



# Commuter Parking Standards

## October 2008

### FOR FURTHER INFORMATION

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## 1. Introduction

This document sets out the Greater Wellington Regional Council (GW) minimum standards for maintaining existing and new build public transport commuter parking facilities in the Wellington region.

All commuter parking facilities are to be developed and maintained to comply with the minimum standards set out in this document. These standards include requirements for safety and security, layout, paving and markings, disabled access, signage, lighting, and landscaping.

These car parking standards are defined for the sole purpose of public transport commuter parking facilities (including cycle parking).

The *National Guidelines for Crime Prevention through Environmental Design* (CPTED) principals have been a major consideration in developing this document and the seven qualities for well designed, safer places, have contributed to the overall standards. The seven qualities are listed below:

- Access - safe movement and connections
- Surveillance and sightlines - see and be seen
- Layout - clear and logical orientation
- Sense of ownership - showing a place is cared for
- Quality environments - well designed, managed and maintained
- Physical protection - using active security measures

## 2. Key Components

All car park maintenance, improvement, and development projects must consider the following components to ensure that the facility will provide a safe open environment whilst being sympathetic with the surrounding landscape.

### 2.1 Location

Commuter parking facilities must be located as close as practicable to be accessible to the passenger transport services they are associated with. Suitable space should be allocated for the provision of drop off facilities that enable those who do not intend to park long term, to set down passengers conveniently. Provision must also be made for current or future interchange between bus and rail. Therefore bus services that are required to share the car parking facilities must be given sufficient room to manoeuvre through the car park without endangering pedestrians and property.

### 2.2 Access

- 2.2.1 Safe and efficient access is vital to the success of a commuter parking facility. A dedicated entrance/exit must be established and approved by the road controlling authority. (Territorial Authorities (TA's) for local roads, and New Zealand Transport Agency (NZTA) for State Highways). Where work is to take place on or near the road (local or highway) permissions must be sought from the Road Controlling Authority (RCA) by submitting a Traffic Management Plan (TMP), and only work approved by the RCA must be carried out.
- 2.2.2 Safe access for pedestrians and cyclists must be provided in all commuter parking facilities and should be constructed in the form of a durable flat surface providing a hazard free walking environment. Pedestrian and cycle footpaths must also provide the safest and most direct available routes to avoid conflict with vehicle movements within the car park. CPTED encourages that facilities with well defined routes, spaces and entrances provide for convenient and safe movement without compromising security

For further information regarding footpath construction refer to *Land Development and Subdivision Engineering Standard NZS4404-2004*.

- 2.2.3 Mobility access must always be located as close as possible to the entrance / exit of the provided service and should include the minimum facilities as per the joint Australian/New Zealand standard, *Parking facilities part 1: Off-street car parking AS/NZS 2890.1:2004*.

### 2.3 Car Park Layout

The layout and physical geometry of a car park is to be determined by land availability, and the condition of the land surface, and soil conditions. Car park layouts should be designed to be sympathetic with the surrounding landscape whilst maximising the number of spaces to be provided. Using the accepted CPTED principals the layout must be clear and logical to discourage crime, enhance perception of safety, and help orientation and way-finding.

Concept designs must be produced prior to a new facility being developed or the re-development of an existing facility to determine the best available option to maximise the benefit of the available space. *AS/ANS 2890.1.2004* should be used to set out the minimum requirements for the design and layout of off-street parking facilities; and also the access and egress requirements for the car park.

## **2.4 Pavement (Road Surface)**

Construction methods and materials will vary for each individual location; consideration must be given to options for non tar sealing methods and features for rain water absorption. Harvesting the rainfall from car park surfaces can serve as a natural feature for surrounding trees and scrubs this type of surface will also reduce the risk of pavement cracking and water pooling which make for unsafe conditions. Line markings and bay sizes are shown in **Section 2.6** of these Standards.

Road surface development must be assessed on an individual project basis and construction methods and materials will be determined at that stage. The following points must be considered in determining the life and reseal process:

- Condition of existing seal
- Existing ground conditions
- The existing car park construction
- Drainage
- Interim maintenance
- The type and number of vehicles using the facility.

If inspections and maintenance are carried out correctly it is possible to obtain 15 - 20 years between reseals and this applies to both chipseal and asphalt. However with some of the high usage facilities there is a high possibility that reseal rates are more likely be at 8 - 10 yearly intervals.

Normally commuter car parking consists of an asphalt surface for a more durable finish or a two coat grade 4/6 chip-seal can be used. A single coat grade 5 chip-seal with 180/200 grade bitumen can also be used dependant on location and size of car park.

As detailed below, table 2 shows the level of surface appropriate to the number of vehicle movements, the table also indicates why different grades are used under these conditions.

**Table 2. Pavement surface**

No.of car park spaces	Pavement surface
1 -20 spaces	A gravel surface can be adopted for smaller car parks, but all driveways from the road to the car park must be sealed.  This type of surface is sufficient for low numbers of vehicle movements and build costs are relatively low.
20-40 spaces	Single coat grade 5 chip-seal with 180/200 grade bitumen  A graded chip seal car park is a more durable surface than the previous gravel and provides a longer life of the facility.
40 + spaces	Sealed asphalt (Hot Mix) finish  This permanent surface type is used for larger car parks that are heavily used by various sizes of vehicle i.e. cars, buses and cycles. Frequent heavy movements are more suited to this type of pavement.  Cost is relatively much higher than the previous two examples.

Each location must be assessed to determine the type of pavement finish that will be required regardless of the number of spaces being built.

#### 2.4.1 Bitumen resealing (chipseal)

Chipseal reseals consist of a layer of bitumen sprayed onto the existing road surface and stone chips spread over the bitumen layer and rolled with a road roller. Chipsealing is a cost-effective method to prevent further deterioration of the road surface, such as potholing. Chipsealing may also be used to seal fine cracks and to restore skid resistance. Chipseals are often more effective in restricting the infiltration of water into the pavement than are asphalt overlays.

This type of reseal has a short life span, and facilities that have this type of surface should be re-sealed on an average every 8 to 10years.

#### 2.4.2 Asphalt resurfacing (hot mix)

Hot mix resurfacing is undertaken to correct surface deficiencies or to strengthen the pavement. It will also restore surface evenness. Hot mix asphalt is the main material used to construct and surface heavily trafficked pavements.

The main advantages of hot mix are:

- it can strengthen and stiffen a pavement
- it can improve ride quality by filling undulations in the pavement
- it produces less tyre noise than chipseals (suitable for residential areas)
- it reduces the amount of stone and metal chip spreading to the local road or highway

- it is excellent for resisting high traffic forces at intersections and roundabouts

The main disadvantages of hot mix is that it is relatively expensive (typically more than twice the cost of chipsealing, but has an expected life of 15/20 years)

Typically this type of seal should be used in high usage areas and particularly at facility exit/entrance points.

## 2.5 Drainage

The need for good drainage is to ensure that surfaces are kept accessible and safe at all times for the user and for the prolonged life of the pavement and surrounding areas.

There are several important factors on why and how the application of drainage can benefit the overall structure being built and the area around the facility.

- Drainage systems divert high flows of water away from heavily used public areas
- Diverting the water maintain safe access (reducing slips and falls)
- Helps to maintain the life cycle of the pavement by reducing the possibility of flooding and pooling which leads to pavement cracks and pot holes
- Reduces the possibility of underground movement (pavement collapse)
- Lessens the risk of landslides and earth movement
- Helps to maintain the natural environment surrounding the structure

Underground drainage should be built in accordance with the design standard (*AS/NZS Building code clause E.1*).

Down pipes from adjacent buildings must not be allowed to flow freely into the car park or drain into planted areas. The appropriate property owners will be advised to divert the flow of water away from the car park site by connection to the storm-water drainage system.

Overflowing water from buildings and gutters onto the car park could present flooding and pooling in various places and eventually leading to the deterioration of the pavement surface by cracking and pot holes forming.

Similarly if excess water is allowed to drain into a designed planting bed this could result in the soak away not being able to disperse the amount of water naturally and too much water could have an effect on the survival of the plants and trees.

Water harvesting should be considered for trees and shrubs planted in car parks. The following features should be considered if water harvesting schemes are to be included:

- Water run off from car park pavement must reach sufficient areas adjacent to the trees or shrubs so that the water can soak into the roots and through designed soak away.



- Subsurface drainage (sub-soil drains) must be installed to ensure that the ground and adjacent car park materials do not become water-logged and result in pavement failure.
- Maintenance to trees and shrubs will be minimised by providing sufficient barriers/protection systems to prevent vehicle damage.

## 2.6 Bay sizes and line marking

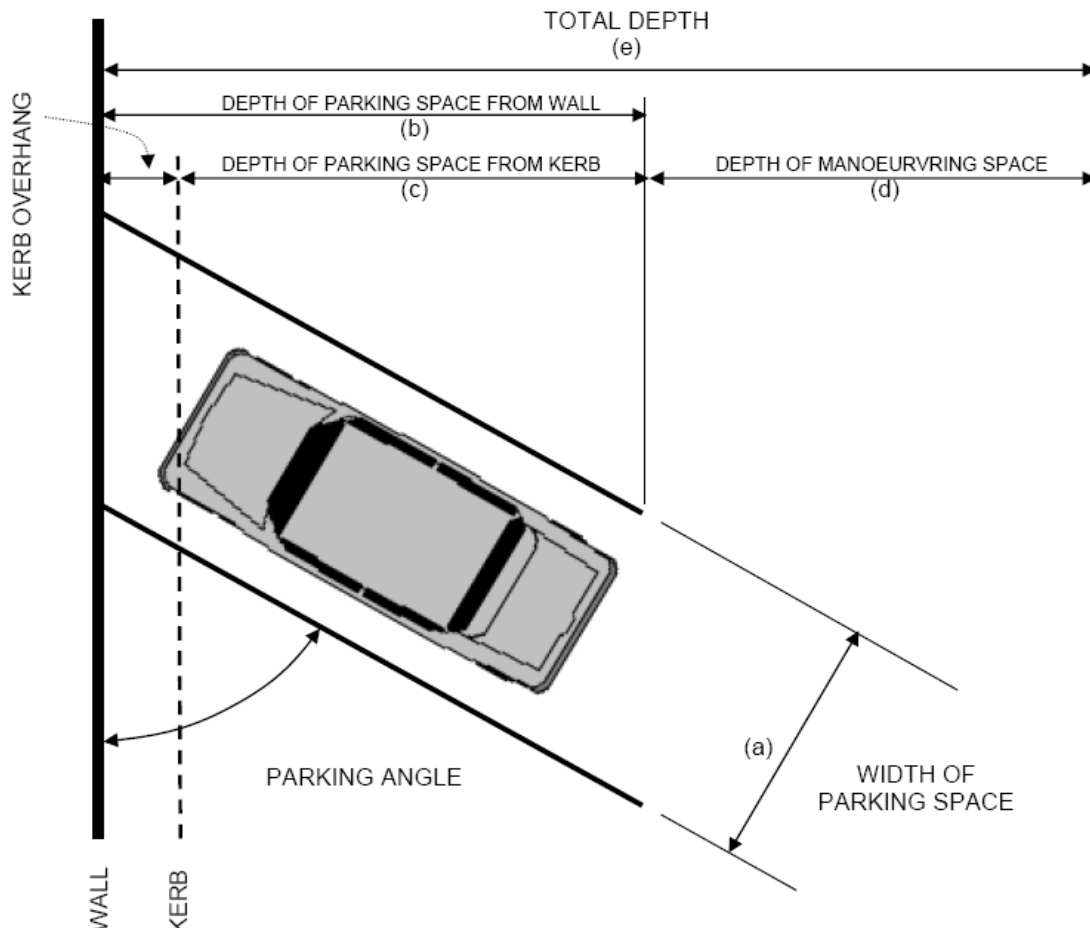
Car parks will be assessed on a regular basis, prior to any re-seal or renewal of line markings, to determine if there is any opportunity for the layout to be improved for access and user flows within the facility, ability to increase the number of parking spaces, and also to ensure current bay size standards are being met.

### 2.6.1 Bay Sizes

The following are the current standard space requirements for all new build and existing car parks upon upgrading. These are basic minimum reference values but different layouts such as parallel, herringbone and in line will have slightly different overall space requirements and must be detailed in the layout of parking spaces which will be site specific.

Table 3 Standard Car Park Measurements AS/NZS 2890.1:2004

Type of Parking	Stall Width (a)	Stall Depth		Aisle Width (d)	Total Depth (e)	
		From Wall (b)	From Kerb (c)		One row	two rows
<b>ALL MEASUREMENTS ARE IN METRES</b>						
<b>Parallel</b>	<b>2.5m</b>	<b>Stall length 6.1m</b>				
<b>Angled</b>	<b>2.5m</b>	<b>5.5m</b>	<b>5m</b>	<b>4.5m</b>	<b>10.0m</b>	<b>15.5m</b>
<b>90%</b>	<b>2.5m</b>	<b>5.0m</b>	<b>7.6m</b>	<b>7.5m</b>	<b>12.5m</b>	<b>17.5m</b>



Road surface markings are required in order to clearly define parking boundaries between vehicles and to maximise the space available for commuter parking. Line marking is also used to define walking, cycling and mobility areas to ensure safe easy access to the passenger transport facilities.

There is a trend for markings to be more durable on asphalt than on chip-seal surfaces. On chip-seal there is often wear by chipping off the tops of the stones, this can also happen very early in the life of the marking.

### 2.6.2 Line Marking

Line markings are required to ensure appropriate use of the car park for all users and to enable the most efficient and safe movement of traffic within and into and out of the facility.

Conventional paints will be used to achieve the line markings required as they tend to be cheaper and easier to apply than the alternatives such as thermoplastic materials, used on highways which carry a greater number of vehicle movements and require longer term visibility for safer road conditions.

Before the application of new line markings unwanted markings must be removed by blacking out or abrasion blasting. Abrasion blasting should be limited to small areas and

locations where removal does not create a safety problem. Line markings need to be renewed on an annual basis.

### 2.6.3 Wheel stops

Wheel stops are used as a physical barrier to prevent vehicles entering unauthorised space. In most commuter car parks these will not be necessary, but if the following circumstances exist they must be installed:

- Potential for vehicles to drive directly onto the rail platforms (i.e. the platform runs direct into the car park)
- Potential for vehicles to enter footpaths and cycle routes

Wheel stops need to be constructed as a permanent kerb with allowance for vehicles to overhang a paved area that is additional to any pedestrian movement area. They will be constructed in wood or concrete

Wheel stop requirements must be identified at the design stage of any new car park and or upgrading of existing car park facilities.

## 2.7 Disabled Parking

*Wellington City Council Mobility Parking Policy* states that mobility parking should be up to 33% larger than a standard parking space. The car parks layout used for mobility purposes must take into account , as a minimum, overhead hoists and rear entry vehicles.

The accessible car park must provide a stable, firm slip resistant flat surface with a slope not exceeding 1:50. Flat access must be provided whenever possible between the car park space and the adjoining footpath.

A sign incorporating the international symbol of access must identify mobility car park space(s). The sign should be readily visible from the entrance to the car park, or guide signs should be provided to indicate direction of the space.

Each mobility space must be clearly identified to indicate to others that the parking bay is restricted for use by mobility impaired users only this is achieved by having ground markings of the international symbol of access painted in yellow.

The following measurements are a minimum requirement for safety and ease of use. These reflect the need to encompass both the passenger and drivers requirements and the type of vehicle being used.

Table 4 Standard measurements for mobility spaces (NZSS 1421 Provision of Mobility Parks Off- street, and AS/NZS 2890.1:2004)

Width	Height	Length
3.5m	2.5m	5.0m
For parallel parks an extra length of 1.3m will provide for rear mounted hoists		

The number of accessible car park spaces for people with a disability will be provided in accordance with the following table.

**Table 5 Number of Mobility Spaces per car park AS/NZS 2890.1:2004**

Total number of spaces	Number of accessible car park spaces
1 – 20	Not Less than 1 space
21 – 50	Not less than 2 spaces
For every additional 50 car parks or part of a car park	Not less than 1 space

The following diagrams are examples of car park layouts incorporating the required space for mobility parking. Each space should be located as close to the passenger transport service as possible.

**Diagram 1 Example mobility layout**

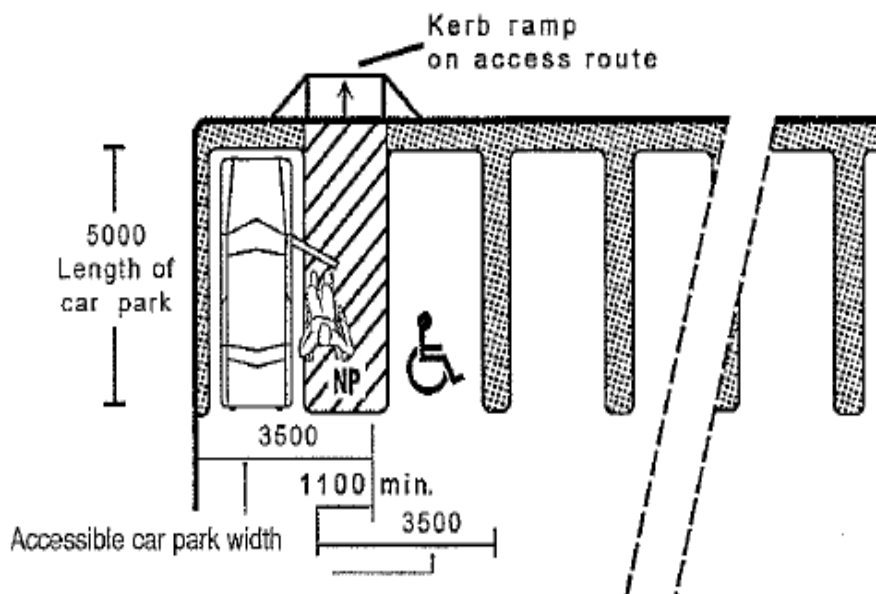
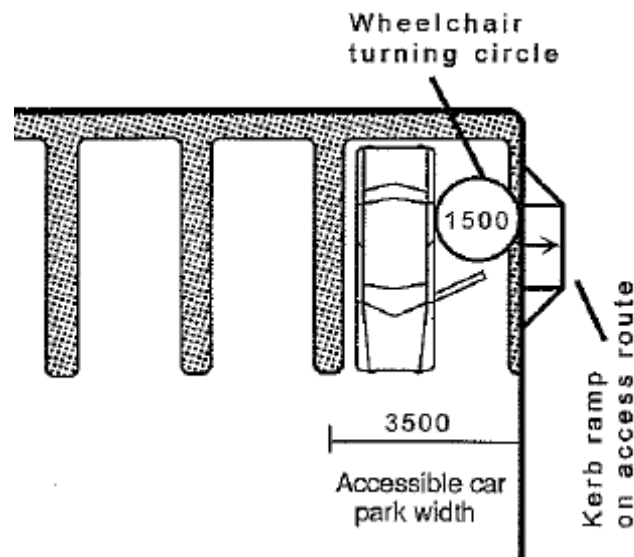


Diagram 2 Example Mobility layout



## 2.8 Safety & Security

Commuter parking facilities must provide a safe environment for users. The design of the facility and the surrounding landscape should provide clear sightlines into and throughout the parking area.

The facility should provide direct access for users, via pedestrian footpaths, to their destinations and vehicles. All car parks must be adequately lit to meet current lighting standards as set out in section 2.8.1

### 2.8.1 Lighting

Good efficient lighting is required for car parks and footpaths to promote the safety and usable areas of the facility. It is also essential to light the pavement markings, mobility kerb cuts, bicycle storage, islands and medians, for visibility and safety from potential hazards.

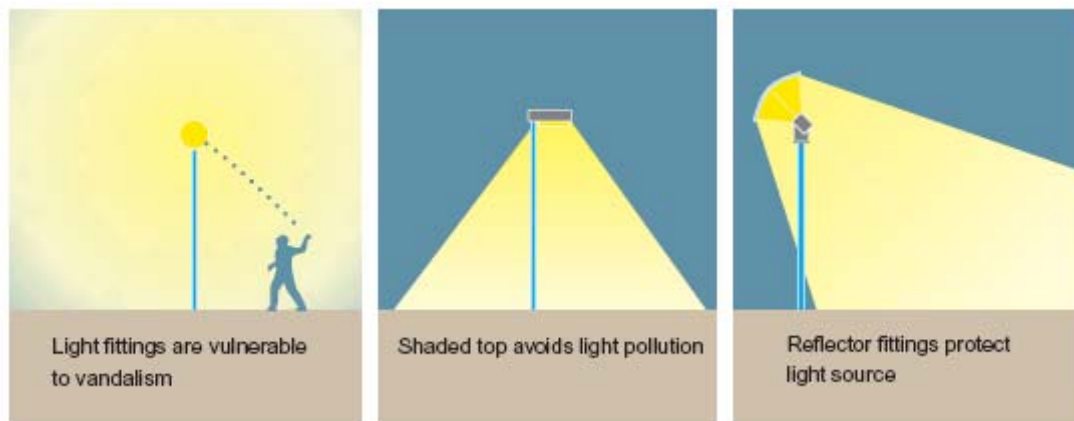
Lighting is critical to the security and safety. It is preferable to achieve a consistent low level of light rather than high levels of light that pools and causes shadows.

Lighting solutions should avoid light pollution not only for the benefit of the local residents but for the surrounding wildlife. This is particularly important if the facility is located adjacent to nature reserve or in residential areas.

Light fittings should be chosen to direct light down to where it is required; flood lighting should always be directed away from residential areas.

Specifications for lamps, lumen value must meet the current standards set out in *Lighting for roads and public places (Category P) (AS/NZS 1158.3.1.2005)*.

Diagram 4 Lighting examples



### 2.8.2 Landscaping Elements

Landscaping is to be used in a positive way to create thresholds and a sense of enhanced, secure and well looked after space. It is not necessary to remove all trees but it is important to be able to see over low shrubs and under limbed up trees. Pruning of trees and shrubs helps to maintain clear sightlines for users and security cameras and creating a more open, well lit and visible environment, as well as removing any sense of seclusion from view of passers by or places to hide until commuters have left. Regular maintenance of all landscaping elements will be required to ensure that the maximum benefit is gained from the design principals and that care is taken to protect the surrounding environment.

Sub soil drainage should be provided for trees and shrubs in planting areas in, or adjacent to car parks. For this and aesthetic reasons, proposals should not include a large number of plantings in small narrow strips. Plants are used to provide colour and texture to make sites more attractive, and to perform particular functions such as screening, defining routes, marking edges and to provide shade. Design objectives can be better achieved in most situations through the use of fewer planting areas with a minimum width of 2.5metres

The above elements should be considered at design and agreed before construction begins; national guidelines for crime prevention through environmental design (CPTED) should be consulted for best practice.

### 2.8.3 CCTV systems

The decision to install CCTV must consider the following:

- Location (remote, hidden from view of local thoroughfare)
- Size of car park (large open space)
- Level of activity of the facility through the day
- Local crime rate figures (NZ Police)

When installing a Closed Circuit Television System (CCTV) within a commuter parking facility a region wide system needs to be taken into account to ensure cost efficiency. However opportunities to jointly work with local police or Territorial Authorities, if they have systems working locally, should be considered.

When designing a new car park or developing an existing car park provision for the possibility of installation of CCTV at a future date should be included.

#### 2.8.4 Vehicle Calming Devices

To improve the general security of all concerned by slowing down vehicles, therefore allowing more frames to be taken of vehicles and their licence plates on the CCTV System. Speed humps also act as a deterrent to boy racers. The diagram below shows speed humps that are bolt-down, traffic-calming ramps made from heavy-duty, recycled PVC. White or amber reflective cat's eyes in each section provide good visibility at night or in bad weather. The most popular speed bump is the 50mm x 4000mm which can be comfortably crossed at safe speeds below 10mph.

These bolt-down speed humps provide a cheap and easy solution to boy racers, as well as providing an asset to GW. Furthermore they are far cheaper than the asphalt alternative



These devices should be considered when developing or upgrading a parking facility. The need for these will be based on the location, size of the parking facility and local crime statistics.

## 2.9 Fencing

Commuter parking facilities in general do not have enclosed fencing, and CPTED principals encourage a safe, inviting usable space. In many circumstances the natural environment of the facility should be taken into consideration when evaluating its access and security.

Fencing in parking facilities should only be constructed for safety reasons, e.g. preventing access to rail corridor and overhead high voltage wires, and to prevented access to private boundaries.

The preferred option for fencing is galvanized steel fencing wire to continue to allow clear sightlines through the car park. However other fencing options can be considered depending on the purpose it is to service. Specification can be found in the *New Building Standards code NZS 3471:1974*.

## 2.10 Signage

Clear visible signage is essential to ensure locality of the parking facility and appropriate use of the facility

Each new or existing parking facilities must display a sign located at the entrance to facility that will identify the purpose of the facility and will contain the following information.

- Purpose of the facility (Park and Ride)
- Station name and road location (for visitors and commuters using the drop off facility)
- Parking liability (Users of this parking facility do so at their own risk Greater Wellington accept no responsibility for loss or damage to vehicles or personal injury). This statement is designed to ensure that commuters take responsibility for their own property and that liability does not lie with GW.
- Towing and enforcements rules including contact details (Tow Company) This notice is important as cars often park illegally preventing access or restricted access.
- Metlink logo and contact details (Free phone and Web site) to provide contact details to report damage to the car park which requires attention.

Below is an example of the type of sign that must be clearly displayed at all times.

### Sign 1 Park and ride





Other signage such as CCTV surveillance and security patrols are to be applied at each individual location providing these services.

### Sign 2 Security CCTV



### 2.11 Cycle Parking

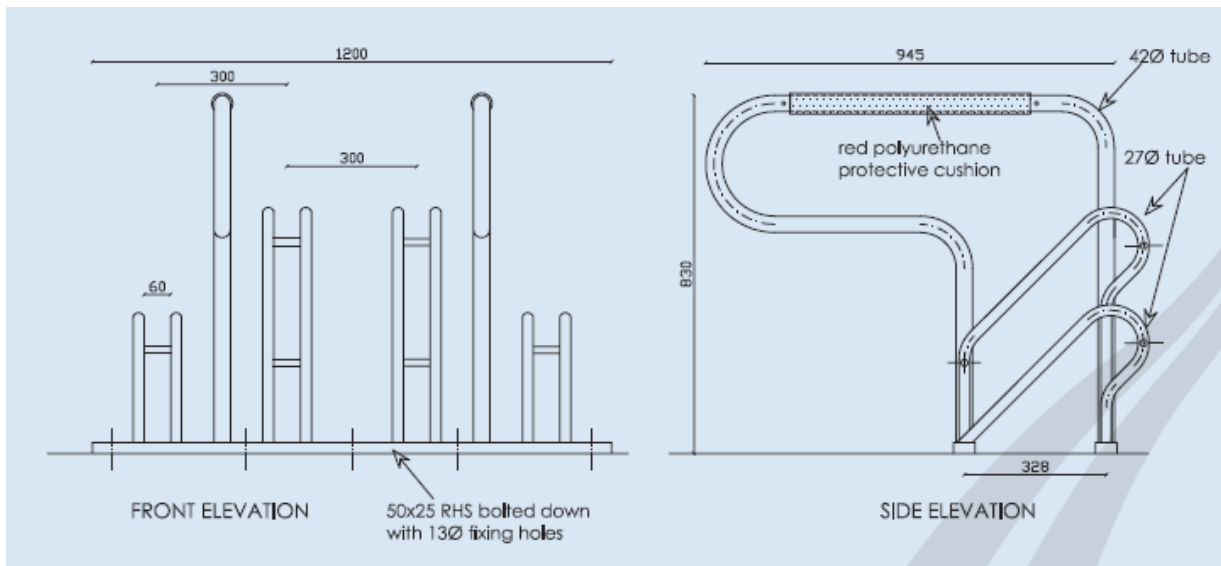
The provision of well located cycle parking is essential if people are to be encouraged to use a bicycle as a means of transport. By indicating that cyclists are welcome at commuter parking facilities acts also as a message to motorists to consider cycling in the future.

This is consistent with the following *RLTS policy 1.12 Walking & cycling integration, Greater Wellington will seek to improve integration between passenger transport and cycling commute modes. Increase the number of cycle lockers/cycle racks at rail stations and bus interchanges.*

Location of the cycle storage facility is absolutely critical to its success. It must be located as close as practicable to the main entrance of the rail station; otherwise it will not be used. It should also be located in an area that is constantly under surveillance by the general public and (CCTV if available) and in well lit areas.

GW has a preferred design of bicycle rack as shown in the diagram below. This is a standard construction using tubular frame of galvanised steel and surface mounted which prevents complicated installation. (Drawing provided by Street Furniture NZ)

Diagram 3 Red Baron Cycle Rack



The number of cycle racks will depend on the design of the car park and the available space that meets the criteria above.

As a guide to installation numbers this will largely depend on demand or the ratio of 10% of the number of car park spaces should be made available for cycle parking.

Installation dimensions as per the *Transit supplement ISBN 0-478-10559-2*

## 2.12 Parking System Equipment

At present GW do not charge for commuter parking but consideration should be given at design stage for the location and type of equipment necessary to implement car park charging. Future proofing for installation of equipment at a later date should include;

- Power source and location relevant to equipment location
- Ticket machine standing pads (location/s)
- Underground ducting for cable connection.

### 3. Maintenance

All car parks are to be kept clean of all deleterious material. This will include build up of loose sealing chips, the removal of rocks, gravel, dead animals, animal droppings, litter, vegetation and glass.

The total surface of the car park will be swept including all channels and around medians, islands, flowerbeds, etc.

Channels shall be kept clean of any rubbish, which would cause a problem of blockage at sump tops, and this includes the removal of spoil and weed growth from the channels. Channels shall be kept in a clean and tidy state.

All sump tops are to be kept clear of any rubbish. It is essential that rubbish be removed from the sump tops to ensure free flow of water during times of wet weather. Particular attention shall be paid to the accumulation of leaves in autumn. Rubbish is to be removed from the site completely, it is not acceptable to allow rubbish to be pushed down through the grating or allow it to enter the sump barrel through the rear entry of the sump top.

Full maintenance details for car park maintenance including sump pumps and performance standards can be found in the GW Guidelines for Passenger Transport Infrastructure.

Table 1 Response times for commuter car parks.

<b>RESPONSE TIMES</b>	
<b>ITEM</b>	<b>RESPONSE TIME</b>
Hazardous or offensive litter	Within 2 hours of notification
Hazardous or offensive condition which could cause damage	Within 2 hours of notification
Urgent, with a risk to life	Within 1 hour of notification
Genuine complaint from ratepayer or instruction from Council	Same day
Graffiti removal	Within 48 hours
Advice that work is sub-standard	Next day
Sump cleaning <ul style="list-style-type: none"> <li>• Urgent, with risk to life</li> <li>• Urgent with flooding to private property</li> <li>• Flooding to roads</li> <li>• Other/non-urgent</li> </ul>	Within 1 hour of notification Cleaned within 4 hours of notification Cleaned within 12 hours of notification Cleaned within 2 days of notification

#### 3.1 Car park surface (Pavement) maintenance

Regular inspections and condition reports will help to determine the level of maintenance required for both regular work and immediate repair necessary to keep GW assets safe and operational.

Pavement maintenance provides for normal care and attention of the car parks in order to maintain its structural integrity and serviceability, examples include;

- Pavement patching and repairs
- Relining annually
- Landscaping annually
- Routine maintenance, and repair of surface water channels and drainage
- Pavement re seals (resurfacing when the seal needs to be re applied).

All other facilities associated with commuter car parks identified in these standards are to have regular maintenance inspections and repairs carried out as appropriate.

## **4. Audits and Reports**

Comprehensive records must be maintained of car parks and sumps cleaned by location, sweeping location and lengths completed which shall be made available to the Greater Wellington(GW) when requested and included with the monthly report of work completed. The report shall also contain schedules of complaints received and action taken and problems of excessive detritus and problem sumps.

Joint inspections will take place between GW and the TA at agreed park and ride locations for inspection. The TA will be required to keep operational records of cleaning and maintenance, these records must be made available for inspection by GW upon request.

### **4.1 Annual Condition Report**

On an annual basis it will be required that a report is commissioned to establish the current condition of each commuter parking facility.

The condition of the following will be assessed and included within the maintenance programme:

- Car park pavement condition (surface)
  - Pot holes and surface cracking
  - Foot paths
  - drainage, water ponding,
  - Road markings
- Lighting Lux levels and condition of lamp fittings
- Access
  - Entry and exit facilities
  - Walking and cycling routes
- Landscape and surrounding Environment
  - CPTED principals
  - Boundary fencing
- Cycle facilities
  - Usage of current facilities
  - Condition of racks / lockers
- Signage
  - Facility information
  - Security signage
  - Mobility signage
  - Damage report signage

## **5. Demand Review**

A capacity review is required to be carried out on an annual basis and should include current and future demand (including any repressed demand) for the commuter parking facility.

Consideration is to be given to the potential to increase the passenger transport catchment size. This is a reflection of the number of people who are likely to access passenger transport services, irrespective of access mode. This is likely to include a diversion rate from private car based on the overall journey cost including fares, time and experience.