The provision and use of bicycle parking at Sydney region public transport interchanges
Results of facilities audit and cyclist questionnaire

Prepared for the New South Wales Premier’s Council for Active Living
August 2009
## Contents

<table>
<thead>
<tr>
<th>Title</th>
<th>Page</th>
</tr>
</thead>
<tbody>
<tr>
<td>How to use this report</td>
<td>4</td>
</tr>
<tr>
<td>Executive summary</td>
<td>5</td>
</tr>
<tr>
<td>Purpose of this study</td>
<td>8</td>
</tr>
<tr>
<td>Audit and questionnaire methodology</td>
<td>12</td>
</tr>
<tr>
<td>Results of the facilities audit</td>
<td>14</td>
</tr>
<tr>
<td>Results of the self-completion questionnaires</td>
<td>24</td>
</tr>
</tbody>
</table>

## Appendices

<table>
<thead>
<tr>
<th>Appendix</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>Appendix A</td>
<td>Audit methodology</td>
</tr>
<tr>
<td>Appendix B</td>
<td>Interchange audit and cyclist questionnaire forms</td>
</tr>
<tr>
<td>Appendix C</td>
<td>Interchange audit and questionnaire results</td>
</tr>
</tbody>
</table>
How to use this report

The format of this report has been designed to enable the clear extraction and presentation of complex data reports; to provide a commentary on raw data; and to report on the analysis and interpretation of data.

About the data:
Green text boxes provide commentary on datasets. This includes any information regarding:
• data collection
• data storage
• data handling / cleaning / manipulation
• methodology

Worth noting:
The orange text boxes highlight findings from the data collated by PB for this project. Any data processed by PB is annotated in this way.

Relevant data source:
The source of datasets, including relevant material received during the course of this study, are highlighted in the purple text boxes. Reports and articles on bicycle parking or cycling in conjunction with public transport – which support or complement assumptions and hypotheses advanced in this report are also noted in purple.

For further study:
Red boxes also indicate where further work is needed to develop appropriate understanding of collected data.

About the chart:
The grey text boxes identify data analysis conducted by the project team. The data was used to develop the charts in the report. This will make it easier for analysis to be replicated or charts to be updated as and when datasets change.

Key Findings:
The blue text boxes contain PB’s key findings, highlighting the most important issues and challenges to be addressed. Findings are overviewed in the Executive Summary and detailed in the main body of the report.
Executive summary

About the background to this report:

Promoting cycling to NSW public transport interchanges presents an opportunity to increase the catchment of public transport services. This enlarges the range of travel purposes and destinations for which the bicycle is suited.

The December 2008 report Cycling in NSW: What the data tells us, prepared by PB for the Premier’s Council for Active Living (PCAL), found that bicycle use in NSW is low compared to other Australian states and territories and that, for the journey to work, the reported use of cycling in conjunction with public transport modes is very low. On the Australian national Census Day 2006, trips combining a bicycle and public transport accounted for a very small proportion of commuter trips in NSW (0.06%).

Though secure and convenient bicycle parking is a critical component of a multi-modal public transport interchange, there were gaps in understanding the provision and use of bicycle parking at public transport interchanges in NSW. The quality and availability of information about bicycle parking is also inconsistent between public transport modes.

A study of the quantity, quality and usage of bicycle parking facilities at interchanges was needed to fill data gaps.

A site audit of bicycle parking and a cyclist questionnaire were developed to complete the picture of cycling to Greater Metropolitan Region public transport interchanges.

200 interchanges were successfully audited and the self-completion of cyclist questionnaires provided a 31% response rate.

The objectives of the report:

Our objectives of this audit of the provision and use of bicycle parking were:

- To gauge the total bicycle parking provision and usage at representative public transport interchanges in the NSW Greater Metropolitan Region.
- To develop a profile of people currently cycling to public transport interchanges.
- To indicate ways in which this type of travel could be encouraged.
- To develop a replicable bicycle parking audit and cyclist questionnaire for tracking and comparing the provision and use of bicycle parking.
Executive summary

The report format:

This report is structured in the following way: identifying the purpose of the interchange audit, illustrating our methodology and presenting results and key findings from the interchange audit and cyclist questionnaires.

The study methodology:

1.) Develop the public transport interchange bicycle parking facilities audit and cyclist questionnaire
2.) Project manage the completion of the parking audit and cyclist questionnaire
3.) Analyse the results of the audit and questionnaire
4.) Develop key findings to inform the PCAL NSW BikePlan

Marrickville Station

Blacktown Interchange
In the audit, the physical provision of bicycle parking, rack type and total provision were recorded. Parked bicycles were also documented, including total bicycles parked at racks (called “formal” parking for the purposes of this report) and bicycles locked to signs, poles and fences (“informal” parking for the purposes of this report).

As cyclists may opt for informal parking locations that may seem to offer more active surveillance or higher security, the audit was designed to identify factors contributing to informal parking.

The interchange audit form is in Appendix B.

About the audit results

The provision of bicycle parking spaces at interchanges did not match observed patterns of bicycle parking demand. Under-provision of formal bicycle parking is common, notably at the busiest stations. In a few other locations the provided parking is underused.

There are 132 interchanges, out of the 200 audited, where there is evident demand for bicycle parking but no provision at all.

There were many examples of poor design and inconsistent quantity and quality of bicycle parking facilities.

Significant numbers of informally parked bicycles were observed at public transport interchanges.

It is difficult to establish general relationships between parking provision, security and use – bicycle parking assessments need to be made on an individual interchange basis and need to take into account the type of bicycle parking product in use.

The complete audit results are provided in Appendix C.

Executive summary

About the interchange audit:

In the audit, the physical provision of bicycle parking, rack type and total provision were recorded.

Parked bicycles were also documented, including total bicycles parked at racks (called “formal” parking for the purposes of this report) and bicycles locked to signs, poles and fences (“informal” parking for the purposes of this report).

As cyclists may opt for informal parking locations that may seem to offer more active surveillance or higher security, the audit was designed to identify factors contributing to informal parking.

The interchange audit form is in Appendix B.

Key findings:

People who park their bike at a public transport interchange are riding for a more limited range of purposes than Sydney cyclists in general and represent a narrow demographic range.

Most cyclists ride to their nearest station, and appear to be prepared to cycle up to 20 minutes before boarding public transport to their destination.

People who completed the questionnaire cycle regularly to public transport interchanges, choosing from a variety of different travel options for those occasions when they do not cycle.

The complete questionnaire results are provided in Appendix C.

About the cyclist questionnaire results:

There is potential for increasing cycling and public transport use in NSW by targeting multi-modal trips to public transport interchanges. Bicycles offer the potential to increase the catchment of public transport interchanges.

This report’s baseline picture of cycling to public transport can be used as a benchmark for tracking and comparing bicycle use at interchanges with new end-of-trip facilities or where encouragement programs have been tested.

The audit of bicycle parking facilities developed for this study could also be used to determine total bicycle parking provision and usage in other contexts. Conducted consistently and regularly, these would provide a rich dataset about all kinds of bicycle parking provided in NSW.

There are three opportunities to encourage cycling to public transport interchanges highlighted in this report:

- Increase usage of under-used infrastructure at some interchanges through relatively low-cost measures such as encouragement programs.
- Provide sufficient, suitable parking to accommodate further demand at high-use interchanges.
- Improve information about bicycle parking at public transport interchanges.
The purpose of the NSW public transport interchange bike access study

- Purpose of this study
- Audit and questionnaire methodology
- Audit results
- Questionnaire results
Cycling to public transport accounts for a very small proportion (0.06%) of commuter trips in NSW

There were 2.4 million work trips by NSW residents reported in the 2006 Census.

Based on the 2006 Census Journey to Work responses, 104,599 trips were reported using more than one mode.

2,887 of these trips involved cycling at some point during the trip.

1,347 of these involved cycling and one other public transport mode, a further 153 involving a bicycle and two public transport modes.

This represents 0.06% of all NSW commuter trips on Census Day.

Cycling and public transport

About the data:
1,347 trips involved cycling plus one public transport mode.

Relevant data sources:
Australian Bureau of Statistics, 2006 Census Journey to Work

Car driver and car passenger trips are excluded.
Bicycle access offers the potential to increase significantly the catchment of public transport interchanges

Two NSW policy documents identify the potential for cycling to increase the catchment of public transport interchanges, particularly rail stations.

- NSW Bicycle Guidelines (Roads and Traffic Authority 2003)
- Planning Guidelines for Walking and Cycling (Department of Planning 2004)

Relevant data sources:
The 2004 “Planning Guidelines for Walking and Cycling” identify the cycling catchment as a 1.5 km trip – or a five-minute bike ride. (p. 17 and p. 19).

Relevant data sources:
The 2005 NSW RTA “NSW Bicycle Guidelines” shown at left, identify the cycling catchment as a 2.5 km trip – or a 10-minute bike ride. (p. 79)

For a public transport interchange, bicycle accessibility from within a defined catchment is enhanced by:
- availability of secure and convenient bicycle parking
- proximity to a well-connected bicycle network

Key findings:
Based on the RTA NSW Bicycle Guidelines, the geographic coverage of a cycling catchment is nine times the walking catchment.

Based on the findings of this study, cyclists currently riding to public transport interchanges tolerate a ride of up to 20 minutes. Using a conservative cycling speed of 15 kph, a 20-minute ride results in a 5 km catchment.

Worth noting:
Different guidelines take an inconsistent approach to defining the accepted size of cycling catchments for public transport interchanges.

<table>
<thead>
<tr>
<th>Catchment</th>
<th>Distance to station</th>
<th>Total coverage</th>
</tr>
</thead>
<tbody>
<tr>
<td>Walking</td>
<td>0.8 km</td>
<td>2.01 sqkm</td>
</tr>
<tr>
<td>Cycling (RTA)</td>
<td>2.5 km</td>
<td>19.63 sqkm</td>
</tr>
<tr>
<td>Cycling (PB questionnaire)</td>
<td>5 km</td>
<td>78.54 sqkm</td>
</tr>
</tbody>
</table>

Cycling to Sydney region public transport interchanges
An audit of quantity, quality and usage of cycle parking facilities at interchanges is needed to fill the data gaps

<table>
<thead>
<tr>
<th>Category</th>
<th>Infrastructure</th>
<th>Cyclist</th>
</tr>
</thead>
<tbody>
<tr>
<td>Fundamental data</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Bicycle parking provision</td>
<td>End-of-trip provision</td>
</tr>
<tr>
<td></td>
<td>Maintenance</td>
<td>End-of-trip usage</td>
</tr>
<tr>
<td></td>
<td>Surveillance</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Infrastructure usage</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Bicycle modeshare</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Demographics</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Length of trip</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Trip purpose</td>
<td></td>
</tr>
</tbody>
</table>

**Public transport interchange owners:**
Including the Ministry of Transport, local councils and public transport operators

**Census JTW**

**Sydney Household Travel Survey**

**Quality of available data**

<table>
<thead>
<tr>
<th>Category</th>
<th>Infrastructure</th>
<th>Cyclist</th>
<th>Fundamental data</th>
<th>Principal data source</th>
<th>Quality of available data</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td>Public transport interchange owners:</td>
<td>Limited in breadth and depth</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td>Including the Ministry of Transport, local councils and public transport operators</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td>Census JTW</td>
<td>Updated every 5 years, highly aggregate</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td>Sydney Household Travel Survey</td>
<td>Highly aggregate</td>
</tr>
</tbody>
</table>

**Methodology**

<table>
<thead>
<tr>
<th>Category</th>
<th>Infrastructure</th>
<th>Cyclist</th>
<th>Fundamental data to collect</th>
<th>New research</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td></td>
<td>Bicycle parking audit</td>
<td>About the data:</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>Parking usage audit</td>
<td>Consistent audits enable bicycle parking providers to track the provision and use of end-of-trip facilities like bicycle parking.</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>Cyclist questionnaire</td>
<td>Completed questionnaires provide information about the cyclists, their travel behaviour and attitudes.</td>
</tr>
</tbody>
</table>

**Fundamental data to collect**

<table>
<thead>
<tr>
<th>Category</th>
<th>Infrastructure</th>
<th>Cyclist</th>
<th>New research</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td></td>
<td>Bicycle parking audit</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>Parking usage audit</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>Cyclist questionnaire</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>About the data:</td>
</tr>
</tbody>
</table>

Cycling to Sydney region public transport interchanges
The methodology for the public transport interchange bicycle facilities audit and self-completion cyclist questionnaire

Purpose of this study

Audit and questionnaire methodology

Audit results

Questionnaire results
The bicycle parking site audit and cyclist questionnaires were developed to complete the picture of cycling to public transport interchanges.

PB designed the audit and questionnaire to collect data on the provision and use of bicycle parking at public transport interchanges – see Appendix B for audit and questionnaire forms.

200 representative Greater Metropolitan Region public transport interchanges were chosen to develop the parking and usage profile.

Auditors were directed to:
- identify locations and type of formal bicycle parking (including total spaces)
- identify surveillance and security levels at the interchange
- distinguish actively used bicycles from abandoned bicycles and scooters
- attach a self-completion questionnaire to the handlebars of each parked bicycle

To achieve "typical" results, audits were conducted on mid-week days outside school holidays, following the morning peak period.

Bicycle parking audit sheets were recorded in MS Excel
Self-completion cyclist questionnaires were recorded in MS Excel

PB undertook a range of analyses to test hypotheses about cycling to public transport interchanges.
About the results of the facilities audit

- Purpose of this study
- Audit and questionnaire methodology
- Audit results
- Questionnaire results
Cycling to Sydney region public transport interchanges were successfully audited

About the bicycle parking observed (over 6 audit days):
- 200 interchanges were audited (143 rail, 34 bus, 21 ferry and 2 light rail)
- 420 bicycle parking locations were observed
- 2,640 bicycle parking spaces were recorded

About the bicycle parking types:

There are two types of bicycle parking: formal and informal.

<table>
<thead>
<tr>
<th>Parked bicycles by parking type</th>
<th>Total</th>
</tr>
</thead>
<tbody>
<tr>
<td>Rack</td>
<td>228</td>
</tr>
<tr>
<td>Hoop/ Rail</td>
<td>235</td>
</tr>
<tr>
<td>Cage</td>
<td>36</td>
</tr>
<tr>
<td>Fence</td>
<td>316</td>
</tr>
<tr>
<td>Sign Post</td>
<td>28</td>
</tr>
<tr>
<td>Light Post</td>
<td>45</td>
</tr>
<tr>
<td>Railing</td>
<td>32</td>
</tr>
<tr>
<td>Other</td>
<td>32</td>
</tr>
<tr>
<td>Total</td>
<td>952</td>
</tr>
</tbody>
</table>

Formal bicycle parking is classified into five main types of bicycle parking products:
- lockers (for more about bicycle lockers see p. 19)
- racks
- rungs
- hoops/ rails
- cages

Security features like active surveillance from a ticket window or cab rank, passive surveillance from a footpath or CCTV camera, and lighting were recorded.

Comfort features that may affect cyclist preference, like distance to the station entrance and weather protection, were also recorded.

Worth noting:
Different bicycle parking products are available. The various products have different physical location criteria.

Worth noting:
163 (17%) of all bicycles observed during the audit were parked at Manly Ferry Wharf.

The Manly bicycle “cage” is located inside the public car park about 100 metre walk from the wharf.

Standard bicycle parking products are provided inside the cage for cyclists to secure their bicycles. This facility is a good practice example of secure bicycle parking.
48% of observed bicycles were parked at informal locations – like fences, posts, railings and trees

About the observed bicycles:
- 952 bicycles were counted
- 499 (52%) were parked at 265 provided bicycle parking locations
- 730 (77%) were observed at stations
- 163 (17%) were parked at Manly Ferry Wharf
- 453 (48%) were parked informally at 155 locations

All observed instances of informal bicycle parking were recorded.
The main types of informal bicycle parking recorded were:
- fences (316 bicycles)
- sign and light posts (73 bicycles)
- railings (32 bicycles)
- other locations (including trees and walls – 32 bicycles)

Worth noting:
The CityRail passenger information website reports on station facilities, including bicycle parking. For the South Coast Rail Line none of the 34 stations show bicycle parking.
11 stations were audited on the South Coast Rail Line.
10 had bicycle parking.
Eight had bicycles parked.

About the data:
Though potentially all instances of light posts and fences could be a location of informal bicycle parking, auditors were directed to record only the instances where bicycles were observed to be parked informally.
Cycling to Sydney region public transport interchanges

The provision of bicycle parking spaces at interchanges did not match observed patterns of bicycle parking demand.

Worth noting:
On the audit day, stations in major centres like Cabramatta, Canley Vale, Fairfield and Lidcombe had more bicycles than bicycle parking.

Photos on the audit day confirm the bicycle parking demand at these locations.

About the chart:
Above the line shows the difference between bicycle locker provision (blue boxes) and total lockers leased (white boxes) according to Bicycle NSW records (2008). Due to the locker design, it was not possible to confirm locker usage on audit days.

About the chart:
Below the line shows the total provision of bicycle parking (blue boxes) and the total observed bicycles parked (white boxes) based on the audit of the Inner West and South Line.
Decisions about the amount, type and location of bicycle parking need to be made on a site-by-site basis.

Active surveillance = nearby shopfronts, taxi rank or ticket windows

Space for two bicycles Clearance to secure the frame and wheel

Worth noting
Security features like CCTV, open ticket windows or shops and lighting are not provided specifically to improve bicycle parking security – but are often coincidently present at formal bicycle parking locations.

About this chart
This chart was developed using the total bicycles observed at formal bicycle parking.

A weighting was assigned to security features to arrive at the blue values on the chart:
- proximity to activity (47%)
- shelter (31%)
- CCTV coverage (18%)
- lighting (4%)

The distance between the formal bicycle parking and the interchange entrance was also given a value, in metres, to arrive at the orange values.

Both values were mapped against the total observed bicycles parked at formally provided bicycle parking.

A clear link between parking provision, apparent security features and distance from the station did not emerge.

<table>
<thead>
<tr>
<th>Lighting at bicycle parking locations</th>
<th>Total interchanges</th>
<th>%</th>
</tr>
</thead>
<tbody>
<tr>
<td>Well-lit</td>
<td>139</td>
<td>70%</td>
</tr>
<tr>
<td>Mixed or no lighting</td>
<td>14</td>
<td>7%</td>
</tr>
<tr>
<td>Not lit</td>
<td>21</td>
<td>11%</td>
</tr>
<tr>
<td>No bicycle parking</td>
<td>26</td>
<td>13%</td>
</tr>
</tbody>
</table>
There were many examples of poor design and inconsistent quantity and quality of bicycle parking facilities

About bicycle lockers:
Over 1,200 bicycle lockers were installed by the Ministry of Transport (MoT). Some local councils also provide bicycle lockers.

Bicycle locker products vary between sites. The standard locker product is a “double horizontal” which is characterised by two individual, one-bicycle lockers. Other bicycle locker products used by MoT include single horizontal and single vertical lockers.

Each locker has a unique lock.

Cyclists may lease a locker for $50 per quarter with a refundable $50 key deposit. Applications are taken online at https://appln.transport.nsw.gov.au/bikelockers/faces/jsp/public/home.xhtml

Though lockers and racks are not differentiated, station bicycle parking availability is also noted on the CityRail website at: http://www.cityrail.info/facilities/facilities.jsp

Photo evidence from the audit illustrates that the bicycle lockers have often been targets for graffiti, regardless of interchange location.

The bicycle locker program is currently under review by the MoT.

Key Finding:
Though there are a variety of guidelines on bicycle parking provision, there is no current standard in NSW for the total bicycle parking required at a public transport interchange.

Different product types for racks and different applications of the guidelines for bicycle parking result in inconsistent provision for bicycles across the audited interchanges.

Even where the same racks are used there are often differing quantities of racks and differing locations for bicycle parking.

Just as the availability and consistency of parking varies across stations, the availability and consistency bicycle parking information also varies between websites.

About the data:
Cyclist are unable to fit a bicycle between the fence, landscaping, signs and bike rack at this new rack at Chatswood Interchange.

This reduces the capacity of this bicycle parking rack.

About the data:
Cyclists are unable to fit more than one bicycle in this rack at Wyong Station.

The rack is also not suited to locking the frame and wheel of a bicycle.

About the data:
Cyclists are unable to lock their frame and wheel to this rack at Revesby Station.

If used as designed, the security of the parking is reduced.

If used to lock bicycles securely, the capacity of the rack is reduced.
Local stations with less than 5,000 daily passengers accounted for almost half of observed bicycles at stations

For further research:
Bicycle use to Woy Woy is the highest across the audited stations. Further research is required to determine the factors that contribute to the popularity of bike/rail travel in Woy Woy.

Worth noting:
343 (47%) bicycles were observed at stations with less than 5,000 daily passengers each.
147 (20%) of bicycles were observed at stations with more than 10,000 daily passengers each.

For further research:
A similar analysis for ferry and bus interchanges could be developed with a figure for daily boardings for buses and/or ferry routes at interchange for a comparable one-day period.

Key finding:
Local stations account for almost half of bicycles at stations.
Targeting passengers at local stations, with under-used bicycle parking, could increase cycling. This could be a relatively low-cost measure, like a “ride to the station” marketing campaign and bicycle encouragement program.

Relevant reports:
According to the Ministry of Transport’s 2008 “Guidelines for the development of public transport interchange facilities” local stations are characterised by:
- Serving a local community
- Dominant access modes are walking and kiss-and-ride
- Limited access to bus service and taxi stand
- Access by cyclists
The train stopping pattern is characterised by “all stations” services
Under-provision of bicycle parking is common, notably at the busiest stations

Key finding:
10 of the busiest stations account for 20% of bicycle parking demand. These stations do not have sufficient parking racks to accommodate growth.

The observed preference for free informal (or formal) bicycle parking, when lockers are available for hire at the same location, seems to reflect motorists preference for free car parking.

Providing sufficient, suitable parking to accommodate further demand at these high-use interchanges could increase cycling.

Worth noting
At Blacktown Station, five bicycles were observed for each formal rack space provided by Blacktown Council. The MoT also provides 30 lockers in 2 locations at Blacktown, with 19 still available for hire.

Worth noting
The highest demand for bicycle parking does not appear to correlate to public transport service frequency.

<table>
<thead>
<tr>
<th>Interchange</th>
<th>Total services</th>
<th>Total bicycles</th>
</tr>
</thead>
<tbody>
<tr>
<td>Blacktown</td>
<td>25</td>
<td>47</td>
</tr>
<tr>
<td>Cabramatta</td>
<td>18</td>
<td>26</td>
</tr>
<tr>
<td>Hornsby</td>
<td>33</td>
<td>26</td>
</tr>
<tr>
<td>Lidcombe</td>
<td>28</td>
<td>25</td>
</tr>
<tr>
<td>Quakers Hill</td>
<td>6</td>
<td>23</td>
</tr>
<tr>
<td>Campsie</td>
<td>12</td>
<td>23</td>
</tr>
<tr>
<td>Epping</td>
<td>14</td>
<td>22</td>
</tr>
<tr>
<td>Bankstown</td>
<td>11</td>
<td>18</td>
</tr>
<tr>
<td>Canley Vale</td>
<td>7</td>
<td>18</td>
</tr>
<tr>
<td>Woy Woy</td>
<td>14</td>
<td>72</td>
</tr>
<tr>
<td>Manly</td>
<td>11</td>
<td>127</td>
</tr>
</tbody>
</table>

Inset for chart on p. 20
Significant numbers of informally parked bicycles were observed at interchanges – even where formal facilities are available

Key finding:
There are 132 interchanges out of the 200 audited where there is evident demand for bicycle parking but no provision at all.

During the audit, when bicycle racks were observed to be full, cyclists preferred informal parking to hiring a locker.

The long-term nature of bicycle hire or the distance from the locker to the interchange may be possible factors contributing to this observed pattern.

Worth noting:
At both Bondi Junction Interchange and Lidcombe Station, five lockers were available for hire during the audit.

of these, at five locations all the available racks were full:
- Lidcombe Station
- Bondi Junction Interchange
- Manly Ferry Wharf (two locations)
- Cronulla Station

Informal bike parking was observed at 155 interchanges.

23 of these interchanges did have formal bike parking provided nearby.

However, the informal bike parking locations observed at all 23 of these locations had some level of active or passive security, including:
- Ticket window
- Taxi rank
- Busy street
- Local shops

Of these, at five locations the provided parking was remote from the interchange entrance:
- Woy Woy Station
- Bondi Junction Interchange (two locations)
- Quakers Hill Station
- Penrith Interchange

About the chart:
Explanatory variables were tested to identify possible motivations for cyclists to choose informal parking, when formal parking was located nearby. The variables were:
- distance from the formal bicycle parking to the station entrance
- apparent levels of surveillance
- bicycle parking occupancy

Of these, 132 interchanges had no formal bike parking facilities near to where bikes were informally parked.

23 of these interchanges had formal bike parking facilities near to where bikes were informally parked.

Cycling to Sydney region public transport interchanges
# Using a “Quality Score” assessment, a significant majority of stations fall into an “underprovided and poor quality” category

<table>
<thead>
<tr>
<th>Station</th>
<th>Level of Provision</th>
<th>Key Finding</th>
</tr>
</thead>
<tbody>
<tr>
<td>East Richmond Station</td>
<td>0.02</td>
<td>12 stations High rate of bicycle parking, but a poor rate of nearby activity, surveillance, shelter and lighting.</td>
</tr>
<tr>
<td>Thirroul Station</td>
<td>0.03</td>
<td>23 stations Low rate of bicycle parking, though available parking has desirable active surveillance, shelter and lighting qualities.</td>
</tr>
<tr>
<td>Towradgi Station</td>
<td>0.02</td>
<td>96 stations Low rate of parking and poor rate of nearby activity, surveillance, shelter and lighting.</td>
</tr>
<tr>
<td>Berowra Station</td>
<td>0.03</td>
<td>23 stations Low rate of bicycle parking, though available parking has desirable active surveillance, shelter and lighting qualities.</td>
</tr>
<tr>
<td>Bulli Station</td>
<td>0.03</td>
<td>23 stations Low rate of bicycle parking, though available parking has desirable active surveillance, shelter and lighting qualities.</td>
</tr>
<tr>
<td>Macarthur Station</td>
<td>0.04</td>
<td>41 stations High rate of bicycle parking per passenger with nearby activity, surveillance, shelter and lighting.</td>
</tr>
<tr>
<td>Wollongong Station</td>
<td>0.01</td>
<td>1 station Low rate of bicycle parking per passenger with nearby activity, surveillance, shelter and lighting.</td>
</tr>
</tbody>
</table>

### Key findings:

- There is no uniform standard for the quality and quantity of bicycle parking at interchanges.
- A very wide distribution of quality and quantity of bicycle parking provision was observed at audited public transport interchanges.

1. A uniform standard for the quality and quantity of bicycle parking provision at interchanges would be of significant value.
2. Consideration could be given to upgrading the existing quality and quantity of bicycle parking provision currently available at public transport interchanges.

### About the chart:

- The “quality score” rating is based on observed bicycle parking features: lighting (4%), shelter (31%), CCTV (18%) and active surveillance (47%).
- The bicycle parking per passenger is derived from the audited bicycle parking provision and the passenger entries.
Results of the self-completion cyclist questionnaires

Purpose of this study

Audit and questionnaire methodology

Audit results

Questionnaire results
The cyclist self-completion questionnaires were designed to collect data about cycling to public transport interchanges and about the cyclists making the trip.

**About the cyclist data:**

- 932 questionnaires were distributed
- 251 questionnaires were returned,
- 31% response rate

### Stations with high questionnaire response rates

<table>
<thead>
<tr>
<th>Station</th>
<th>Distributed</th>
<th>Returned</th>
<th>Response rate</th>
</tr>
</thead>
<tbody>
<tr>
<td>Quakers Hill Station</td>
<td>21</td>
<td>11</td>
<td>52%</td>
</tr>
<tr>
<td>Hornsby Station</td>
<td>22</td>
<td>10</td>
<td>46%</td>
</tr>
<tr>
<td>Woy Woy Station</td>
<td>17</td>
<td>10</td>
<td>59%</td>
</tr>
<tr>
<td>Berowra Station</td>
<td>15</td>
<td>10</td>
<td>67%</td>
</tr>
<tr>
<td>Gosford Station</td>
<td>14</td>
<td>8</td>
<td>57%</td>
</tr>
<tr>
<td>Fairfield Station</td>
<td>13</td>
<td>7</td>
<td>54%</td>
</tr>
<tr>
<td>East Hills Station</td>
<td>8</td>
<td>7</td>
<td>88%</td>
</tr>
<tr>
<td>Penrith Station</td>
<td>8</td>
<td>7</td>
<td>88%</td>
</tr>
</tbody>
</table>

**About the ride to the station**

- 90% of cyclists ride 3-5 times per week
- 84% were riding for a **commute trip**
- 82% of cyclists ride between five and 20 minutes to the public transport interchange

**About the data:**

The raw numbers of responses to the self-completion questionnaire are too small to be broken down into a “by-interchange” analysis.
The profile of those who cycle to public transport interchanges is very different from Sydney cyclists in general

The surveyed sample of cyclists parking at interchanges has a significantly different profile from cyclists captured by the larger Sydney Household Travel Survey:

- The majority are males between 25 and 60 years old
- They are almost all commuters
- They have a much more concentrated trip pattern, with the majority of reported trip times being between five and 20 minutes

Key finding:
Based on the self-completion questionnaires, there is an opportunity to increase cycling to public transport interchanges for non-work trips.

The threshold for cycling to public transport also appears to be further than the five-minute bike ride currently suggested in NSW policy documents like the *NSW Bicycle Guidelines*. 
There is an opportunity to increase women’s participation in cycling to public transport.

Worth noting:
Responses to the self-completion cyclist questionnaire indicate that fewer women cycle. Women are underrepresented in cycling to public transport. This reflects low rates of participation in cycling generally by women.

Further research:
Possible reasons for relatively low female cycling to public transport interchanges could be lower participation in the workforce, a higher rate of “trip-chaining” or perceptions of risk.

About the chart
The self-completion questionnaire asked respondents to state their age and sex. Contact details were collected with the incentive of a prize draw designed to increase response rates. The data in Appendix C was depersonalised for analysis.
Most cyclists ride to their nearest station and are prepared to cycle for up to 20 minutes before boarding public transport.

**Key finding**

Self-reported journey times can sometimes be unreliable – with respondents making higher time estimates than they actually experienced.

Taking into consideration that reported cycling times may be inflated, a very conservative cycling speed of 15 kph was used to derive the maximum cycle catchment for a 20-minute bicycle ride. Though many cyclists would ride faster than 15 kph. A conservative 5 - 6 km ride is reasonable.

This reported bicycle catchment is at least four times larger than the bicycle catchment identified in the NSW Bicycle Guidelines.

**Average cycling speed (kph)**

<table>
<thead>
<tr>
<th></th>
<th>15kph</th>
<th>20kph</th>
</tr>
</thead>
<tbody>
<tr>
<td>Average cycle time</td>
<td>3.0 kms</td>
<td>4.0 kms</td>
</tr>
<tr>
<td>50% of cyclists</td>
<td>2.5 kms</td>
<td>3.3 kms</td>
</tr>
<tr>
<td>90% of cyclists</td>
<td>5.0 kms</td>
<td>6.7 kms</td>
</tr>
</tbody>
</table>

Worth noting:

Almost three-quarters of respondents cycle to their closest public transport interchange.
When respondents do not cycle it is usually because of weather – and on such days almost 25% do not use the interchange.

**About respondents and their trip to the interchange . . .**

<table>
<thead>
<tr>
<th>How often do you ride to this station / interchange?</th>
<th>0% 10% 20% 30% 40% 50% 60% 70% 80% 90%</th>
</tr>
</thead>
<tbody>
<tr>
<td>3 - 5 times per week</td>
<td>![Bar Chart]</td>
</tr>
<tr>
<td>1 - 2 times per week</td>
<td>![Bar Chart]</td>
</tr>
<tr>
<td>1 - 3 times per month</td>
<td>![Bar Chart]</td>
</tr>
<tr>
<td>Less than once per month</td>
<td>![Bar Chart]</td>
</tr>
<tr>
<td>No response</td>
<td>![Bar Chart]</td>
</tr>
</tbody>
</table>

**What respondents do when the don’t cycle . . .**

<table>
<thead>
<tr>
<th>What reasons influence your decision not to ride to this interchange?</th>
<th>0% 10% 20% 30% 40% 50% 60% 70%</th>
</tr>
</thead>
<tbody>
<tr>
<td>Weather</td>
<td>![Bar Chart]</td>
</tr>
<tr>
<td>Health</td>
<td>![Bar Chart]</td>
</tr>
<tr>
<td>Lift in car available</td>
<td>![Bar Chart]</td>
</tr>
<tr>
<td>Different activity</td>
<td>![Bar Chart]</td>
</tr>
<tr>
<td>Other</td>
<td>![Bar Chart]</td>
</tr>
<tr>
<td>No Response</td>
<td>![Bar Chart]</td>
</tr>
</tbody>
</table>

**Do you own or have daily access to a car?**

<table>
<thead>
<tr>
<th>0% 10% 20% 30% 40% 50% 60%</th>
</tr>
</thead>
<tbody>
<tr>
<td>Yes</td>
</tr>
<tr>
<td>No</td>
</tr>
<tr>
<td>No response</td>
</tr>
</tbody>
</table>

**Why do you ride to the station / interchange?**

<table>
<thead>
<tr>
<th>0% 10% 20% 30% 40% 50% 60%</th>
</tr>
</thead>
<tbody>
<tr>
<td>Quickest and easiest</td>
</tr>
<tr>
<td>Health and fitness</td>
</tr>
<tr>
<td>Environmentally friendly</td>
</tr>
<tr>
<td>Save money</td>
</tr>
<tr>
<td>Too far to ride all the way</td>
</tr>
<tr>
<td>Lack of parking</td>
</tr>
<tr>
<td>Do not have access to car</td>
</tr>
<tr>
<td>No public transport</td>
</tr>
<tr>
<td>Don’t like public transport</td>
</tr>
<tr>
<td>Other</td>
</tr>
</tbody>
</table>

**Do you still use this station / interchange but get to it using another method?**

<table>
<thead>
<tr>
<th>0% 10% 20% 30% 40% 50% 60% 70% 80%</th>
</tr>
</thead>
<tbody>
<tr>
<td>Yes</td>
</tr>
<tr>
<td>No</td>
</tr>
<tr>
<td>No response</td>
</tr>
</tbody>
</table>

**If you still use this interchange, how do you get to it?**

<table>
<thead>
<tr>
<th>0% 10% 20% 30%</th>
</tr>
</thead>
<tbody>
<tr>
<td>Car driver</td>
</tr>
<tr>
<td>Car passenger</td>
</tr>
<tr>
<td>Walk</td>
</tr>
<tr>
<td>Bus</td>
</tr>
<tr>
<td>Taxi</td>
</tr>
<tr>
<td>Other</td>
</tr>
<tr>
<td>No Response</td>
</tr>
</tbody>
</table>

**Worth noting:**
- Respondents were regular cyclists even though they are mostly car owners.
- Weather was the most commonly reported reason for choosing not to cycle.
- More than 30% of respondents do not use the interchange on the occasions they don’t cycle.
- Of those that continue to use the interchange, the majority use motorised modes.
- Lifestyle factors (health and the environment) were the most commonly reported reasons for cycling.