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# Burwood North Precinct Masterplan

Rapid transport appraisal

21 July 2023 | Version 5.0



# Quality Assurance

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## Project details

Project number:	SCT_00367		
Document name:	Burwood North Precinct Masterplan: Rapid transport appraisal		
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Version	Date	Details
1.0	3 March 2023	Draft for information
1.1	9 March 2023	Updated with revised parking rate recommendations
2.0	13 March 2023	Updated masterplan yield
3.0	15 March 2023	Updated masterplan yield
4.0	14 July 2023	Updated masterplan yield
5.0	21 July 2023	Updated with feedback from Council

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# Table of Contents

DRAFT

- 01 INTRODUCTION
- 02 DRAFT MASTERPLAN OPTION AND YIELD
- 03 TRANSPORT APPRAISAL
- 04 PARKING REQUIREMENTS

DRAFT

[01]

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# Introduction



# Overview

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Burwood Council is preparing an updated masterplan and supporting studies for the Burwood North Precinct, building upon the work already undertaken as part of the Parramatta Road Corridor Urban Transformation Strategy (PRCUTS). The masterplan seeks to capture the opportunity afforded by a new metro station at Burwood North on the Sydney Metro West network.

The masterplan strives to deliver an outcome that is feasible, maximises public benefit and delivers high quality public domain, open spaces and community infrastructure. The masterplan articulates a cohesive vision for Burwood North that will underpin the growth and development of the precinct as a benchmark for sustainable urban renewal.

The masterplan is the result of a collaborative process that has been undertaken between Burwood Council, a wide range of government, institutional and community stakeholders, and the project's consultant team.

An Implementation Plan will also be prepared that outlines the recommended planning controls, policies and infrastructure necessary to enable the successful delivery of the masterplan. The recommendations may inform amendments to the Burwood Local Environmental Plan 2012 (LEP) and Burwood Development Control Plan 2012 (DCP).



# Purpose of this report

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This report documents the rapid transport appraisal undertaken to assess the viability of the proposed Burwood North Precinct Masterplan.

The analysis undertaken:

- Quantifies the total trip generation for the precinct under existing approved schemes (including PRCUTS).
- Quantifies the total trip generation with the increased densities and land-use changes proposed in the masterplan.
- Highlights the changes to mode-share (including the shift to public and active transport) which would be required to achieve a net-zero increase in private vehicle trips and the associated impact on these other modes.
- Benchmarks and recommends parking provisions for the land uses proposed in the masterplan which balance customer needs, accessibility and helps achieve the target mode-shares.

The outcomes of this report will be refined and assessed in greater detail in the next phase in the form of a transport assessment to support the Burwood North Precinct Planning Proposal (PP).



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# Draft masterplan option and yield



# Burwood North Masterplan Option

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- COX has provided a revised masterplan option study for Burwood North Precinct (dated 20 July 2023).
- Development blocks were identified, with constrained sites identified for each development block that excludes heritage items, recent developments, strata developments, schools and open spaces.
- A proposed FSR has been identified for each block, responding to the strategic, transport and development context.
- The proposed FSR controls are translated into quantification of residential GFA and non-residential GFA. This represents the maximum development outcome for the precinct at built out.
- Precinct capacity for jobs, dwellings and population capacities have been calculated for each block using the following assumptions:
  - 90m<sup>2</sup> GFA per dwelling
  - 35m<sup>2</sup> GFA per job
  - 2.5 persons per dwelling





# Burwood North Masterplan Yield

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The transport assessment compares the proposed masterplan to the baseline scenario, which as agreed with Transport for NSW, includes:

- Existing development to be retained
- Maximum development FSRs as approved by PRCUTS.

The relative change in yield from the baseline scenario to the proposed masterplan is summarised below:

	Baseline (PRCUTS + Existing)	Proposed (Burwood North PP)	Change
Non-residential (m <sup>2</sup> of GFA)	25,621*	42,155*	(▲ 16,534)
Residential (no. of dwellings)	4,476	6,243	(▲ 1,767)

Note (\*) This excludes the precinct to the north of Parramatta Road that is part of the Canada Bay Parramatta Road Corridor Planning Proposal, and Block E1 (Sydney Metro) which may be subject to a separate Planning Proposal.

**The Burwood North Masterplan Planning Proposal (PP) will consider the potential transport implications of the increase of:**

- ~16,500m<sup>2</sup> of non-residential GFA
- ~1,750 additional residential units



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[03]

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# Transport appraisal

# Assessment scenarios and assumptions

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The assessment will consider scenarios:

- **Baseline:** development of Burwood North based on existing developments and the PRCUTS maximum approved FSRs with mode-share as per the Canada Bay Planning Proposal (PP).
- **Project (do nothing):** development based on the revised Burwood North masterplan with mode-share as per the Canada Bay PP.
- **Project (with intervention):** development based on the revised Burwood North masterplan with a revised mode-share to achieve a net-zero increase in private vehicle trips (compared to the previously approved scenario – baseline). The intervention includes measures such as changes to parking policies and improvements to active/public transport accessibility.

## Mode share targets (baseline)

- There were no mode share targets set (or if set, not made publicly available) for the PRCUTS Transport Strategy.
- The Strathfield Burwood Canada Bay Traffic and Transport Strategy, prepared by Bitzios (and used to support the Canada Bay Planning Proposal), assumed mode share targets for Burwood Precinct as follows and they were assumed as the baseline of this appraisal.

Mode Share Targets	Walk	Bicycle	Bus	Train	Car as Driver	Car as Passenger
Canada Bay PP	6%	2%	15%	45%	28%	4%

## Trip rates

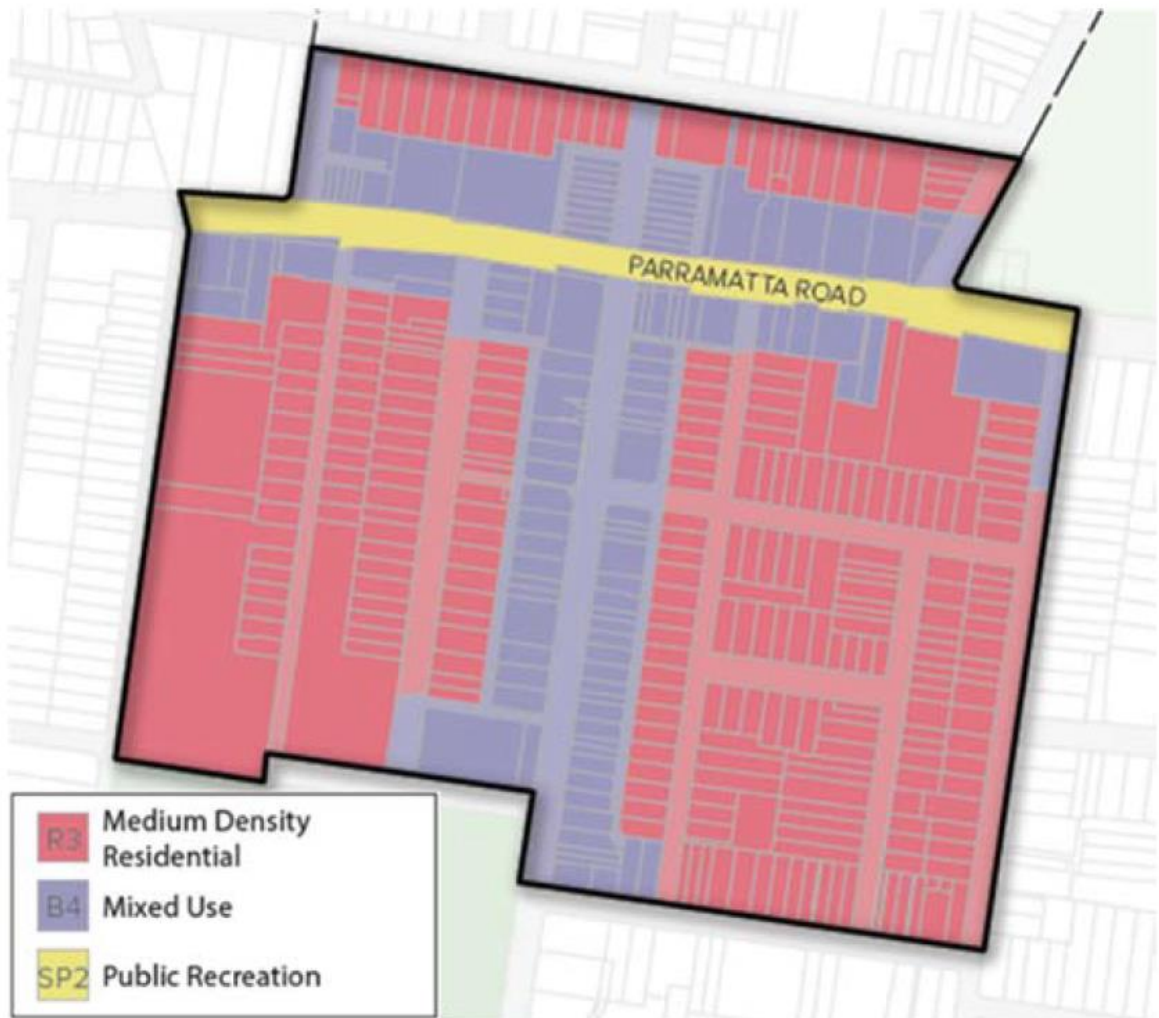
- The total trips expected to be generated by the baseline and the Burwood North Masterplan PP, were estimated using surveyed trip rates according to TfNSW Technical Direction (TD 2013-04a) and baseline mode share targets.
- The residential rates derived from the average of Sites 1, 2, 5 and 8 for high-density residential from the TD 2013 | 04a. The non-residential rates are derived from the average of office sites 1 to 8 from the TD 2013 | 04a and factored up with a higher density occupancy of 35 employees per 100m<sup>2</sup>. Refer to **Appendix A** for details of these sites.

Person trip rates	AM	PM
Non-residential (trips per 100m <sup>2</sup> of GFA)	2.04	1.51
Residential (trips per unit)	0.73	0.62



# Baseline scenario

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Under the baseline scenario (existing + PRCUTS approved FSR), the redevelopment of the sites would generate up to 3,800 and 3,150 total trips in the AM and PM peak hours respectively.

AM peak total trips	Walk	Bicycle	Bus	Train	Car as Driver	Car as Passenger	Total
Non-residential	31	10	78	235	146	21	522
Residential	196	65	490	1,470	915	131	3,268

PM peak total trips	Walk	Bicycle	Bus	Train	Car as Driver	Car as Passenger	Total
Non-residential	23	8	58	174	108	15	387
Residential	166	55	415	1,244	774	111	2,764

AM Peak summary (values are rounded)

Active Transport	Public Transport	Private Vehicle
300	2,275	1,060

Source: PRCUTS Controls Built Form Testing – Burwood, Roberts Day

# Project (do nothing) scenario

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Under the Project (do nothing) scenario with the proposed masterplan densities (without transport intervention) will generate up to 5,400 and 4,500 total trips in the AM and PM peak hours respectively.

AM peak total trips	Walk	Bicycle	Bus	Train	Car as Driver	Car as Passenger	Total
Non-residential	52	17	129	386	240	34	858
Residential	273	91	684	2,051	1,276	182	4,557

PM peak total trips	Walk	Bicycle	Bus	Train	Car as Driver	Car as Passenger	Total
Non-residential	38	13	95	286	178	25	636
Residential	231	77	578	1,735	1,079	154	3,855

AM Peak comparison to baseline (values are rounded)

Active Transport	Public Transport	Private Vehicle
430	3,250	1,520
(▲ 130)	(▲ 975)	(▲ 460)

# Project (with intervention) scenario

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Under the Project (with intervention) scenario, several measures (including parking policy and improvements to active/public transport accessibility) to reduce private vehicle mode-share.

Mode Share Targets	Walk	Bicycle	Bus	Train	Car as Driver	Car as Passenger
Canada Bay PP	6%	2%	15%	45%	28%	4%
Proposed	10%	3%	13%	50%	20%	4%
Change	(▲ 4%)	(▲ 1%)	(▼ 2%)	(▲ 5%)	(▼ 8%)	(-)

Note: Bus mode-share has been reduced to reflective of the lower bus accessibility for Burwood South (compared to the Canada Bay PP) and more reflective of current observations (~5% in 2016 Journey-to-work data).

Under the Project (with intervention) scenario with the proposed masterplan densities will generate up to 5,400 and 4,500 total trips in the AM and PM peak hours respectively (unchanged from the *Project Do Nothing* scenario).

AM peak total trips	Walk	Bicycle	Bus	Train	Car as Driver	Car as Passenger	Total
Non-residential	86	26	112	429	172	34	858
Residential	456	137	592	2,279	911	182	4,557

PM peak total trips	Walk	Bicycle	Bus	Train	Car as Driver	Car as Passenger	Total
Non-residential	64	19	83	318	127	25	636
Residential	386	116	501	1,928	771	154	3,855

AM Peak comparison to baseline (values are rounded)

Active Transport	Public Transport	Private Vehicle
700	3,400	1,080
(▲ 400)	(▲ 1,125)	(▲ 20)



# Project (with intervention) scenario

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## Key implications:

- By achieving net zero increase in car trips, there will be an increase in up to 400 active and 1,125 public transport trips respectively during peak hours.
- This level of increase in walking and cycling trips can be accommodated by the proposed street network in Burwood North with significant investment in the public domain and improved environment and infrastructure for pedestrians and cyclists.
- The increase of 1,125 public transport trips would be spread across buses (approximately 10%) and rail (approximately 90%).
  - Improved bus services, which predominately operate north-south, and potential new bus services along the Parramatta Road corridor. Buses would likely accommodate the 10% increase and serve customers with an origin or destination not directly served by the two rail modes.
  - Existing train services from Burwood Station may be able to accommodate some of the increased rail trips, as capacity on the T1 Western Line and T2 Inner West Line is freed up following the introduction of Sydney Metro West. However, given the increased distance (compared to Sydney Metro) to the station and the comparatively slower journey time to Parramatta and the Sydney CBD, it is assumed majority of Burwood North customers will opt for Sydney Metro West.
  - If a significant majority of the new customers opt for the high-frequency Sydney Metro West services from Burwood North Station, the increase in customers may have an impact on the capacity of the station (refer to adjacent commentary).

From the *Sydney Metro West - Rail infrastructure, stations, precincts and operations EIS* (March 2022), the forecast customer demand for Burwood North is as below. Therefore, it is assumed the station has been design to accommodate these demands (at a minimum).

Forecast customers	Access	Egress	Total
2036 AM peak hour	2,600	850	3,450

TfNSW projects typically assumed a 15% contingency during the phase to account for changes in assumptions (including land-use density). This equates to capacity for an additional 525 customers.

Forecast customers	Access	Egress	Total
2036 AM peak hour	3,000 (▲ 400)	975 (▲ 125)	3,975 (▲ 525)
Net deficit			600

Therefore, if a significant majority of the increase of the 1,125 public transport trips opt for Sydney Metro West, the increase in customers may have an impact on the capacity of the station (net deficit of 600). Hence it is recommended analysis be undertaken in conjunction with Sydney Metro to confirm design capacity of the station, and its implications on the station and services.

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# Parking requirements

# Parking requirements (residential)

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To support the initiative of achieving net-zero vehicular trips (Project (with intervention) scenario), the parking rates for residential uses have been reviewed to discourage excessive on-site parking and car ownership and promote more sustainable outcomes via restrained parking policy.

The following maximum parking requirements (residential) are proposed within the Burwood North Precinct for inclusion into the LEP, as outlined in table below:

Residential Parking	Studio	1 Bed	2 Bed	3+ Bed	Visitor
Proposed (maximum no. of spaces per unit)	0.1	0.3	0.7	1.0	0.1

The proposed rates have been informed by benchmarking to the existing Burwood Development Control Plan and other regions (refer to the table on the right of the page):

- Are generally aligned with the City of Sydney Category A rates (lowest rates for development with the best public transport accessibility) and PRCUTS (Category 1) rates that apply for high accessibility locations within 800m of multiple transport options.
- Are lower than those set out for the Canada Bay Burwood-Concord, Homebush North and Kings Bay Precincts and Burwood DCP (centres and corridors), but also aligned with those approved for Rhodes East and Rhodes West site-specific DCPs.
- Retain the suggested visitor parking rates for the Canada Bay Burwood-Concord, Homebush North and Kings Bay Precincts, rather than the zero-parking provision for visitors.

## Benchmarking

Area	Residential Parking (spaces per unit)				
	Studio	1 Bed	2 Bed	3+ Bed	Visitor
PRCUTS (Category 1 applied for high accessibility locations)	0	0.3	0.7	1.0	0
City of Sydney (Category A)	0.1	0.3	0.7	1.0	0
Rhodes East site-specific DCP	0.1	0.3	0.7	1.0	0.05
Rhodes West site-specific DCP	0.1	0.3	0.7	1.0	0.05
St Leonards Precinct	0.25	0.25	0.5	0.5	0
PRCUTS (Category 2)	0.3	0.5	0.9	1.2	0.1
Canada Bay LEP - Burwood-Concord, Homebush North and Kings Bay Precincts	0.3	0.5	0.9	1.2	0.1
Canada Bay DCP (Category C)	0.3	0.5	0.9	1.2	0.2
Burwood (Centres and Corridors)	0.5	1.0		1.5	0.2



# Parking requirements (non-residential)

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To reduce the attractiveness for workers to drive to work in an area that will be supported by trains, metro and buses, the parking rates for non-residential uses have also been reviewed and benchmarked to the Burwood DCP and other similar Precincts (refer to the table on the right of the page) .

The following maximum parking requirements (non-residential) are proposed within the Burwood North Precinct for inclusion into the LEP, as outlined in the table below

Non-residential Parking (maximum)	
Commercial	1 space per 150 m <sup>2</sup>
Retail	1 space per 100 m <sup>2</sup>

- The proposed rates are generally aligned with those suggested for the PRCUTS precincts (Category 1) for high accessibility locations within 800m of multiple transport options.

## Benchmarking

Area	Non-residential Parking	
	Commercial	Retail
St Leonards Precinct	1 space per 400 m <sup>2</sup>	
Burwood (Centres and Corridors)	1 space for the first 400 m <sup>2</sup> or part thereof, plus - 1 space per 120 m <sup>2</sup> or part thereof additional to the first 400 m <sup>2</sup>	1 space per 50 m <sup>2</sup>
City of Sydney (Category D)	1 space per 175 m <sup>2</sup>	1 space per 90 m <sup>2</sup>
PRCUTS (Category 1)	1 space per 150 m <sup>2</sup>	1 space per 100 m <sup>2</sup>
Rhodes East site-specific DCP	1 space per 150 m <sup>2</sup>	1 space per 100 m <sup>2</sup>
City of Sydney (Category E)	1 space per 125 m <sup>2</sup>	1 space per 60 m <sup>2</sup>
PRCUTS (Category 2)	1 space per 100 m <sup>2</sup>	1 space per 70 m <sup>2</sup>
Canada Bay LEP - Burwood-Concord, Homebush North and Kings Bay Precincts	1 space per 100 m <sup>2</sup>	1 space per 70 m <sup>2</sup>
Rhodes West site-specific DCP	1 space per 40 m <sup>2</sup>	
Canada Bay DCP	1 space per 40 m <sup>2</sup>	

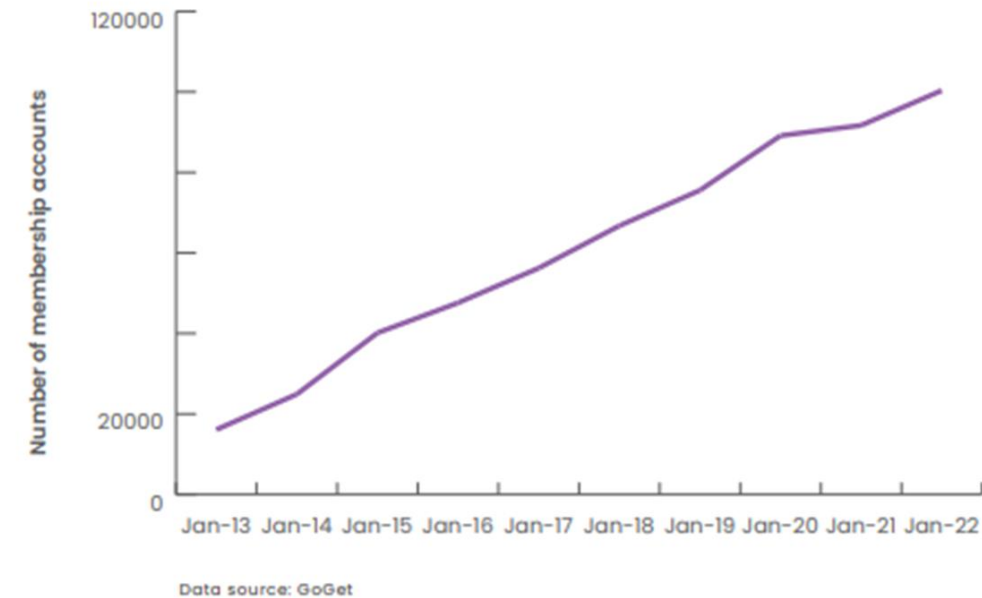
# Other parking considerations

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- Provide access to a car when they need one, without having to own and store one – car share and ride share
- Unbundled parking from the price of a unit – gives residents the option to rent or buy parking spaces, but also choose to save money by not having a parking space
- Making parking electric capable – requirement for all new development and retrofitting existing

## Demand for car-share is increasing in NSW

GoGet has more than 100,000 membership accounts – there can be more than one registered driver per account.



# Other parking requirements

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## Freight and servicing vehicle parking

- Adopt freight and servicing vehicle parking requirements as per Canada Bay DCP control as follows:

Land Use	Space required
Residential development	1 space per 50 apartments for first 200 apartments plus 1 space per 100 apartments thereafter
Commercial offices	1 space per 4,000m <sup>2</sup> GFA for first 20,000m <sup>2</sup> GFA and a space per 8,000m <sup>2</sup> GFA thereafter
Retail	1 space per 500m <sup>2</sup> for first 2,000m <sup>2</sup> and 1 space per 1,000m <sup>2</sup> thereafter (50% of spaces for trucks)

## Motorcycle parking

- Adopt maximum provision for residential dwellings as per Canada Bay DCP control – 2 spaces per 10 dwellings.

## Bicycle parking

- Adopt minimum bicycle parking and storage provision as per Canada Bay DCP control as follows:

Land Use	Resident/Staff Bicycle storage facility	Visitor Bicycle parking facility
Residential	2 per dwelling	2 per 10 dwellings
Commercial	2 per 150m <sup>2</sup> GFA	2 per 400m <sup>2</sup> GFA
Retail	2 per 250m <sup>2</sup> GFA	2 per unit + 2 per 100m <sup>2</sup> GFA

## Accessible parking

- Adopt accessible parking rates as per Canada Bay DCP control – 1 space for every 100 car parking spaces or part thereof.

## Car share and ride share

- Adopt car share and ride share requirements as per Canada Bay DCP control as follows:
  - One car share space is to be provide for every 20 dwellings.
  - On-site car parking can be reduced at a rate of 5 parking spaces per 1 car share space.

## Electric vehicles charging facility requirements

- Adopt minimum level 1 Electric Vehicle charging facility requirements as per Canada Bay DCP control as follows:

Table B-K Minimum Level 1 electric vehicle charging facility requirements

Type of development	Type of charging facility	Minimum number of charging points/facilities/stations
Manor houses, Multi-dwelling housing, Multi-dwelling housing (terraces), Residential flat building, Shop top housing	Level 1 <ul style="list-style-type: none"><li>Regular 240V wall socket (10amps).</li><li>2.4kW - 3.7kW.</li><li>No specialist installation required.</li><li>16 – 20 hours to fully charge average vehicle.</li></ul>	1 per parking space  1 per five bicycle parking spaces (a dedicated space and charging point for electric bicycles and mobility scooters to be charged must be provided for every five bicycle parking spaces)
Non-residential	Level 1 <ul style="list-style-type: none"><li>Level 1 Regular 240V wall socket (10amps).</li><li>2.4kW - 3.7kW.</li><li>No specialist installation required.</li><li>16 – 20 hours to fully charge average vehicle.</li></ul>	1 per parking space

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## Appendix A

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# TD 2013 | 04a trip rates



# Residential trip rates

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APPENDIX B3 – HIGH DENSITY RESIDENTIAL – GENERATION RATES										
Site No.	Site 1	Site 2	Site 3	Site 4	Site 5	Site 6	Site 7	Site 8	Site 9	Site 10
Location	St Leonards	Chatswood	Cronulla	Rockdale	Parramatta	Liberty Grove	Strathfield	Pymont	Charlestown	Wollongong
Weekday										
AM Peak Person Trips per Unit	0.64	0.64	0.32	0.81	0.95	0.72	0.52	0.69	0.53	0.89
AM Peak Person Trips per Car Space	0.39	0.51	0.22	0.47	0.5	0.62	0.43	0.3	0.62	0.53
AM Peak Person Trips per Bedroom	0.29	0.3	0.13	0.39	0.45	0.29	0.26	0.46	0.27	0.3
PM Peak Person Trips per Unit	0.54	0.82	0.14	0.53	0.65	0.91	0.42	0.46	0.65	1.11
PM Peak Person Trips per Car Space	0.54	0.82	0.14	0.53	0.65	0.91	0.42	0.46	0.65	1.11
PM Peak Person Trips per Bedroom	0.24	0.39	0.06	0.26	0.31	0.37	0.21	0.3	0.33	0.37
Daily Person Trips per Unit	3.49	5.35	2.96	5.36	5.01	6.5	4.16	3.05	6.03	8.67
Daily Person Trips per Car Space	2.52	3.35	4.61	4.83	3.85	4.47	4.3	2.01	5.76	4.11
Daily Person Trips per Bedroom	1.56	2.51	1.19	2.61	2.39	2.67	2.08	2.01	3.11	2.89
AM Peak Vehicle Trips per Unit	0.14	0.14	0.07	0.32	0.27	0.28	0.1	0.18	0.39	0.67
AM Peak Vehicle Trips per Car Space	0.1	0.09	0.11	0.29	0.2	0.19	0.1	0.12	0.37	0.32
AM Peak Vehicle Trips per Bedroom	0.06	0.07	0.03	0.16	0.13	0.12	0.05	0.12	0.2	0.22
PM Peak Vehicle Trips per Unit	0.07	0.12	0.11	0.18	0.12	0.41	0.06	0.1	0.42	0.22
PM Peak Vehicle Trips per Car Space	0.05	0.07	0.17	0.17	0.09	0.28	0.07	0.07	0.4	0.11
PM Peak Vehicle Trips per Bedroom	0.03	0.05	0.04	0.09	0.06	0.17	0.03	0.07	0.22	0.07
Daily Vehicle Trips per Unit	0.77	1.23	0.93	2.25	1.67	3.14	1.16	1.03	4.37	4.78
Daily Vehicle Trips per Car Space	0.56	0.77	1.44	2.03	1.29	2.16	1.2	0.68	4.18	2.26
Daily Vehicle Trips per Bedroom	0.35	0.58	0.37	1.1	0.8	1.29	0.58	0.68	2.26	1.59
AM Car Driver mode split	22%	22%	22%	40%	28%	39%	19%	26%	74%	75%
PM Car Driver mode split	13%	15%	79%	34%	18%	45%	14%	22%	65%	20%
Daily Car Driver mode split	22%	23%	31%	42%	33%	48%	28%	34%	72%	55%

# Office trip rates

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## APPENDIX D3 – OFFICE BLOCKS – PERSON-BASED TRIP RATES

	OB1 North Sydney	OB2 Chatswood	OB3 Sydney Olympic Park	OB4 Hurstville	OB5 Macquarie Park	OB6 Parramatta	OB7 Liverpool	OB8 Norwest
AM Peak Hour								
Trips	397	249	842	119	142	387	95	34
Trips/100m2 GFA	1.26	2.44	2.47	3.66	2.47	1.43	3.37	2.83
PM Peak Hour								
Trips	338	205	801	77	126	349	65	14
Trips/100m2 GFA	1.08	2.01	2.35	2.37	2.19	1.29	2.31	1.17
Daily								
Trips	2975	1691	-	802	1079	5114	700	142
Trips/100m2 GFA	9.47	16.56	-	24.65	18.77	18.94	24.85	11.83
Road Network AM Peak Hour								
Trips	391	111	-	104	142	266	58	31
Trips/100m2 GFA	1.25	1.09	-	3.2	2.47	0.99	2.06	2.58
Road Network PM Peak Hour								
Trips	338	90	-	67	86	298	48	10
Trips/100m2 GFA	1.08	0.88	-	2.06	1.5	1.1	1.7	0.83

Source: Trip Generation and Parking Generation Surveys (Office Blocks), GTA Consultants for the NSW Roads and Traffic Authority, September 2010, p116

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