

**Technical Note 207**

# **Planning for safe transport infrastructure at schools – Bicycle parking**

**May 2023**



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## 1 Introduction and purpose

### 1.1 General

This document provides an interim update to the Planning for Safe Transport Infrastructure at Schools (PSTIS) guideline on bicycle parking and access requirements, to assist in the planning and design of new and upgraded schools in Queensland.

It aims to ensure guidance for the provision of bicycle parking facilities at schools is fit-for-purpose and meets stakeholder and customer needs.

This document was initiated following stakeholder feedback identifying an opportunity to clarify and update current provisions under the PSTIS guideline to help ensure bicycle parking is delivered more consistently across schools in Queensland. The outcomes in this Technical Note have been developed based on best practice research and stakeholder engagement (refer to Appendix A).

This document:

- is to be read in conjunction with the PSTIS guideline
- takes precedence over and replaces original content within the PSTIS guideline pertaining to bicycle parking provisions from:
  - Section 1.4 Summary of background research
    - Section A. Active transport (cycling, scooters, walking, etc), Bicycle storage, (page 4)
  - Section 2.1 Development outcome
    - Table 1: Active transport, Specific outcome S2 (page 10), S3 (page 11)
  - Section 3.1 Recommendations for infrastructure
    - Outcome 1, Active transport, Schedule 2 Bicycle parking and end-of-trip facilities (page 33)
  - Section 3.2 Infrastructure layouts
    - Outcome 1: Active transport, (page 38), (page 42)
    - Figure 3: A. Bicycle parking and cage details, (page 43)
  - Section 4 Issues Application Matrix
    - Active transport – Bicycle parking, (page 57)
  - Section 5 References, (pages 68-70), and
- supports the Department of Transport and Main Roads officers, the Department of Education and consultants in the application of the PSTIS guideline for school planning applications.

This document includes information on the following:

- desired outcomes for the provision of bicycle parking
- requirements for bicycle parking and end-of-trip facilities, including rates of provision
- location considerations for bicycle parking and end-of-trip facilities, and
- guidance on design, best practice design features and layouts for bicycle parking and end-of-trip facilities.

## 1.2 Out of scope

The updating of the PSTIS guideline is out of scope, related to all other topics apart from bicycle parking.

## 1.3 Definitions

Terms and abbreviations used in this Technical Note are described in Table 1.3.

**Table 1.3 – Definitions**

Term / abbreviation	Definition
Bicycle parking	Any facility for storing a bicycle or personal mobility device when not in use. This includes secure facilities such as bike rooms, cages and lockers which are restricted access enclosures. It also includes unsecured facilities such as bicycle racks that are permanently installed fixtures which require users to provide their own lock. Bicycle parking refers to bicycle, scooter and skateboard parking unless otherwise stated.
PSTIS guideline	<a href="#">Planning for Safe Transport Infrastructure at Schools</a> (Department of Transport and Main Roads)
Personal mobility devices (PMD)	Personal mobility devices can include e-scooters, e-skateboards and self-balancing single wheeled devices (like e-unicycles and e-boards). Personal mobility devices are designed for use by one person only and are powered by an electric motor. Vehicles with pedals, motorised mobility devices (such as mobility scooters or motorised wheelchairs) and wheeled recreational devices are not personal mobility devices.
Scooter parking	Where scooter parking is singular, scooter parking is applicable to scooters only.
Skateboard parking	Where skateboard parking is singular, skateboard parking is applicable to skateboards only.
Wheeled Recreation Devices (WRD)	Wheeled recreation devices are generally propelled by human power and are used for recreation or play. They include rollerblades, roller skates, skateboards and foot scooters.

## 1.4 Related documents

This document should be used in conjunction with the documents described in Table 1.4 which provide further detail on design considerations and supplementary information.

**Table 1.4 – Related documents**

Reference	Relevance
<a href="#">Standards Australia AS 2890.3 Parking Facilities Part 3: Bicycle parking</a>	Details minimum requirements for the layout, design and security of bicycle parking facilities.
AUSTROADS <a href="#">Guide to Traffic Management Part 11: Parking Management Techniques (2020)</a>	Provides guidance for location and types of bicycle parking and end-of-trip facilities.
Department of Transport and Main Roads <a href="#">Planning for Safe Transport Infrastructure at Schools (2011)</a>	Details all other aspects of planning for safe transport infrastructure at schools (excluding bicycle parking – refer to this Technical Note).
Queensland Government <a href="#">Crime Prevention through Environmental Design – Guidelines for Queensland (2021)</a>	Provides guidance for locating bicycle parking to ensure passive surveillance and reduce theft / damage of bicycles.

## 2 Infrastructure planning guidance

### 2.1 Development outcome

The aim of this section is to provide the overall guidance to assist in planning and providing for bicycle parking at new schools and when upgrades occur to existing schools. The guidance documented in this section provides the overall strategies and guidelines for bicycle parking as part of the following PSTIS guideline outcome:

**Outcome 1: Active transport – provide infrastructure that promotes and supports active transport.**

This outcome is achieved by responding to specific outcomes and probable solutions. The guidance provided in Table 2.1 below replaces Specific Outcomes S2 and S3 from Table 1 of the PSTIS guideline and takes precedence over the PSTIS guideline. Table 2.1 also includes additional context pertaining to bicycle parking<sup>1</sup> provision.

<sup>1</sup> As per Table 1.3, “bicycle parking” refers to bicycle, scooter and skateboard parking.

**Table 2.1 – Active transport specific outcomes and probable solutions**

Specific outcome	Probable solutions	Notes	Relevant infrastructure guidelines and standards
<b>S2</b>	<b>P2.1</b>		
Safe and accessible bicycle parking is provided which meets the existing and future needs of users of all ages and abilities.	The provision of bicycle parking for students, staff and visitors to be provided in accordance with Schedule 3.1.	Bicycle parking facilities should be provided for all user groups (including PMD users, where relevant) to promote and encourage the use of active transport. Provision should support increasing use of active modes and meet existing, latent and future demands.	If there is conflicting guidance between this Technical Note, Austroads and local planning requirements, this Technical Note prevails.
	<b>P2.2</b>		
	Bicycle parking to be located in a visible location near a safe and convenient school entrance and in a location which allows surveillance across the day to prevent theft.	Examples of appropriate locations for bicycle parking are shown in Figure 3.2(a) and Figure 3.2(b). Detailed guidance for locating bicycle parking facilities is provided in Section 4.2. <i>Crime Prevention through Environmental Design (CPTED)</i> principles should also be considered in locating bicycle parking. Parking provision should encourage use and demonstrate a priority to active transport modes for access.	Queensland Government <a href="#">Crime Prevention through Environmental Design – Guidelines for Queensland</a>
	<b>P2.3</b>		
	Secure and sheltered (protected from the weather) bicycle parking is provided for students and staff and must be installed on a hard surface. Bicycle, scooter and skateboard racks must allow the user to lock their device securely.	Refer to Figure 3.2(d) for examples of appropriate bicycle parking devices and facilities. Bicycle pumps, artwork and seating are also desirable features that make the bicycle parking more attractive and easy to use (see good practice examples in images in Figure 3.2(e)).	Austroads <a href="#">Guide to Traffic Management</a> Part 11: <i>Parking Management Techniques</i>  <a href="#">Standards Australia AS 2890.3 Parking Facilities</a> Part 3: <i>Bicycle parking</i>
	<b>P2.4</b>		
A pathway connecting the bicycle parking to the entrance and internal network is to be provided. This should be no less than 2 m wide (minimum width) and in accordance with PSTIS guideline Schedule 1.	Also refer to PSTIS guideline P4.2 regarding egress of path at school boundary and this Technical Note P2.2 regarding location of facilities on school grounds.	PSTIS guideline	

Specific outcome	Probable solutions	Notes	Relevant infrastructure guidelines and standards
<b>S3</b>	<b>P3.1</b>		
Appropriate supporting facilities are provided to increase the comfort, convenience and amenity for those walking, riding bikes, scooting or skateboarding, including those using PMDs.	Major internal pathways and those immediately adjacent to the school boundary on the site provide lighting in accordance with AS 1158 <i>Lighting for Roads and Public Spaces</i> .	Further consideration should be given to lighting design, and the warrants for this considering the primary use of facilities is daytime based.	<a href="#">Standards Australia AS 1158 Lighting for Roads and Public Spaces</a>  PSTIS guideline
	<b>P3.2</b>		
	Shelter for users are provided over major internal pathways.	A permanent shade structure or awnings are the preferred option. On paths that are less important, appropriate shade trees could be considered.	SunSmart Australia <i>Developing Quality Shade in Schools</i>  PSTIS guideline
	<b>P3.3</b>		
	Signage is provided to clearly identify pathways, school entrances / exits, school buildings and amenities, as well as directional signage to connect external walking and cycling paths, parking facilities and public transport.	A map at school entrances should be provided. Signage at primary schools should be designed cognisant of the developing reading skills of students.	AS 2890.3 Section 2.7 <i>Signage</i> for signage to bicycle parking facilities.  <a href="#">Austrroads Guide to Traffic Management</a> Part 10: <i>Transport Control – Types of Devices</i> Appendix A: <i>Route Planning and Directional and Wayfinding Signage for Bicyclists</i>
	<b>P3.4</b>		
Provision of appropriate end of trip facilities such as showers and lockers are provided for staff in accordance with Schedule 3.1. For high school students, ensure the school allows access to showers for students before school.	Generally, showers are not necessary for primary school students. However, some older students might prefer access to showers, therefore it is recommended access to existing showers should be provided, e.g., in school gyms.  Charging facilities (power points) for e-bikes and e-scooters could be considered for older students and staff.  For schools with regular after hour events, lighting of bicycle parking areas could also be considered.		

### **3 Recommendations for infrastructure and infrastructure layouts**

This section provides support to the planning guidance in Section 2, providing further details in regard to specific infrastructure requirements for the provision of bicycle parking and end-of trip facilities at schools, with the guidance provided below replacing and taking precedence over parts of Section 3 of the PSTIS guideline.

#### **Outcome 1: Active transport – provide infrastructure that promotes and supports active transport.**

Schedule 3.1 outlines requirements (including minimum provisions) for short and long term bicycle parking for primary and secondary / combined schools, with a user focus for students, staff and visitors. Schedule 3.1 also outlines requirements for end-of-trip facilities such as lockers, showers, toilets and wash basins.

#### **3.1 Recommendations for infrastructure**

Schedule 3.1 provides design and best practice guidelines specific to the desired transport outcomes for bicycle parking and end-of trip facilities.

#### **Outcome 1: Active transport – provide infrastructure that promotes and supports active transport.**

Schedule 3.1 has been developed following a review of the practices and example case studies examined during the formulation of this Technical Note. It has also been developed cognisant of the policy targets to increase mode share for active transport and focuses on promoting active transport at the top of the hierarchy of school transport modes. The key assumptions that have guided the development of Schedule 3.1 include:

- Provision of high-quality best practice active transport facilities will encourage more users and priority should be given to this infrastructure. Facilities should be designed in accordance with relevant standards and where possible exceed these standards due to the high demand at school environments. The planning and location guidance in Sections 2 and 4 should dictate the planning and location of these facilities.
- Recommended rates for provision of end of trip facilities for schools was developed based on a literature review, stakeholder feedback and survey of end users (school principals, parents / carers and staff). The recommended rates aim to ensure the highest rate of provision for new schools, whereas rates for existing schools should aim to support increasing use of active transport modes whilst balancing the context of the school and its surrounding environment (for example, student catchment size, transport network, surrounding land uses etc.).



**Schedule 3.1 – Bicycle parking<sup>1</sup> and end of trip facilities<sup>2</sup>**

Parking				End of trip facilities <sup>3</sup>			
User	Long term	Short term	Security level <sup>4</sup>	Lockers	Showers	Toilet	Wash basin
<b>Primary school</b>							
Students <sup>6</sup>	Refer to Table 3.1.1(a) and Table 3.1.1(b) for standard, reduced and minimum rates	–	B	–	–	–	–
Staff <sup>7</sup>	1 per 10 staff	–	B	2 per 10 staff <sup>3</sup>	1 per 100 staff with minimum of 1	1 per 2 showers with minimum of 1 per male / female	1 per shower
Visitors	--	1 per 25% of student parking	C	–	–	–	–
<b>Secondary / combined<sup>5</sup> school</b>							
Students <sup>6</sup>	Refer to Table 3.1.1(a) and Table 3.1.1(b) for standard, reduced and minimum rates	–	B	–	Gymnasium and locker room use recommended	Gymnasium and locker room use recommended	Gymnasium and locker room use recommended
Staff <sup>7</sup>	1 per 10 staff	–	B	2 per 10 staff <sup>3</sup>	1 per 100 staff with minimum of 1	1 per 2 showers with minimum of 1 per male / female	1 per shower
Visitors	–	1 per 10% of student parking	C	–	–	–	–

<sup>1</sup> As per Table 1.3, “bicycle parking” refers to bicycle, scooter and skateboard parking.

<sup>2</sup> This information has been developed based on a literature review, stakeholder feedback and survey of end users (school principals, parents / carers and staff).

<sup>3</sup> Accommodates all forms of active transport (e.g., people riding bikes, riding scooters, walking, running, etc.)

<sup>4</sup> Refer to AS 2890.3 for further details on security level classifications:

- Security level A: An individual locker with a high security locking mechanism. Typical application at transport hubs (not for use in school environments).
- Security level B: A secure room or structure, protected from the weather, containing bicycle parking devices that allow users to lock the bicycle frame and both wheels. Typical application at a workplace or school where all day parking is required.
- Security level C: A parking space, where a bicycle frame and both wheels can be locked to a bicycle parking device using the owners own locking device, and scooters and skateboards can be locked to appropriate device using the owners own locking device.

<sup>5</sup> 'Combined' schools refer to combined primary and secondary schools e.g., P-10 schools and P-12 schools.

<sup>6</sup> Bicycle parking rates for students do not apply to special schools unless there is demonstrated demand.

<sup>7</sup> Staff bicycle parking and end-of-trip facilities should be provided separately to student facilities.

### **3.1.1 Student bicycle parking provision rates**

Student bicycle parking provision rates are to be determined using Table 3.1.1(a) and Table 3.1.1(b) (where appropriate), and to be read in conjunction with Schedule 3.1. When determining the rates, the following shall be noted:

1. All new schools should provide the 'standard' rate of parking facilities for students, as per Table 3.1.1(a).
2. The standard rate can also be increased where very high cycling demand can be demonstrated or expected.
3. The rate of provision must not be reduced to below the minimum rate, as per Table 3.1.1(a).

**Table 3.1.1(a) – Bicycle parking<sup>1</sup> – standard, reduced and minimum rates of provision**

<b>Rate</b>	<b>Primary schools</b>	<b>Secondary / combined schools</b>
<b>Standard</b>	1.5 bicycle parking spaces per 10 students AND Min. 0.5 scooter parking spaces per 10 students, or two racks, whichever is greater AND Min. 1 skateboard parking rack <sup>2</sup>	3.5 bicycle parking spaces per 10 students AND Min. 0.4 scooter parking spaces per 10 students or two racks, whichever is greater  Min. 1 skateboard parking rack <sup>2</sup>
<b>Reduced</b>	1.0 bicycle parking spaces per 10 students AND Min. 0.25 scooter parking spaces per 10 students or one rack, whichever is greater AND Min. 1 skateboard parking rack <sup>2</sup>	2.0 bicycle parking spaces per 10 students AND Min. 0.25 scooter parking spaces per 10 students or one rack, whichever is greater AND Min. 1 skateboard parking rack <sup>2</sup>
<b>Minimum</b>	0.5 bicycle parking spaces per 10 students AND Min. 0.25 scooter parking spaces per 10 students or one rack, whichever is greater AND Min. 1 skateboard parking rack <sup>2</sup>	1.0 bicycle parking spaces per 10 students AND Min. 0.25 scooter parking spaces per 10 students or one rack, whichever is greater AND Min. 1 skateboard parking rack <sup>2</sup>

<sup>1</sup> As per Table 1.3, “bicycle parking” refers to bicycle, scooter and skateboard parking.

<sup>2</sup> Skateboard use is likely to be higher in combined / secondary schools. A minimum of one skateboard parking rack should be provided in all circumstances and increased to meet demand, where present or expected.

Where it is proposed that the ‘standard’ rate in Table 3.1.1(a) is not appropriate, an assessment should be undertaken in accordance with Table 3.1.1(b) to determine whether a standard rate is in fact appropriate, or whether a reduced or minimum rate of provision of bicycle parking facilities could be justified for students. If a reduced rate is to be provided, justification, including the points scoring for each measure, should be provided e.g., written justification, supporting maps, calculations etc.

When using Table 3.1.1(b), assess each measure in the table below in accordance with the notes / guidance. Allocate the relevant number of points based on the results of each measure and tally up the total amount at the bottom of the table. Add up the total points from the assessment to determine the minimum rate of provision (as outlined in Table 3.1.1(a) above):

- Standard = 12-18 points
- Reduced = 6-11 points
- Minimum = 0-5 points

**Table 3.1.1(b) – Varying rates of provision based on school context and surrounding characteristics**

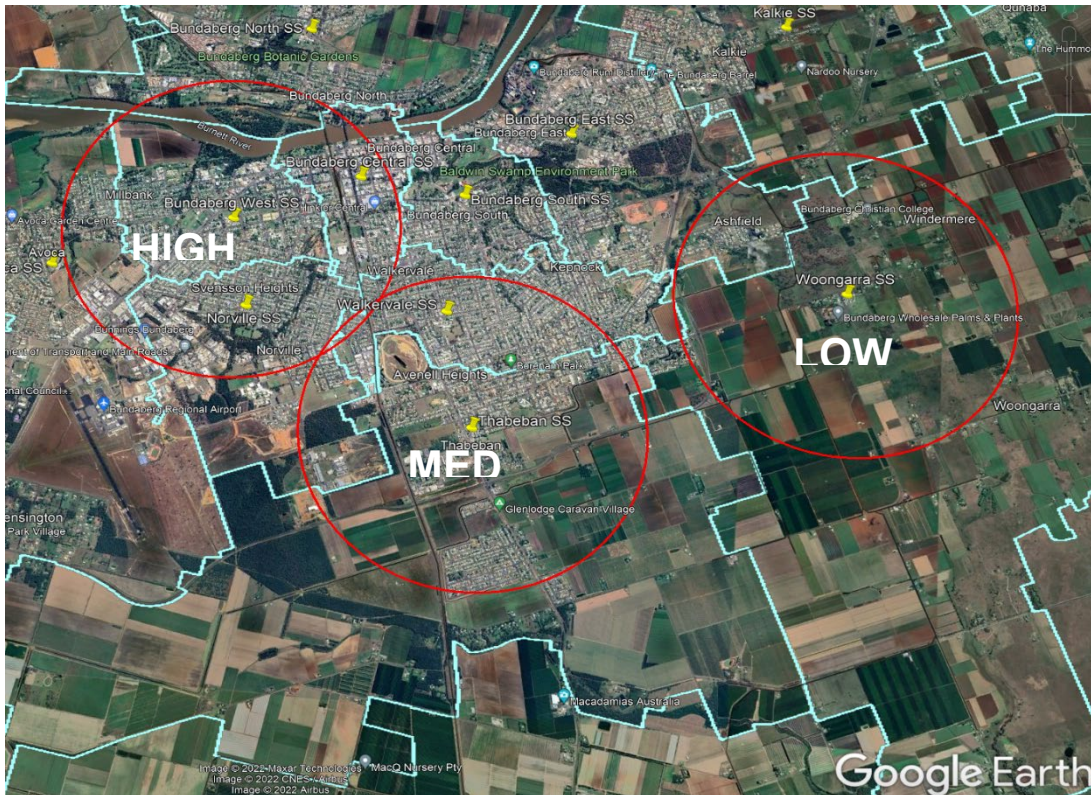
Measure no.	Measure	Notes / guidance	High	Medium	Low
1	<b>MODE SHARE Existing combined bicycle / scooter / skateboard mode share (all students)</b>	<p>To be determined through mode share survey of existing students, with a minimum sample size of 60% of students (and responses sought from all year levels). At a minimum, this could be undertaken using a ‘hands up’ count (an in-class survey using a show of hands) to determine how students travel to school, with data collection recommended for all weekdays in a typical week to estimate average and maximum mode share. Alternative or supplementary data collection could be observations across a week of travel mode to school or a parent survey with 60% response rate (online or intercept). At a minimum, the following questions should be asked:</p> <ul style="list-style-type: none"> <li>• How the students travelled to school on the day of the survey?</li> <li>• How the students travelled home the day before the survey?</li> <li>• For students traveling by foot, bicycle, scooter or skateboard, which access point they use (this can be used to inform Measure no. 2 below).</li> </ul>	<p>Primary school: More than 7% of students travel to school by bicycle, scooter or skateboard.</p> <p>Combined / secondary school: More than 20% of students travel by bicycle, scooter or skateboard.</p> <p><b>4 points</b></p>	<p>Primary school: 4-6% of students travel to school by bicycle, scooter or skateboard.</p> <p>Combined / secondary school: 10-19% of students travel to school by bicycle, scooter or skateboard.</p> <p><b>2 points</b></p>	<p>Primary school: 0-3% of students travel to school by bicycle, scooter or skateboard.</p> <p>Combined / secondary school: 0-9% of students travel to school by bicycle, scooter or skateboard.</p> <p><b>0 points</b></p>

Measure no.	Measure	Notes / guidance	High	Medium	Low
2	<b>EXISTING CYCLE NETWORK</b> <b>Existing cycle network characteristics</b>	<p>Cycling facilities for school students should be physically separated from traffic. Assess quality and quantity of existing off-road footpaths, shared pathways, cycle tracks, rail trails and lower speed / lower volume local streets within a 2 km radius of the primary school / 3 km radius of the combined / secondary school.</p> <p>Data sources: Existing – Relevant local government open-source maps or <a href="https://www.openstreetmap.org">openstreetmap.org</a> / <a href="https://www.google.com/maps">google maps</a> with cycling layers turned on.</p>	<p>High proportion of existing continuous walking / cycling network / routes (physically separated from traffic) to school and extending in multiple directions (two or more directions) into surrounding area.</p> <p><b>4 points</b></p>	<p>Moderate proportion of existing continuous walking / cycling facilities / routes (physically separated from traffic) to school and extending in one or two directions.</p> <p><b>2 points</b></p>	<p>Limited existing walking / cycling facilities.</p> <p><b>0 points</b></p>
3	<b>PLANNED CYCLE NETWORK</b> <b>Planned cycle network characteristics</b>	<p>There may be planned projects to upgrade the cycle network which will significantly improve walking / cycling infrastructure and/or network access to school. Improvements can include completing missing links on key routes and upgrading existing infrastructure to provide enhanced safety and connectivity for students cycling.</p> <p>Liaise with Local Government and Transport and Main Roads to identify major planned projects (including delivery timing) within a 2 km radius of the primary school / 3 km radius of the combined / secondary school.</p> <p>Data sources: <a href="#">Departmental Principal Cycle Network (PCN) Plan.</a> Transport and Main Roads' <a href="#">Queensland Transport and Roads Investment Program (QTRIP)</a> Local government Capital Works Program and relevant bicycle network planning.</p>	<p>Funded and committed (for construction and delivery) walking / cycling infrastructure projects which fill existing gaps in the network or significantly improve existing walking / cycling access to school.</p> <p><b>2 points</b></p>	<p>Some level of planning in place. Planned walking / cycling infrastructure projects (not yet currently funded for delivery) which fill existing gaps in the network or significantly improve existing walking / cycling access to school.</p> <p>AND/OR PCN.</p> <p><b>1 point</b></p>	<p>No existing infrastructure or known planned walking / cycling infrastructure projects to improve access to school.</p> <p>AND No PCN.</p> <p><b>0 points</b></p>

Measure no.	Measure	Notes / guidance	High	Medium	Low
4	<b>RESIDENTIAL CATCHMENT</b> Residential land uses within 2 km of primary school or 3 km of combined / secondary school	Residential land uses within cycling distance of the school will correlate with higher potential for students to ride to school.  Data sources: Queensland Government Open Data Portal (search 'Queensland state schools – geographic information'). KML files for all Queensland school sites and catchments can be freely downloaded and viewed on an aerial photo base in Google Earth. Use the "Ruler" tool to measure a 2 km / 3 km radius around the school site.  See example of high, med, low scoring residential catchments at Figure 3.1.1.	Majority of area within 2 km / 3 km of school is built-up urban / residential area.  <b>4 points</b>	Around half of the area within 2 km / 3 km of school is built-up urban / residential area.  <b>2 points</b>	The school is in a location with minimal residential / urban land uses within 2 km / 3 km of the school.  <b>0 points</b>
5	<b>STUDENTS RESIDING WITHIN SCHOOL CATCHMENT</b> % of students enrolled and living within school catchment boundary	Schools where the majority of students live within the catchment boundary are more likely to have students living within riding distance of the school.  Source: The percentage of students enrolled and living within the school catchment is available on the Department of Education's Schools Directory website: <a href="#">Department of Education's Schools Directory</a> (Search for the school then select: Facilities > Facilities planning > catchments).	75% or more  <b>2 points</b>	50-74%  For non-government schools which are unable to supply sufficient information to confirm rate, apply this medium score.  <b>1 point</b>	0-49%  <b>0 points</b>

Measure no.	Measure	Notes / guidance	High	Medium	Low
6	<b>BARRIERS TO RIDING BIKES</b> <b>Topography and physical barriers</b>	Steepness of surrounds and physical barriers can increase the time / distance it takes to ride to school and can be a deterrent to students riding to school. Consider barriers to movement between residential areas and the school such as rivers / waterways without bridges, highways / rail lines without safe crossings, arterial / high speed roads without safe crossings, steep topography (slope above 7%) etc. within 2 km radius of primary school / 3 km radius of the combined / high school.	Limited constraints / barriers e.g., flat, limited or treated physical barriers to riding between residential areas and school.  <b>2 points</b>	Some constraints / barriers e.g., some hilly terrain, part of school's residential catchment is impacted by untreated physical barriers to riding.  <b>1 point</b>	Many constraints / barriers e.g., very steep location and/or untreated major barriers to riding between residential area and school.  <b>0 points</b>

**Figure 3.1.1 – Residential catchment – examples of high, medium and low levels of residential land uses around schools**



### 3.1.2 Staging of provision

In limited circumstances it may be appropriate to make available 50% of the level of provision recommended at the initial installation stage, however, space should be set aside to allow 100% provision in the event that the full demand for bicycle parking needs to be installed. Circumstances where this may be appropriate include where there are currently very low levels of people riding bikes to an existing school, but future cycle network improvements may result in a dramatic increase in cycling demand.

## 3.2 Infrastructure layouts

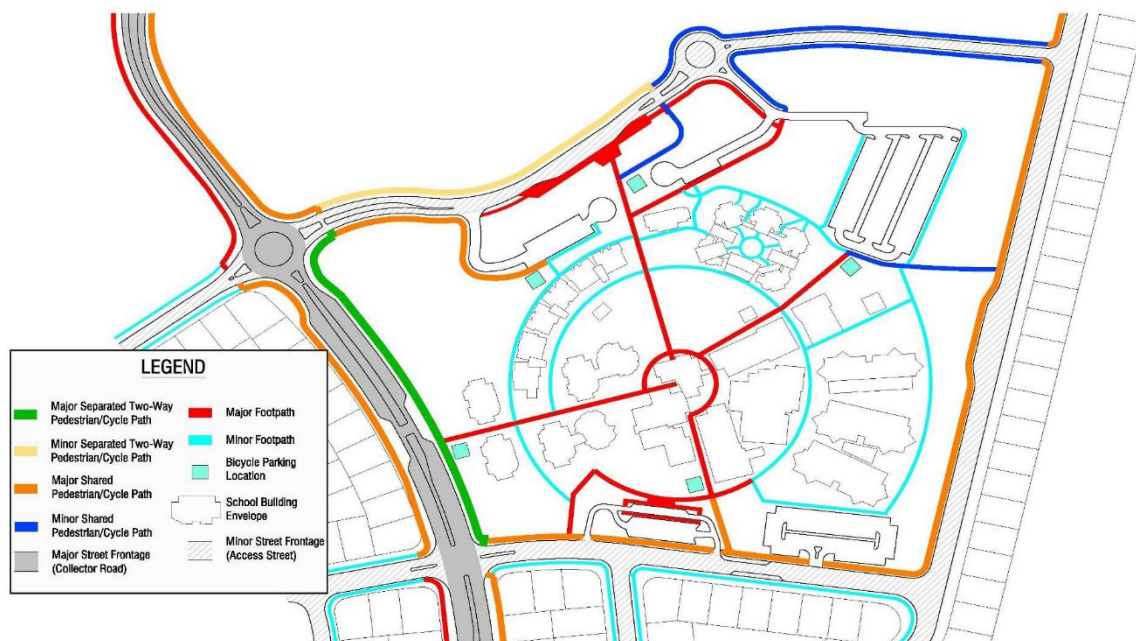
### Outcome 1: Active transport

Figure 3.2(a) illustrates a proposed network of pathways surrounding an example school to encourage active transport. The aim of the figure is to:

- illustrate the location of active transport infrastructure in a typical best practice school environment
- demonstrate active transport connections to surrounding catchment with pathways via a number of access points at all school boundaries
- show a network of internal pathways providing direct connections from other transport facilities such as bus stops and car parks to school facilities
- show shared path connections to bicycle parking facilities, and
- illustrate how the different active transport facility types are provided in a typical school environment.



**Figure 3.2(a) – Active transport hierarchy**

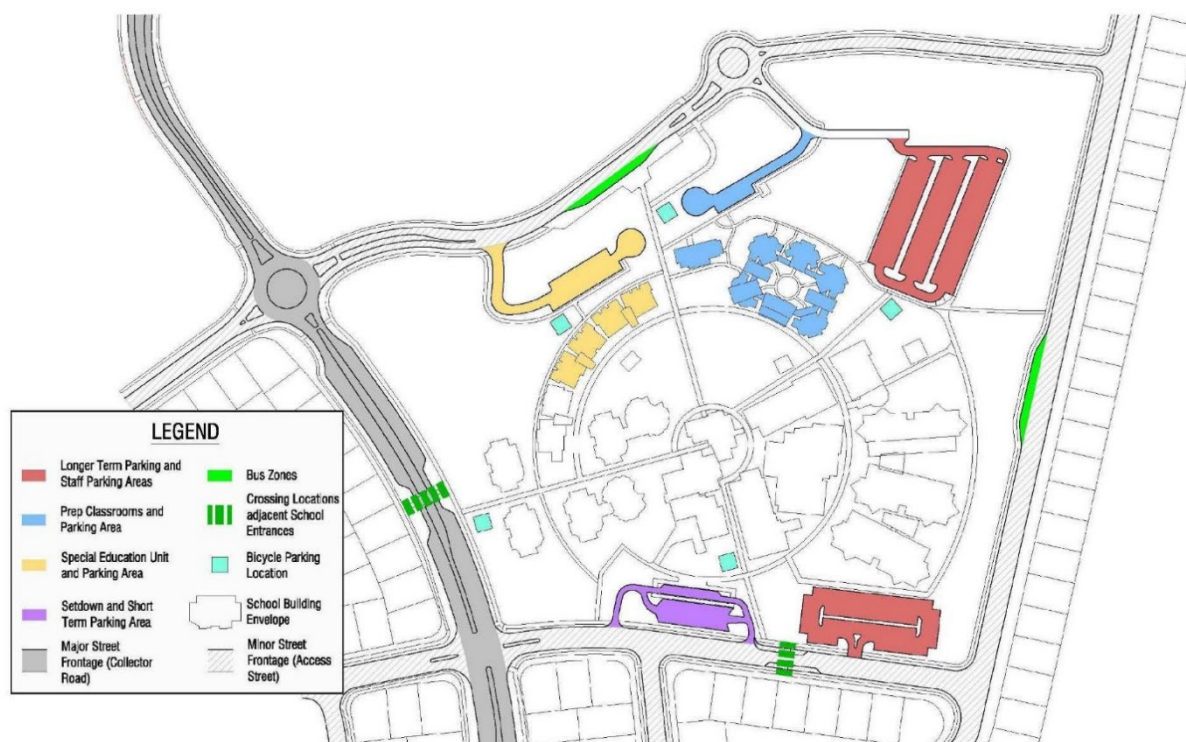


Source: PSTIS guideline Figure 3: Active transport hierarchy – Example overlaid over an example of a greenfield site school layout.

*Note: Refer to Probable Solution P2.2 and Section 4.2 for further information on locating student, staff and visitor bicycle parking.*

Figure 3.2 (b) provides an example of a good school site layout complementing transport infrastructure. The aim of the figure is to illustrate:

- separation of transport infrastructure to reduce conflicts and congestion in a school environment, and
- priority placement of active transport facilities such as bicycle parking.

**Figure 3.2(b) – Example separation of modes of transport overlaid on an example school layout**

Source: PSTIS guideline Figure 4: Example separation of modes of transport overlaid on an example school layout.

*Note: Refer to Probable Solution P2.2 and Section 4.2 for further information on locating student, staff and visitor bicycle parking.*

Figure 3.2(c) is primarily sourced from AS 2890.3 *Parking facilities, Part 3: Bicycle parking*, which should be referred to when designing bicycle parking at schools. The figure provides examples of typical bicycle shelters and demonstrates a logical layout and design for bicycle racks within the shelter. The planning and location guidance details in Section 2 and 4 should also be referred to when planning and locating such parking at schools. Considerations for the design of bicycle shelters / facilities include:

- When storing bicycles in multiple rows, ensure the areas are sufficient to accommodate each bicycle and provide adequate room to manoeuvre.
- Floor or pavement surfaces should have a maximum slope of 5% and shall be of a hard surface.
- Bicycle parking facilities shall be designed to ensure that motor vehicles do not encroach into bicycle parking area.
- Student and staff bicycle parking should be located in a convenient and visible location (refer to Section 4.2 location for further guidance) and be sheltered and fenced.
- Design of bicycle parking infrastructure shall comply with AS 2890.3 *Parking facilities, Part 3: Bicycle parking*.

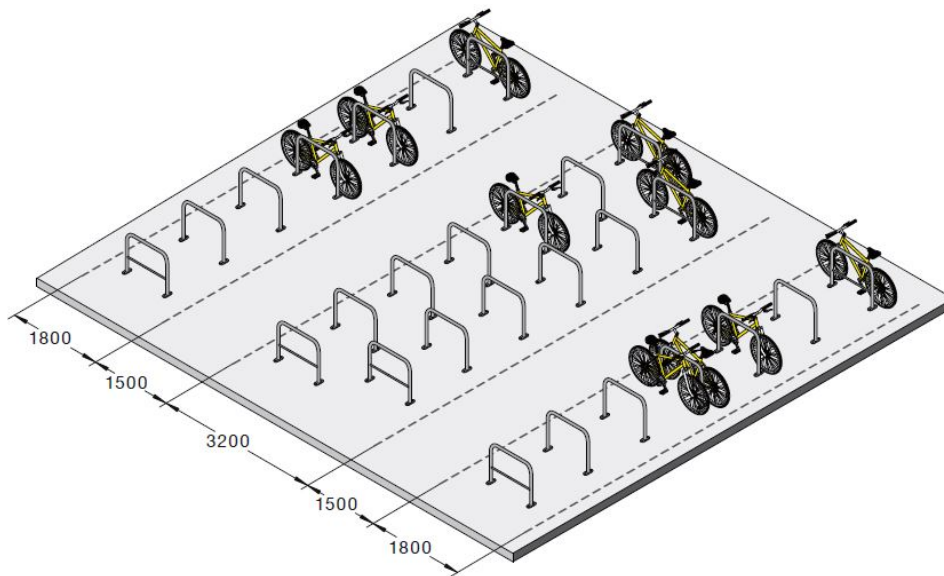
**Figure 3.2(c) – Bicycle parking and bicycle parking device details**



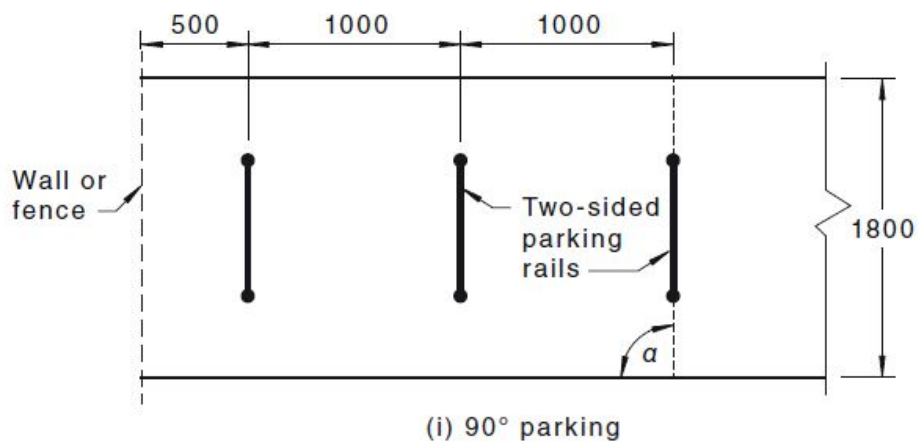
Integrated secured and sheltered bicycle parking facilities at Brisbane South State Secondary College.



Standalone secured and sheltered bicycle parking structure at Baringa State Primary School.



Source: AS 2890.3 *Parking Facilities* Figure B5(b).



Source: AS 2890.3 *Parking Facilities* Figure B5(c).

Child bicycle facilities can use smaller dimensions e.g., 900 apart and less aisle width due to shorter bikes.

**Notes:**

*Bicycle parking devices shall meet Australian Standards as outlined in AS 2890.3 Parking facilities, Part 3: Bicycle parking.*

*A combination of bicycle racks and rails should be used, to provide for different types and sizes of bicycles. A layout for bicycle rails for children’s bicycles is shown in the image to the right. Note that racks that require children to lift bicycles to park are less suitable in primary schools but are acceptable in high schools and for staff bicycle parking.*

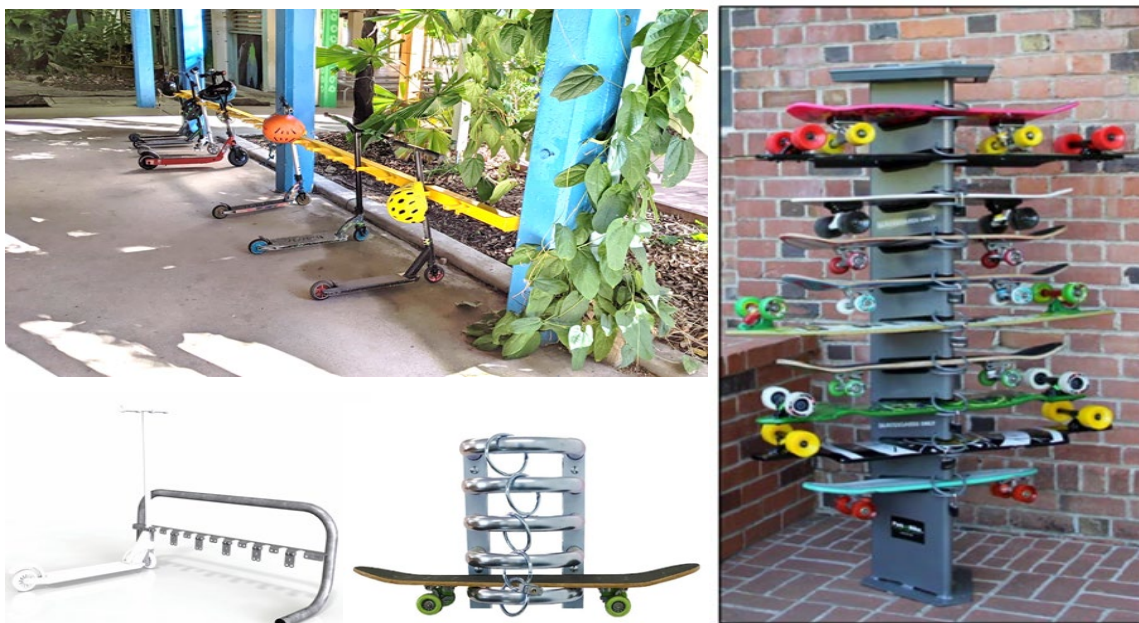
*Security level may be reduced in limited circumstances, based on the risk level / location of the facility e.g., shelter may not need to be enclosed if overlooked by administration building, there is no history of theft / vandalism and an alternative, lockable shelter is provided elsewhere on the school grounds.*

*Bicycle parking shelters / structures should not dominate the street presentation of schools. For example, bicycle storage may be covered and integrated within buildings to minimise the visual impact from the street, or multiple, smaller bicycle parking shelters could be provided near different access points.*

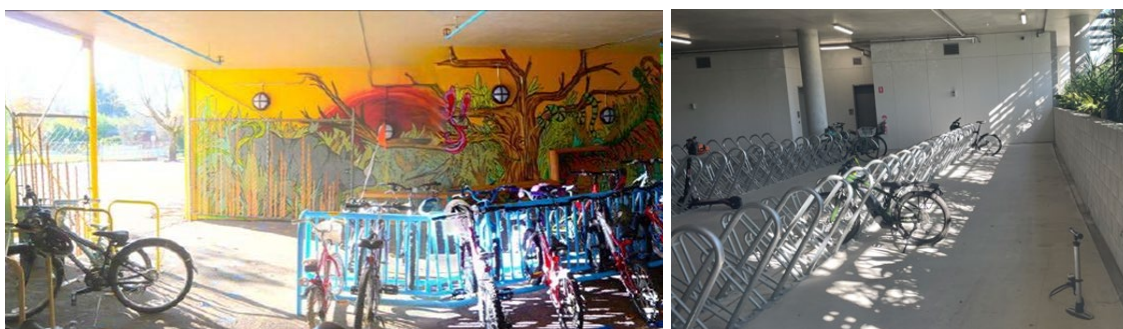
*Scooter and skateboard parking racks must allow users to be able to lock individual devices e.g., with a padlock. Examples are provided in Figure 3.2(d).*

*Desirable features that could be considered to make bicycle parking facilities more attractive include bicycle pumps, maintenance stands, seating and artwork. Examples are provided in Figure 3.2(e).*

**Figure 3.2(d) – Scooter and skateboard parking devices – lockable examples**



**Figure 3.2(e) – Bicycle pumps, seating and artwork can make bicycle parking facilities more attractive and comfortable**



### 3.3 *Bicycle parking location considerations*

The following guidance replaces and takes precedence over the Active Transport – Bicycle Parking sub-section of the Issues Application Matrix of the PSTIS guideline.

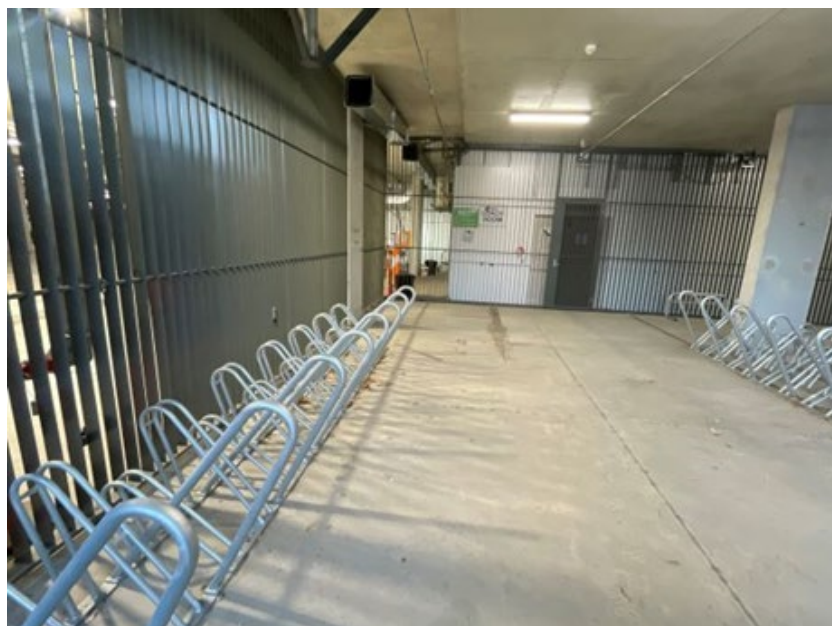
Key considerations when determining an appropriate location for bicycle parking facilities include the following:

- Bicycle parking facilities are to be located in a visible and convenient location that allows surveillance across the day to prevent theft.
- Minimum bicycle parking infrastructure is a secure, sheltered facility (see Figure 3.3(a)) with a combination of bicycle racks / rails, scooter racks and skateboard racks, which allows the user to lock their device securely.
- Bicycle parking facilities to be accessible from direct and connecting pathways.
- CPTED principles to be considered when determining bicycle parking location.
- Bicycle parking requirements are identified in Schedule 3.1.

Figure 3.3(a) illustrates a secure, sheltered bicycle storage facility with convenient access from the external cycling network. Note that racks require users to lift bicycles into every second parking space, so the addition of some bicycle rails would provide options for different users. Bicycle parking supply recommendations for different types of school can be found in Schedule 3.1.

Figure 3.3(b) shows a secure, sheltered bicycle storage facility, with lockers for individual use.

#### **Figure 3.3(a) – Example of secure, sheltered bicycle storage facility**



**Figure 3.3(b) – Example of bicycle storage facility with lockers**

### 3.4 Bicycle parking location checklist

The location and accessibility of bicycle parking facilities is critical to encouraging more active transport. Table 3.4 provides a checklist to be used to ensure that the proposed bicycle parking location is convenient, safe and appropriately accessed whether for students, staff or visitors.

**Table 3.4 – Bicycle parking<sup>1</sup> location checklist**

Item	✓ or ✗
<b>1. Student bicycle parking facilities</b>	
<b>1.1 Convenient access to school entrance(s):</b>	
Bicycle parking should be located in prominent 'gateway' location(s), visible from the school gate(s) OR in a convenient location with passive surveillance (see point 1.2 below).	
Bicycle parking should be provided in more than one location, if it is determined that students are likely to access the school from multiple access points.	
Bicycle parking shall be provided that ensures step-free access i.e., ramps and kerb ramps are installed if required.	
Students should be able to access bicycle parking facilities by riding to a point preferably no more than 30 m away from the bicycle parking facility (refer to AS 2890.3 <i>Parking facilities, Part 3: Bicycle parking</i> , Section 2.5 <i>Location and clearances</i> and Section 2.6 <i>Access</i> for more information).	
Where the above requirements cannot be achieved (particularly in existing schools), clear wayfinding signage and line-marking should be considered to direct students to bicycle parking facilities. Examples are shown in Figure 3.4.	

Item	✓ or *
<b>1.2 Visible to allow all-day passive surveillance:</b>	
Bicycle parking should be visible from classrooms, administration buildings or other facilities that allow people to overlook the facilities during school hours. Steady flows of foot traffic and/or a location visible through windows reduces the risk of theft / vandalism beyond the security provided by a bicycle lock or enclosure.	
Passive surveillance from school staff is more important than bicycle parking being visible from the street.	
<b>1.3 Separate access from vehicle traffic:</b>	
Bicycle parking should be accessible via routes that avoid drop off / pick up areas, bus zones and waiting areas.	
Priority should be given to locating bicycle parking near entrances from streets with low traffic speeds, nearest proximity to the cycle network, most desirable grades and/or closest access to the school's residential catchment.	
<b>2. Staff bicycle parking facilities</b>	
Co-located with end-of-trip facilities	
Staff bicycle parking should be next to showers, lockers, toilets and change facilities. Conveniently located power points should be installed to allow staff to charge e-bicycles / e-scooters.	
Consideration should be given to ensuring close and easy access to lifts / pedestrian access points to cater for people walking / running.	
Staff bicycle parking and end-of-trip facilities should be separate from student parking facilities.	
<b>3. Visitor bicycle parking facilities</b>	
Bicycle parking devices (racks / rails) should be provided in locations most likely to be accessed by parents / carers e.g., outside main school entrance.	
Signage indicating bicycle parking is for visitors should be considered. Refer to AS 2890.3 <i>Parking facilities, Part 3: Bicycle parking</i> , Section 2.7 for more information.	

<sup>1</sup> As per Table 1.3, "bicycle parking" refers to bicycle, scooter and skateboard parking

**Figure 3.4 – Clear wayfinding signage and line-marking**



## **Appendix A – Key findings of research to inform Technical Note**

### **A1 Summary of background research**

Best practice research and stakeholder engagement has informed the preparation of this Technical Note. A summary of the key findings from this research is provided below.

### **A2 Literature review**

A national and international best practice literature review was undertaken to inform the development and update of this guidance. Key best practice findings that are relevant to the Queensland context include:

- Guidance to consider bicycle parking with varying rates of provision (e.g., high, medium or low rate based on cycling mode share, location or school size).
- Guidance to incorporate provision for different types of bicycle parking devices (e.g., scooter and skateboard racks).
- Requirements to be provided detailing different levels of security to improve options and provide flexibility for bicycle parking (e.g., lockable enclosures and casual racks).
- Shelter for weather protection at bicycle parking is important for all types of climates.
- Bicycle parking should be installed on paved or hard surfaces.
- Bicycle parking facilities to be located appropriately within school grounds, with convenience and surveillance important to encourage increased use of active types of transport.

#### **A2.1 Bicycle parking rates**

In the Australian context, bicycle parking requirements for schools range from a minimum of one space per 10 students to one space per three students (in year 4 or higher). There is limited research available on the provision for scooters and skateboards.

International research shows that bicycle parking provision rates can be varied based on school and locational characteristics, such as likely cycling mode share, surrounding cycling networks and size of the school.

### **A3 Stakeholder engagement**

Stakeholder engagement, through workshops and interviews, was undertaken via Technical Working Group with representatives from key state and local government stakeholders.

A survey of end users was conducted which included school principals, parents, carers and staff from a broad cross section of public and independent schools across Queensland.

Key findings of stakeholder feedback, interviews and school surveys include:

- Connectivity, safety and availability of external cycling networks are a key factor in cycling rates / bicycle parking utilisation.
- Differentiating rates based solely on geographic location (e.g., inner-city, suburban, regional, rural etc.) does not consider many factors which can influence cycling mode share, including external cycling networks, size of school catchment, number of 'out-of-catchment' enrolments, socio-economic factors, availability of public transport, school culture etc.



- Flexibility is needed in determining rates of bicycle parking provision (in terms of prescriptiveness and site context).
- Guidance to detail a 'minimum' standard for quantity and quality of facilities.
- New schools should have a higher minimum standard to meet for bicycle parking facilities. There is a need to recognise that there will be more constraints in 'growth schools' (where existing schools are being upgraded).
- Staff bicycle parking and end-of-trip facilities are often non-existent at schools.
- Satisfaction with existing bicycle parking facilities at schools (from principals, parents / carers and staff) is moderate (average satisfaction score of 3 out of 5).
- Older / established schools are more likely to have lower satisfaction levels with current bicycle parking facilities.
- Scooter and skateboard racks are already being provided by schools, despite limited guidance on design / installation being available.
- Shelter and security are important for all school stakeholders including principals, parents / carers, students and staff.
- Bicycle parking provisions in Queensland schools vary greatly but are generally below the current PSTIS guideline requirements.
- There is an increasing use of e-scooters as a method of transport to ride to schools, particularly in secondary and combined schools in South East Queensland.

