

CARPARK⁺

SAFER PARKING

Car Park Safety Manual

Compiled by Safer Auckland City (SAC)

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Foreword

The car park safety accreditation scheme was a response to reduce the incidence of car crime in cities throughout New Zealand. The Safer Auckland City partners, including Auckland City Council, Auckland City District police, Ngati Whatua o Orakei Maori Trust Board and the Ministry of Justice's Crime Prevention Unit, sponsored the development of the accreditation system.

The features outlined in car park safety accreditation literature will assist planners, designers and car park owners to become strategic and proactive in the implementation of safety measures in car park buildings and surface car parks. The standards will also reduce the opportunity for car crime and increase the levels for personal safety of patrons and those working in car park facilities.

Accrediting car parks for safety is not new. The principles outlined in this publication were adopted from international literature. Staff would like to acknowledge the publications from the Association of Chief Police Officers in England and Wales who, in partnership with the British Parking Association and Home Office, produced the 'Secured Car park Award Scheme: Guidelines for Self Assessment'. This document was used as a basis for the car park safety accreditation scheme. The Melbourne Car Parking Accreditation Guidelines documentation developed by Melbourne City Council was also used as a guide. In addition, the publication from the New South Wales Police Service, Safer by Design Unit 'Companion to the Safer By Design Evaluation' was used to provide an understanding of what is required to improve safety standards in carparks.

The Purpose of Car park accreditation

The purpose of accrediting car parks for safety is to:

- reduce the incidence of vehicle crime and to improve the ease with which customers can utilise car parks safely
- improve standards of safety in all car park facilities
- encourage older car parks to apply for accreditation. Older car parks might not meet all the safety criteria because of plant considerations, however this will not be a barrier to successful accreditation
- provide standards for planners and designers of car parks to plan for safety

The information outlined in this booklet is to be used when:

- Applying for safety accreditation for your car park
- Designing and constructing any new car park
- Improving and upgrading the general safety standards of existing car parks

Introduction

The objective of the accreditation scheme is to certify car parking facilities for the implementation of safety measures. These measures target crime reduction initiatives. They include features involving the principles of crime prevention through environmental design (CPTED), which recognises, amongst other things, the importance of adequate levels of surveillance, adherence to recommended lighting levels, appropriate security options and vehicle access options. The accreditation process also considers effective management systems and responsible management practices. Such a combination is intended to promote a safer and more secure car park environment, to encourage safe public use and restrict opportunities for crimes to be committed and/or accidents to occur.

Some older car parking facilities might not meet all the outlined criteria because of dated design options, but these car parks can still be successfully accredited, as each car park is considered on its merits. The emphasis of accreditation is on progressing improved safety standards in car parks. Only car parks that clearly cater for the safety and security of customers and their property will be awarded this certification.

When safety accreditation is awarded, this shows customers that operators have implemented a customer-focused approach to effectively reduce the level of crime and enhance potential safety in the facility. Once a certificate is awarded, a biennial audit process will determine that compliance standards have been maintained, which is a requirement to receive ongoing accreditation. Continued improvement and maintenance of safety standards will be judged during the biennial audit process.

Possession of safety accreditation does not guarantee a crime or accident free car park, and it should not be used to market the facility as a “crime/accident free zone”, which could mislead the public. The award will take due consideration of statutory requirements, and in all instances where there is a tension between statutory and accreditation standards, the statutory requirements will prevail e.g. fire, health and safety.

Successfully gaining accreditation does not create any liabilities to the owner or operator over and above their general contractual obligations. Safety accreditation will be optional for car park operators.

This publication will clarify requirements for car park accreditation. If there are any areas needing further clarification, please contact the car park safety team in the transport group, by phoning the call centre at Auckland City Council on 397-2020.

The Safety Accreditation Process

Required steps to become an accredited car park:

1. Complete the self-assessment form provided with this booklet.
2. Refer to the safety criteria in this booklet.
3. Ensure that Table A is completed in the self-assessment form. Table A is completed for those questions that cannot be answered with a 'Yes' in the questionnaire. Table A gives the car park owners the opportunity to provide a brief comment as to why it might be difficult to achieve compliance for a particular aspect of the accreditation questionnaire. This will be taken into account by the safety accreditation team at the time of the site visit.

Send the completed application form to your local authority:

For Auckland City:

Jenny Matthews
Transport: Parking Operations
Auckland City Council
Private Bag 92-516
Wellesley St
Auckland 1141

For Waitakere City:

Michael Alofa
Safe Waitakere
Waitakere City Council
Private Bag 93 109
Henderson
Waitakere City 0650

For Hutt City:

Adrian Peoples
Car Park Safety Accreditation
Community Development
Hutt City Council
Private Bag 31-912
Lower Hutt 5010

4. On receipt of the application, a member of the safety accreditation team will arrange a site inspection of the car park. This site inspection will concentrate on the features outlined in the Car Park Safety Accreditation Manual. The visit will be arranged with the applicant named on the application form.
5. The site inspection will be performed by trained assessors who are part of the safety accreditation team. The team will include representatives from the following organisations:
NZ Police
Territorial Local Authority for your area (local council)
Trained independent assessors
6. The outcome of the site safety assessment will be given to the applicant after the site visit has been completed. A full decision will be forwarded no longer than one calendar month after the site inspection.
7. A safety accreditation certificate will be provided to successful applicants on completion of a favourable site report. Applicants whose car parks do not qualify for accreditation will receive information outlining what needs to be achieved in order to successfully gain accreditation status.

Costs

Costs will be uniform across New Zealand and are per application as determined by each Territorial Local Authority.

The costs include charges against the following:

- an audit against the criteria within the Car Park Safety Accreditation Manual.
- an on-site assessment
- preparation of reports and feedback to verify necessary actions
- issue of the safety accreditation certificate

Roles and Responsibilities

1. The Safety Accreditation Team will:

- complete specialised training in Crime Prevention through Environmental Design (CPTED) principles as it relates to car parks and car park safety accreditation, to a level conducive with competence to conduct assessments and audits of car parks to the satisfaction of the training facilitators
- be available to conduct assessments on a rostered, monthly basis as agreed with each Territorial Local Authority's Transport group representatives (or a similar group of representatives)
- review applications for accreditation and conduct an on-site assessment for each
- complete an on-site report of application
- make recommendations for accreditation, or outline improvements needed to qualify for accreditation
- submit completed report and recommendations to safety accreditation administrator in the Territorial Local Authority
- The assessment team will comprise three assessors, of which one NZ police representative must be a part in each instance

2. Territorial Local Authority will:

- provide nominated council officers to be part of the safety accreditation team
- advise on those safety guidelines that refer to crime prevention through environmental design (CPTED)
- give appropriate groups of council oversight of the overall programme, to take responsibility for reviewing the detail of the programme and its processes where appropriate

3. New Zealand Police will:

- provide officers to be part of the safety accreditation team
- advise on all issues of risk analysis and necessary security features for car park buildings
- raise any areas of concern that must be addressed, and will need to be rectified before certification is approved
- be part of any review process that falls outside of the duties of the safety accreditation team

4. Independent Assessors will:

- receive the specialist car park training as outlined in (1) above trained
- will form part of the accreditation team pool

5. Self assessment process

- To be granted accreditation, a car park must achieve an effective combination of preventive security features, each of which will be considered on an individual basis in the survey of the premises.
- The self-assessment form is intended to provide a comprehensive list of security features that help to ensure a consistent approach when assessing car parks.
- It should be noted that failure to positively address all the criteria contained in the self-assessment form will not automatically preclude a car park from achieving accreditation status.
- The final decision on all applications rests with the accreditation team.

6. Disputes

- In the event of a dispute between the members of the accreditation team, the representatives will seek the advice of a neutral third party. This third party is to be trained in CPTED rules as they apply to car park safety and will be decided upon by the Territorial Local Authority.
- Similarly, any dispute between the accreditation team and car park owners will need to be resolved by a neutral third party that includes senior representation from both the New Zealand Police and the Territorial Local Authority.

7. Site inspection

- The safety accreditation certification recognises that the causes of crime, fear of crime, and the perception of crime can be attributed to a number of factors. These include local, regional and national trends, urban locations, economic and social factors, car park style and management practices.
- Accordingly there are a number of effective measures for reducing crime. It is necessary to consider various alternatives in an attempt to identify the most effective, economical and practical solutions for individual car park operators.
- This means that it has been necessary to create a degree of flexibility within the safety accreditation certification scheme. Each car park is to be treated on its own merits during a site inspection. The safety criteria outlined in this booklet and the car park safety accreditation manual are statements of desired outcomes.
- Some car parks will not easily comply with all requirements and local considerations might dictate the priority for some safety features in contrast to others. These matters will all be taken into account at the time of the site inspection. Consequently, the certification scheme will apply to as many car parks as possible, without reducing the quality of the certification.
- Site inspections are to be conducted by pre-arrangement with the management of the car park.
- The visits will be at a mutually convenient time to all parties. A minimum of two members of the safety accreditation team will be present at each site inspection and, at this visit, the team will inspect all evidential submissions to support the application.

8. Application Decision

- Applicants are to be advised of the outcome of the safety accreditation process within one calendar month of the site visit and the examination of supporting documentation.
- Notification of rejected applications will be accompanied with detailed explanation, together with measures that must be undertaken to achieve a successful re-application.
- Failed applicants who upgrade their premises and are inspected within a six-month period (following the initial inspection), will not be subject to any additional charges.

Safety principles – crime prevention through environmental design (CPTED)

The safety features for accreditation in car parks have been derived from crime prevention through environmental design (CPTED) principles. This booklet concentrates on these features, and explains them so that they can be implemented in car parks. CPTED is a crime reduction strategy that focuses on reducing the opportunities for crimes to be committed.

CPTED employs four key principles. These are:

1. **Surveillance**
2. **Access Control**
3. **Territorial reinforcement**
4. **Space and activity management**

1. **Surveillance** includes features such as car park layout and design, lighting levels, technical supervision including the use of CCTV cameras and patrols, and vegetation maintenance
 - *Natural surveillance* is achieved if you can see and be seen by others. Natural surveillance highlights the importance of layout, orientation and location of the car park; the strategic use of a car park design; landscaping and lighting. Natural surveillance is a by-product of well-planned, well-designed and well-used space.
 - *Formal surveillance* is achieved through the tactical positioning of guardians. An example would be use of on-site patrols in car park buildings.
 - *Technical surveillance* is achieved through mechanical/electronic measures such as CCTV, and help-phones. Technical surveillance is commonly used to supervise isolated, higher-risk locations.
2. **Access control** includes making the number of entry and exit points to and from car parks clearly visible and easily accessible, keeping entry and exit points to a minimum and using security devices such as boom gates, disabled parking features, and vehicle access systems which clearly delineate vehicle and pedestrian routes.
 - Access control can measure, restrict, channel and encourage people, bicycles and motor vehicles into, out of and around targeted sites.
 - Clear directional signage, desire-lines and formal/informal routes are important crime prevention considerations for ensuring safety in car parks.
 - Access control is used to increase the time and effort required to commit crime and to increase the risk to criminals.
3. **Territorial reinforcement** includes the boundary treatment of car parks and the importance of local guardians, clear orientation and signage.
 - Criminals rarely commit crime in areas where the risk of detection and challenge are high. People who have guardianship or ownership of areas are more likely to provide effective supervision and to intervene in crime than passing strangers. Effective guardians are often ordinary people who are spatially 'connected' to a place and feel an association with, or responsibility for it.
 - *Territorial Reinforcement* uses actual and symbolic boundary markers, spatial legibility and environmental cues to 'connect' people with space, to encourage communal responsibility for public areas and facilities, to communicate to people where they should and should not be, and what activities or actions are appropriate for an area.
4. **Space and activity management**, to create quality environments, includes vandalism eradication policies, vegetation maintenance policies, management policies including advice on security measures
 - Space and activity management strategies are an important way to develop and maintain *natural* community control.
 - Space management involves the formal supervision, control and care of the public domain. All space, even well planned and well-designed areas, needs to be effectively utilised and maintained to maximise community safety.
 - Places that are infrequently used are commonly abused.

National guidelines for crime prevention through environmental design (CPTED) in New Zealand

The above four key principles form the foundations of the National Guidelines for CPTED in New Zealand. These guidelines were developed by the Ministry of Justice, for those involved in planning, designing and managing publicly accessible places.

The National Guidelines define seven qualities that characterise well-designed, safer places. These qualities form the basis for many of the accreditation criteria contained in this booklet:

1. Access: safe movement and connections

Places with well-defined routes, spaces and entrances that provide for convenient and safe movement without compromising security.

2. Surveillance and sightlines: see and be seen

Places and spaces that can be clearly seen by people undertaking activities, or overlooked by buildings, and that have clear sightlines and good lighting provide maximum visibility.

3. Layout: clear and logical orientation

Safety is enhanced and crime is discouraged by clear signage that assists in orientation and navigation for the public.

4. Activity mix: eyes on the street

Places where the level of human activity is appropriate to the location and creates a reduced risk of crime and a sense of safety at all times by promoting a compatible mix of uses and increased use of public spaces.

5. Sense of ownership: showing a space is cared for

Places that promote a sense of ownership, respect, territorial responsibility and community.

6. Quality environments: well designed, managed and maintained environments

Places that provide a quality environment through well-established management and maintenance processes discourage crime and promote community safety in the present and the future.

Improving the safety of car parks – safety criteria

The following criteria assess the safety of car parks:

- 1. Access: safe movement and connections**
- 2. Surveillance and sightlines**
- 3. Layout: clear and logical orientation**
- 4. Activity mix: eyes on the street**
- 5. Sense of ownership: showing a space is cared for**
- 6. Quality environments: well designed, managed and maintained environments**

This document provides a full set of criteria and explains why they are important safety considerations. Not all criteria contained in this manual will be necessary to gain accreditation status.

1. Access: safe movement and connections

Entry and exits should be safe and convenient for customers while restricting unauthorised access. The safe flow of vehicles and pedestrians throughout the car park arises from effective layout and design that encourages well-defined routes and spaces that are logical and clear.

Access: vehicle movement

General features

- a) Access control - exits/entrances are safe and convenient with entrance and exit points reduced to a minimum
- b) Unauthorised access can be challenged on all entrances/exits
- c) Logical traffic flow throughout the car park
- d) Traffic movement is controlled
- e) One way circulatory system



Why do we need these features?

Access control and minimising the number of entry/exit points:

- reduces unauthorised access into the car park and increases both the effort required to commit crime and fear of detection
- effective internal traffic circulation ensures users have a clear understanding of traffic flow
- users who are able to read their surroundings and orientate themselves easily in an environment, feel more confident and safe.

Safety criteria

a) Access control: safe movement and connections

- Vehicle access and exit points should be minimised to reduce unauthorised access and to allow easy orientation for users
- Natural surveillance may be adequate for small, low risk facilities, however large or higher risk car parks require formal access control. Access control should be provided for all vehicle entrances/exits to the car park. Boom-gates, manned control points or other access control devices should be provided to regulate vehicle movement and increase the effort required to steal vehicles from car parks



b) Unauthorised access:

- The use of employees tasked with access control can increase risk to offenders and crime effort
- Where the facility is not open 24 hours a day, all vehicle entrance and exit routes should be capable of being fully secured. After hours contact details should be provided to release vehicles if necessary
- Locate exit booth near the entry lane, so that the entry is perceived to be staffed. This also orientates patrons as to where the exit is located

b) Circulation: logical traffic flow

- Vehicles should be encouraged to circulate in a logical and continuous manner
- Direct exit routes should be clearly indicated from all parking areas
- Movement of vehicles through the car park should be controlled and a one way system should be utilised

c) Controlled traffic movement

- Signage, directional arrows and speed bumps should be used to channel traffic and keep vehicle speeds down. This increases the time and effort involved in committing crime, particularly car theft. Clear demarcation should be provided to encourage people and vehicles to use only designated routes
- Similar traffic flow should be used on each level of multi level car parks to allow easy orientation
- Ramp corrugations reduce opportunities for corkscrewing and improve vehicle traction. Occasionally, skateboarders use multi-storied car parks for corkscrewing or ramping (riding ramps from top to bottom). This is a dangerous practice and there is strong anecdotal evidence that car parks used by youth for entertainment, experience high levels of vandalism and theft from motor vehicles
- Install wheel stops or landscaping to prevent inappropriate movement of vehicles through the car park
- Internal circulation and facilities should be designed based on an access hierarchy, with pedestrians and cyclists taking priority over private vehicles. Pedestrian crossings, paths and signage should clearly enforce pedestrian rights of way.



Access: safe pedestrian movement

Provide safe and convenient pedestrian movement to and from, and throughout, the car park.

General features

- a) Concentrate pedestrian activity
- b) Separate pedestrian and car traffic
- c) Links from the car park to nearby destinations need to be clearly defined and safe



Why do we need these features?

Concentrating pedestrian movement enhances natural surveillance and assists in the safety of car park users. Perceptions of safety are increased when links to and from the car park are safe and convenient.

Safety criteria

a) Concentrate pedestrian activity

- Minimise the number of pedestrian access/exit points so that pedestrian movement is concentrated. Where possible access/exit points should be located next to manned kiosks so that staff can monitor activity
- Locate main pedestrian entrances/exits at the front of the site and in view of the street



b) Separate pedestrian and car traffic

- Separate pedestrian and vehicle traffic at the entry/exit points as well as throughout the car parks and provide pedestrian crossings where walkways and vehicle routes cross each other
- Pedestrian routes through car parks should allow for a clear visible area (such as a vehicle route) between the route and parked cars, to minimise opportunities for hiding places or entrapment



- Entrapment spots on pathways leading to car parks must be blocked off and the pathways evenly lit to avoid the opportunity for crime to occur

c) Links from the car park to nearby destinations need to be clearly defined and safe

- Provide wide footpaths with clear sightlines to destination points. Opportunities for pedestrians to take avoidance action if necessary should be provided
- Provide pedestrian walkways in convenient locations to concentrate and channel pedestrians. Exterior walkways in large surface car parks should be covered to provide protection from the elements
- Fire exits and stairs in car parks need to be checked that they are self-closing and self-locking rather than vandalised, able to be chocked open, and/or left unsupervised
- Waiting areas and entrances to lifts and stairs should be open to the exterior and/or parking areas to reduce entrapment opportunities. Glazed walls or screens can be used for protection from weather
- All pedestrian routes should be fitted with lockable full height gates or grilles, provided with anti theft hinges, and capable of being secured in both 'open' and 'closed' positions
- Clear lines of sight should be maintained from car parking areas to pedestrian exit points



2. Surveillance and sightlines

- All car parking areas need to have clear sightlines and appropriate lighting so that the opportunity to see and be seen is provided. Where possible car parks should be situated in areas where neighbouring activities provide surveillance opportunities of the car park.
- The location, size and amount of natural surveillance available to the car park in conjunction with the incident history and profile for the immediate area determine the level of risk of crime in car parks. Using this information the car park can be classified as follows:

Low risk - small to medium car parks in which minor vandalism and occasional theft problems may occur, but no personal injury incidents and no car theft may reasonably be expected.

Moderate risk – car parks where graffiti, vandalism or vehicle crime may occur during non-business hours but there is no reason to expect personal attacks.

High risk – large car parks (>200), car parks where personal injury incidents have occurred or where vehicle crime occurs regularly. Park ride facilities, due to the length of stay and low presence of users at off peak times are considered to be high risk.

General features

- a) Good layout and design should increase opportunity for natural surveillance
- b) Clear sightlines throughout the car park
- c) Appropriate landscaping
- d) Technical surveillance
- e) Formal surveillance
- f) Lighting



Why do we need these features?

- Planned location and layout allows natural surveillance into the car parks that increases the level of informal supervision. Poor layout and lack of clear sightlines create visual obstruction. From a criminal's perspective, such obstructions provide opportunities for cover and entrapment.
- Formal surveillance and security are required in moderate to high-risk car parks to reduce the opportunity for crime and instil a sense of safety for users.
- There are four safety criteria to consider for surveillance and security:



- a) natural surveillance
- b) sightlines
- c) technical surveillance
- d) formal surveillance



Surveillance

a) Create opportunities for natural surveillance through good layout and design

- Car parks should be located next to uses that provide natural surveillance into or over the site. Locating car parks on front sites next to busy roads or footpaths enhances natural surveillance. Windows and entrances of nearby buildings should overlook the car park to maximise surveillance. Activities such as late night retailers, restaurants or other entertainment facilities are particularly beneficial due to their generation of people and late opening hours
- Avoid blank walls or solid fencing fronting the street or on side/rear boundaries where these will block opportunities for natural surveillance. Multi-storied car parks with open sides and surface car parks with visually permeable fencing are more easily supervised by passing pedestrians and motorists
- Use dark coloured open mesh or slat perimeter screens, as these are easier to see through when finished in a dark exterior colour. White, pale or light finishes reflect light towards the observer. The glare restricts an ability to focus on objects beyond the screen.



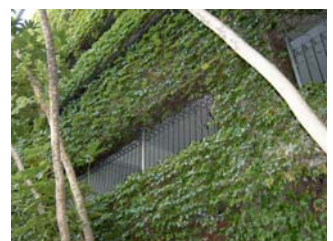
b) Clear sightlines

- Ensure a grid row configuration is used for parking bays, to allow good lines of sight between vehicles and through the car park
- Ensure all parking areas remain as open as possible and do not contain visual obstructions. Concrete columns, solid internal walls, service rooms and enclosed fire exits create significant visual obstruction in car parks
- Avoid changes in grade or topography that inhibit sightlines. From a criminal's perspective, such obstructions reduce supervision and provide opportunities for cover and entrapment
- Ensure ceiling heights are above 2.2m. Facilities with below average ceiling heights (less than 2.2 m) appear visually constrictive. It is also easier to vandalise lighting fixtures in these facilities. Open deck storeys with high ceilings (greater than 3m) can be effective in capturing available daylight



c) Landscaping

- Islands of landscaping and large trees or banks within surface car parks can create visual obstructions. Lower tree limbs should be above average head height and shrubs should not provide easy concealment. A yardstick height of 900mm (maximum) is often applied to shrubs in at-risk areas
- Vegetation can significantly diminish the effectiveness of external lighting. Designers and gardeners should consider the size, shape and density of plants near external lights. Poles should not be used as stakes to support plant growth
- Dense vegetation located beside or within car parks can provide concealment and entrapment opportunities. Species should be selected on the basis of their height, shape, and bulk
- Use green-screens on blank walls or fences. Green-screens are wall-hanging plants that cannot be hidden behind. Comprising shrubs,



creepers or vines, green-screens protect walls and other susceptible structures from graffiti and vandalism. Green-screens should not cover windows or other vantage points

- A vegetation maintenance plan should be part of business as usual practice for car park managers.

d) Technical surveillance

- **Closed Circuit Television (CCTV)** can be an effective crime prevention tool when combined with appropriate lighting, targeted at particular crime and supported by good management, monitoring and responses
- High risk car parks or car parks containing areas with limited opportunities for natural surveillance, poor sightlines or a history of crime should use CCTV in conjunction with other forms of security
- CCTV should cover all areas of risk particularly entrapment spots such as enclosed areas for stairs and lifts in buildings, and for at surface car parks, areas that are enclosed so that people cannot move around quickly with 3 metres of space on either side of them
- CCTV should be monitored whenever possible. Unmonitored CCTV passively watches crime rather than prevents it. Persistent offenders are likely to test environments and in so doing, identify and exploit system weaknesses
- Monitored CCTV cameras linked to public address systems can facilitate immediate communication between guardians and patrons
- Signage should be clearly displayed relaying information that CCTVs are operating
- The ability to clearly identify and record faces, shapes and colours (over a targeted range) is an accepted yardstick of CCTV effectiveness
- The use of CCTV must comply with the Privacy Act 1993.



e) Formal surveillance

- Manned security kiosks in larger car parks are desirable
- The visible presence of uniformed security officers is one of the best crime prevention methods and should be used in high risk facilities
- Formal patrols in car parks that are experiencing a number of thefts are an effective means of reducing crime. Such patrols are a management tool that can be formed and dispersed as required according to hot spot location and time
- The number of patrol staff and patrolled routes will vary dependent on the premises, but patrols should be random, cover vulnerable areas of the site and provide a highly consistent visible presence. The following evidence needs to be provided:

- An analysis of how staffing levels were arrived at, including 'business as usual' scenario as well as security patrol
- Details of the required patrolling levels and frequency of the patrols
- Monitoring method to verify that patrols have been undertaken as required

f) Lighting

Lighting is considered the most important security feature in a car parking facility. All car parking areas need to be well lit and lighting regularly maintained, to ensure that bright and even lighting is maintained in all areas of the car park.

General features

- Lighting should enhance natural surveillance
- White lights are the ideal for all areas of the car park and pedestrian links
- Low pressure sodium lamps should be urgently phased out
- Maintain lux levels of lamps in car parks
- Ensure bright and even lighting in enclosed areas
- Treatment of ceilings
- External lighting.
- Security lighting
- Pedestrian lighting
- Lighting levels for outdoor car parks



Why do we need these features?

There is a proven correlation between poor lighting, fear of crime, the avoidance of public places and crime opportunity. Effective lighting reduces fear. If people can see and be seen, there is an increase in perceptions of safety, community activity is encouraged and visibility is improved. Good lighting discourages offenders who fear detection and apprehension.

Safety criteria

a) Lighting should enhance natural surveillance and must meet minimum national standards

- Crime reduction and increasing the perceptions of safety are specified as key objectives in NZ Lighting Standard ASA/NZS 1158.
 - For external lighting standards, information is outlined in Part 3.1 of the ASA/NZS 1158
 - For internal lighting of car parks, refer to the AS/NZS 1680 Interior lighting Part 1 Section 1
- Lighting for outdoor car parks will vary depending on the use and security risk. Refer AS /NZS 1158.3.1 2005 Table 2.5 to determine category
- Ensure that lighting is vandal resistant, complying with required uniformity and optimum spacing. Refer AS /NZS 1158.3.1 2005
- Internal car park lighting should conform to a standard of 50 lux at a minimum uniformity ratio of 0.3
- External car park lighting should conform to a standard of 10-15 lux at a minimum uniformity ratio of 0.4
- Disability parking requires higher levels of illumination. Refer AS /NZS1158.3.12005, Table 2.9, category P12
- Provide consistent lighting that does not create harsh shadows and ensure that lighting levels are consistent over the rest of the car park (uniformity) whilst avoiding high levels of average luminance
- Design lighting that can be on at all hours after dark while the car park is accessible or operated on a time clock or similar



- Ensure all lights are working always

b) White lights are the ideal for all areas of the car park and pedestrian links

- Clarity of vision - white lights, or induction lights that give off a whiter cooler light are the best lights to use in car park buildings as these lights allow for clarity of vision
- Detail and colour identification - parked cars can easily be identified for colour and other details. Similarly, witnesses can clearly identify details of crime scenes, and characteristics of offenders

c) Low pressure sodium lamps (orange/yellow lights) should be urgently phased out

- Yellow/orange coloured lights are not preferred – these are low-pressure sodium lamps, they are not effective for use in car parks as they do not depict colour and detail
- Pedestrians are less likely to use and enjoy environments that are lit by low-pressure sodium lamps because they do not instil a sense of safety



d) Maintain lux levels of lamps in car parks

- Research has shown that many old and new car parks fail to meet average and minimum lighting standards. Within 12 months, tubes can lose up to 20% of their capacity resulting in facilities that fall below recommended levels
- A non-technical measure of lighting effectiveness in public car parks is that lighting should be bright and even enough to enable a car park user to see into the rear seat of a parked car before they enter it



e) Bright and even lighting in enclosed areas

- Enclosed areas in car parks such as fire-exits, lift areas, stair wells and waiting areas all require bright, even lighting
- Research has identified that the above areas are often under-lit, poorly maintained and heavily vandalised. (McCamley, P.1999)



f) Treatment of ceilings

- Ceilings and vertical structures should be white to reflect light throughout the car park. Painted facilities not only look larger and more spacious than unpainted car parks, but lux levels are increased without adding fixtures. Painting can reduce the number of lights required to illuminate a facility – an ongoing energy saving
- Roof soffits, ceiling mounted signs, air conditioning ducts, and pipes should not reduce the effectiveness of lighting in car parks. This needs to be considered when new car park buildings are being erected



g) External lighting

- Illuminate all external edges and access points to car park buildings during opening hours of the car park
- Lighting covering all areas of surface car parks should be provided unless car parks are not used and fully secured at night. All parking areas and vehicle and pedestrian access points need to be well lit
- To allow for the adjustment of driver and pedestrian vision, lighting intensity into covered or underground car parks should be graduated. Brighter lights should be used at the entrance and pedestrian access ways, while dimmer light should be used elsewhere



Security lighting

- Security lighting should enhance areas so that light is projected in a manner that enables clear vision for observers and clear sight lines of vantage-points
- In commercial applications such as car parks, observers are likely to be passing motorists or pedestrians on the outside of the car park. In this case, lights should point inwards towards the area in need of protection



Pedestrian scale lighting

- Lighting in public places should cater for likely pedestrian user groups
- Pedestrian scale lighting along pedestrian pathways and other local well-used routes that lead to car parks encourages surveillance, thereby making the area safer
- Entrapment spots on the external wall of the car park (often 3 sided gardens) and on pathways leading to the car park entrance should be blocked off or evenly lit to avoid the opportunity for crime
- The lighting should also try to conform to the Auckland City Council Lighting Guidelines which states the following:



Auckland City Council lighting planning prompts for outdoor car parks

Car parks include exterior car parks in locations such as premier parks, sports fields, town and suburban centres and neighbourhood parks.

Lighting must address the following:

- excellent sight lines to encourage natural surveillance from people in the area
- direct access from pedestrian paths to destinations
- a person must be able to clearly identify vehicles, exits, entrances and other approaching people
- pedestrian scale lighting is critical for outdoor car parks
- provide lighting that illuminates both parking bays circulation routes and signage
- provide visual guidance to pedestrians returning to their vehicles. This is an important factor for large car parks.

Correct lighting for outdoor car parks

Outdoor Car parks			
	Level 1	Level 2	Level 3
Light sources	Metal halide, linear fluorescent, compact fluorescent and LED		
Brightness levels	P11a, 10, 12	P11b, 9-10, 12	P11c, 9-10, 12
	Refer to lighting Codes and Standards AS/NS 1158 3.1.2005		
Colour rendering	CRI Ra > 80		
Colour temperature	CCT 4000K.		
Pole top luminaries	Full cut-off required.		
Markers	Navigation markers.	Not required.	
Stairs and ramps	P9-10		
	Wall mounted scoop lights, LED markers or tread lighting with glare shields. Refer to lighting Codes and Standards AS/NS 1158 3.1.2005		

These images below show lighting features that need to be considered for 'best' car park lighting. These are examples of good illumination and uniformity with low glare.



Example 1



Example 2



Example 3



Example 4

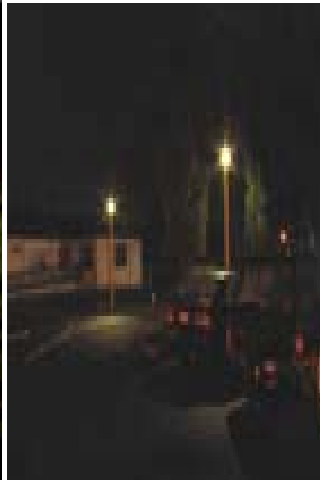
The photos below are examples of poor lighting using equipment selected mainly for its daytime aesthetic appearance. Note the intense light at the top of the pole but the poor distribution of light in the car park.



Daytime



Night time



Night time

3. Layout: clear and logical orientation

The design and layout of car parks should:

- allow for users to easily understand the layout
- increase perceptions of safety
- reduce opportunities for crime to occur.



General features

- a) Mobility access
- b) Configuration and design with grid row parking bay
- c) Crime and Security



Why do we need these features?

- Locating mobility parking and payment meters in visible areas reduces vulnerability
- Appropriate design and layout of the parking area ensures that opportunities for criminal activity are reduced and users feel safe
- The presence of entrapment spots, or a poorly defined perimeter of the space, increases the risk of criminal behaviour.

Safety criteria

a) Mobility Access

- The parking area and facilities should take into account the access requirements of mobility parking permit holders and patrons travelling with push chairs
- Locate the required number of mobility parking spaces, determined by the relevant legislation, in highly visible areas convenient to ticket machines and pedestrian exit points
- The provision of mobility parking should adhere to NZS 4121 which provides minimum guidelines for the construction, design and location of mobility parking spaces



b) Configuration, layout and design

- Configuration should be in grid rows to increase surveillance
- Offset sections and herringbone patterns can severely restrict sight lines/vision to one or two rows thereby increasing the opportunities for crime to occur
- A car park is a private space with a defined perimeter that reduces unauthorised access and exit. A combination of following features can be used to delineate boundaries of a site and encourage appropriate behaviour:
 - Visually permeable fencing (can be seen through)
 - Landscaping – hedges, bushes
 - Changes of level
 - Use of different ground surface treatment
 - Design features
 - Consistent colours or treatments to walls, fences, buildings etc
- Building or perimeter design should avoid features that make it easy to gain unlawful access
- Avoid using features that create a fortress-like appearance or create a negative perception for users (e.g. barbed wire). Design security features into car parks such that they are intrinsic, unobtrusive or a positive visual feature
- Incorporate anti-graffiti and vandal-resistant measures into car park design



- Use open grilled designs or internal shutters instead of roller shutter doors
- If there is long-stay car parking provided, it should not be identifiable from other car parking areas
- Payment meters are provided in areas with good natural surveillance, illuminated and regularly emptied



c) Crime and Security

- Car thieves often choose motor vehicles in fringe areas of car parks located away from predictable pedestrian traffic
- Assaults are often committed in secluded accessible areas. Potential entrapment spots need to be designed out or fenced off. Avoid hidden recesses
- Crime opportunities will be reduced in large car parks by employing a 'safety in numbers' or a compartmentalisation policy. This means that as need arises, a section or floor of a car park can be opened or closed off
- Crime-risk reducers for late night workers and at-risk car park customers by reserving easily accessed and well-lit car spaces near guardians
- Panic points should be provided in larger car parks or car parks with a high incidence of crime



Orientation and signage (wayfinding)

Car parks need clearly visible, understandable and informative signage to direct and orientate users.

General features

- Orientation: clearly visible and legible directional aids to influence perceptions of safety
- The use of clear, informative signage with clear markings and colours



Why do we need these features?

Users who are able to read their surroundings and orientate themselves easily in an environment feel more confident and safe. Signage and navigation aids allow motorists and pedestrians to easily identify access and routes within and to and from the car park, which prevents patrons from getting lost and thereby reduces feelings of vulnerability.



Safety criteria

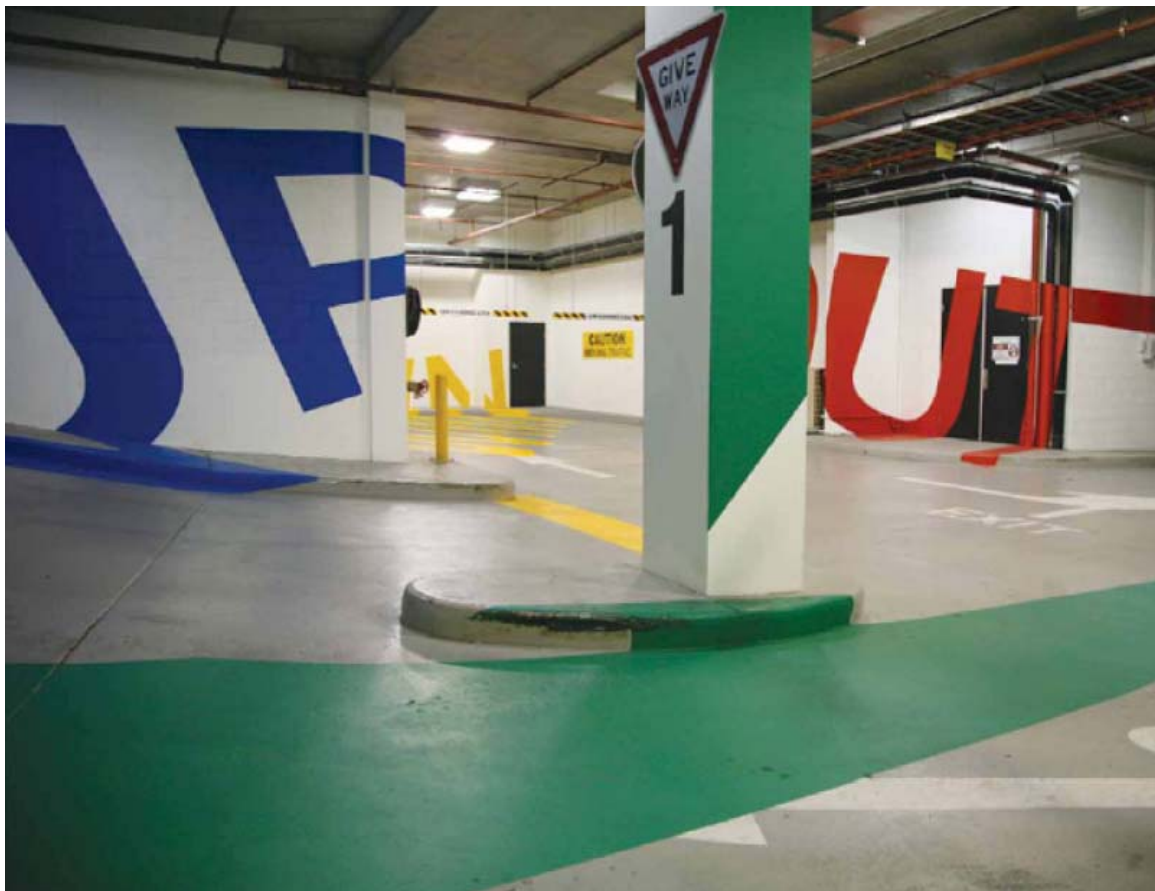
a) Orientation

- Creative markings and/or signage in car parks can aid navigation and help owners locate their vehicles quickly and easily
- Colourful motif designs are easier to remember than numbers
- Knowing where to enter and exit as well as find assistance in a car park can impact perceptions of safety and reduce victim vulnerability and crime opportunity



b) Clear and Informative Signage

- Signs should be clear, legible and useful
- Use strong colours and international symbols to avoid confusion
- Provide signs advising users to lock their cars and take their valuables with them
- Signs providing directional information should be located at or prior to junctions requiring people to make decisions
- Advise users of security measures that are in place and where to find them
- Signage must indicate the ownership of the car park and identify the agency/company responsible for monitoring and maintaining the car park
- Signage and environmental cues should indicate who the space should be used by. Similarly it should discourage illegitimate use and users
- Signs should be able to be clearly seen at night. Correct lighting should be used to ensure all signs can be seen at night and that there is no glare or under-illumination from a distance
- Provide the following information to customers prior to entering the site:
 - Fees and opening times
 - Clearances
 - Availability of parking spaces
 - Directions



4. Activity Mix: Eyes on the Street

Encourage a range of businesses to maximise convenience and to generate legitimate activity within and around the car park. This helps provide guardianship and ownership of the car park.

General features

- Provide parking facilities for a range of travel modes
- Encourage complementary uses
- Provide public telephones
- Maximise the access and visibility of facilities
- Guardianship or ownership of areas reduces the likelihood of crime

Why do we need these features?

An increased level of human activity enhances perceptions of safety and increases the risk to criminals of being seen, which acts as a deterrent. Where car parks have other businesses operating within or on the boundary, there is an increase in the number of guardians who 'own' the area. They will not only offer effective supervision, but will also be more likely to intervene and/or report crime than the casual passer-by.

Safety criteria

a) Provide parking facilities for a range of travel modes

- Provide parking areas and facilities for motorbikes and scooters
- Provide facilities for cyclists. This could include secure stands and storage lockers for helmets and personal belongings



b) Encourage complementary uses

- Encourage complementary uses on the boundary of, or within, car parks
- These uses might include such activities as coffee kiosks, park 'n' wash services, mobile mechanical services, taxi ranks, cafés, food stalls
- During off peak times such as weekends in inner city car parks, consider using parts of the car park for other activities such as markets or small events or festivals to encourage more users into the car park



c) Provide public telephones

- Provide visible and accessible public telephone facilities

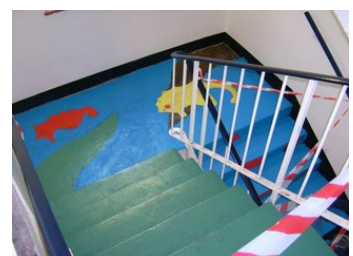
d) Maximise the access and visibility of facilities

- Locate toilets and parents' rooms close to areas of active uses or regularly staffed areas, e.g. cashier desks, entrances etc



e) Visible guardianship or ownership of areas

- Provide features such as public art or murals to personalise the space and enhance the sense of ownership



5. Sense of Ownership

- To deter car crime, the car park design should emphasize the concept of ownership. This means that a car park should look like a private space with a defined perimeter that restricts unauthorised access and exit
- Paving can be different to the surrounding streetscapes giving a psychological message to the public that the space they are entering is different to the surrounding streets
- If the 'message' of ownership is clear, patrons and others will be aware that the space they are in does have legitimate standards of behaviour associated with it.



6. Quality Environments: well designed, managed and maintained environments

Providing attractive, quality environments that are well maintained and managed will discourage crime and enhance perceptions of safety.

General features

- a) The parking facility provides an attractive environment
- b) Appropriate materials and finishes are used throughout the car park
- c) The car park is regularly cleaned and maintained to a high standard
- d) Support for public
- e) Formal processes are established to record and report on crime
- f) Review procedures
- g) Staff training



Why do we need these features?

A clean and well-kept car park provides a reassuring environment for users. This contributes to a reduction in fear of crime. An attractive, well-maintained environment will encourage more people to use the facility. This increases the amount of natural surveillance. The materials and finishes used within car parks should create an attractive and comfortable environment for users.

A well-managed car park with trained staff and safety procedures in place enhances safety for users. Car park managers need to review procedures continually to ensure crime is reduced.

Safety criteria

a) Amenity – providing an attractive environment

- Make perimeter-fencing look attractive by allowing visibility through fences, including creative designs or by combining them with landscaping such as hedging with thorns
- Use toughened or laminated glass as a design alternative to solid walls or grills
- Surfaces within the car park should be finished in light colours to enhance general brightness. White ceilings and vertical structures reflect light throughout a car park. Painted facilities look larger and more spacious than unpainted car parks and can reduce the number of lights required to illuminate a facility - an ongoing energy cost
- Ensure ground surfaces are also as light as possible. Light coloured concrete or concrete stain on the car park surface improves perceptions of safety
- Open-air car parks should include landscaping in appropriate places to enhance the visual appearance of the site
- Any landscaping should be regularly trimmed and maintained to ensure sightlines are not impeded and car parking areas maintain a high level of amenity
- Avoid creating a sterile environment

b) Materials and finishes

Appropriate materials and finishes to car park buildings, surfaces, fencing, lighting and furniture should be used to reduce maintenance. Car parking areas must not appear under-used or uncared for. The following factors should be considered:

- Durability of materials used
- Low maintenance – materials within reach of users should be easily cleaned and all susceptible surfaces should be treated with graffiti-proofing products
- Quality and appearance – materials should be attractive and should be uniform throughout the car park to create continuity
- Repair and replacement – materials should be standardised and widely available
- Local context – materials to be compatible with the local climate and relate to the surrounding area

c) Repairs and maintenance

- Vandalism stops people from using the car park, particularly women and the elderly. Clean and well-maintained areas reduce the incidence of vandalism
- Quick removal of graffiti and rubbish can deter further incidents of criminal damage
- Rubbish should be removed daily and graffiti removed within a maximum of 24 hours
- The operating procedures should identify regular monitoring for cleanliness, with an effective policy established for the quick removal of graffiti and rubbish
- Provide fixed rubbish bins at regular intervals inside or in close proximity to the car parking area
- Lighting needs to be monitored regularly and expired or damaged lights replaced within appropriate timeframes to maintain lighting levels

c) Support for public

- Signage should provide contact details and instructions for users if crime and safety issues arise
- The ownership and management of the space should be clearly identifiable to users. Uncertainty of ownership with poor quality maintenance increases the likelihood of crime
- Operators are required to demonstrate that car park users can easily contact the car park's management
- Resources should be available to enable staff to respond positively and quickly to any incident or customer difficulty that is reported
- The level of support available should be dependent upon a number of factors including risk analysis, car park size, structure and location

d) Recording and communicating crime

- Details of crime and other incidents of antisocial behaviour should be recorded on one standard form, with the following information to be included as a suggested minimum:
- Day/Date/Time
- Specific location within the car park
- Vulnerability/state of vandalised property and method of offending
- Type of property damaged/stolen
- Details of the offender (if known), or other identifiable features e.g. car/type/colour/registration
- Details of any follow-up action to reduce the risk of repeat offence/ incident
- Details of follow-up action (e.g. report to the Police)
- Details of complaint
- All incidences of crime must be reported to the police
- When a staff member notes suspicious cars or behaviour, this information should be passed on to other nearby parking facility operators

f) Regular review

- Regular management meetings (at least monthly) should be held to review systems and procedures for managing the car park. Minutes should be produced recording action points and timescales for completion.
- Points for discussion may include the following:
 - Review of the Customer Charter and Quality Policy
 - Assessment of the quality management systems
 - Customer complaints and commendations
 - Crime levels and locations within the car park
 - Health and Safety and other statutory responsibilities
 - Quality planning and operational changes
- Review and comply with any applicable Occupational Safety and Health (OSH) Codes of Practice, resource consent and building code requirements

- Management must document emergency plans for all potential emergency situations and verify the effectiveness of emergency plans where practical
- A designated member of staff should be identified and responsible for controlling all documentation, such as minutes of management meetings, customer complaint records, crime reports and training records

g) Staff training

- Staff must receive a satisfactory level of training either in-house or by formal external certification
- Staff should undergo some sort of basic vetting to ensure their integrity
- Areas for staff training should include:
 - The organisation's policy
 - Quality of service and customer care
 - Basic Health and Safety information
 - Training on equipment installed
 - Training on dealing with recording incidents
 - Basic first aid
 - Avoiding confrontation
 - Records of the above criteria should be maintained, and be used as appropriate, in processes of staff selection, induction training and supervision

Special Applications

Park & Ride facilities

These facilities provide medium to long term parking in suburban areas for commuters using public transport. They often cater for a large number of vehicles and operate during the day and night. Many are located in semi-isolated areas with limited opportunities for natural surveillance. This combined with the length of time vehicles are left unattended in the car park and the lack of activity in the car parking area during off peak times mean they can be a target for theft unless the facility is designed appropriately and security is established. In addition to the general criteria contained in this document the following additional criteria should be considered for Park & Ride facilities:

- Locate the passenger waiting area in a prominent position where passengers can overlook the car parking area. Any buildings or shelter should be designed to ensure waiting passengers can clearly see out to the car parking area
- Ensure information boards, kiosks or other structures do not impede sightlines
- Locate holding areas for buses in a location where drivers waiting in their buses can easily see the car parking area
- Ensure the parking bays are aligned in a grid pattern with cars facing in towards the station/platform areas to maximise visibility between cars
- Provide separate access for pedestrians and ensure there are safe routes for bicycles. Pedestrian and cycle access should be located in convenient locations and based on popular approach routes
- Provide wide pedestrian routes and with clear sightlines to the station area. Entry/exit points should be located in a prominent location and enable pedestrians to see ahead
- Where local pedestrian and cycle routes exist these should be used to connect directly into the internal pedestrian routes of the Park n Ride facility near the station buildings
- Drop off areas and taxi stands should be located as close to the station as possible
- Provide secure cycle parking facilities located in a position visible from the station/platform entrance in an area which does not conflict with pedestrian or vehicle traffic
- Encourage users to park near the bus terminal during off peak times to concentrate vehicles and users in one area of the car park. This can be achieved by signage or shutting off more remote areas of the car park at off peak times
- Monitored CCTV should be used covering all parking and passenger waiting areas
- Formal security patrols should be used.

