

The Wheelie

Deployment Guide

Draft 2

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Background

“The Wheelie” is a bike parking device (BPD) co developed by Transport for Victoria and the Mobility Design Lab at Monash University. It is intended to be deployed in the public realm as part of a family of BPDs available. Specifically, the Wheelie fills a gap between permanent hoops, and larger parking facilities such as Parkiteer. It is designed to be low cost, rapidly deployable, secure yet non-permanent, and to offer a high number of bicycle parking spaces in proportion to its physical size.

The Wheelie can be manufactured and deployed using basic industrial techniques - stainless steel tubular welding, and concrete casting are required to produce the components, and these can be taken to site on a ute or small truck. Aside from ensuring a suitable site as detailed in this guide, no works are necessary to deploy The Wheelie - it has been designed to be secure without the need for digging or drilling into pavements, for example.

Basic Characteristics

The Wheelie stores bicycles in two ways. Firstly it functions in the same way as a standard bicycle hoop, providing a structure where a bike can be leaned and locked. Secondly, an upper tier of bicycles are accommodated by placing the front wheel in an elevated cradle. This serves to hold the bike securely while also keeping the upper bike isolated from bikes in the lower position. By this process, interference between bikes is minimised while storage capacity is maximised. It also results in efficient storage where users will not have to completely lift their bike. In common terms, upper

Parts of The Wheelie

***Fabricated Stainless Steel
Bike Parking Device***

Pre-cast Concrete Anchors.



bikes are placed in position by “popping a wheelie”. The Wheelie can hold six bikes (three up, three down) and has a peak capacity of nine bikes (three up, six down).

The Wheelie consists of two parts. A stainless steel frame, and a concrete anchor. As illustrated in this guide, two anchors are used to secure each unit, and the anchors provide for arrayed deployments to be held in place.

The Wheelie is designed as a no-dig solution to public infrastructure and can be commissioned from a manufacturer of your choice. Unit costs depend on the size of orders, expected to fall into the range of \$2500 for a single unit down to \$1500 for large orders of 30 units or more.

Product Details

Detailed drawings, copies of this guide, and CAD files for manufacturing are available for free download at:

https://figshare.com/articles/The_Wheelie_Bike_Rack/6852815

Or by using “Wheelie Bike Parking Device” as the search terms in a Google Web search.

Do I need a Wheelie?

Deployment of devices such as the Wheelie require consideration of a range of factors. The Wheelie will not solve all problems nor be suitable in all cases where bicycle parking is required. Some useful scenarios where The Wheelie may be suitable include:

- Where demand for bike parking exceeds supply.
- Where an authority wishes to determine if demand exceeds supply - by facilitating a “build it and they will come” experiment.
- Where the cost of installing hoops is too high.
- Where car parking is being re-allocated to bike-parking.
- Where an event creates a temporary need for bike parking.
- Experimental situations - for example where the needs of the public or space may be unknown, and a low-cost test is appropriate.

Site Selection

The Wheelie has been designed to fit into the built environment, and requires a site that is flat, level, and generally conducive to cycling access. Needs will dictate a large proportion of what deems a site to be suitable, as will the Australian Standard on bicycle parking AS2890.3 (2015). Note that The Wheelie is not a hoop, and as such complies with this standard, but note that to create a fully compliant deployment there are site selection characteristics which need to be complied with:

- Free from obstructions such as utility covers, hydrants, DDA access.

- On a site of no more than 5% (1:20) grade.
- Vehicle encroachment is not possible.
- Clear of obstructions (as detailed in AS2890.3 section 2.5) for example awnings, high volume pedestrian areas, car doors.

Further to these requirements, an optimum user experience for all users, whether they are direct users of The Wheelie or not, can be achieved if the site enables:

- Night time lighting.
- Passive surveillance E.G. proximity to other activities such as railway station entrances, cafes, shops.
- Shelter from rain and wind. Undercrofts may be ideal sites in this regard, provided they are well lit and have good surveillance.
- CCTV, especially considering existing camera fields of view.
- Close proximity to high quality cycling infrastructure, for example bike paths.
- Close proximity to destinations, such as railway stations and shops. Care should be taken not to diminish pedestrian access to such nodes. Although sites vary, a reasonable guide would be a distance of 20M from a destination. A larger distance might be appropriate for large deployments of The Wheelie. Also consider that bicycle parking should be more convenient than regular car parking.

Installation

The Wheelie is not designed to be a permanent fixture, and while there are significant time and money savings to be reaped by not commissioning capital works, it's important to be well aware that like any public realm objects it might be subject to malicious activity. Please carefully consider siting The Wheelie to avoid this.

Organisations commissioning The Wheelie for their site are recommended to ask the manufacturer to provide logistics in the form of delivery and installation. This can be done for market rates and will avoid double-handling. Organisations are free to undertake their own deployment should they wish, for example, if logistics can be done in house.

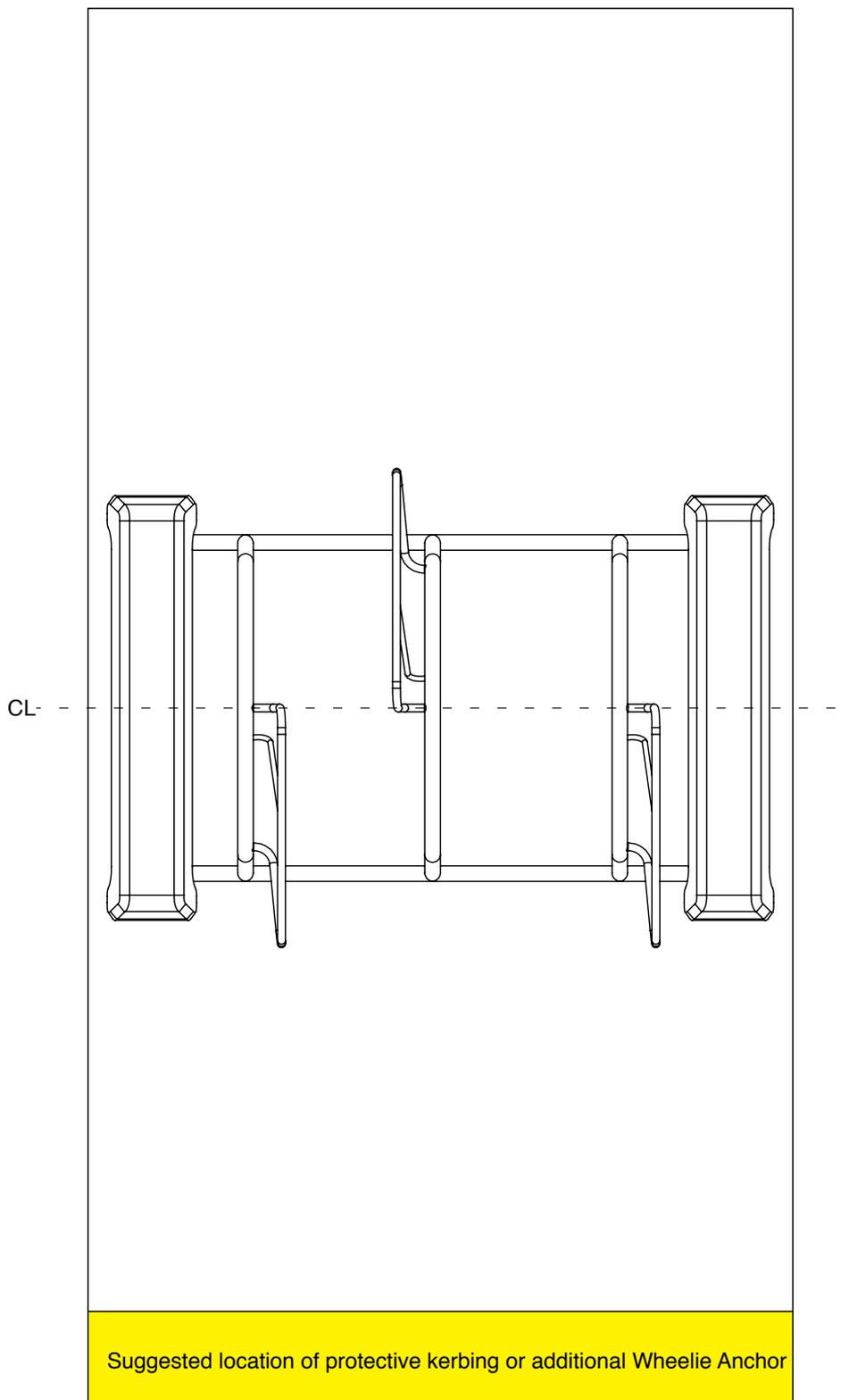
Once a site is selected, installation is quite straight forward. It is recommended that a knowledgeable stakeholder from the commissioning organisation is present at the time of installation to ensure The Wheelie is sited as required.

Car Park Installation

The choice to deploy The Wheelie in a car park may be a powerful statement so care is advised into how public relations are carried out. The Wheelie has been designed to fit into an Australian Standard car parking space, as shown in the illustration below. Care should be taken to ensure access for parking by observing how The Wheelie will be placed longitudinally across the centre of the car parking space. To avoid vehicle encroachment, The Wheelie will also require kerbing to be placed at the borders of the car park(s) being used, also as shown below.

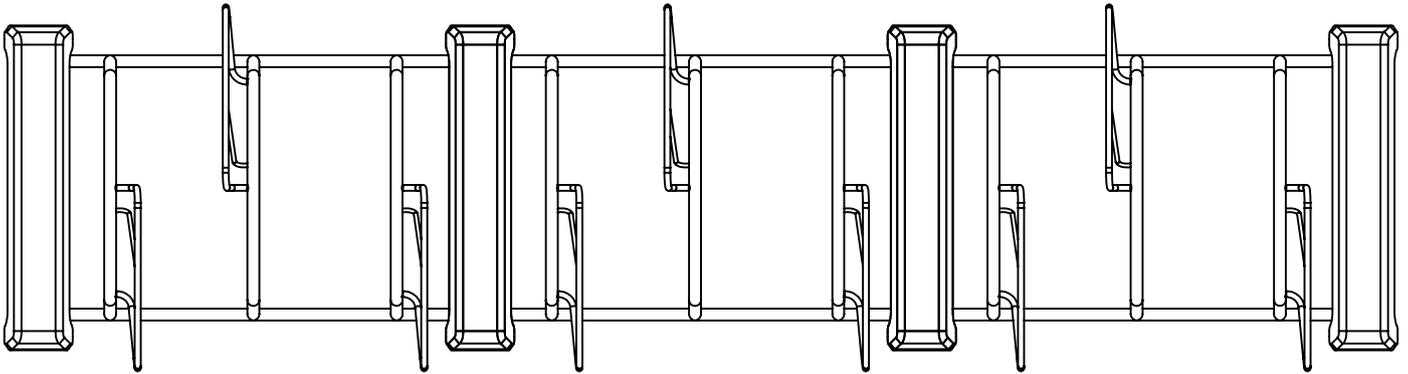
When multiple car parking spaces are used, a spatial gain can be achieved as shown below. Deployment of kerbing should be considered when The Wheelie is deployed adjacent to car parking spaces to clearly delineate space, reduce conflicts or vehicle collisions, and reduce the likelihood of theft and vandalism by towing.

Recommended characteristics of car park deployment.



Arraying Multiple Wheelies

In order to promote mode share growth for cycling, it is recommended that bicycle parking supply should exceed demand. As such, deployment of The Wheelie may grow over time before more permanent facilities are commissioned. Additional units can be added on to existing deployments should space allow, with a typical linear array shown below. Care should be taken to allow breaks between multiple units in order to preserve access and not create a barrier on site.

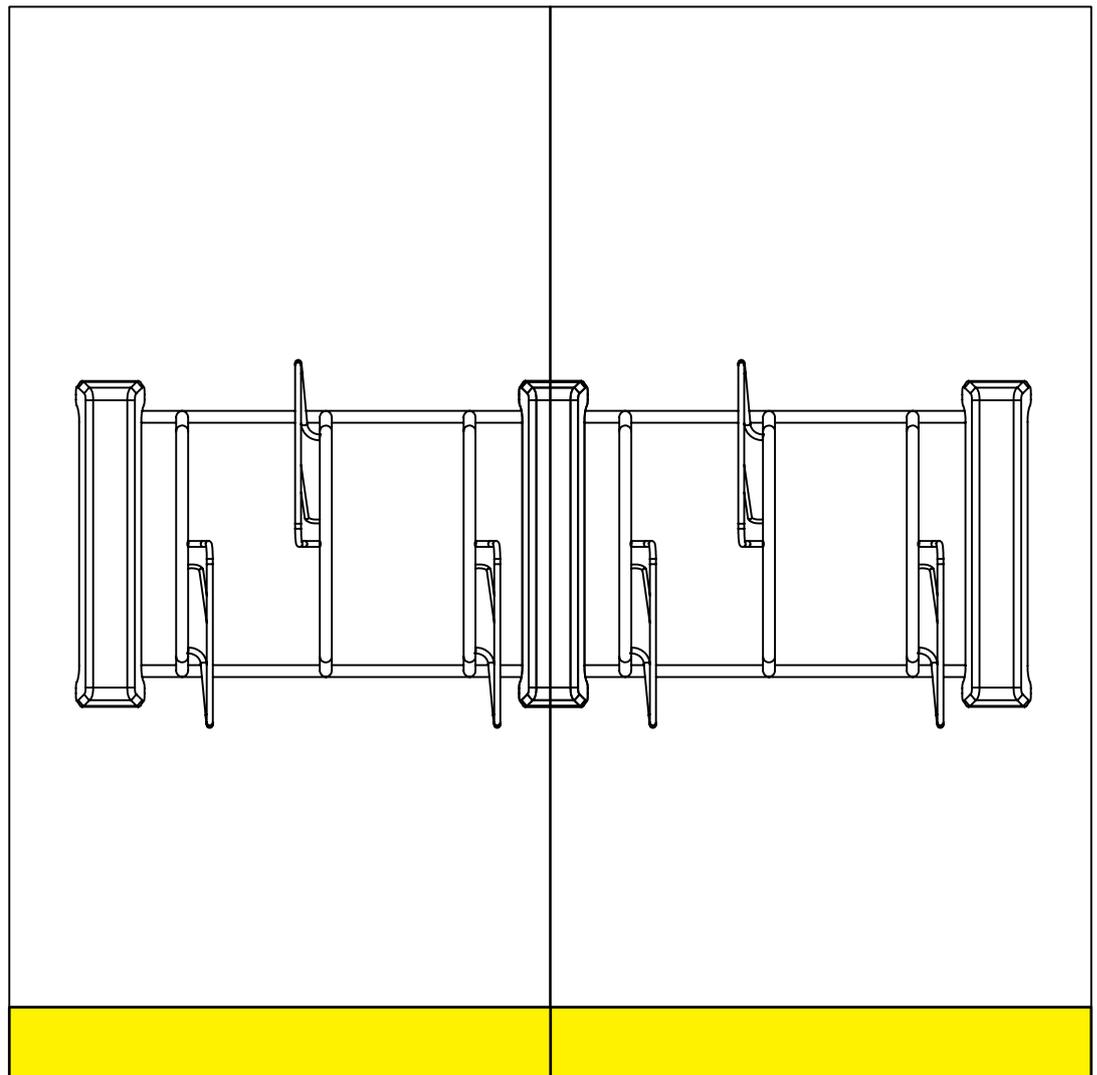


ABOVE

Example of multiple units deployed in a linear array. Note that the number of anchors used in a linear array reduces from $2N$, to $N+1$.

RIGHT

Example of multiple car park deployment.



User Experience

Providing ample cycle parking is necessary for creating a good user experience for cycling, however it is not, alone, sufficient. In addition to the recommendations already provided in accordance with AS2890.3, the following characteristics and additions are highly recommended in deployments of The Wheelie.

- Create places that are easy to navigate and understand, by provision of wayfinding (wayshowing) signs. This helps users find and use The Wheelie, and also serves to legitimise cycling as a transport mode.
- Although user testing demonstrates that the public understand how The Wheelie can be used, a ground sticker or sign is recommended to make this message clear. Signage artwork suggestions are provided.
- Accessibility is important to proper functioning of The Wheelie. As such, at least 2M of access to either side of the unit are recommended to enable ease of use. 2.5M is ideal. The car park deployment illustration provides a good guide for these dimensions.

Maintenance

As it has no moving parts, The Wheelie will not require regular maintenance. It is recommended that grounds keeping staff are familiarised with the unit such that it can be kept free of litter and accumulating dirt, in a way similar to other infrastructure such as park benches. Movement of The Wheelie is possible, and as such security staff should also be made aware of the unit in order to keep it in good state of repair. For example, ensuring that the concrete anchors are kept hard-up against the lower struts.

As with all BPDs, The Wheelie will attract bicycles that are locked in place for long periods of time. Refer to your current practice for identifying and if necessary, removing these bikes. Testing also indicates that users will leave locks secured to The Wheelie and these should be accommodated where possible if they don't detract from the user experience. Leaving locks is a matter of convenience for some users.

Example of ground sticker. Suggested diameter 1M.



Manufacturers

The two components of The Wheelie can be made from common materials for which suppliers can be found in most cities. To date, parts have been commissioned from the following manufacturers:

Stainless Steel:

GripSport

8 Northgate Drive, Thomastown

Victoria, Australia, 3074

(03) 9466 2553

gripsport.com.au

Concrete:

SVC Products Pty Ltd

38 Japaddy St, Mordialloc VIC 3195

1300 287 782

svc.com.au

AS2890.3 Suggested signage.



More information

This guide is a draft. For more information, to provide feedback, or to carry out user testing or other research, please contact us at Monash University's Mobility Design Lab:

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