



# **Sustainable Transport & Mobility Plan**

The University of Sydney

CIS Planning – Engineering &  
Sustainability

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DRAFT

## FOREWORD

The University of Sydney aims to create an environment where the brightest researchers and the most promising students can thrive and realise their full potential in a sustainable way.

Being conscious of our impacts on the environment and on our communities, we strive to avoid and reduce any adverse impacts of our operations consistent with our Environmental Sustainability Policy. In particular, we are aware of the role the University can play in influencing environmentally sustainable and healthier transport and mobility choices for our staff, students and communities.

To this end, this University of Sydney's Transport & Mobility Plan aims to promote a safe and healthy place to work and study, a place where equitable transport options are provided to our communities, and a place that fosters a cohesive relationship with the city and our neighbouring communities.

I encourage all staff and students to make a conscious sustainable transport and mobility choice that will enhance their University experience and deliver environmental, economic and social benefits.

Yours Sincerely

Vice-Chancellor  
The University of Sydney

## Contents

<b>ACKNOWLEDGEMENTS.....</b>	<b>3</b>
<b>FOREWORD .....</b>	<b>4</b>
<b>EXECUTIVE SUMMARY .....</b>	<b>VII</b>
<b>ACCRONYMS .....</b>	<b>13</b>
<b>INTRODUCTION .....</b>	<b>14</b>
<b>OBJECTIVES.....</b>	<b>15</b>
<b>SUSTAINABLE BENEFITS.....</b>	<b>16</b>
ENVIRONMENTAL.....	16
ECONOMIC .....	16
SOCIAL .....	17
<b>DRIVERS &amp; POLICY.....</b>	<b>18</b>
FEDERAL GOVERNMENT.....	18
STATE GOVERNMENT .....	18
THE DRAFT METROPOLITAN STRATEGY FOR SYDNEY TO 2031 .....	18
LONG TERM TRANSPORT MASTER PLAN, 2012 .....	18
NEW SOUTH WALES BIKE PLAN.....	19
EASTERN SYDNEY AND INNER WEST REGIONAL ACTION PLAN.....	19
NSW PLANNING GUIDELINES FOR WALKING AND CYCLING .....	19
LOCAL GOVERNMENT .....	19
SUSTAINABLE SYDNEY 2030 - THE VISION .....	19
CITY OF SYDNEY CYCLE STRATEGY AND ACTION PLAN 2007 – 2017 .....	20
SYDNEY CITY CENTRE ACCESS STRATEGY .....	20
BROADWAY CYCLE LINK .....	20
UNIVERSITY TRENDS .....	20
UNIVERSITY OF SYDNEY.....	21
ENVIRONMENTAL SUSTAINABILITY POLICY.....	21
<b>COMMUTER DEMOGRAPHICS &amp; TRAVEL PATTERNS.....</b>	<b>22</b>
DEMOGRAPHICS.....	22
TRAVEL MODE PATTERNS.....	23
STAFF.....	24
STUDENT .....	25
COMPARISONS WITH SYDNEY CBD COMMUTERS .....	26
<b>INFRASTRUCTURE &amp; PLANNING .....</b>	<b>27</b>
CAMPUS IMPROVEMENT PROGRAM .....	27
ACTIVE TRANSPORT .....	27
BICYCLE PARKING.....	28
LOCKERS AND SHOWER .....	31

CYCLING NETWORK AND CONNECTIONS .....	31
PEDESTRIAN PATHS .....	32
PUBLIC TRANSPORT .....	33
BUSES .....	33
TRAINS .....	34
MOTOR VEHICLES .....	35
UNIVERSITY SHUTTLE BUS SERVICE .....	35
MOTORCYCLE PARKING .....	36
CAR PARKING .....	37
<b>ENABLING TECHNOLOGY .....</b>	<b>41</b>
E-LEARNING .....	41
BUSINESS TRAVEL .....	41
TELECOMMUTING .....	41
ACTIVITY-BASED WORKING .....	42
<b>COMMUNICATION AND ENGAGEMENT .....</b>	<b>43</b>
COMMUNICATION .....	43
ORIENTATION AND INDUCTION .....	43
WEBSITE .....	43
ENGAGEMENT .....	43
EVENTS .....	43
NETWORKS .....	44
<b>LIMITATIONS &amp; BARRIERS .....</b>	<b>45</b>
POLICY REFORM .....	45
FINANCIAL INSTRUMENTS .....	45
INCENTIVES .....	45
PARKING RATES .....	45
INFRASTRUCTURE .....	45
ACTIVE TRANSPORT FACILITIES .....	45
ICT RESOURCES .....	46
ENGAGEMENT .....	46
COMMUNICATION .....	46
MONITORING AND REPORTING .....	46
ADDITIONAL BARRIERS .....	47
FINANCIAL .....	47
<b>STAMP STRATEGY .....</b>	<b>0</b>
<b>BIBLIOGRAPHY .....</b>	<b>0</b>

## EXECUTIVE SUMMARY

In 2014 Campus Infrastructure & Services commenced development of a Sustainable Transport & Mobility Plan (STAMP) to increase uptake of active and public transport by the University's students and staff at the Camperdown and Darlington campuses. The STAMP compliments the Campus Improvement Plan 2015-2020 which aims to improve campus liveability, accessibility and connectivity by providing staff and students with economic choices and incentives to adopt more sustainable travel. It is also consistent with the University's 2015 Environmental Sustainability Policy's objective to promote sustainable transport.

### ***Objectives of the STAMP***

Main objectives of the STAMP are to:

- a. increase public transport and active travel uptake by staff and students
- b. improve health outcomes of students and staff living close to the University through active modes of transport
- c. manage car parking demand through appropriate pricing
- d. reduce vehicle movements through the University to improve amenity and ease congestion
- e. consider social equity requirements of community members with specific car parking, transport and mobility needs
- f. provide accessible, affordable and quality active transport infrastructure
- g. improve connections to the city's bicycle and public transport networks
- h. reduce vehicle carbon emissions by avoiding travel where possible
- i. promote staff telecommuting
- j. monitor, measure and report on staff and student travel patterns

### ***Travel Patterns***

University staff and student travel patterns reveal significant opportunities for take up of enhanced active and public transport options that would deliver environmental, economic and social benefits.

Student and staff travel behaviours show that:

- 60% of students use public transport compared with 40% of staff
- both groups are equally likely to use active transport, walking or cycling, which is most likely influenced by proximity of their households to the University
- cycling represents the lowest share of journeys, probably due to lack of confidence and road safety concerns, and inadequate campus end of trip facilities
- staff are twice as likely to use cars compared to students because they benefit from heavily discounted car parking fees
- 25% of car parking permit holders live less than 5km from the University and just over 60% live less than 10km from the University: they should be encouraged to shift to greater use of active and public transport

### ***Barriers to active and public transport***

A number of barriers at the University discourage take up of active transport:

- lack of secure active transport facilities on campus
- heavily discounted car parking fees which makes public transport relatively more costly
- lack of financial salary packaging incentives for active and public transport
- ineffective online marketing and communications promoting sustainable transport to the University community
- lack of easily accessible technology for teleconferencing

### Strategy Recommendations

The STAMP proposes a range of strategies for consideration by the University to improve transport accessibility, equity, connectivity and environmental sustainability.

**Table 1 - STAMP Strategy Proposals**

Objective Measure	Actions for Implementation	Accountability Area	Timeframe
<b>Policy Reform</b>			
<b>1. Include sustainable transport &amp; mobility in relevant University policies</b>	a. Include sustainable transport objectives, accountabilities and responsibilities in the University Environmental Sustainability Policy.	Sustainability sub-committee (as proposed by the Environmental Sustainability Policy effective from June 2015)	2015
	b. Establish a sustainable transport work group to develop, review and recommend relevant sustainable travel initiatives for endorsement by FIC & SEG		
	c. Improve communication and engagement about teleconferencing facilities and its implementation.	HR	2016 – 2017
<b>Financial Instruments</b>			
<b>2. Financial incentives for active &amp; public transport</b>	a. Negotiate & facilitate purchase of cheaper annual public transport (opal) passes	HR, Finance	2016 - 2017
	b. Salary sacrifice purchase of annual public transport (opal) tickets		



Objective Measure	Actions for Implementation	Accountability Area	Timeframe
	c. Staff salary sacrifice for the purchase of bicycles		
<b>3. Finance sustainable transport programmes</b>	a. Apply parking and fine revenues to fund sustainable transport initiatives and infrastructure	CIS, Finance	2016 – 2020
<b>Infrastructure</b>			
<b>4. Improve active transport facilities</b>	a. Provide high quality active transport facilities with bicycle storage, lockers, toilets and showers for new developments and existing high demand areas	CIS	2016 – 2017
	b. Run design competition for innovative & modular active transport facilities	CIS	2016 – 2017
	c. Pilot University bike loan/share schemes to test viability	HSU	2017 – 2018
	d. Provide bicycle maintenance/repair stations on campus	CIS	2016 – 2020
<b>5. Reduce vehicle traffic through campus</b>	a. Consolidate car parking to designated peripheral car parking stations	CIS	2017 – 2020
	b. Only permit services, emergency & construction vehicle access onto campus roads		
	c. Designate vehicle-free zones		2017 - 2020
<b>6. Improve campus cycleway and signage</b>	a. Standardise cycleway design and signage to be consistent with the City of Sydney	CIS	2017 - 2020

Objective Measure		Actions for Implementation	Accountability Area	Timeframe
<b>7. Construct more campus student accommodation</b>	a.	CIP Implementation	CIS	2014 – 2020
<b>Collaborating with Government</b>				
<b>8. Collaborate with Transport for NSW for improved public transport services</b>	a.	Lobby Transport for NSW for a University train or tram station to improve public transport connectivity and reduce car congestion	CIS	2017 – 2020
<b>9. Improve cycleway connectivity with surrounding Councils</b>	a.	Collaborate with transport planners from City of Sydney, Marrickville Council, Ashfield Council & Leichhardt Council to improve cycleway connectivity, design, signage & way-finding to the University	CIS	2017 – 2020
<b>Demand Management</b>				
<b>10. Reduce car parking demand</b>	a.	Prioritise parking access on a needs basis, e.g. special carers / disability access priority, etc.	HR, CIS	2016 – 2020
	b.	Facilitate University carpooling scheme to reduce single occupant vehicle trips		
	c.	Introduce designated carpool vehicle parking spaces		
	d.	Implement tiered car parking tariffs dependent on distance to driver's place of residence e.g the closer drivers live to the University: the more they pay for car parking		

Objective Measure	Actions for Implementation	Accountability Area	Timeframe
	e. Progressively implement minimum car parking tariff equivalent to a 3-5 section bus journey		
	f. Provide additional motorcycle parking facilities		
<b>11. Reduce business-related motor vehicle &amp; flight travel</b>	a. Centralised website to provide travel options for using active and public transport  b. Increase readily accessible video conferencing & teleconferencing facilities with well-supported user- training  c. Develop and implement a system to monitor business travel metrics	Marketing & Communications, ICT, Finance	2016 – 2018
<b>ICT Solutions</b>			
<b>12. Promote Telecommuting</b>	a. Invest in ICT resources to facilitate telecommuting / teleconferencing for staff	ICT	2016 – 2017
<b>Communication &amp; Engagement</b>			
<b>13. Marketing &amp; Communications</b>	a. Provide engaging & informative online sustainable travel portal that provides useful maps, timetables, advice & options	Marketing & Communications, CIS, HR, Students Union	2016 – 2018

Objective Measure	Actions for Implementation	Accountability Area	Timeframe
	<ul style="list-style-type: none"> <li>b. Market &amp; promote active travel initiatives to improve health, wellbeing &amp; environmental outcomes</li> <li>c. Develop and promote a cycling social network/forum for staff &amp; students</li> <li>d. Provide staff &amp; student informative induction packs for sustainable transport</li> </ul>		
<b>14. Measure &amp; Monitor</b>	<ul style="list-style-type: none"> <li>a. Biennial surveys to measure staff &amp; student travel transport behaviour</li> <li>b. Review of Sustainable Transport Working Group initiatives by the Sustainability Sub-Committee of FIC</li> </ul>	CIS	2016 – 2020
<b>15. Promote more distance learning / education</b>	<ul style="list-style-type: none"> <li>a. More on-line courses should reduce student travel kilometres as well as reducing space demand and utilities' costs</li> </ul>		2017 – 2018

## ACCRONYMS

<b>COAG</b>	Council of Australian Governments, a peak intergovernmental forum comprising the Prime Minister, State and Territory Premiers and Chief Ministers and the President of the Australian Local Government Association
<b>CIP</b>	The University of Sydney Campus Improvement Programme
<b>DCP</b>	Development control plan provides detailed planning and design guidelines to support the planning controls in a local council's Local Environmental Plan
<b>STAMP</b>	Sustainable Transport & Mobility Plan
<b>LGA</b>	Local Government Area
<b>GFA</b>	Gross Floor Area
<b>SSC</b>	Sustainability Sub-Committee
<b>FIC</b>	Finance and Infrastructure Committee of SEG
<b>SEG</b>	Senior Executive Group
<b>TfNSW</b>	Transport for NSW

## INTRODUCTION

The Sustainable Transport & Mobility Plan (STAMP) seeks to enhance the uptake of active, public transport and sustainable travel by students and staff at the University of Sydney.

This STAMP focuses on the Camperdown and Darlington campuses and considers potential strategies to improve transport accessibility, equity, connectivity and environmental sustainability at the University.

Implementing the STAMP will enhance the University's reputation and position as a leading employer and education institution.

### **Why do we need a Sustainable Transport & Mobility Plan?**

The University of Sydney is responsible for generating over 80,000 trips daily in the Sydney metropolitan area across a range of travel modes (Rissel, et al., 2013). The University Campus Improvement Plan 2015-2020 (CIP) (*The University of Sydney, 2014*) proposes greater consolidation of faculties and buildings to enhance collaboration and seeks to increase affordable student accommodation at the Camperdown and Darlington campuses. Whilst this will make the University a more liveable community, it will require improved transport links to the City, surrounding neighbourhoods and the Sydney metropolitan area. The STAMP aims to support the CIP's initiatives to improve campus liveability, accessibility and connectivity by providing staff and students with economic choices and incentives to undertake sustainable travel.

New affordable student accommodation facilities will significantly increase the number of students located close to the Camperdown-Darlington campus, increasing demand for short-distance and cost-effective travel options to and from campus. The STAMP will support these students' needs by enhancing active transport infrastructure for cyclists and pedestrians and seeking to improve connections to public transport.

In 2012 the University established the *Healthy Sydney University Initiative* to improve health outcomes for students and staff. The STAMP will support this initiative by encouraging and incentivising active modes of travel to and from the University's campuses which will improve health and fitness.

Analysis of car parking permits issued by the University shows 25% of permit holders live within 5 km of the University and 60% within 10 km of the University. These permit holders are viable candidates for taking up active and public transport.

Current use of the University's roadways presents risks of potential conflict amongst pedestrians, cyclists and vehicle drivers particularly during normal business hours. Most roads experience moderate to heavy vehicle traffic and many roads have car parking along the edges. Certain roads are used as short cuts by drivers travelling between Glebe and Newtown/Redfern. The STAMP aims to reduce potential for conflicts and safety risks by improving pedestrian paths and cycle ways, promoting shared access, limiting vehicle access to designated peripheral areas and improving logistics of delivering goods around the University.

## OBJECTIVES

The STAMP sets out a strategy to improve the economic, environmental and social impacts of travel by University students, staff, affiliates and visitors. Its principal objectives are to:

- a. promote sustainable transport and mobility through policy reform
- b. consider social equity requirements of community members with specific car parking, transport and mobility needs
- c. improve health outcomes of all students and staff living close to the University by encouraging active modes of transport
- d. increase the proportion of active and public transport uptake by students, staff, affiliates and visitors
- e. provide active transport facilities to new campus developments and existing demand areas
- f. provide accessible, affordable and quality cycling infrastructure for students and staff
- g. improve connections to the city's bicycle and public transport networks
- h. reduce vehicle movements through the University to improve amenity and ease congestion
- i. better manage car parking demand through appropriate pricing measures
- j. promote teleconferencing (avoided trips) for staff and reduce vehicle carbon emissions by avoiding travel where possible
- k. monitor, measure and report on staff and student travel behaviour patterns
- l. reduce travel requirements by promoting distance learning / education (eLearning) opportunities where appropriate

Achieving these objectives will encourage affordable and sustainable modes of transport and will improve campus liveability by creating an accessible, pedestrian-friendly and healthier University environment for both students and staff.

## SUSTAINABLE BENEFITS

The STAMP delivers environmental, economic and social transport benefits to the University's staff and students.

### ENVIRONMENTAL

The STAMP delivers environmental benefits through the provisions of facilities, services and financial incentives for staff and students to use active, public and sustainable transport in preference to cars.

Vehicle emissions have a range of impacts on the local community and also contribute to global climate change. Transport emissions are currently responsible for over one quarter of Australia's total greenhouse gas emissions (Department of Innovation Industry, Science and Research, 2011). Transport accounted for 17% of Australia's National Greenhouse Gas Inventory in the year to March 2015 (Commonwealth of Australia, 2015). The STAMP will encourage a shift to active, public and sustainable transport which will improve urban air quality and greenhouse gas emissions by reducing car exhaust emissions.

The STAMP will serve to enhance the University's environmental reputation amongst leading learning and research institutions. By creating a more accessible organisation and encouraging environmentally sustainable transport options, the University will demonstrate its commitment to sustainability and reinforce its position as a leading Go8 University.

### ECONOMIC

The STAMP will increase awareness about alternative travel choices and costs to enable rational and informed travel mode choices based on the real cost of transport. It will highlight anomalies in current car parking pricing that present disincentives to adopt alternative and more sustainable transport modes.

Choosing active or public transport instead of a car may offer significant financial benefits to many of the University's staff and students. Car running costs provided by the NRMA, which include costs for registration, compulsory third party insurance, fuel, tyres and general maintenance are about 73.88 cents/km for a medium car (NRMA, 2014). It would cost \$49 per week for a 14 km daily return trip from Ashfield to Redfern in a medium car. By comparison, the cost of a weekly train pass from Ashfield to Redfern Station is \$33/week (Transport for NSW, 2015) and the cost of running a bicycle is about \$14/week<sup>1</sup>. A traveller choosing a train for the trip would save about \$770 annually and a cyclist would save \$1680 annually compared to using a car.

The University currently has numerous pockets of land throughout its Camperdown and Darlington campuses locked up by car parking facilities. This land may be better utilised for higher value teaching, learning, research or student housing use that would provide a greater return to the University.

Campus car parking is currently inexpensive compared to alternate commercially operated car parks in the area. This price disparity encourages use of car travel to the University. The STAMP aims to promote viable and cost-effective active, public transport and sustainable options and thereby reduce demand for car parking spaces for staff and students. Progressively escalating car parking fees and

<sup>1</sup> Bicycling costs are based on data from <http://www.bwa.org.au/riding-to-work/521/>. They are calculated assuming a \$1000 purchase cost amortized over 10 years, accessories costing \$260 every two years, and maintenance costs of \$430 per year. It is assumed bicycles are used for 48 weeks per year.



narrowing the price gap relative to commercial car parks will generate additional funds for more sustainable transport programs that incentivise and encourage sustainable transport uptake.

Telecommuting provides economic benefit to the University, staff and students, through avoided travel. The University benefits from staff that utilise ICT equipment such as teleconferencing, saving on associated travel costs. Staff who utilise ICT resources such as Virtual Private Network (VPN) to work from home and avoid travel benefit from the associated economic savings, simultaneously the University saves on the associated utility & infrastructure costs.

Students who are enrolled in distance or e-learning courses also save on travel costs associated from avoiding travel to campus.

A range in transport and mobility choice along with travel cost savings will cement the University's status as an attractive institute to students and encourage staff recruitment and retention.

## SOCIAL

The STAMP will provide a range of social and health benefits to the University community. It will improve on-campus facilities and services that will limit vehicles to designated peripheral areas, reduce internal traffic movements and encourage uptake of active and public transport.

Planning and design of car parking stations, paths and cycling facilities will reduce existing traffic-related conflicts amongst cars, pedestrians and cyclists. Car sharing services and infrastructure will be set up to reduce single person car trips and provide opportunities for drivers to share travel costs, ease road congestion, and reduce exhaust air pollution and the associated respiratory health problems.

Healthier lifestyles will be encouraged through the adoption of healthier behaviours for our staff and students by encouraging the integration of physical activity into daily commuting. Physical activity, particularly through active travel, has a range of health benefits and the University's commitment to this through its travel plan reflects its deep-seated commitment to world-leading research in obesity, cardiovascular disease and diabetes. Staff who are physically active for 20 minutes a day take less than half the annual sick leave of staff that are only active for 10 minutes a day (Goodyear, et al., 2010). Exercise and health benefits of active transport will also contribute to valuable research into cardiovascular disease, obesity and diabetes.

The STAMP seeks to improve social equity by considering those without access to cars. Car park pricing and permit allocation will give preference to staff and students most in need of car parking. There will be better connections to the City's bicycle and public transport networks which will reduce travel times and improve campus accessibility.

Travelling to and from the University is an important consideration for potential staff and students when considering new work/study opportunities. On average Sydney residents spend around 80 minutes daily commuting to and from work (NSW Transport and Infrastructure, 2009), time which is generally considered wasteful and expensive. Travel choices that aim to reduce traffic congestion, better manage vehicle circulation on campus and promote active, public and sustainable transport choices facilitate a healthier University environment.

## DRIVERS & POLICY

Federal, state and local governments are committed to increasing sustainability of transport. The main driving factor is the reduction of carbon emissions in response to climate change. The University of Sydney places extensive research into carbon emissions reduction across several faculties including the natural sciences, law, agriculture, medicine, government and politics. There are various policies and programs aimed at increasing the share of walking, cycling and public transport.

### UNIVERSITY OF SYDNEY POLICY

Environmental Sustainability Policy 2015  
Campus Improvement Plan 2014  
The University of Sydney Traffic & Parking Policy 2012

### FEDERAL GOVERNMENT

The federal government's COAG commitment to cities, public transport and social inclusion is demonstrated by the COAG reform agenda which recognises the importance of walking, riding and public transport as key parts of urban transport systems. The *Walking, Riding and Access to Public Transport* report (Transport, 2013) sets out how to increase the proportion of people walking and riding for short trips as well as accessing public transport in cities.

### STATE GOVERNMENT

Current state policies provide a framework to support local strategies to improve the level of accessibility and sustainable transport in the City of Sydney LGA. The NSW government's commitment to active and public transport is demonstrated by targets in the *NSW State Plan NSW 2021* (NSW Government, 2011), the *NSW Bike Plan* (NSW Government, 2010), *Planning Guidelines for Walking and Cycling* (NSW Government, 2004) and the *Metropolitan Plan for Sydney 2036* (NSW Department of Planning, 2010). Importantly for the University, The Department of Planning and Infrastructure has issued specific requirements that require provision of pedestrian and bicycle linkages for developments proposed by the University's CIP.

Key state and local government strategies were identified in the Access Strategy for the CIP are summarised below.

### THE DRAFT METROPOLITAN STRATEGY FOR SYDNEY TO 2031

The draft metropolitan strategy to 2031 will replace the Metropolitan Plan for Sydney 2036. This draft strategy aims to better align with the Long Term Transport Master Plan and the State Infrastructure Strategy released in 2012. It focuses on driving sustainable growth of Sydney to 2031, with emphasis on:

- a. Balanced growth
- b. A liveable city
- c. Productivity and prosperity
- d. Healthy and resilient environment
- e. Accessibility and connectivity

### LONG TERM TRANSPORT MASTER PLAN, 2012

The Long Term Transport Master Plan was released in December 2012. The master plan emphasises better planning of public transport services around "demand generators" such as universities.

Key public transport links identified in the master plan are located adjacent to the University. Completion of Redfern Railway Station upgrades and recognition of strategic bus corridors will provide better access for students and staff to the University. The master plan considers a Bus Rapid Transit or Light Rail along Parramatta Road. This investigation will also look at the urban renewal aspects along Parramatta Road due to the WestConnex motorway project. These projects should improve the public transport network for Sydney's inner west areas by providing reliable and frequent services.

## NEW SOUTH WALES BIKE PLAN

The NSW Bike Plan encourages increased cycle usage. It looks at how LGAs can implement strategies to benefit cyclists at major locations such as universities and public transport hubs including:

- a. additional way finding signage, including distances to and from major hubs close to the University
- b. development and testing of narrow bus shelter structure to reduce obstacles for cyclists on major bus corridors, which could apply to Parramatta Road or City Road in the future
- c. introducing bicycle excepted signs along one-way roads such as the Little Eveleigh Street
- d. a greater number of suitable active transport facilities with showers and lockers

## EASTERN SYDNEY AND INNER WEST REGIONAL ACTION PLAN

This regional action plan focuses on a well-connected efficient public transport system which includes:

- a. Planning for cycling networks close to employment centres
- b. Upgrading railway stations
- c. Upgrading roads to improve traffic flow
- a.

Once the cycling and public transport network upgrades have been completed, it is expected that these modes will become more attractive to staff and students.

## NSW PLANNING GUIDELINES FOR WALKING AND CYCLING

The planning guidelines for walking and cycling were developed by the NSW Government to recognise the importance of walking and cycling in NSW cities. The guidelines address a range of design principles aimed at promoting walking and cycling.

## LOCAL GOVERNMENT

The City of Sydney has committed \$76 million to active transport through its cycling strategy, which includes a 200 km network of cycle ways throughout the City of Sydney LGA ([City of Sydney 2012](#)). It is currently in discussions with the University about strategies and measures to improve city cycle ways connectivity to the University.

## SUSTAINABLE SYDNEY 2030 - THE VISION

The Vision for The City of Sydney is to be a green, global and connected city, leading the world in all three of these fields. A key plan to realise this vision is to encourage active modes of transport and improve the public transport system.

## CITY OF SYDNEY CYCLE STRATEGY AND ACTION PLAN 2007 – 2017

The City of Sydney Cycle Strategy and Action Plan (City of Sydney Council, 2007) will provide a safer and bike-friendly environment, which will promote the use of bicycles throughout the City of Sydney. Introduction of additional infrastructure and facilities will increase cycling mode share from 1% in 2007 to a predicted 10% by 2016. Key features of this strategy include:

- a. constructing of separate bicycle lanes;
- b. improving bicycle parking and active transport facilities; and
- c. connecting gaps in bicycle network

## SYDNEY CITY CENTRE ACCESS STRATEGY

The Sydney City Centre Access Strategy was released for consultation in September 2013. It documents how the City of Sydney Council plans to reduce congestion. Strategies relevant to the University include:

- a. completion of the Sydney cycle network to provide an integrated safer environment for cyclists both locally and regionally
- b. improved bus routes and simpler timetables
- c. increased real time information for increased public transport use
- d. reduction of on-street parking throughout the CBD
- e. 40km/h speed limits in some City areas
- f.

Proposed improvements to the public transport and cycle networks will increase their mode share. Limiting car parking will also reduce general traffic entering the CBD in peak periods which will further improve accessibility to the University.

## BROADWAY CYCLE LINK

This Broadway Cycle Link was approved by the City of Sydney in September 2013. The link forms a part of the cycling strategy for the City, connecting Leichhardt to City South/Central and Newtown to Bondi Junction. This cycle link will connect Notre Dame University, University of Technology, the University of Sydney, TAFE and the Broadway retail precinct. This link will improve connections between the University and other major hubs in the region.

The majority of the link will be mixed traffic cycleway, with sections devoted to shared paths. It will create streetscape improvements, encouraging pedestrian movements and traffic calming. Safety for pedestrians and cyclists will be improved through better street lighting, wider footpaths, and 40km/h speed limits and shared pedestrian/ cyclist paths. This link will complement access to the University.

## UNIVERSITY TRENDS

A number of Australian Universities are following sustainable transport trends at leading international tertiary institutions. They are adopting and implementing strategies and initiatives to reduce demand for car parking spaces, reduce vehicle use, and promote active transport modes like walking and cycling which reduce vehicle carbon emissions.

Sustainable transport initiatives are an important consideration for university staff and students and help enhance the University's employment and learning experience.

Notable Australian Universities that have sustainable transport strategies or plans include:

- a. Australian National University

Sustainable Transport & Mobility Plan - Draft

CIS-PLA-SLN-STAMP 001

Date of Issue: 1 December 2015

- b. Edith Cowan University
- c. Macquarie University
- d. Monash University
- e. University of Melbourne
- f. University of NSW
- g. University of Technology, Sydney
- h. University of Tasmania
- i. University of Western Sydney

University-based sustainable transport strategies focus on a range of initiatives, including:

- a. encouraging a shift from car use to public transport and active transport modes
- b. providing salary packaging for public transport
- c. negotiating fare discounts for public transport
- d. providing active transport facilities on campus
- e. implementing bike sharing schemes
- f. establishing carpooling schemes
- g. procuring and managing fleet vehicles
- h. Investing in communication technologies to minimise business travel
- i. investment in ICT equipment to facilitate teleconferencing for staff
- j. purchasing carbon offsets for greenhouse gas emissions from vehicles and air travel
- j.

## UNIVERSITY OF SYDNEY

The Environmental Sustainability policy is the crucial tool to the University's promotion of sustainable travel and mobility uptake. The [Travel Policy](#) and the [Flexible Working Arrangements Policy](#) are existing policies that facilitate sustainable travel and mobility choices for staff.

## ENVIRONMENTAL SUSTIANBILITY POLICY

A key objective of the policy is to promote sustainable transport and mobility through; the provision of quality infrastructure and facilities to support active transport, encouraging and supporting use of active and public transport; and using communication technology to minimise business travel.

The policy outlines responsibility to the Sustainability Sub-Committee (SSC) to develop working groups to oversee the progress of environmental sustainability initiatives and programmes. One of the working groups outlined in the Terms of References of the Sustainability Sub Committee is Transport and Mobility.

## COMMUTER DEMOGRAPHICS & TRAVEL PATTERNS

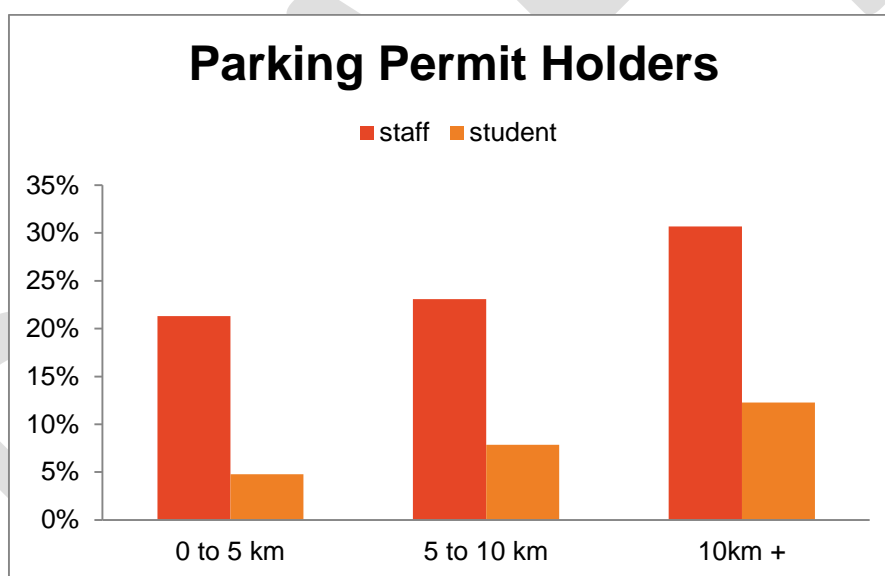
Camperdown and Darlington campuses accommodate about 44,000 students and about 6,200 staff. Most staff on the main campus lives within the wider Sydney metropolitan area, with a few living in the Central Coast, Blue Mountains and Wollongong areas. Similarly most students live in the greater Sydney metropolitan area.

This section draws on the following data for demographic and travel pattern analytics:

16. 2011 Census data from the Bureau of Transport Statistics for journeys-to-work (Bureau of Transport Statistics, 2011) at Camperdown and Darlington; and
  - a. Travel Mode and Physical Activity Survey (Rissel, et al., 2013), Healthy Sydney University, 2013

### DEMOGRAPHICS

Analysis of the proximity of permit holders' places of residence to the University indicates a substantial portion of the permit holders live within 10km of the University shows about 25% of staff and student parking permits holders live within 5km of the University and about 60% live within 10km of the University.

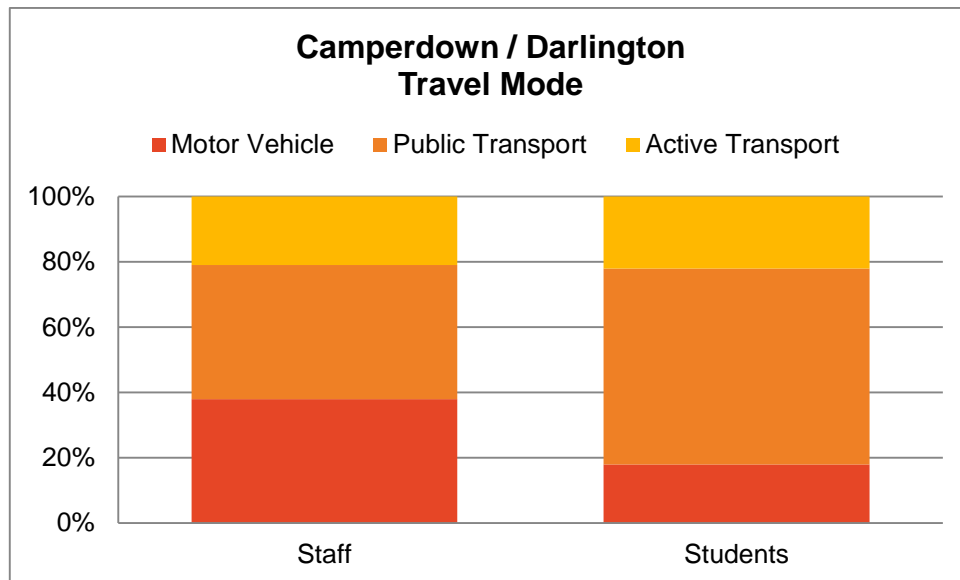


**Figure 1** Distance of parking permit holders' residences to the University

The significant number of parking permit holders living close to the University presents an opportunity to encourage these travellers to adopt active travel.

## TRAVEL MODE PATTERNS

There are some clear distinctions between staff and student travel behaviours. The share of active, public and motor vehicle transport choices of staff and students is compared in **Figure 2**.



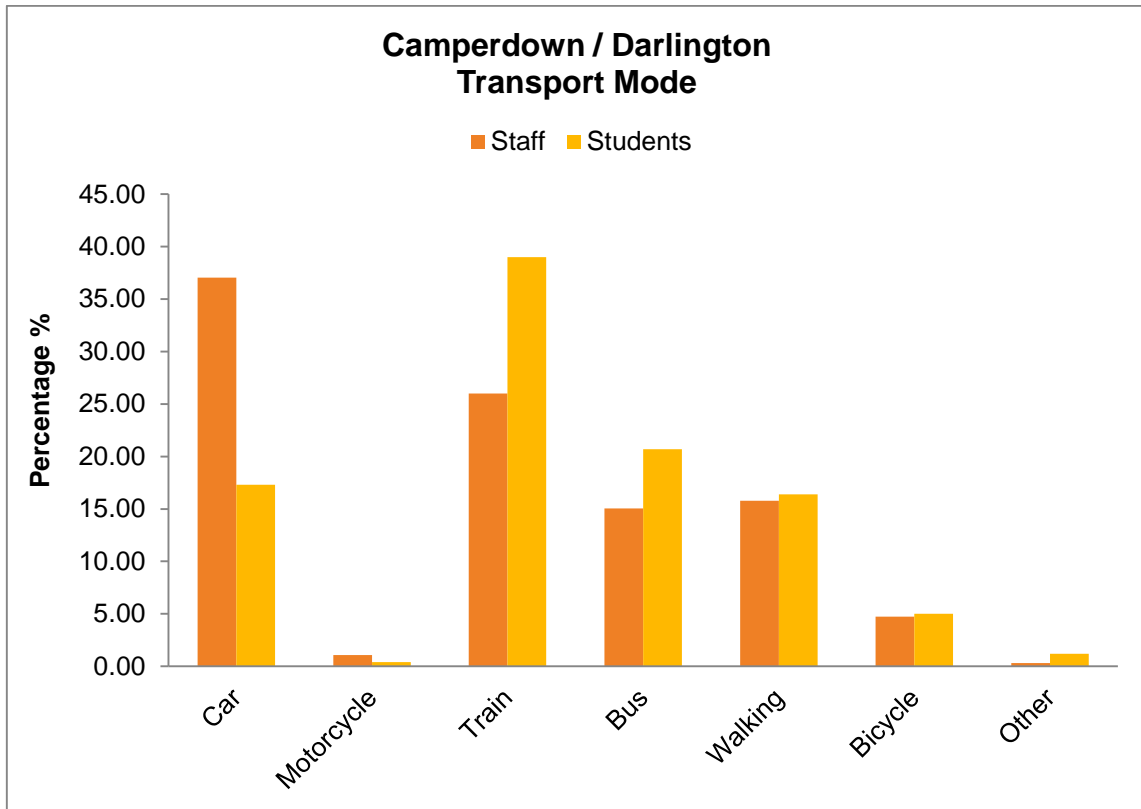
**Figure 2 - Travel Mode**

There is greater use of public transport amongst students, about 60% compared with 40% for staff.

Both staff and students are equally likely to use active transport, walking or cycling, which is most likely influenced by proximity of their households to the University.

Cycling represents the lowest share of journeys. This may be because of inadequate active transport facilities (amenities with showers, lockers and secure bicycle parking) on campus for cyclists, lack of confidence and road safety concerns.

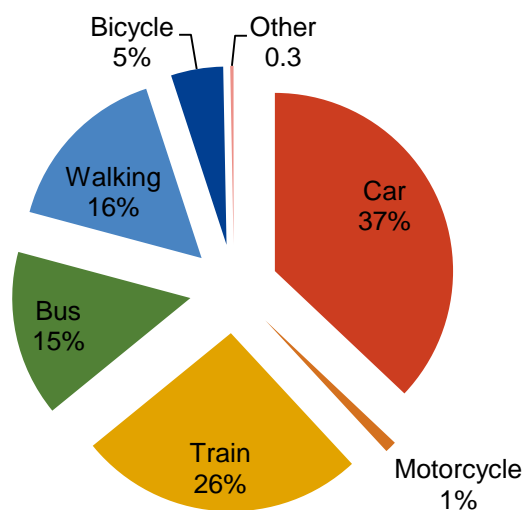
**Figure 3** shows staff is twice as likely to use cars compared to students. Car users living within 10km of the University represent an important group which can shift to greater use of public transport.



**Figure 3 - Transport Mode**

## STAFF

Staff trips to work were estimated using 2011 Census data from the Bureau of Transport Statistics for journeys-to-work at Camperdown and Darlington. **Figure 4** shows the journey-to-work transport modal split.



**Figure 4 2011 Census Staff Journey to Work Modal Split**



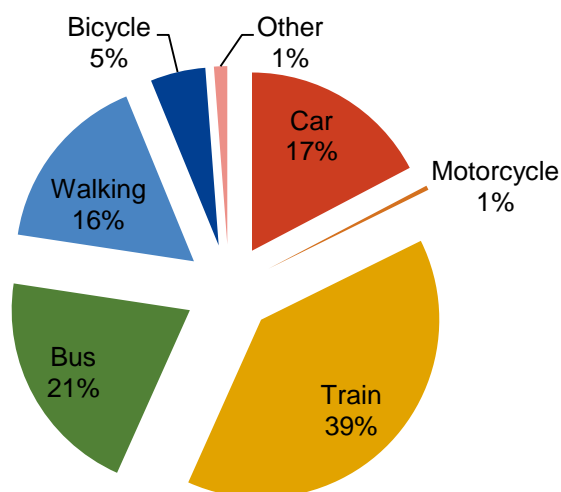
Staff travel behaviour indicates:

- buses were used for about 15% of journeys for shorter trips within a 10km radius. Buses were also used by staff living in areas not serviced by trains such as the Hills area, Eastern Suburbs and the Northern Beaches
- trains were used for 26% of journeys from areas well-serviced by rail, principally the Inner West and North Shore
- Motor vehicles were used for 38% of journeys, representing the most dominant transport mode. Staff living in the Eastern Suburbs and within 10km of the University were prevalent amongst car users
- active transport modes accounted for about 20% of journeys
- cycling was the least used travel mode, accounting for only 5% of journeys

The census travel mode split is consistent with the Travel Mode and Physical Activity Survey undertaken as part of the Healthy Sydney University Initiative (Rissel, et al., 2013).

## STUDENT

Student travel to the University was estimated from the Travel Mode and Physical Activity Survey undertaken as part of the Healthy Sydney University Initiative (Rissel, et al., 2013). Travel modes used by students are shown in **Figure 5**.



**Figure 5 2012 Surveyed Student Journey-to-work Mode Split**

Student travel behaviour shows:

- 60% of students used public transport
- train journeys dominate public transport use, being almost twice the share of bus journeys
- about 20% of students used active transport, which includes walking and cycling
- cycling was the least used travel mode accounting for 5% of journeys

## COMPARISONS WITH SYDNEY CBD COMMUTERS

A higher percentage of people drive to the University compared to the Sydney CBD. This is most likely due to the greater availability of on-site car parking and the low cost of parking permits compared to the CBD.

A higher proportion of people walk and cycle to the University than to the CBD suggesting the University is more amenable to cycling and walking.

A lower percentage of people use public transport to travel to the University compared to the CBD which is most likely due to the availability and affordability of car parking permits.

## INFRASTRUCTURE & PLANNING

There are opportunities to improve active travel and public transport facilities and infrastructure to support the predicted growth in student and staff population resulting from the CIP.

### CAMPUS IMPROVEMENT PROGRAM

The Campus Improvement Programme (CIP) is a seven-year plan for the development of new and improved infrastructure and services at the main Camperdown and Darlington campuses from 2014 – 2020. Its key objectives include:

- Upgrading the quality of University facilities
- Delivering world research excellence
- Providing vibrant and affordable student campus life
- Ensuring a healthy and sustainable campus environment

Main aspects of the CIP concerning transport access include an area-wide strategy for:

- a. rationalising car parking
- b. improving access to public transport
- c. increasing on-site student accommodation
- d. improving the pedestrian and cycling environment

Increased student numbers are forecast in the Camperdown and Darlington campuses as a result of the CIP. By 2020, student numbers could increase from the current 44,000 to over 53,000 for the Camperdown and Darlington campuses.

The CIP proposes to increase on-site student accommodation by about 4,000 additional beds. It is envisaged that the additional accommodation will increase activity on-campus and reduce the commute for these students. The majority of the additional accommodation will be located near the Mallet Street and Darlington campuses.

The number of staff (full-time and part-time) based at the Camperdown and Darlington campuses is projected to increase from about 6,200 to 6,600.

Additional students and staff on-campus will impact on travel mode demands and will require improvements to infrastructure to support active and public transport and better manage motor vehicle movements.

### ACTIVE TRANSPORT

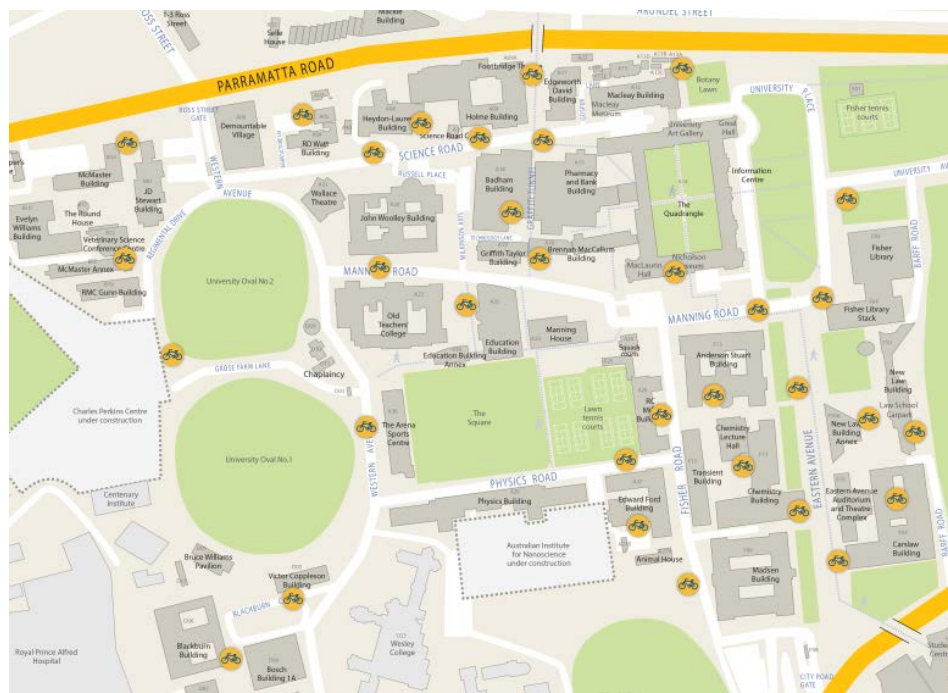
Active transport facilities are designated places to support staff and students to use alternative modes of travel, such as cycling, jogging and walking, rather than driving or taking public transport. These facilities may also benefit staff and students who exercise or participate in physical activity on campus throughout the day during recreational breaks. They include:

- Bicycle parking
- Locker facilities
- Change rooms
- Shower facilities

## BICYCLE PARKING

About 1,400 bicycle parking spaces currently exist at various locations throughout the Camperdown-Darlington campus as shown in **Figure 6** and **Figure 7**. Most of the infrastructure comprises of external bicycle hoop-type racks. Only four secure and undercover bicycle parking facilities exist at Biochemistry, Margaret Telfer, New Law and the Charles Perkins Centre.

Bicycle parking spaces will grow to 1700 in 2015 when the Abercrombie Business School, Student Accommodation and AIN projects are completed.

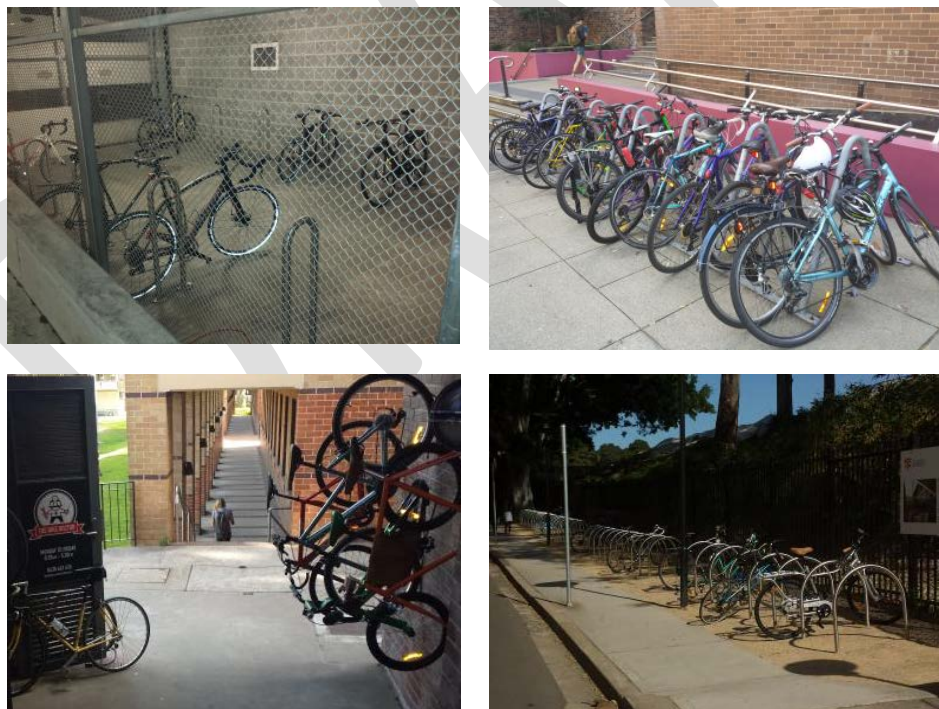


**Figure 6 - Bicycle Parking Locations, Camperdown**



### Figure 7 - Bicycle parking locations Darlington

Bicycle racks are spread across the University and well utilised as shown below in **Figure 8**.



### Figure 8 - Various Bicycle Parking Infrastructures

The City of Sydney Development Control Plan (DCP) 2012 and the Green Star Education V1 Technical Manual provide the following recommendations for number of showers and lockers for tertiary education facilities and Universities:



- City of Sydney Development Control Plan (DCP) 2012:
  - 1 Bicycle Park per 10 students and 1 bicycle park per 10 staff.
- Green Star criteria vary depending on how many points are being targeted by a project:
  - 1 point – secure bicycle parking for 5% of the peak number of students using the building at 75% occupancy and 5% of building staff
  - 2 points – secure bicycle parking for 10% of the peak number of students using the building at 75% occupancy and 10% of building staff.

Green Star define secure bicycle parking as racks/rails which are covered and protected from the element, and designed to allow both a wheel and the frame to be locked securely to the structure in accordance with AS2890.3. Bike storage must be either within 100m of the building front entrance or be added to the campus central bicycle storage area.

**Table 2** assesses the recommended number of bicycle parking spaces against the above requirements. There are about 30% fewer bicycle parking spaces than the recommended minimum in the aforementioned guidelines.

Further to the minimum number of bicycle parking spaces, there is also the requirement for a proportion of bicycle parking to be secure and undercover.

**Table 2 - Bicycle Parking Provision, Existing vs. Recommended**

Demographic	No.	Bicycle Parking spaces (Green Star Criteria for 1 to 2 Points)	No. of Existing Bicycle Parking spaces	Difference relative to recommended guidelines %
Student	44,400	1,665 - 3,330		
Staff	6,200	310-620		
		<b>1,975-3,950</b>	<b>1,400</b>	<b>-30% to -65%</b>

CIS Engineering & Sustainability has adopted bicycle parking space requirements for new developments and major refurbishment projects in its Sustainability Framework tool which are summarised in **Table 3**. These requirements lie between the 1 and 2 point target requirements of Green Star.

**Table 3 - Cycle Parking Standard, Sustainability Framework**

	(1A) Bicycle Parking Provision	(1B) Secure, Covered and Protected Parking	(1C) Under Cover Parking
<b>Staff</b>	10% full time building staff	Of the total staff bicycle parking provision, 1A, at least of 50% of parking will be secure, covered and protected.	No specific requirement if 1B is met.
<b>Students</b>	5% of the peak no. of students using the building at 75% occupancy		When providing bicycle parking at outside locations, where there are more than 10 bicycle parking spaces, at least 50% should be covered providing protection against the elements.

## LOCKERS AND SHOWER

A survey of change room facilities in Camperdown-Darlington campus was conducted in September 2014. **Table 4** summarises findings of the survey.

**Table 4 - Number of Existing Showers and Lockers for Active Transport Users**

Campus	Buildings	Showers	Lockers	Accessible to Students
Camperdown	25	87	306	Yes
Darlington	15	59	116	No
<b>Total</b>	<b>40</b>	<b>146</b>	<b>422</b>	

For tertiary education and Universities, the NSW Planning Guidelines (NSW Government, 2004) and the Green Star Education V1 Technical Manual provide the following recommendations for number of showers and lockers:

- NSW Planning Guidelines for Walking & Cycling
  - 8 showers per 300 – 500 staff members, there is no recommended number of showers for students numbers stated;
  - 1 locker per 3 bicycle racks.
- Green Star criterion is a stepped point system
  - 1 shower per 10 bicycle racks and 1 locker per bicycle rack based on:
  - 1 point - bicycle parking for 5% of the peak no. of students using the building at 75% occupancy and 5% of building staff – 1 shower per 10 bicycle racks
  - 2 points – bicycle parking for 10% of the peak no. of students using the building at 75% occupancy, and 10% of building staff.

Based on the 2014 staff population of 6,200, the NSW Planning Guidelines (NSW Government, 2004) would require 100 – 165 showering facilities. The end-of-trip survey indicates a total of 146 showering facilities across 40 buildings at the Camperdown-Darlington campus of which 87 are also accessible to students. The number of shower facilities at the main campuses meets the recommended guidelines.

There are 1,400 bicycle parking spaces at the Camperdown-Darlington campus which would require about 467 lockers to satisfy the NSW Planning Guidelines (NSW Government, 2004). Currently there are 422 existing lockers on campus which is 10% fewer than guideline requirements. However, the lockers are not distributed evenly as only 8 buildings have lockers. Remaining buildings have potential to accommodate lockers close to either the changing / shower room facilities or near bicycle parking racks.

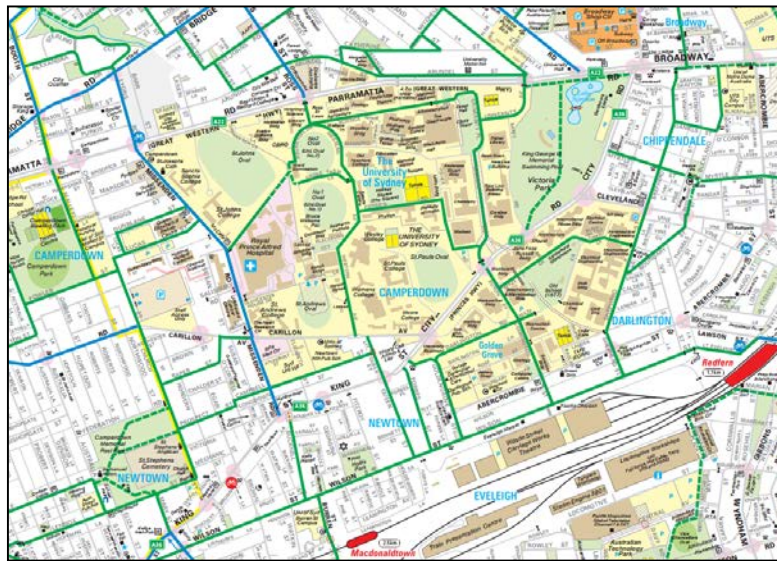
## CYCLING NETWORK AND CONNECTIONS

The University promotes cycling as an affordable mode of transport, to reduce traffic congestion and to improve health and fitness. Cycling infrastructure on-campus has improved considerably in recent years through provision of shared zones areas, such as Eastern Avenue, and increased bike parking facilities. There are about 1400 cycle parking spaces in the Camperdown-Darlington campus.

The University is well-embedded in the City of Sydney cycle network and has good links to cycle paths connecting to surrounding areas and suburbs as shown in. Maps showing bicycle parking areas on-



campus are provided on the internet for staff and students. The City of Sydney cycle network maps showing cycleway connections to surrounding areas are also made available to staff and students.



**Figure 9 - University of Sydney links to City of Sydney Cycle Paths**

## PEDESTRIAN PATHS

Pedestrians generally have unfettered access throughout the University. However, there is potential for pedestrian conflicts on campus due to:

- limited footpath capacities resulting in pedestrian overflow onto roadways
- vehicles on internal roads and in parking zones interfering with pedestrian flow
- shared pedestrian and bicycle paths
- lack of pedestrian awareness of vehicle traffic on internal roads

Hotspots for pedestrian conflicts with motor vehicles have been identified at the following locations:

- Shepherd Street / Lander Street intersection
- pedestrian crossings of the traffic signals at Butlin Avenue / City Road
- QMB access along Grose Street and crossing Missenden Road
- Abercrombie Street / Lawson Street footpaths

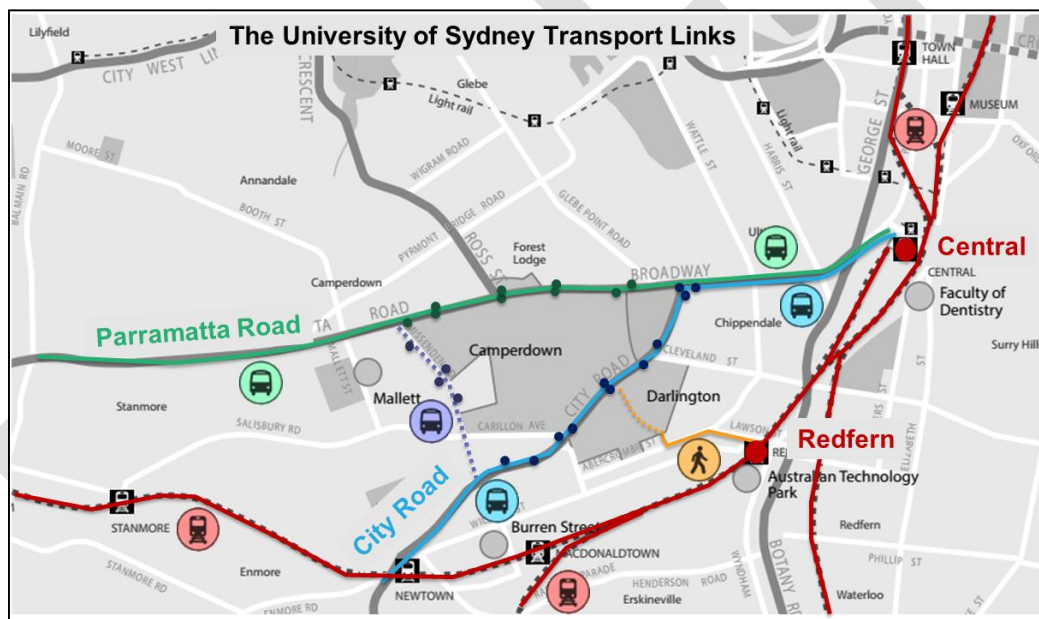


## PUBLIC TRANSPORT

Public transport to the University consists of primarily bus and train services with very little light rail use. The public transport mode share by staff and students to the University is approximately 50%, while more than 60% of students demonstrate a preference for public transport (train and bus) to reach the University (Rissel, et al., 2013). Main public transport routes to the University are shown in **Figure 10**.

Recent studied forecast the proposal of a University on-site station to serve 35,800 trips per day including relief of 6,100 trips from Redfern Station and 23,700 trips from Central Station, diminishing the pressure on existing rail networks. Whilst promoting the convenience of rail transport to the nearly 4,700 students living along the proposed Sydney Metro network. The proposed station is a clear opportunity for a substantial shift from road to rail amongst employees, students, residents and visitors in the surrounding areas.

The University will continue to lobby the local government and welcomes the opportunity to collaborate with local government and other stakeholders to deliver effective and the best outcome for long-term public transport solutions and ultimately sustainable transport choice for the staff and students of the University of Sydney.



**Figure 10 - Public Transport Links**

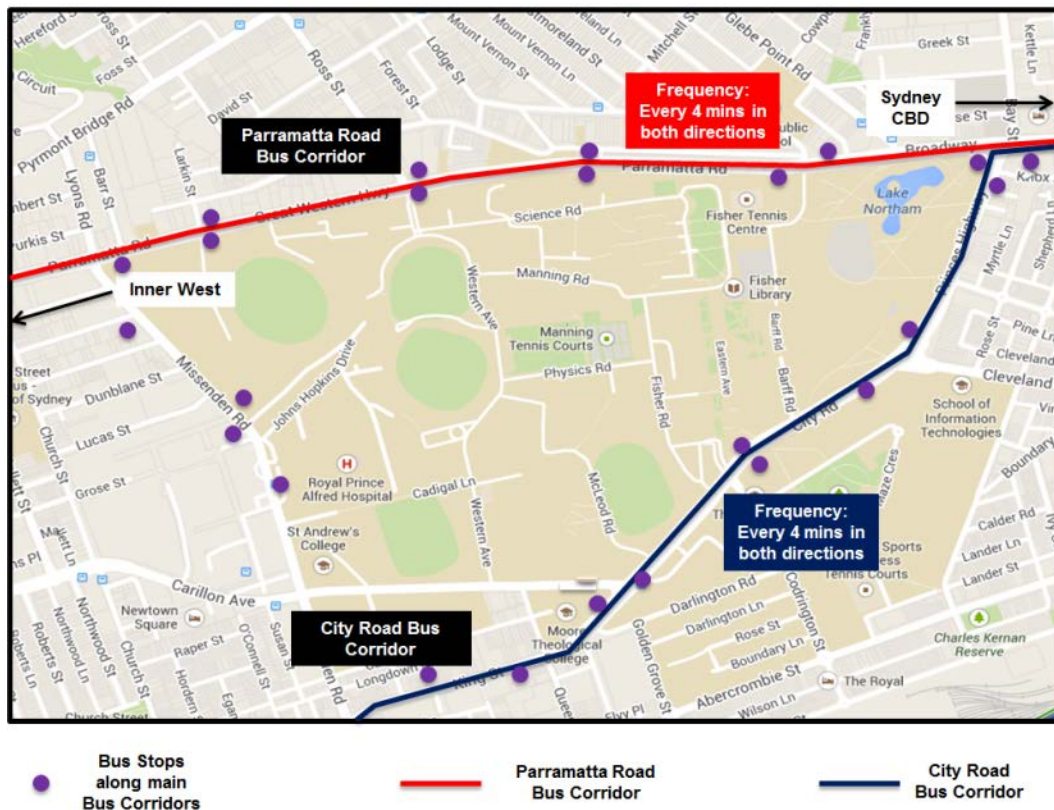
## BUSES

Buses are used by about 17% of students and staff, Travel Mode and Physical Activity Survey, Healthy Sydney University, 2012. The Camperdown-Darlington campus is serviced by buses on the Parramatta Road and City Road corridors. There are 11 bus routes servicing Parramatta Road and 10 buses servicing City Road. A service map showing all bus routes passing the University campus is shown in. Most regularly used bus routes are:

- 440- Rozelle to City via Leichhardt- 10%
- 422- Kogarah to City via Tempe and St Peters – 8.7%
- M30- Spit Junction to Sydenham via City and the University- 8%



- 423- Kingsgrove to City via Earlwood- 6.4%



**Figure 11 - The University Bus Service Map**

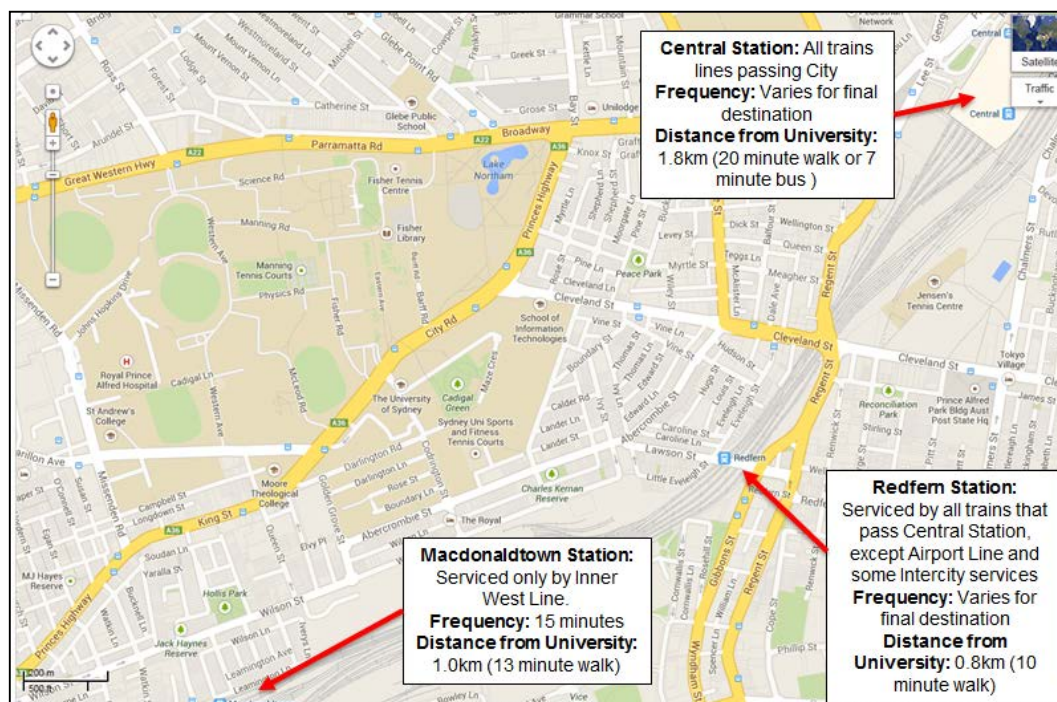
Buses along Parramatta and City Road to and from the Sydney CBD arrive at a frequency of every 4 minutes during peak times. Bus stops servicing the University are located every 400 metres around the perimeter of Camperdown along the Parramatta Road and City Road.

## TRAINS

Train use is the dominant public transport mode for the University. Approximately 30% of students and staff use trains, Travel Mode and Physical Activity Survey, Healthy Sydney University, 2012. shows Camperdown-Darlington campus is located near three railway stations:

- Central Station
- Redfern Station
- Macdonaldtown Station

Central Station is serviced by all train lines (including intercity and interstate services) except the Carlingford Line and Cumberland Line of Sydney Trains. Redfern Station is serviced by all train lines except certain NSW Trainlink services and the Airport/East Hills Line. Macdonaldtown Station is only serviced by the Inner West Line.



**Figure 12 - Train Station locations close to the University**

Redfern Station is the closest railway station to the Camperdown-Darlington campus and its patronage is five times higher than Central Station. MacDonaltdtown Station has the lowest patronage.

Access to the University from Central station is via connecting bus services to Parramatta Road or City Road, which take approximately 7 minutes.

The walk from Redfern Station to the Darlington campus takes approximately 10 minutes to the boardwalk entry at Shepherd Street and an additional 5 minutes to Camperdown campus entry point at Eastern Avenue.

Redfern Station currently did not have lift access to the station platforms which limited access for parents with prams and mobility-impaired persons. Construction of new lift access is scheduled in 2015 which will provide people with limited mobility more equitable access to the interchange with greater ease and convenience. New lift access is planned to be However in August 2013, Transport for NSW announced the construction of lift access to at least one platform.

## MOTOR VEHICLES

### UNIVERSITY SHUTTLE BUS SERVICE

The University operates three free minibuses from the University to Redfern Station and satellite campuses. One of the minibuses is an eight-seat bus equipped with a hydraulic wheel lift for mobility-impaired persons. The shuttle bus service operates on a loop between the University and Redfern Station. Services run from the Fisher Library to Redfern Train Station at 15-20 minute intervals between 4:30pm-10:15pm during semester, and 4:30pm-8:15pm outside of semester.

Additionally, the shuttle services are operated between the Camperdown-Darlington campus (corner of Manning Road / Fisher Road), the Mallett Street campus and the Sydney College of Arts (Rozelle) campus. Services are operated during the day from 8.30am-8.30pm at half hour intervals. The estimated travel time between campuses is approximately 20 minutes.



Shuttle bus services do not run on weekends, public holidays or during the Christmas shut down period. The shuttle bus route is shown in.

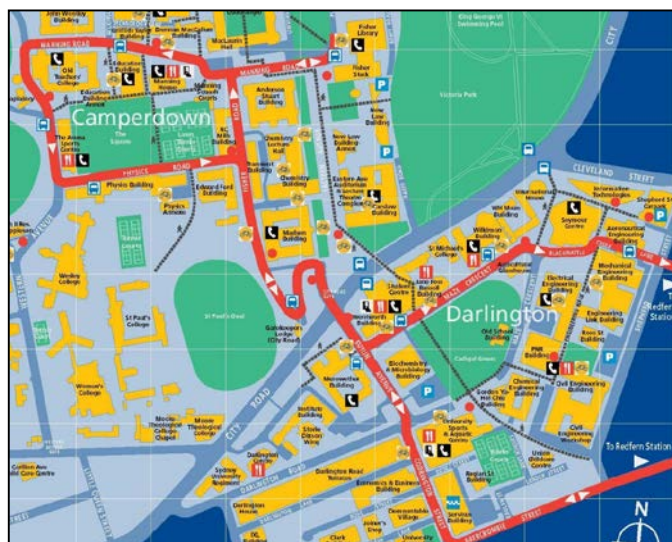


Figure 13 - University Shuttle Bus Route

## MOTORCYCLE PARKING

Designated motorcycle parking is currently provided at four peripheral locations on the University campuses as shown on **Figure 18**. While the University's Camperdown/Darlington campuses cater for approximately 124 motorcycles per **Table 5**, any car parking space on campus can also be used for motorcycles (for the cost rates of cars). Existing motorcycle parking areas are largely unmarked and do not comply with AS/NZS 2890 Parking Facilities standards whose design requirements would effectively reduce the number of motorcycle spaces.

Table 5 – Motorcycle Parking Spaces, University of Sydney

Parking Location	No. of Motorcycle Spaces
Ross Street (West Side)	20
City Road Gate (Eastern Avenue)	40
Western Avenue (West Side)	20
Codrington Street (West Side)	15
Shepherd Street Carpark	29
	<b>124</b>

The City of Sydney DCP 2012 recommends 1 motorcycle parking space for every 12 car parking spaces. There is currently a significant shortfall in motorcycle parking spaces. At least 200 motorcycle parking spaces are needed to satisfy the City of Sydney requirements. The CIP will introduce an additional 12 motorcycle parking spaces on campus at the completion of all three transformational developments. This meets only 55% of the DCP 2012 recommendation.

Recommended initiatives below would aid in the STAMP and the University's efforts to promote sustainable transport choice to staff and students.

- A 'car free day' once per semester or year where vehicles are prohibited on campus (except for staff and students with mobility issues).
- All parking revenues and fines to be devoted/channelled into a pool of money to fund sustainable transport alternatives for staff and students (i.e. so they can be clearly linked to positive initiatives by the University, not simply pushed into general revenue);

- c. Clear traffic information visible throughout the campus, which includes information about safe cycling practices and a 'shared footpath' scheme between pedestrians and cyclists.

## CAR PARKING

Parking availability on the Camperdown-Darlington campus is wide spread and offers drivers relatively short walking distances to their final destinations. There are currently about 2227 car parking spaces at Camperdown-Darlington campuses according to a recent 2013 audit of parking spaces. An additional 200 parking spaces will be provided for the Transformational projects currently underway, including the Abercrombie Business School and the AIN building

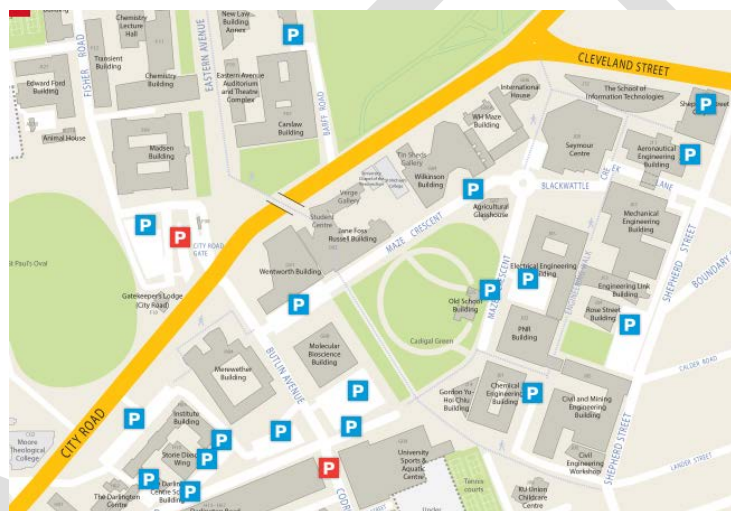
**Figure 14** and **Figure 15** show the distribution of car parking facilities at Camperdown and Darlington campuses. Car parking stations are shown in blue and motorcycle parking stations in red.

There is a car parking pricing mechanism and permit system in place. Parking permits are available to staff for about \$285 per annum and this cost can be salary sacrificed. The University issues approximately 2,300 parking permits to staff (63%), students (21%), commercial representatives (1%), departments (3%), and service contractors (13%). Approximately 65% of the 7,000 staff has parking permits.

Visitors park for a flat rate of \$24 (between 6am-3pm weekdays), except at Shepherd Street car park which charges \$4 per hour up to the maximum of \$24. Outside of 6am-3pm weekdays, parking costs \$2 per hour up to a maximum of \$6.



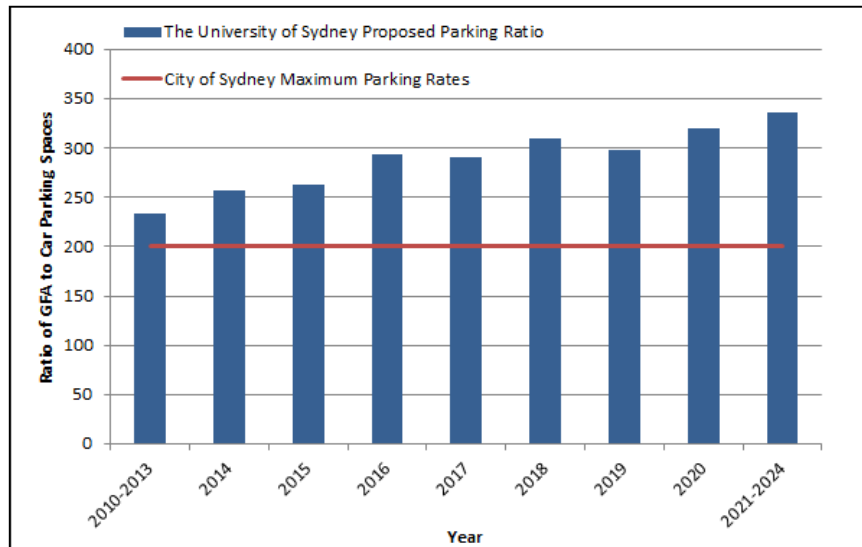
**Figure 14 - Camperdown Parking Locations**



**Figure 15 - Darlington Parking Locations**

The CIP will significantly change distribution of car parking facilities by consolidating car parking facilities in defined precinct areas. Car parking areas will be relocated to peripheral locations in basements to new CIP buildings to reduce the many surface car parks that exist across the heart of the Camperdown-Darlington campus. This will greatly reduce on-street car parking and through-campus vehicle traffic to create a safe pedestrian and bicycle-friendly environment.

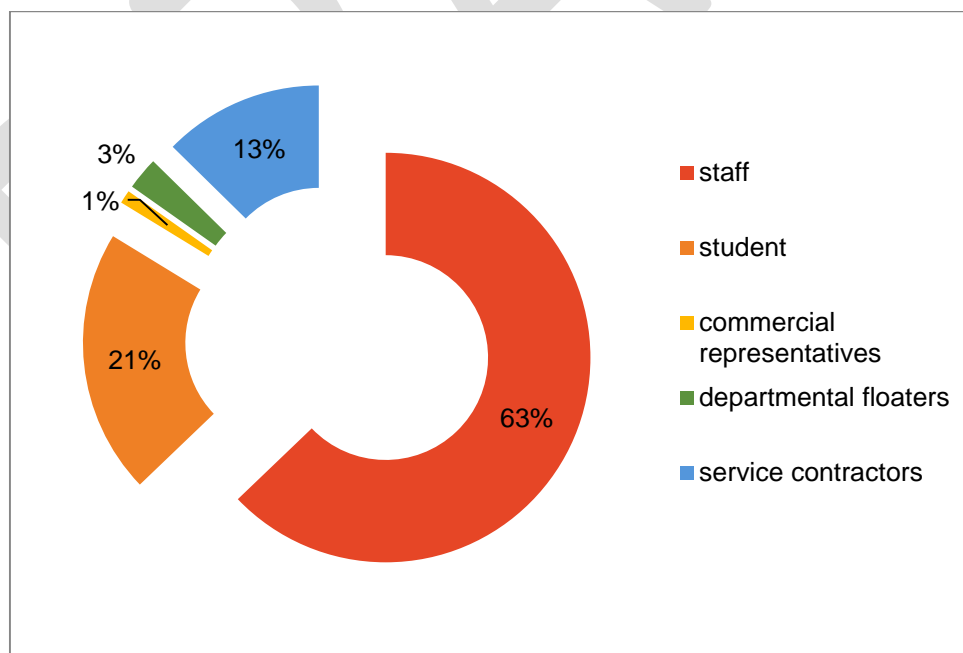
The City of Sydney LEP 2012 maximum car parking provision is 1 car park per 200m<sup>2</sup> GFA. The CIP will result in a total GFA of 884,600m<sup>2</sup> and aims to provide 2800 car parking spaces, which is an improvement on requirements of the Sydney LEP 2012 parking controls. The GFA parking ratio throughout the course of the CIP compared with the City of Sydney's rate of 1 car park per 200m<sup>2</sup> is shown below in **Figure 16**. The table indicates that the University is providing 1 per 220m<sup>2</sup> with the rate of parking decreasing to 1 per 310m<sup>2</sup> by 2020.



**Figure 16 - Ratio of GFA to Car Parking**

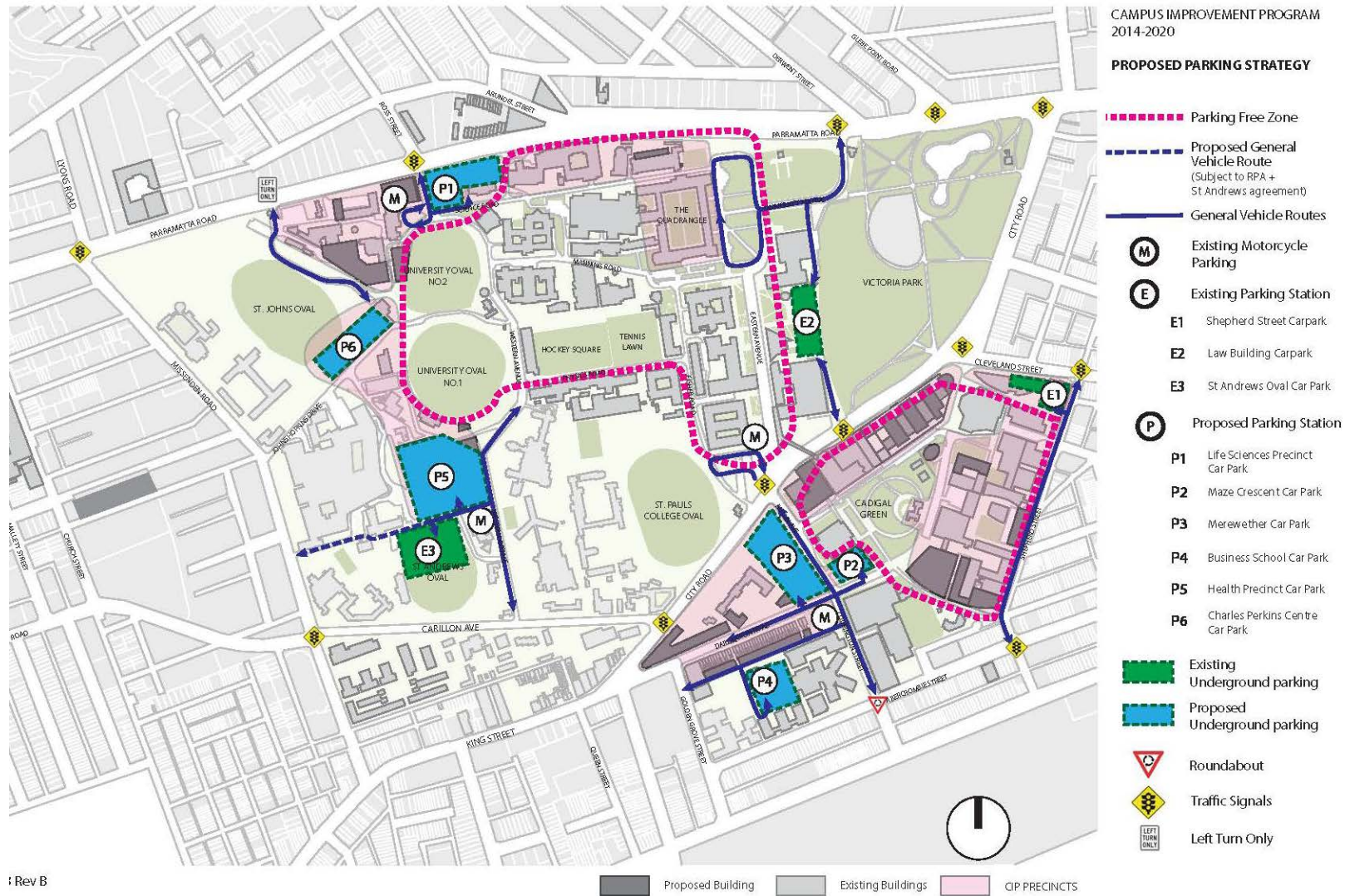
As part of the CIP, parking on the internal streets of the Camperdown-Darlington campus will be limited (excluding disabled, service and emergency vehicle spaces) and most current street parking areas will be designated “park free zones” as shown in **Figure 18 - CIP Parking Strategy**. Surface parking will be removed progressively as the staged development occurs.

The University issued approximately 2,300 parking permits in 2012. Students and staff accounted for over 1,900 permits, or just over 80% of parking permits. Below shows that staff parking permits accounted for about 60% of the issued permits, three times the number of permits issued to students.



**Figure 17 Breakdown of parking permit holders**





**Figure 18 - CIP Parking Strategy**



## ENABLING TECHNOLOGY

The University's investment in information and communication technology is vital to promote sustainable transport choice amongst staff and students. Training is integral to ensure the uptake of these resources is sustained. Such technologies provide savings in time, cost and emissions as associated travel costs are avoided.

### E-LEARNING

The increased uptake of e-learning sees savings in both time and costs associated with the physical commute to campus, while allows for flexible study options for students.

The University of Sydney offers a range of e-learning courses and utilises technology to support students. CIS and ICT continuously refit formal teaching spaces and informal collaborative spaces for students to partake in collaborative and engaging learning experiences, whilst allowing students to flexibly manage their studies. The Learning Management System (LMS) facilitates a virtual learning space for students by collating a number of eLearning systems.

The Sydney Executive Group (SEG) expressed in-principle support for the development of a whole-of-institution eLearning strategy and participation in the massive open online courses (MOOCs) sector (The University of Sydney, 2014)

### BUSINESS TRAVEL

ICT resources are key to providing staff with the required technology to avoid business travel. ICT resources facilitate telecommunication such as video-conferencing & teleconferencing facilities to communicate with colleagues and external stakeholders.

The University is able to realise the financial, time and emission savings benefits associated with avoiding air or vehicle travel. Well supported user-training is required to ensure the uptake and application of ICT resources in avoiding business.

### TELECOMMUTING

Telecommuting is the practice by which employees work from home or a designated location outside of the office. Telecommuting helps reduce the need for the daily journey to work, allowing employees to become more flexible with their work hours and simultaneously reduce transport emissions and congestion on the road and public transport networks.

Policy is vital in establishing a framework and set guidelines for effective telecommuting at the University. The University has policy in place to facilitate home based working arrangements for staff. The [Flexible Working Arrangements Policy](#) sets out guidelines for working from home arrangements through the [Working from Home Policy](#). The University's 2014 [Working from Home Policy](#) provides a framework for both academic and professional staff to telecommute to the University.

For professional staff telecommuting on a regular basis is formalised through a [Working from Home \(WFH\) Agreement](#). The agreement outlines the duties to be performed whilst undertaking home-based work, the mechanism for monitoring output, as well as the supervision arrangements prior to the arrangement being put in place. For ad hoc telecommuting professional staff need not formalize with a WFH Agreement, however approval must be obtained in advance from staff member's supervisor.

A formal WFH Agreement is not required for Academic staff however arrangements must be discussed and agreed with the staff member's supervisor to ensure campus-based responsibilities are appropriately balanced with home/other location work arrangements, appropriate contact and

availability arrangements are in place and an understanding of WHS requirements and responsibilities.

The University also realizes financial benefits when significant numbers of employees telecommute, which allows additional emission cuts through reduction of office energy on campus. Financial benefits are seen by both staff and the University. For staff, savings are gained from a reduction on fuel costs, which are substantially more than their increase in home energy costs (Arif, *et al.*, 2013).

### ACTIVITY-BASED WORKING

The Activity Work Based survey was conducted in CIS in 2015. Of the 83% staff respondents, 44.7% currently work remotely. A further 14% of respondents expressed interest in telecommuting in the future. That is a potential 58.7% uptake of telecommuting by CIS staff.

The survey also indicated that 18.9% of the 14% who expressed interest in telecommuting currently choose not to telecommute due to technology limitation. The introduction of an activity based workplace within CIS will facilitate the technology and ICT resources required for remote productivity and hence the notion of telecommuting.

## COMMUNICATION AND ENGAGEMENT

Effective communication and engagement with staff and students is essential to promote positive behaviours that lead to adoption of active and public transport. The University uses a variety of communication and engagement channels which are discussed below.

### COMMUNICATION

#### ORIENTATION AND INDUCTION

Information on public transport, cycling routes and advice on travel options should be provided in marketing collateral for student orientation and staff inductions. The information should communicate:

- sustainable options for commuting to the University
- benefit promotion of active transport choices
- information on bus and train public transport
- locations of active transport facilities
- details of shuttle bus services
- location and costs of car and motorcycle parking
- Sustainable transport toolkits for staff and students
- Sustainable transport information sessions for staff and students – including customized sessions e.g. Cycling Safety

#### WEBSITE

The University website currently provides some information on public transport routes and cycling parking locations on the online campus site map. Information on active transport facilities such as shower facilities, change and locker rooms, secure undercover bicycle parking and public transport is also available. The website's considerable enhancement is required to engage and provide readily accessible high quality information on active transport facilities, maps, public transport timetables and advice about the range of travel options for staff and students.

### ENGAGEMENT

Sustainable transport and mobility engagement activities currently involve staff and student participation in events and network forums.

#### EVENTS

The University, through Campus Infrastructure Services hosts the annual Ride2Uni event, which aligns with the National Ride2Work event, to support cyclists and encourage new cyclists to ride to work. Additionally, the University partners with the City of Sydney to promote cycling awareness events on campus such as Try2Wheels and Rusty Riders courses which provide bike awareness and safety training as well as free maintenance services.



**Figure 19 - Ride2Uni Day Event**

Other annual events the University should sponsor include:

- Walk-to-work day
- Car-free day
- Personal journey planning booths be set up and promote sustainable transport choice, twice per year.
- Annual workplace engagement programmes to promote active transport and well-being

## NETWORKS

A bicycle user group is commonly established at universities and commercial organisations to represent interests of the cycling community. Cyclists at the University established a Bike2Work group on Yammer, the University's social network platform. This group is currently restricted to staff and not open to students. In future, a student bicycle user group may be established to advocate for student cycling interests and to help engage student participation in university cycling awareness campaigns.

## LIMITATIONS & BARRIERS

A number of barriers discourage the uptake of active and sustainable transport choice amongst staff and students at the University.

### POLICY REFORM

As part of the Environmental Sustainability Policy, the SSC will be responsible for developing working groups such as Transport and Mobility to oversee the progress of environmental sustainability initiatives and programmes.

The Transport and Mobility Working Group will consist of relevant stakeholders and experts who will be responsible for developing specific sustainability initiatives and programmes consistent with the Environmental Sustainability Policy's objectives to promote sustainable transport and mobility. The working group will also be able to establish set benchmarks and targets in sustainable travel for the University.

The Transport and Mobility Working group will be a key in the implementation of the STAMP's strategy and its recommendations.

### FINANCIAL INSTRUMENTS

#### INCENTIVES

In stark contrast to car parking, there are few benefits and incentives offered for taking up active and public transport. For example, staff is unable to salary sacrifice the cost of bicycles or public transport passes like the Opal card whilst they may salary sacrifice car parking costs.

#### PARKING RATES

Car parking at the University is very cheap compared with commercial parking facilities in the city. Campus car parking permits costs can be salary sacrificed by staff. A large number of staff living 5-10kms from the University have car parking permits. Availability of cheap parking on campus contributes to the high percentage of staff driving to work instead of using active and public transport modes.

### INFRASTRUCTURE

#### ACTIVE TRANSPORT FACILITIES

Secure active transport facilities comprise bicycle parking with accessible changing facilities, showers, lockers and bicycle maintenance stations. Secure end of trip facilities deter bicycle theft, protect bicycles from the weather, provide showers, lockers and change rooms and allows basic access to maintenance tools for cyclists. Active transport facilities support active modes of transport to the University especially in warm and cool temperate climates. Lack of such facilities is a deterrent to many cyclists. University of Sydney staff has often raised the need for additional active transport facilities (Rissel, et al., 2013).

The CIP encourages the provision of active transport facilities with the new developments. With a forecast population increase of approximately 10,500 staff and students additional bicycle parking, showers and lockers are required to stratify the City of Sydney Development Plan and Green Star criteria.

## ICT RESOURCES

The installation of professional quality video conferencing allows staff to connect with their colleagues and external stakeholders in remote locations without the need for travel. The investment of high quality technology and training in the use of these technologies is required to facilitate and encourage the uptake by staff.

## ENGAGEMENT

### COMMUNICATION

Communication and information about sustainable transport options and initiatives on the University's website is not easily accessible, effective or engaging. Sustainable transport modes need to be clearly addressed within the University's website. Information needs to be prominent and easily accessible by both staff and students. A dedicated webpage to sustainable transport would provide effective and engaging information on:

- Public transport options, route and timetable information
- Active transport options including cycling and pedestrian routes
- Active transport facility locations
- Car and motorcycle parking facilities locations
- Staff and student incentives for public transport passes
- Health benefits for active transport
- University bicycle sharing schemes
- Information on bicycle communities and maintenance
- Information on walking groups – [The Walking Bus](#)
- Information on [Flexible Working Arrangement Policy](#) & [Working From Home Policy](#)
- Information on ICT resources for avoiding travel e.g. teleconferencing & VPN technology

### MONITORING AND REPORTING

A periodic Sydney University travel survey is essential in profiling the commuting behaviour of both staff and students at the University. Periodic surveys monitor target key performance indicators (KPIs) to monitor effective implementation of the STAMP and confirm the mode shift of the University's staff and students.

On-going monitoring of the University's STAMP performance will ensure that emerging challenges are addressed and targets remain relevant to the University's environment.

**ADDITIONAL BARRIERS****FINANCIAL**

Commuters using multiple travel modes such as cycling and public transport face financial penalties, such as cyclists required to purchase additional tickets for their bike on trains during peak times.

## STAMP RECOMMENDATIONS

In order to achieve the stated objectives of the STAMP and overcome identified barriers, a number of recommendations are proposed for consideration. These recommendations are grouped into the following themes:

1. Policy Reform
2. Financial Instruments
3. Infrastructure
4. Working with Government
5. Demand Management
6. ICT Investment
7. Communication & Engagement

A programme for implementing the recommendations is proposed in the table below.



Objective Measure	Actions for Implementation	Accountability Area	Timeframe
<b>Policy Reform</b>			
<b>1 Include sustainable transport &amp; mobility in relevant University policies</b>	a. Include sustainable transport objectives, accountabilities and responsibilities in the University Environmental Sustainability Policy.	Sustainability sub-committee (as proposed by the Environmental Sustainability Policy effective from June 2015)	2015
	b. Establish a sustainable transport work group to develop, review and recommend relevant sustainable travel initiatives for endorsement by FIC & SEG		
	c. Reform and improved communication and engagement about Telecommuting policy and its implementation.	HR	2016 – 2017
<b>Financial Instruments</b>			
<b>2 Financial incentives for active &amp; public transport</b>	a. Negotiate & facilitate purchase of cheaper annual public transport (opal) passes	HR, Finance	2016 - 2017
	b. Salary sacrifice purchase of annual public transport (opal) tickets		
	c. Staff salary sacrifice for the purchase of bicycles		

<b>3</b>	<b>Finance sustainable transport programmes</b>	a.	Hypothecate parking and fine revenues to fund sustainable transport initiatives and infrastructure	CIS, Finance	2016 – 2020
<b>Infrastructure</b>					
<b>4</b>	<b>Improve active transport facilities</b>	a.	Provide high quality active transport facilities with bicycle storage, lockers, toilets and showers for new developments and existing high demand areas	CIS	2016 – 2017
		b.	Run design competition for innovative & modular active transport facilities	CIS	2016 – 2017
		c.	Pilot University bike loan/share schemes to test viability	HSU	2017 – 2018
		d.	Provide bicycle maintenance/repair stations on campus	CIS	2016 – 2020
<b>5</b>	<b>Reduce vehicle traffic through campus</b>	a.	Consolidate car parking to designated peripheral car parking stations	CIS	2017 – 2020
		b.	Only permit services, emergency & construction vehicle access onto campus roads		
		c.	Designate vehicle-free zones		2017 - 2020

6	<b>Improve campus cycleway and signage</b>	a.	Standardise cycleway design and signage to be consistent with the City of Sydney	CIS	2017 - 2020
7	<b>Construct more campus student accommodation</b>	a.	CIP Implementation	CIS	2014 – 2020
<b>Collaborating with Government</b>					
8	<b>Collaborate with Transport for NSW for improved public transport services</b>	a.	Lobby Transport for NSW for a University train or tram station to improve public transport connectivity and reduce car congestion	CIS	2017 – 2020
9	<b>Improve cycleway connectivity with surrounding Councils</b>	a.	Collaborate with transport planners from City of Sydney, Marrickville Council, Ashfield Council & Leichhardt Council to improve cycleway connectivity, design, signage & way-finding to the University		
<b>Demand Management</b>					
10	<b>Reduce car parking demand</b>	a.	Prioritise parking access on a needs basis, e.g. special carers / disability access priority, etc.	HR, CIS	2016 – 2020
		b.	Facilitate University carpooling scheme to reduce single occupant vehicle trips		
		c.	Introduce designated carpool vehicle parking spaces		

- d. Implement tiered car parking tariffs dependent on distance to driver's place of residence e.g the closer drivers live to the University: the more they pay for car parking
- e. Progressively implement minimum car parking tariff equivalent to a 3-5 section bus journey
- f. Provide additional motorcycle parking facilities

<b>11 Reduce business-related motor vehicle &amp; flight travel</b>	<ul style="list-style-type: none"> <li>a. Centralised staff business travel website to provide staff with travel options using public transport for local/metropolitan business purposes</li> <li>b. Increase readily accessible video conferencing &amp; teleconferencing facilities with well supported user- training</li> <li>c. Develop and implement a system to monitor business travel sustainability indicators</li> </ul>	Marketing & Communications, ICT, Finance	2016 – 2018
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#### ICT Investment

<b>12 Promote Telecommuting</b>	<ul style="list-style-type: none"> <li>a. Invest in ICT resources to facilitate teleconferencing for staff</li> <li>b. Promote and education policy &amp; Flexible Working Hours guidelines</li> </ul>	ICT	2016 – 2017
		HR	

Communication & Engagement				
<b>13 Marketing &amp; Communications</b>	a.	Provide engaging & informative online sustainable travel portal that provides maps, timetables, advice & options	Marketing & Communications, CIS, HR, Students Union	2016 – 2018
	b.	Market & promote travel initiatives to improve health, wellbeing & environmental outcomes		
	c.	Develop a cycling social network/forum for staff & students		
	d.	Provide staff & student informative induction packs for sustainable transport		
<b>14 Measure &amp; Monitor</b>	a.	Biennial surveys to measure staff & student travel transport behaviour	CIS	2016 – 2020
	b.	Review of Sustainable Working Group (Transport) initiatives by the Sustainability Sub-Committee which reports back to FIC		
<b>15 Promote more distance learning / education</b>	a.	More on-line courses should reduce student travel kilometres as well as reducing space demand and utilities' costs		2017 – 2018

## BIBLIOGRAPHY

**Bureau of Transport Statistics** Employment and Commuting to Centres [Report]. - [s.l.] : Bureau of Statistics, 2011.

**City of Sydney Council** Cycle Strategy and Action Plan 2007-2017 [Report]. - [s.l.] : City of Sydney Council, Sydney, 2007.

**Commonwealth of Australia** Quarterly Update of Australia's National Greenhouse Gas Inventory: March 2015 [Report] / Department of Environment. - 2015.

**Department of Innovation Industry, Science and Research** 2011 Strategic Roadmaps for Australian Research Infrastructure [Report] / Innovation Industry, Science and Research. - [s.l.] : Commonwealth of Australia, 2011.

**Goodyear Rosmary and Ralphs Martin** New Zealand Transport Agency [Online] // NZ Transport Statistic Resource 1. - Statistics of New Zealand, 2010.

**NRMA** NRMA [Online] // NRMA. - NRMA, 2014. - 2015. - [www.mynrma.com.au](http://www.mynrma.com.au).

**NSW Department of Planning** Metropolitan Plan for Sydney 2036 [Report]. - [s.l.] : NSW Government, 2010.

**NSW Government** NSW 2021: A Plan to Make NSW Number one [Report]. - 2011.

**NSW Government** NSW Bike Plan [Report]. - [s.l.] : NSW Government, 2010.

**NSW Government** Planning Guidelines for walking and Cycling [Report]. - [s.l.] : Department of Infrastructure, Planning and Natural Resources, 2004.

**NSW Transport and Infrastructure** 2007 Household Travel Survey [Report]. - [s.l.] : NSW Transport and Infrastructure Transport Data Centre 2009, 2009.

**Rissel Chris, Mulley Corinne and Ding Ding** Travel Mode and Physical Activity at Sydney University [Journal] // International Journal of Environmental Research and Public Health. - 2013. - pp. 3563-3577.

**The University of Sydney** Annual Report 2014 [Report]. - [s.l.] : University of Sydney, 2014.

**Transport Department of Infrastructure and** Walking, Riding and Access to Public Transport; Supporting Active Travel in Australian Communities [Report] / Department of Infrastructure and Transport. - [s.l.] : Commonwealth of Australia, 2013.

**Transport for NSW** Transport Sydney Trains [Online] // Sydney Trains. - 2015.

**University of Sydney** Delivering Certainty - Overview Benefits of A Univeristy of Sydney Metro Station [Report]. - 2015.