry route

The route regularly followed by a passenger ferry. mass Transport Transportation by bus, train, tram or ferry, which provides service on a regular and continuing basis.

Mass Transport service (or 'service')

Refers to a vehicle (train, tram, bus or ferry) covering a particular route at a given time.

Morning Peak Period

Refers to the morning period where mass transportation is mostly used. For the purposes of Green Star, this is between 7:30am and 9:30am.

Railway and Tram line

The route followed by a passenger train or tram.

Transport Interchange

A location where passengers can exchange between services of the same or different mode of transport. These locations include train stations; bus and tram stops; and ferry wharfs.

3. How the calculator works

The Calculator determines the number of Green Star points achieved based on scores representing the type and frequency of Commuting Mass Transport routes, as well as their proximity to the building.

The scores required for points to be awarded in the Tra-4 'Commuting Mass Transport' credit vary depending on the location of the building, since there are generally more people that will use the services, and more destinations to travel to in a densely populated location than in a sparsely populated one. For this reason, date on population density determines the score required for each location.

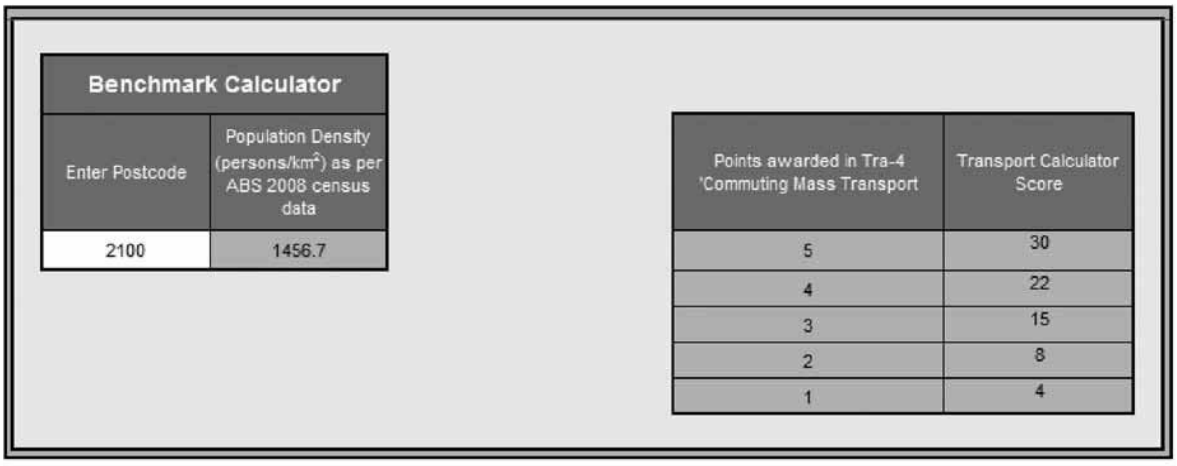
Appendix A outlines in detail the values and scores assigned for each transport service, its frequency and proximity to the building.

3.1 Where to find the calculator and how to enter data

The Calculator is embedded in the Green Star – rating tool, which is located on the GBCA website, www.gbca.org.au/greenstar. It can be found on a tab in the spreadsheet after the Transport Category. Data can be entered manually or by selecting pre-assessed or deemed to satisfy options. Where applicable, the user can enter data manually in the white cells of the Calculator. All data must be supported by the Compliance Requirements documentation as stipulated in the 'Tra-4 Commuting Mass Transport' credit in the Green Star – Technical Manual.

3.2 Determining the benchmark

Population density data from the Australian Bureau of Statistics (ABS) is used to determine the score required to achieve points in the Tra-4 'Commuting Mass Transport' credit. The population density data for each postcode in Australia is embedded in the Calculator; the score required to achieve points in the Tra-4 'Commuting Mass Transport' credit is displayed in the top section of the Calculator based on the postcode where the project is located. Detailed information of how these benchmarks are calculated is available in Appendix A.



Benchmark Calculator	
Enter Postcode	Population Density (persons/km^2) as per ABS 2008 census data
2100	1456.7

Points awarded in Tra-4 'Commuting Mass Transport	Transport Calculator Score
5	30
4	22
3	15
2	8
1	4

Figure 1 Benchmarks calculator with the transport calculator score required to achieve points in the Tra-4 'Commuting Mass Transport' credit displayed.

3.3 Determining the commuting mass transport calculator score

There are three main options to follow when using the Calculator:

1. Deemed to satisfy criteria based on the postcode of the development site;
2. Deemed to satisfy criteria based on proximity to selected train stations; and
3. Manual data entry for trains, buses, trams and ferries.

All options are described on the following pages.

3.3.1 Option one: deemed to satisfy criteria based on postcodes

This option allows projects to automatically achieve five Green Star points when they are located within one of the selected postal regions listed in Table 1 below, and within 500m walking distance of either:

- A bus interchange with at least six bays; or
- A train station with at least four platforms.

If the postcode of the project is not listed[1] or the project is not eligible (as outlined above); data for bus, tram and/or ferry services should be manually entered. Data for train services could be manually entered or the deemed to satisfy option can be used, as explained in section 3.3.3.

ACT	NSW	VIC	QLD	SA	WA	NT	TAS
	2000	3000	4000	5000	6000		
	2010	3008	4006				
	2060	3121					
	2600	3205					

Table 1 Postcodes with a 'Deemed to Satisfy' Provision

If eligible, select the postcode of the project site from the dropdown list, as shown in figure 2. The Calculator will automatically display the maximum five points.

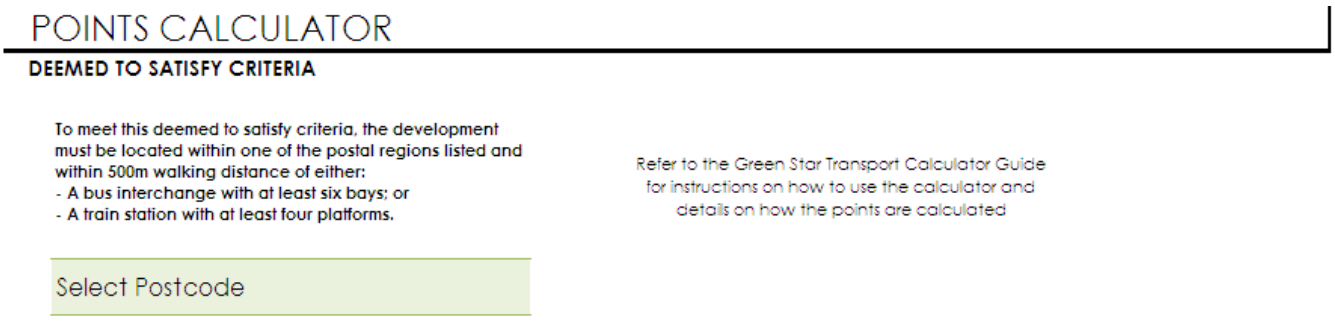


Figure 2 Input for the Deemed to satisfy criteria based on postcode.

3.3.2 Option two: deemed to satisfy criteria based on proximity to train station

The GBCA has pre-assessed a number of train stations[2] in different cities based on the number of railway lines servicing those particular stations, as well as the 'Average Interval Between Services During Peak Periods'. Projects

[1] As additional qualifying postcodes become available they will be listed on the GBCA website and incorporated into the Calculator

located within 1000 metres of these pre-assessed stations can use this option by selecting train stations from the list in the 'Deemed to Satisfy Criteria Based on Proximity to Train Station' option in the 'Train Services' section of the Calculator (Figure 3). If the project is not within 1000m of these pre-assessed stations, the 'Manual Data' entry option should be used as described in Section 3.3.3 below.

Up to five points will be awarded depending on the distance and the 'Average Interval Between Services During Peak Periods' at the particular train station. When five points are not awarded based just on proximity to train stations, additional points can be achieved by manually entering data for buses, trams and ferries where applicable as per section 3.3.3.

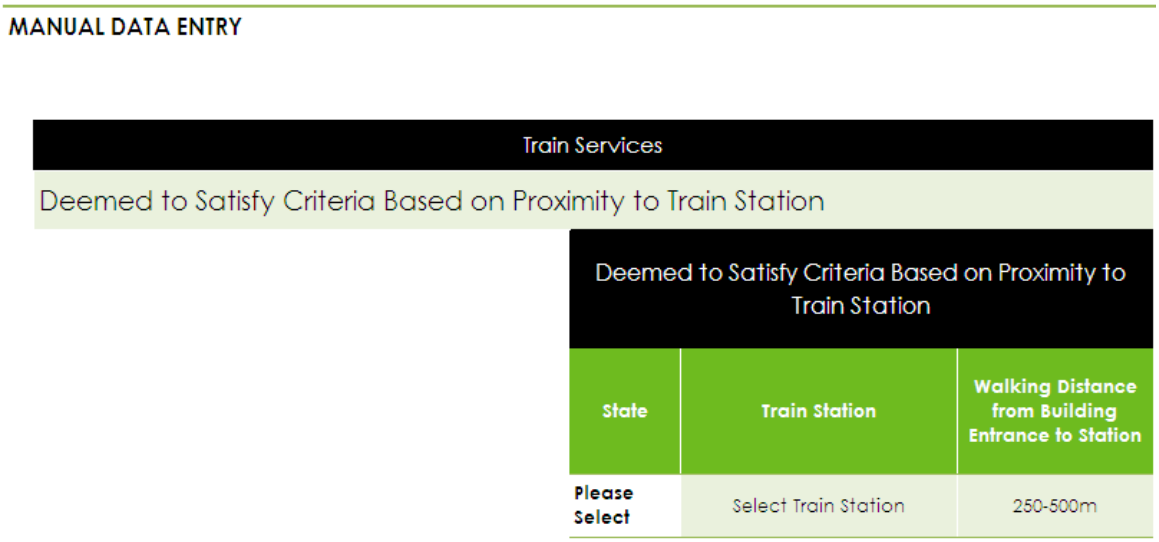


Figure 3 Options for Train Data Entry.

Once the 'Deemed to Satisfy Criteria Based on Proximity to Train Station' option is selected, train stations in NSW, QLD and VIC can be selected from the 'Train Stations' section as shown in Figure 4 Note that the 'State' field will be automatically displayed according to the information entered in the 'Building Input' section of the rating tool. If the state is other than NSW, QLD or VIC, the 'Train Stations' option is not displayed in the Calculator and data must be entered manually.

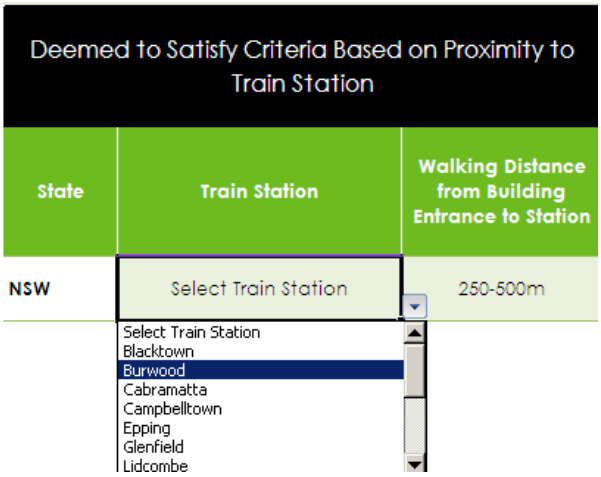


Figure 4 Deemed to Satisfy Train Stations List.

Once the train station is chosen, select the applicable range under the 'Walking Distance from Building Entrance to the Train Station' drop down list as shown in Figure 5 below.

[2] As additional train station details become available they will be incorporated into the Calculator

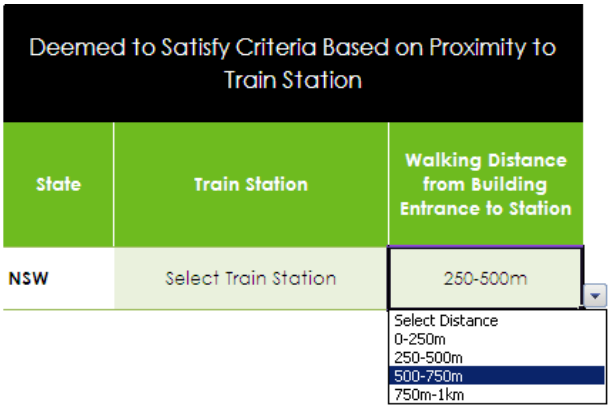


Figure 5 Walking Distance List for Selected Train Station

The distance is to be measured as actual pedestrian walking distance (not straight line distance) from a major entrance of the building to the selected train station. Distances greater than 1000m cannot be entered into the Calculator as per the provisions of the Credit Criteria.

3.3.3 Option three: manual data entry

The 'Manual Data Entry' section of the Calculator is divided in two:

- Bus, Tram, or Ferry services; and
- Train services.

The manual data entry option requires a number of calculations prior to entering the data in the Calculator. All calculations required are described in detail in this section.

The calculation requirements are the same for buses, trams, ferries and trains. However, as the modes of transport are weighted differently, data needs to be entered in separate tables. Note that each route for all eligible modes of transport must be assessed individually before the data is entered to the Calculator. Refer to Appendix A for further detail on how the transport score and the Green Star points are calculated.

Data about each particular route should be entered to the section of the calculator shown in Figure 6. The cell in which data should be entered is determined by calculating the following two indicators:

- 'Walking Distance from Building Entrance to Transport Service', (determines which row in the table should be used); and
- 'Average Interval Between Services During Peak Periods' (determines which column should be used).

How these indicators should be calculated is explained in Sections 3.3.4 and 3.3.5, respectively; and some additional rules are provided in Section 3.3 of this Guide.

Manual Data Entry - Train Services		
Walking Distance from Building Entrance to Station	Average Interval Between Services During Peak Periods	
	≤15min	≤30min
0-250m		
250-500m		
500-750m		
750m-1km		

Figure 6 Manual Data Input Table

3.3.4 Walking dIstance from bullding entrance to transport stop

The distance between the building and the transport service is to be measured as actual pedestrian walking distance (not straight line distance) from a major entrance of the building to the relevant train station, bus/tram stop or ferry wharf. The Calculator includes four distance range groups:

- 0-250m
- 250-500m
- 500-750m
- 750m-1km

3.3.5 Average interval between services durIng peak periods

The 'Average Interval Between Services During Peak Periods' should be assessed individually for each mode of transport route. This should be calculated using the following methodology:

1. Determine the number of services during peak periods for each route.
2. Calculate the 'Average Interval Between Services During Peak Periods' for each route.

1. Determine the number of services during peak periods for each route

The number of services for each route servicing a stop located within 1000m walking distance of the building needs to be determined for morning and afternoon peak periods.

For the purposes of the Green Star rating tools, the GBCA has set morning and afternoon peak hours as follows:

- Morning peak period: Between 7:30am and 9:30am Monday to Friday excluding public holidays
- Afternoon peak period: Between 4:30am and 6:30pm Monday to Friday excluding public holidays

Note that other peak periods can be used for the assessment if it can be demonstrated that building is operated other times than the peak periods stipulated in this guide. Such exemption should be confirmed through a Credit Interpretation Request.

An example of data for two bus routes can be seen in Table 2. The number of services between peak periods' for Routes '1' and '2' is nine and seven respectively for 'Morning Periods', and four and nine for 'Afternoon Periods'.

2. Calculate the average Interval between services during Peak Periods

The 'Average Interval Between Services' per route should be calculated separately for morning and afternoon peak periods by dividing 120 minutes (number of minutes in the two-hour peak period) by the number of services of the route during the peak period. For example, using the data in Table 2, The 'Average Interval Between Services' (AIBS) for Route 1 during the Morning Peak Period is 13 minutes calculated as follows:

$$AIBS = \frac{120}{9} = 13.33 \text{ min}$$

Likewise, the 'Average Interval Between Services' (AIBS) for Route 1 during the Afternoon Peak Period is 30 minutes calculated as follows:

$$AIBS = \frac{120}{4} = 30 \text{ min}$$

Once these figures are calculated, the 'Average Interval Between Services During Peak Periods' (AIBSPP) can be calculated by adding the two 'Average Interval Between Services' and divide the resulting number by two. The 'Average Interval Between Services During Peak Periods' for Route 1 is 22 minutes calculated as follows:

$$AIBSPP = \frac{(13.33 + 30)}{2} = 21.6 \text{ min}$$

Calculations are required for each route servicing the stop. In the example of Table 2, the same calculations are required for Route 2 where the 'Average Interval Between Services During Peak Periods' is 15 minutes.

Table 2: Sample data for the calculation of the 'Average Interval Between Services During Peak Periods' for two bus routes.

Sample Bus Routes			
Time of Services Morning Peak Period			
Route 1 (Northbound Services)		Route 2 (Southbound Services)	
7:25am ✕		7:15am ✕	
7:45am ✓		7:30am ✓	
8:00am ✓		7:45am ✓	
8:15am ✓		8:00am ✓	
8:25am ✓		8:15am ✓	
8:35am ✓		8:30am ✓	
8:50am ✓		9:00am ✓	
9:05am ✓		9:30am ✓	
9:15am ✓		10:00am ✕	
9:25am ✓		-	
9:40am ✕		-	
Number of Services	9	Number of Services	7

Sample Bus Routes

Time of Services Afternoon Peak Period			
Route 1 (Northbound Services)		**Route 2 (Southbound Services)**	
4:20pm ✕		4:25pm ✕	
4:50pm ✓		4:40pm ✓	
5:20pm ✓		4:55pm ✓	
5:50pm ✓		5:05pm ✓	
6:20pm ✓		5:15pm ✓	
6:50pm ✕		5:25pm ✓	
-		5:35pm ✓	
-		5:45pm ✓	
-		6:00pm ✓	
-		6:15pm ✓	
-		6:35pm ✕	
Number of Services	4	Number of Services	9

Table 2 Sample data for the calculation of the 'Average Interval Between Services During Peak Periods' for two bus routes.

Assuming that the walking distance from the building entrance to the bus stop is 575m; data should be entered to the Calculator as shown in Figure 6 where each route is represented by a '1' and is entered in the respective cells.

N.B. Standard rounding convention should be used (i.e. 13.3 is rounded to 13 and 13.5 is rounded to 14).

Note that this example is just for two routes. The same calculations are required for other routes if applicable, and figures should be entered into the calculator accordingly (e.g. if there are three routes and each of them has an 'Average Interval Between Services During Peak Periods' ≤ 15, a '3' should be entered in the relevant cell.

Bus, Tram and Ferry Services		
Walking Distance from Building Entrance to Stop/Wharf	Average Interval Between Services During Peak Periods	
	≤15min	≤30min
0-250m		
250-500m		
500-750m	1	1
750m-1km		

Figure 7 Data entry based on example

3.4 Additional Guidance

The following additional rules should be considered when using the Calculator:

- A route that provides services in two directions (e.g. northbound and southbound) should be considered as two different routes. Note that intervals between services may be different for each direction.
- Routes with an 'Average Frequency Between Services During Peak Periods' of more than 30 minutes are not eligible for assessment.
- A transport route that terminates within 2km of the site is to be counted as half a service.

Mass Transport stops

In cases where a transport route services several stops within 1000m from the building, only one stop (the closest to the building) can be included for assessment.

- Only transport routes that service the selected station can be included for assessment.
- Transport stops located more than 1000m from the building are not eligible for assessment.

Transport Interchange

Routes servicing a nearby Transport Interchange can be included in the assessment provided that:

- The Transport Interchange can be accessed by Mass Transport within a travel time of no more than 15 minutes and an 'Average Interval Between Services During Peak Periods' of no more than 30 minutes.

If the conditions above are met, data for routes servicing the Transport Interchange can be entered in the Calculator as follows:

- Each route servicing the Transport Interchange should be entered into the Calculator as '0.5' instead of '1' (see Example 2 in Appendix B); and The 'Walking distance from Building Entrance to Transport Stop' for the
- Routes servicing the Transport Interchange is equal to the actual walking distance from the site to the connecting service stop plus 250m.

N.B. Routes servicing more than one Transport Interchange can be included for assessment providing the conditions above are met and each route servicing the Transport Interchange is considered for calculations just one time.

Appendix A. Point allocation, benchmarks and weighting

Point allocation in Tra-4 'Commuting mass transport'

Up to five points are awarded in the Tra-4 'Commuting Mass Transport' credit. The number of points achieved is based on the results of the assessment in the Calculator. The Calculator produces a Mass Transport Calculator Score that is compared to a benchmark matrix. For each point to be awarded in the Tra-4 'Commuting Mass Transport' credit, a certain level of Transport Calculator Score is required. This score varies with the location of the building project, as explained in the following section.

Benchmark calculation

The score required to achieve points in the Tra-4 'Commuting Mass Transport' credit depends on the population density of the location of the building. The score required in previously released Green Star tools has been the same across all Australian locations.

A number of locations has been identified as having good commuting mass transportation and these have been given a deemed to satisfy criteria based on their postcode, i.e. location. The average population density of these locations is 4000 persons/km^2.

The location specific scores required are calculated as a function of the baseline scores required to achieve points in Tra-4 'Commuting Mass Transport' as per Table 3.

Total Mass Transport Calculator Score	Number of Green Star points for Tra-4
10	1
20	2
40	3
60	4
80	5

Table 3 Baseline for calculating scores required to achieve Green Star points in the credit Tra-4 'Commuting Mass Transport'.

The function for calculating the required scores for individual locations is (all results are rounded up):

Score required at location = baseline requirement/4000 x Population density for location

With two exceptions:

1. No location can be required to get a higher score than the baseline in Table 3 to achieve points in Tra-4 'Commuting Mass Transport', if the calculation results in higher requirements; the requirement will be as per Table 3.
2. The minimum score required to achieve points in Tra-4 'Commuting Mass Transport' is as per Table 4, if the calculation results in lower requirements; the requirement will be as per Table 4.

Total Mass Transport Calculator Score	Number of Green Star points for Tra-4
1	1
2	2
4	3
6	4
8	5

Table 4 Minimum score required to achieve Green Star points in the credit Tra-4 'Commuting Mass Transport'.

Example calculation for a location with population density of 2500 persons/km^2:

Baseline Total Mass Transport Calculator Score	Calculation	Location Specific Total Mass Transport Calculator Score	Number of Green Star points for Tra-4
10	10/4000x2500=6.25	6	1
20	20/4000x2500=12.5	13	2
40	40/4000x2500=25	25	3
60	60/4000x2500=37.5	38	4
80	80/4000x2500=50	50	5

Weighting of transport services

Each Mass Transport route is allocated a score in the Calculator depending on the proximity to the site and its 'Average Interval Between Services During Peak Periods'. This score is then used to calculate the Green Star points. The score is calculated as per Table 5.

walking distance from building entrance to mass Transport	average Interval between services during Peak Periods	
Score for bus, tram and ferry services		
	≤ 15 min	≤ 30 min
0-250m	6	4
250-500m	5	3
500-750m	4	2
750-1000m	3	1
Score for train services		
	≤ 15 min	≤ 30 min
0-250m	7	5
250-500m	6	4
500-750m	5	3
750-1000m	4	2

Table 5 Allocation of points in the Calculator

The score achieved for each route is added to get the total Calculator score

Appendix B. Example

Example 1: Calculation of 'average interval between services durlng peak periods' for a traln route

For this example, assume a building that due to its location is not eligible for the 'Deemed to Satisfy Options' based on postcodes or proximity to preassessed train stations. The data to determine the points gained under the Tra-4 'Commuting Mass Transport' Credit would need to be entered into the Calculator manually. The following assumptions should also be considered:

- There is one train station located 643m walking distance from the main entrance to the building.
- The train stopping at that station services just two routes - northbound and southbound.
- Peak morning and afternoon periods as per Green Star provisions are between 7:30am and 9:30am, and 4:30pm and 6:30pm (120 minutes per peak period).
- The number and time of services during peak periods varies depending on the direction of the train as shown in Table 6

Table 6: Time and Number of Services During Peak Periods for Two Train Routes

Sample Bus Routes			
Time of Services Morning Peak Period			
Route 1 (Northbound Services)		Route 2 (Southbound Services)	
7:28am ✕		7:25am ✕	
7:48am ✓		7:45am ✓	
8:08am ✓		8:05am ✓	
8:48am ✓		8:25am ✓	
9:15am ✓		8:55am ✓	
9:20am ✓		9:00am ✓	
9:30am ✓		9:20am ✓	
9:38am ✕		9:25am ✓	
-		9:35am ✕	
Number of Services	6	Number of Services	7

Sample Bus Routes

Time of Services Afternoon Peak Period			
Route 1 (Northbound Services)		**Route 2 (Southbound Services)**	
4:26pm ✕		4:25pm ✕	
4:56pm ✓		4:45pm ✓	
5:16pm ✓		5:05pm ✓	
5:36pm ✓		5:25pm ✓	
6:06pm ✓		5:55pm ✓	
6:46pm ✕		6:00pm ✓	
-		6:05pm ✓	
-		6:15pm ✓	
-		6:35pm ✕	
Number of Services	4	Number of Services	7

Table 6 Time and Number of Services During Peak Periods for Two Train Routes

As explained in section 4.3.2 of this Guide, the 'Average Interval Between Services During Peak Periods' for each route was calculated as shown in Table 7.

	Route 1	Route 2
'Average Interval Between Services' for Morning Peak Period	AIBS = 120 /6 = 20min	AIBS = 120 / 7= 17.14min
'Average Interval Between Services' for Afternoon Peak Period	AIBS = 120 /4 = 30min	AIBS = 120 / 47 = 17.14min
'Average Interval Between Services During Peak Periods'	AIBSPP = (20 + 30) / 2 = 25min	AIBSPP = (17.14 + 17.14) / 2 = 17.14min

Table 7 Calculations of 'Average Interval Between Services During Peak Periods'

The 'Average Interval Between Services During Peak Periods' is 25 minutes for Route 1, and 17 minutes for Route 2. Based on the results of these calculations and the assumptions above, data should be entered in the calculator as shown in Figure 7.

Manual Data Entry - Train Services

Walking Distance from Building Entrance to Station	Average Interval Between Services During Peak Periods	
	≤15min	≤30min
0-250m		
250-500m		
500-750m		2
750m-1km		

Both Routes have an 'Average Interval Between Services During Peak Periods' of more than 15 minutes, hence a '2' should be entered in this cell.

Figure 8 Data Entry for Example 1.

Example 2: Calculation of 'average interval between services durlng peak perlods' for routes servicing a nearby transport interchange

Using all suppositions in Example 1, consider the following extra assumptions:

- The train route that stops near the building services a Transport Interchange with a travel time of 12 minutes.
- Six additional bus routes service the Transport Interchange; three arriving routes and three departing.

Since the 'Average Interval Between Services During Peak Periods' for the train routes servicing the Transport Interchange is 25 and 17 minutes respectively, data for the additional bus routes servicing the Transport Interchange can be entered into the Calculator as per the rules in Section 3.2.3 of this guide.

The time and number of services during peak periods, and the 'Average Interval Between Services' calculations for each bus route are shown in Table 8.

Morning Peak Period services 'To' and 'from' Transport Interchange

Bus a		Bus b		Bus C	
Route 1 To Transport Inter-change	Route 2 From Transport Interchange	Route 3 To Transport Interchange	Route 4 From Transport Interchange	Route 5 To Transport Interchange	Route 6 From Transport Interchange
Time	Time	Time	Time	Time	Time
7:25am	7:20am	7:18am	7:45am	7:15am	-
7:45am	7:40am	7:48am	8:30am	8:00am	6:45am
8:00am	8:00am	8:18am	9:15am	8:10am	7:45am
8:15am	8:20am	8:48am	10:00am	8:20am	8:45am
8:30am	8:40am	9:18am	-	8:30am	9:45am
8:45am	9:00am	9:48am	-	8:40am	-

9:00am	9:20am	-	-	8:50am	-
9:15am	9:40am	-	-	9:00am	-
9:35am	-	-	-	9:45am	-
Number of Services Route 1	**7**	**Number of Services Route 3**	**4**	**Number of Services Route 5**	**7**
Number of Services Route 2	**6**	**Number of Services Route 4**	**3**	**Number of Services Route 6**	**2**
Average Interval Between Services Route 1	**17.14 min**	**Average Interval Between Services Route 3**	**30 min**	**Average Interval Between Services Route 5**	**17.14 min**
Average Interval Between Services Route 2	**20 min**	**Average Interval Between Services Route 4**	**40 min**	**Average Interval Between Services Route 6**	**60 min**

Afternoon Peak Period of services 'To' and 'from' Transport Interchange

Bus a		**Bus b**		**Bus C**	
Route 1 To Transport Interchange	**Route 2 From Transport Interchange**	**Route 3 To Transport Interchange**	**Route 4 From Transport Interchange**	**Route 5 To Transport Interchange**	**Route 6 From Transport Interchange**
Time	**Time**	**Time**	**Time**	**Time**	**Time**
4:25pm	4:30pm	4:50pm	4:40pm	4:15pm	4:29pm
4:45pm	4:50pm	5:20pm	4:55pm	4:45pm	4:32pm
5:00pm	5:10pm	5:50pm	5:10pm	5:15pm	4:35pm
5:05pm	5:20pm	6:20pm	5:25pm	5:20pm	4:58pm
5:10pm	5:30pm	6:50pm	5:40pm	5:25pm	5:13pm
5:15pm	5:40pm	-	5:55pm	5:30pm	5:22pm
5:20pm	6:00pm	-	6:10pm	5:35pm	5:30pm
5:30pm	6:20pm	-	6:25pm	5:40pm	5:43pm

6:00pm	6:40pm	-	6:40pm	5:45pm	5:59pm
6:15pm	-	-	-	6:00pm	6:22pm
6:30pm	-	-	-	6:30pm	6:28pm
6:45pm	-	-	-	7:00pm	6:43pm
Number of Services Route 1	**10**	**Number of Services Route 3**	**4**	**Number of Services Route 5**	**10**
Number of Services Route 2	**8**	**Number of Services Route 4**	**8**	**Number of Services Route 6**	**10**
Average Interval Between Services Route 1	**12 min**	**Average Interval Between Services Route 3**	**30 min**	**Average Interval Between Services Route 5**	**12 min**
Average Interval Between Services Route 2	**15 min**	**Average Interval Between Services Route 4**	**15 min**	**Average Interval Between Services Route 6**	**12 min**
Average Interval Between Services Dur ing Peak Periods for Bus A Route 1 = 14.57 minutes ≈ 15 minutes		**Average Interval Between Services During Peak Periods for Bus B Route 3 = 30 minutes**		**Average Interval Between Services During Peak Periods for Bus C Route 5 = 14.57 minutes ≈ 15 minutes**	
Average Interval Between Services Dur ing Peak Periods for Bus A Route 2 = 17.50 minutes ≈ 18 minutes		**Average Interval Between Services Dur ing Peak Periods for Bus B Route 4 = 27.50 minutes ≈ 28 minutes**		**Average Interval Between Services During Peak Periods for Bus C Route 6 36 minutes**	

Table 8 Time of Services During Peak Periods and 'Average Interval Between Services' Calculations for three Bus Routes Servicing a Transport Interchange.

The 'Average Interval Between Services During Peak Periods' for each route was calculated as per the instructions within this Guide. Data is entered into the Calculator in the 'Bus, Tram and Ferry Services' section as shown in Figure 8. This figure also shows data entered for 'Trains' as per Example 1 as well as the total number of points awarded.

According to the rules in Section 3.4 of this Guide, three bus services from and to the Transport Interchange are to be counted as six different routes, and should be entered in the Calculator as '0.5' per service when eligible. The walking distance figure should be the distance from the stop near the building plus 250m. Since the assumed walking distance used in Example 1 is 643m, the distance to be used when entering data for routes to and from the Transport Interchange is 893m.

The calculation figures at the bottom of Table 8 indicate that five out of six bus routes servicing the Transport Interchange have an 'Average Interval Between Services During Peak Hours' of 30 minutes or less. Bus C – Route 6 should be excluded from being entered into the Calculator as per the provisions of this Guide.

Figure 9 Data Entry for Example 1 and Example 2

A project with the assumptions provided in Examples 1 and 2 would be awarded one point for this credit.

Appendix C. Example of submlsslon documentation

There are two options for how to document the timetable information for the manual data entry option. One option is to collect timetables for each transport route, the other option is to use the timetable for each relevant stop. The following is an example of the second option.

Bus routes 355, 423, 426 and 428 all service Bus stop 204239: Newtown, Enmore Rd Nr Simmons St. The calculations in the table below are done in accordance with the Green Star Commuting Mass transport Calculator Guide to determine how these bus routes shall be entered to the Green Star Commuting Mass Transport Calculator for the four bus routes. The timetable information is an extract from the official 'Transport Info' website for the relevant times for this bus stop, see below.

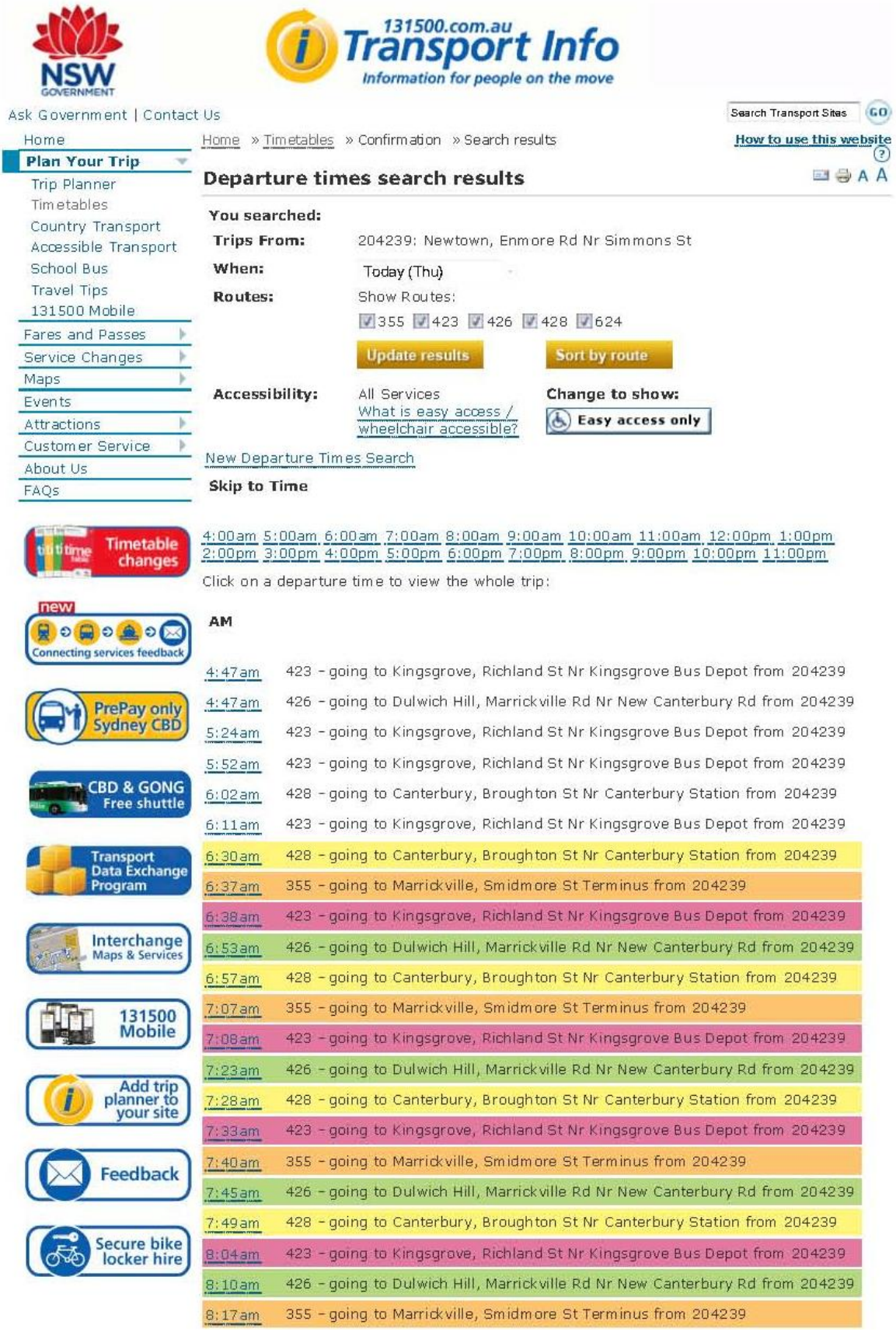
Morning Peak Period

Route	355	423	426	428
Departure times	6:37	6:38	6:53	6:30
	7:07	7:08	7:23	6:57
	7:40	7:33	7:45	7:28

	8:17	8:04	8:10	7:49
		8:25		8:18
Number of services	4	5	4	5
Morning average Interval between services (albs)	30min	24min	30min	24min
Afternoon Peak Period				
route	**355**	**423**	**426**	**428**
departure times	4:47	4:38	4:31	4:34
	5:17	4:47	4:41	4:44
	5:47	4:57	4:50	4:54
	6:19	5:07	5:00	5:02
		5:18	5:15	5:17
		5:34	5:28	5:30
		5:49	5:41	5:42
		6:04	5:46	5:52
		6:15	5:54	6:00
			5:55	6:10
			6:08	6:17
			6:19	6:24
			6:29	
number of services	**4**	**9**	**13**	**12**
afternoon average Interval be tween services (albs)	**30min**	**13.3min**	**9.2min**	**10min**
average Interval between services Peak Periods (albsPP)	**30min**	**19min**	**19min**	**17min**

Assuming that the walking distance from the building entrance to the bus stop is between 250 and 500m; the following entry is allowed to the Green Star Commuting Mass Transport Calculator.

Bus, Tram and Ferry Services		
Walking Distance from Building Entrance to Stop/Wharf	Average Interval Between Services During Peak Periods	
	≤15min	≤30min
0-250m		
250-500m	0	4
500-750m		
750m-1km		



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How to use this website

Departure times search results

A A

You searched:

Trips From: 204239: Newtown, Enmore Rd Nr Simmons St

When: Today (Thu)

Routes: Show Routes:
355 423 426 428 624

Update results Sort by route

Accessibility: All Services
What is easy access / wheelchair accessible?

Change to show: Easy access only

New Departure Times Search

Skip to Time

4:00am 5:00am 6:00am 7:00am 8:00am 9:00am 10:00am 11:00am 12:00pm 1:00pm
2:00pm 3:00pm 4:00pm 5:00pm 6:00pm 7:00pm 8:00pm 9:00pm 10:00pm 11:00pm

Click on a departure time to view the whole trip:

Timetable changes

new Connecting services feedback

PrePay only Sydney CBD

CBD & GONG Free shuttle

Transport Data Exchange Program

Interchange Maps & Services

131500 Mobile

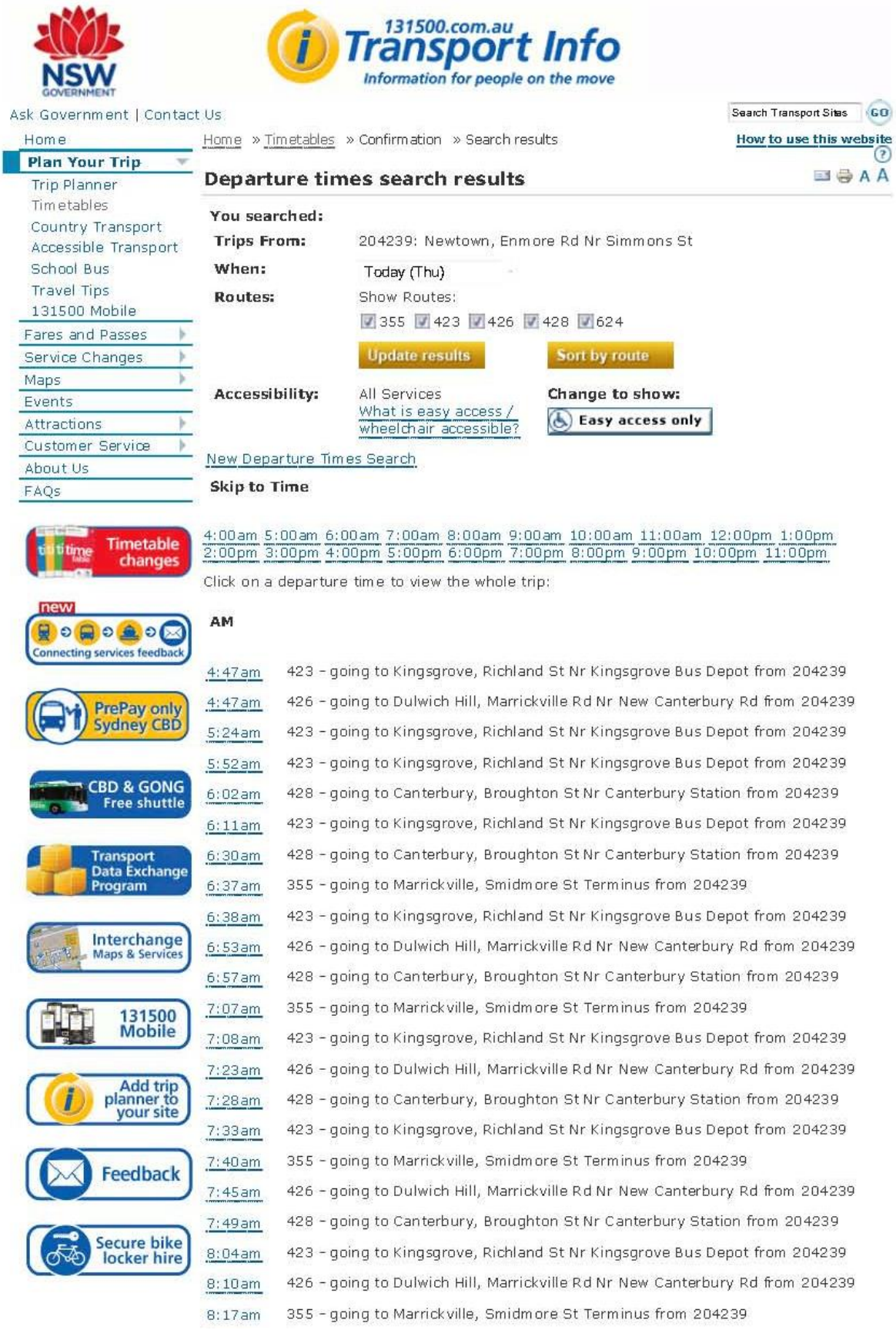
Add trip planner to your site

Feedback

Secure bike locker hire

AM

4:47am	423 - going to Kingsgrove, Richland St Nr Kingsgrove Bus Depot from 204239
4:47am	426 - going to Dulwich Hill, Marrickville Rd Nr New Canterbury Rd from 204239
5:24am	423 - going to Kingsgrove, Richland St Nr Kingsgrove Bus Depot from 204239
5:52am	423 - going to Kingsgrove, Richland St Nr Kingsgrove Bus Depot from 204239
6:02am	428 - going to Canterbury, Broughton St Nr Canterbury Station from 204239
6:11am	423 - going to Kingsgrove, Richland St Nr Kingsgrove Bus Depot from 204239
6:30am	428 - going to Canterbury, Broughton St Nr Canterbury Station from 204239
6:37am	355 - going to Marrickville, Smidmore St Terminus from 204239
6:38am	423 - going to Kingsgrove, Richland St Nr Kingsgrove Bus Depot from 204239
6:53am	426 - going to Dulwich Hill, Marrickville Rd Nr New Canterbury Rd from 204239
6:57am	428 - going to Canterbury, Broughton St Nr Canterbury Station from 204239
7:07am	355 - going to Marrickville, Smidmore St Terminus from 204239
7:08am	423 - going to Kingsgrove, Richland St Nr Kingsgrove Bus Depot from 204239
7:23am	426 - going to Dulwich Hill, Marrickville Rd Nr New Canterbury Rd from 204239
7:28am	428 - going to Canterbury, Broughton St Nr Canterbury Station from 204239
7:33am	423 - going to Kingsgrove, Richland St Nr Kingsgrove Bus Depot from 204239
7:40am	355 - going to Marrickville, Smidmore St Terminus from 204239
7:45am	426 - going to Dulwich Hill, Marrickville Rd Nr New Canterbury Rd from 204239
7:49am	428 - going to Canterbury, Broughton St Nr Canterbury Station from 204239
8:04am	423 - going to Kingsgrove, Richland St Nr Kingsgrove Bus Depot from 204239
8:10am	426 - going to Dulwich Hill, Marrickville Rd Nr New Canterbury Rd from 204239
8:17am	355 - going to Marrickville, Smidmore St Terminus from 204239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You searched:
Trips From: 204239: Newtown, Enmore Rd Nr Simmons St
When: Today (Thu)
Routes: Show Routes:
355 423 426 428 624
Update results
Sort by route
Accessibility: All Services
What is easy access / wheelchair accessible?
Change to show:
Easy access only
New Departure Times Search
Skip to Time
4:00am 5:00am 6:00am 7:00am 8:00am 9:00am 10:00am 11:00am 12:00pm 1:00pm 2:00pm 3:00pm 4:00pm 5:00pm 6:00pm 7:00pm 8:00pm 9:00pm 10:00pm 11:00pm
Click on a departure time to view the whole trip:
Timetable changes
new
Connecting services feedback
PrePay only Sydney CBD
CBD & GONG Free shuttle
Transport Data Exchange Program
Interchange Maps & Services
131500 Mobile
Add trip planner to your site
Feedback
Secure bike locker hire
AM
4:47am 423 - going to Kingsgrove, Richland St Nr Kingsgrove Bus Depot from 204239
4:47am 426 - going to Dulwich Hill, Marrickville Rd Nr New Canterbury Rd from 204239
5:24am 423 - going to Kingsgrove, Richland St Nr Kingsgrove Bus Depot from 204239
5:52am 423 - going to Kingsgrove, Richland St Nr Kingsgrove Bus Depot from 204239
6:02am 428 - going to Canterbury, Broughton St Nr Canterbury Station from 204239
6:11am 423 - going to Kingsgrove, Richland St Nr Kingsgrove Bus Depot from 204239
6:30am 428 - going to Canterbury, Broughton St Nr Canterbury Station from 204239
6:37am 355 - going to Marrickville, Smidmore St Terminus from 204239
6:38am 423 - going to Kingsgrove, Richland St Nr Kingsgrove Bus Depot from 204239
6:53am 426 - going to Dulwich Hill, Marrickville Rd Nr New Canterbury Rd from 204239
6:57am 428 - going to Canterbury, Broughton St Nr Canterbury Station from 204239
7:07am 355 - going to Marrickville, Smidmore St Terminus from 204239
7:08am 423 - going to Kingsgrove, Richland St Nr Kingsgrove Bus Depot from 204239
7:23am 426 - going to Dulwich Hill, Marrickville Rd Nr New Canterbury Rd from 204239
7:28am 428 - going to Canterbury, Broughton St Nr Canterbury Station from 204239
7:33am 423 - going to Kingsgrove, Richland St Nr Kingsgrove Bus Depot from 204239
7:40am 355 - going to Marrickville, Smidmore St Terminus from 204239
7:45am 426 - going to Dulwich Hill, Marrickville Rd Nr New Canterbury Rd from 204239
7:49am 428 - going to Canterbury, Broughton St Nr Canterbury Station from 204239
8:04am 423 - going to Kingsgrove, Richland St Nr Kingsgrove Bus Depot from 204239
8:10am 426 - going to Dulwich Hill, Marrickville Rd Nr New Canterbury Rd from 204239
8:17am 355 - going to Marrickville, Smidmore St Terminus from 204239

2:13pm	355 - going to Marrickville, Smidmore St Terminus from 204239
2:14pm	426 - going to Dulwich Hill, Marrickville Rd Nr New Canterbury Rd from 204239
2:18pm	428 - going to Canterbury, Broughton St Nr Canterbury Station from 204239
2:22pm	423 - going to Kingsgrove, Richland St Nr Kingsgrove Bus Depot from 204239
2:29pm	426 - going to Dulwich Hill, Marrickville Rd Nr New Canterbury Rd from 204239
2:33pm	428 - going to Canterbury, Broughton St Nr Canterbury Station from 204239
2:37pm	423 - going to Kingsgrove, Richland St Nr Kingsgrove Bus Depot from 204239
2:43pm	355 - going to Marrickville, Smidmore St Terminus from 204239
2:44pm	426 - going to Dulwich Hill, Marrickville Rd Nr New Canterbury Rd from 204239
2:48pm	428 - going to Canterbury, Broughton St Nr Canterbury Station from 204239
2:52pm	423 - going to Kingsgrove, Richland St Nr Kingsgrove Bus Depot from 204239
2:59pm	426 - going to Dulwich Hill, Marrickville Rd Nr New Canterbury Rd from 204239
3:03pm	428 - going to Canterbury, Broughton St Nr Canterbury Station from 204239
3:07pm	423 - going to Kingsgrove, Richland St Nr Kingsgrove Bus Depot from 204239
3:14pm	426 - going to Dulwich Hill, Marrickville Rd Nr New Canterbury Rd from 204239
3:15pm	355 - going to Marrickville, Smidmore St Terminus from 204239
3:18pm	428 - going to Canterbury, Broughton St Nr Canterbury Station from 204239
3:22pm	423 - going to Kingsgrove, Richland St Nr Kingsgrove Bus Depot from 204239
3:29pm	426 - going to Dulwich Hill, Marrickville Rd Nr New Canterbury Rd from 204239
3:33pm	428 - going to Canterbury, Broughton St Nr Canterbury Station from 204239
3:37pm	423 - going to Kingsgrove, Richland St Nr Kingsgrove Bus Depot from 204239
3:44pm	426 - going to Dulwich Hill, Marrickville Rd Nr New Canterbury Rd from 204239
3:48pm	428 - going to Canterbury, Broughton St Nr Canterbury Station from 204239
3:50pm	624 - School Bus going to Earlwood, Homer St Nr Joy Av from 204239
3:50pm	624 - School Bus going to Earlwood, Homer St Nr Joy Av from 204239
3:50pm	624 - School Bus going to Earlwood, Homer St Nr Joy Av from 204239
3:51pm	355 - going to Marrickville, Smidmore St Terminus from 204239
3:52pm	423 - going to Kingsgrove, Richland St Nr Kingsgrove Bus Depot from 204239
3:59pm	426 - going to Dulwich Hill, Marrickville Rd Nr New Canterbury Rd from 204239
4:03pm	428 - going to Canterbury, Broughton St Nr Canterbury Station from 204239
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4:13pm	428 - going to Canterbury, Broughton St Nr Canterbury Station from 204239
4:17pm	426 - going to Dulwich Hill, Marrickville Rd Nr New Canterbury Rd from 204239
4:17pm	355 - going to Marrickville, Smidmore St Terminus from 204239
4:19pm	423 - going to Kingsgrove, Richland St Nr Kingsgrove Bus Depot from 204239
4:25pm	428 - going to Canterbury, Broughton St Nr Canterbury Station from 204239
4:27pm	423 - going to Kingsgrove, Richland St Nr Kingsgrove Bus Depot from 204239
4:31pm	426 - going to Dulwich Hill, Marrickville Rd Nr New Canterbury Rd from 204239
4:34pm	428 - going to Canterbury, Broughton St Nr Canterbury Station from 204239
4:38pm	423 - going to Kingsgrove, Richland St Nr Kingsgrove Bus Depot from 204239
4:41pm	426 - going to Dulwich Hill, Marrickville Rd Nr New Canterbury Rd from 204239

2:13pm	355 - going to Marrickville, Smidmore St Terminus from 204239
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