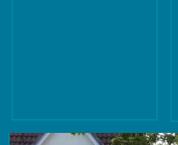
# The provision of parking in new development











Parking in Mid Devon









### Content

1 Mid Devon District Council is expanding on existing planning policy through this Supplementary Planning Document (SPD) to provide guidance on the provision of parking within new development. Under planning regulations SPDs cannot contain policies but instead provide detailed guidance that enables the policies in adopted plans to be implemented in development.



# Parking in Mid Devon

- Setting appropriate provision of parking is an important issue for new development. This document has been prepared in response to a number of issues that have emerged over recent years in relation to the quality and provision of parking on new development. Consultation feedback has indicated that many people felt there was an under-provision of car parking on recent developments.
- Under the last Labour government, national planning policy on transportation was determined by the requirement to deliver sustainable development. This was to be achieved by a variety of approaches, one of which was to prioritise sustainable modes of transport, such as walking, cycling and public transport, over the use of the private motor car. One outcome of this policy was a restriction on the number of parking spaces provided within new development. As a result national planning guidance stated that parking standards were to be expressed as a maximum with developers providing less than the standards if they so wished.
- 4 National and local research has since indicated that restricting the amount of available parking has not had a direct impact on levels of car ownership. Instead, the effect of implementing maximum parking standards combined with increasing car ownership has had a detrimental effect on the quality of the built environment. In many cases, such policies have led to inappropriate and anti-social parking.
- 5 Analysis of the most recent data reveals changes in levels of car ownership, which supports a different policy approach. Census data highlights that the ratio of cars per household has been constantly increasing at national and local levels. The average household in Mid Devon now owns 1.47 cars, as opposed to 1.33 at the time of the 2001 census. The percentage of households owning 2, 3 and 4 or more cars has all increased, whilst the share of those who do not own a car has fallen. In particular, the ratio of cars owned per household in Mid Devon has continued to grow at a consistent rate whilst growth in the national level has shown signs of levelling off (Figure 1).



- The affordability of housing has also impacted on the level of car ownership per household. House prices within Mid Devon are greater than in the rest of England. Furthermore, the average house price is now nearly eight times average earnings for the district (Devonomics, 2012). As a result young people are living with parents for longer, whilst the age of first time buyers has increased considerably within the last decade. Many young people are continuing to live at home, many of them owning a vehicle in addition to any owned by their parents.
- 7 Levels of public transport have also fallen across the district. Mid Devon's Annual Monitoring Reports that have been produced since 2006 contain an indicator that monitors bus provision to 55 villages in Mid Devon, including 21 which are defined as settlements where limited development is acceptable in principle. The number of daily services to these settlements has showed a steady decline across this period.
- National planning guidance in the 8 National Planning Policy Framework (NPPF) now indicates local standards can be set which take account of local characteristics such as car ownership levels and the availability of public transport. In response to these changes, this SPD takes a more flexible approach to the provision of car parking spaces. Instead of setting a maximum standard, this document recommends the use of a minimum level of provision for residential parking. It encourages developers to adopt quality design principles, to integrate a sufficient level of parking into the public realm, whilst providing a safe and secure environment for all types of development. Recent planning consultations have not received comments regarding the standards set for non-residential development under the Local Plan 2006, and therefore it is proposed that these be retained. These are still expressed as maximum standards.

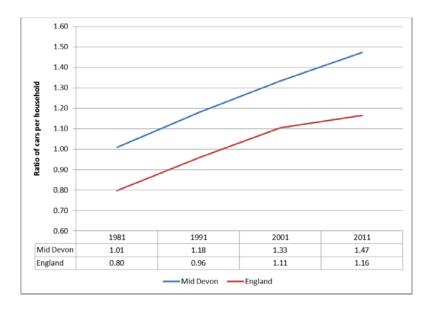


Figure 1:
Ratio of the number of
cars/vans per household
for Mid Devon and England
from 1981 to 2011. Source: ONS.

# Policy background – emerging Local Plan policy

The new Local Plan Part 3: Development Management Policies (LP3) is expected to replace the Local Plan adopted in 2006 which contains the Council's current parking standards. The Council has submitted the LP3 for Examination in Public, with the hearings having taken place over 13-15 March. LP3 Policy DM/8 provides the basis for the more detailed guidance included in this SPD. Policy DM/8 (as proposed by the Inspector as a major modification) is set out below.

#### **DM/8 PARKING**

Development must provide an appropriate level of parking, taking into account:

- a) The accessibility of the site, including the availability of public transport;
- b) The type, mix and use of development

Design must enable and encourage the maximum use of sustainable modes of transport, including provision for cyclists and low-emission vehicles. Within the towns of Tiverton, Cullompton and Crediton, infrastructure for electric vehicles should be built into development. The Council will seek parking provision and electric vehicle infrastructure according to the following standards, the variation of which must be justified on a case-by-case basis.



RESIDENTIAL						
Use	Description	Location	Minimum	Minimum cycle	Electric vehicle	
class			car parking standard	parking standard	infrastructure (Tiverton, Cullompton, Crediton)	
C3, C4	Dwellings	General	1.7 per dwelling	1 or 2 beds – 2 per dwelling 3+ beds – 4 per dwelling	1 charging point per 10 units	
NON-RESIDENTIAL						
Use class	Description	Location	Car parking standard	Cycle parking standard	Electric vehicle infrastructure (Tiverton, Cullompton, Crediton)	
			Per sqm gross floor area unless otherwise stated			
A1	Non-food retail	General	1 per 20	1 per 200	2 charging points per 200	
A1	Food retail	General	1 per 14	1 per 140	2 charging points per 200	
A2	Financial and professional	Within Tiverton, Cullompton, Crediton and Bampton	1 per 30	1 per 300	2 charging points per 200 (exc. Bampton)	
		Elsewhere	1 per 20	1 per 200	N/A	
A3	Restaurants	General	1 per 5.5 sqm of eating area	1 per 55 sqm of eating area	2 charging points per 200	
A4	Public houses	General	1 per 3 sqm of drinking area	1 per 20 sqm of drinking area	2 charging points per 200	
B1, B2	Business and general industry	General	1 per 30	1 per 300	2 charging points per 200	
B8	Warehousing and distribution	General	1 per 46.5	1 per 46.5	2 charging points per 10 parking spaces (employees/ visitors)	
C1	Tourist accommodation	General	1 per bedroom	1 per 10 bedrooms	2 charging points per 30 rooms or per 10 parking spaces	
C2	Residential institutions	General	1 per bedroom	1 per 10 bedrooms	2 charging points per 30 rooms or per 10 parking spaces	
D1	Non-residential institutions (exc. Schools and health facilities)	General	1 per 40	1 per 400	2 charging points per 200	
D2	Indoor and outdoor sports	General	1 per 2 players and 1 per 10 spectator seats	1 per 20 players and 1 per 100 spectator seats	2 charging points per 200	
	Indoor entertainment	General	1 per 5 seats	1 per 50 seats	2 charging points per 200	

# Calculating the standard

- The Council has used the latest release of data from the 2011 census to calculate the level of parking provision required for new residential development. The census provides a breakdown of the percentage of households owning 0, 1, 2, 3 or 4+ cars for the district as a whole. No data has been released to allow a crosstabulation between dwelling type, size and car ownership; instead the figures for car ownership per household are the primary basis for the calculation of necessary provision. The methodology for calculating the provision is based on guidance set out in DCLG Residential Car Parking Research (May 2007).
- To calculate the overall parking provision, the impact of allocating one space per dwelling needed to be considered, factoring in the data on local car ownership. Allocating one space per dwelling generated a level of underprovision from households with two or more cars. In addition, one visitor space is required per 10 dwellings, which has been factored into the methodology. The calculation to work out the level of additional demand, and hence the total demand, is set out in Table 1.

Table 1: Calculating parking demand							
Number of cars per household	Percentage breakdown of total car ownership	Additional demand required if one space allocated	Total allocation (1 allocated space + additional demand + 0.1 visitor spaces)				
0	14.3%	0					
1	41.9%	0					
2	31.9%	0.319					
3	8.2%	0.164					
4 or more	3.7%	0.111					
Total	100%	0.594	1.694				



On the basis of the calculations within 12 Table 1, it was felt appropriate to set a minimum standard of 1.7 parking spaces to be provided on average per residential dwelling on new development sites. On a site of 100 houses, 170 parking spaces would be provided. While some houses might have only one parking space, others may have two or three spaces, or shared on-street parking depending on circumstances. Setting this figure as a minimum requirement is an increase in the level of provision previously set within Mid Devon. This level of provision accords with the comments received at recent consultations regarding the previous shortfall in parking and reflects the growing rate of car ownership across the district. It is realistic to provide an adequate level of car parking that reflects local car ownership. New development is still required to encourage the use of sustainable modes of transport, through promoting walking, cycling and public transport. This SPD also sets guidance for the installation of electric vehicle charging points within new dwellings, thereby putting in place the opportunity for unsustainable fossil fuel burning cars to begin to be superseded by greener alternatives.





Transport systems must be balanced in favour of sustainable transport, giving people choices about how they travel.

#### Principle 1 – Use of the parking standards

The principles set out in this Supplementary Planning Document (SPD) define the minimum standards that apply to the provision of parking for new development in Mid Devon. Planning applications for development should contain provision for parking in accordance with the standards set out in LP3 policy DM/8 and the other principles of this SPD. Variations of the principles should only be justifiable in specific exceptional circumstances such as where other material considerations outweigh the need to adhere to the principles set out in this document.

- 13 It is recognised that whilst it is important to combat climate change, recent efforts to restrict parking provision have not resulted in a fall in car ownership. Under-provision of parking places in new development has often led to inappropriate and anti-social parking. As a result, these new standards have been designed to ensure that occupiers of new development have a sufficient minimum level of well-designed parking provision. This should reduce the frequency of inappropriate parking and improve the appearance of new development.
- All types of new development, including 14 change of use, need to give consideration to the standards set within this SPD. It is the responsibility of the applicant to explicitly demonstrate that the appropriate standard has been met. If the requirements of this guidance cannot be met, the applicant must ensure that the exception is fully justified, being able to demonstrate that other material considerations outweigh the need to adhere to the principles set out in this document. The Council will work proactively with developers to deliver new development that provides the level of parking occupiers will require.

#### Principle 2 – Design of residential parking

The design of car parking needs to ensure that it operates functionally, whilst not dominating the character of the development. The surfaces of all parking areas should be permeable where appropriate and measures to control pollution in run-off water should be included where necessary.

- 15 It is expected that car parking can be accommodated into a high quality public realm in new development. How well this is achieved can often determine the quality of a development. Developers should give consideration to a range of approaches to minimise the impact of car parking, so that it does not dominate the street scene. The Council will wish to be satisfied that a developer has considered a variety of approaches in order to achieve the most appropriate solution. This can be set out in the Design and Access Statement where one is required.
- 16 It is always preferential to locate the parking in close proximity to the property it services. For houses, car parking should ideally be provided adjacent to the property, either within the residential curtilage or in well-designed on-street parking. Recent trends have demonstrated that where adjacent parking is not provided, residents often park there out of convenience anyway.

- Spaces within parking courts are much 17 less frequently used, and can be perceived to be inconvenient and insecure. Where the use of rear parking courts is unavoidable, the design should give safety the highest priority. The size of courts should be minimised and have only one entrance/exit point to avoid the need for outsiders to pass through the area. The court and access point should also be overlooked. The boundaries of any properties that back on to parking courts should be made of robust and attractive materials to ensure the long term appearance of the area and provide a sense of safety and security for residents.
- 18 'Manual for Streets' (2007), produced by the Department for Transport provides detailed guidance for developers on the design and layout of parking areas for new development. It discusses the positive and negative impacts of the different types of parking provision, and provides design solutions in order to promote lasting quality environments that can work for all users. The document can be located at:





Under-provision or poorly-designed parking places can lead to inappropriate and anti-social parking, causing inconvenience to other road users and pedestrians.

#### https://www.gov.uk/government/publications/manual-for-streets

19 To ensure that there are no implications for flooding from the run-off of surface water from parking areas and spaces, they shall be surfaced with permeable materials where appropriate. Where soil permeability tests show such surfaces would not be appropriate measures to control additional surface water run-off will be required. In all cases measures to control pollution should be incorporated into drainage arrangements.

#### Principle 3 – Allocation of parking spaces in residential development

Each dwelling within a residential development is to be allocated a minimum of one space for car parking. For developments comprising one or two dwellings the standard will be rounded up to two spaces per dwelling.

20 Policy DM/8 of LP3 sets a minimum parking standard of 1.7 spaces per dwelling for new residential developments. This figure is to be used to calculate the minimum number of parking spaces for the whole development site. Of the total number, a minimum of one parking space should be allocated for the sole use of each property. The remaining parking provision (and more if preferred) should be distributed appropriately

throughout the development, subject to the other principles set out in this document. This will ensure that occupiers of new housing have at least one space available for parking and allowing the developer to vary the design of parking provision within the standard to suit what occupiers will want. Rounding up should be used if the calculation of the amount of parking spaces does not produce a whole number.

#### Principle 4 – Proximity of parking to housing

The provision of the minimum one space per dwelling should either be on the relevant plot, adjacent to the plot or indicated as part of any on street parking provision within the application site.

Allocated parking spaces should be 21 located in as close proximity to the dwelling as possible. Parking spaces that are overlooked can reduce the likelihood of crime. Being able to access a vehicle at a short distance from the property is convenient and important for those with accessibility issues. Meeting this requirement contributes towards the Hea 4/Lifetime Homes criterion of the Code for Sustainable Homes to provide homes that are accessible and easily adaptable. Principle 4 will contribute towards the delivery of the Local Plan Part 3 policies DM/3 (sustainable design) and DM/15 (design of housing) which set respective requirements regarding the Code for Sustainable Homes and Lifetime homes.

#### Principle 5 – Garages and car ports

Where garages or car ports are provided they will not count as parking spaces. The internal dimensions of garages should be at least 6m long by 3m wide (single garage) or 6m long by 6m wide (double garage) and will negate the need for separate cycle storage

- 22 Studies of car parking behaviour have noted that where garages are provided a low percentage of them are actually used for the storage of vehicles. Instead they are used for general storage or are converted into extra living accommodation. The requirement for a standard size could increase the usability of garages and the Council's requirement for minimum dwelling sizes could reduce the need for residents of new housing to use garages for storage. However, because such a low proportion of garages are used for parking and the relationship between garage and house sizes is unknown, where garages are provided they will not count towards meeting the parking standard. Instead the provision of garages will be a matter for the developer to consider in determining the design of the properties within a development. Where garages are provided they should be provided with a 6m driveway to accommodate the one car parking space per plot required by the standard. Garage doors should provide a minimum clearance of 2134mm.
- 23 Whilst car ports are not suitable for storage and cannot be easily converted to living space it is still considered that permitted development rights will enable many owners to replace the car ports with extensions. Therefore car ports will not count towards the provision of parking to meet the parking standard.





#### Principle 6 – Security of parking

To ensure the security of vehicles, parking spaces should be overlooked by the property to which the parking relates.

A car or other vehicle is a significant asset which if stolen or damaged can have a significant financial impact on the owner and a dramatic impact on the way in which users live their lives. Owners are therefore justifiably concerned about the security of their vehicles and whilst also wishing to park conveniently close to their property. This can lead to cars being parked partly on footways close to a property rather than in isolated parking courts. It is therefore important to ensure that a vehicle can be seen from the property when in a main habitable

room of a house, such as a kitchen or living room, where there can be frequent observation of a vehicle if required. Secured by Design principles suggest that parking on drives or in parking courts should be behind a gate but low crime levels in Mid Devon will not normally mean such provision is necessary. Developers will have the flexibility to distribute spaces which are not allocated within the development as they see fit, but large areas of unallocated parking should be avoided as they are difficult to oversee whilst large parking areas can have a damaging effect on the appearance of housing developments.

#### Principle 7 – Application of Devon County Council's Standing Advice

The design of all forms of parking, including the size of spaces, should be in accordance with Devon County Council's Standing Advice with appropriate manoeuvring space

a standing advice document that sets out the requirements for parking and other highway standards on small developments of three or less houses.

Councils in Devon and developers are expected to abide by this advice when dealing with planning applications.

In accordance with the advice, the minimum size of a parking space will vary

depending on the arrangement of parking and associated manoeuvring space. The Council will expect these standards to be implemented except where specific circumstances may indicate the need for variations. Parking spaces of smaller dimensions than set out in the advice will not be counted as contributing towards the total amount of parking on a site. It is the role of the developer to confirm that the size of parking spaces meets the minimum size standard.

#### Principle 8 – Provision of visitor spaces

For residential developments comprising more than 10 dwellings, a space will be provided for visitors and marked to define them as such for every ten houses over the threshold

- 26 Research has shown that car ownership varies widely for each size of dwelling. Owners of three bed houses may have no cars at all whereas owners of one bed flats may own two vehicles. Even in Mid Devon where levels of car ownership are relatively high, 14% of households do not have a car. This means that a level of flexibility is required in the availability of parking in a new development to cater for variations in ownership. Some flexibility is provided by the ability of a developer to distribute the parking across a development as they see fit apart from the one space per plot minimum. However, where a developer decides to allocate a high proportion of spaces on plots to cater for those residents who have high levels of car ownership, visitor spaces need to be provided.
- 27 As the Council is aiming to ensure that there is at least one space for each plot, research has shown that the visitor provision can be made at the fairly low level of one space for every ten dwellings. To ensure that such spaces are reasonably close to most houses, they should be distributed through a development and their location must ensure that they can be easily seen. To discourage their use for general parking they should be marked as visitor spaces. Visitor spaces will be the subject of negotiation on developments of less than 10 dwellings. Where a visitor space is not provided as a result of negotiation the minimum parking standard should be assumed to be 1.6 per dwelling, not 1.7.

#### Principle 9 – Parking for flats

Parking provision for developments of flats will generally be grouped but spaces should be allocated to individual flats, marked as such and capable of being secured.

28 Where parking is provided for flats it may not be possible to have it directly related to the property. Instead such parking is often grouped into general parking areas. Such provision should be in accordance with the appropriate standard but, to avoid conflict over the ownership of spaces, it should be specifically allocated to properties and capable of being secured. This will not allow the

flexibility of parking possible in mixed housing developments but the provision of visitor spaces in accordance with Principle 8 should allow there to be some flexibility in parking for flats. Where there is likely to be pressure on the parking from other nearby land uses such as retailing or other employment or where there is considered to be a significant risk of theft, it may be appropriate to provide for the locking of spaces.

# Principle 10 – Reduced parking provision in town centres

The ability to provide parking in some areas may be limited by the characteristics of the location. Developers proposing less than the required standard should demonstrate that other material considerations justify them providing less than the standard.

- 29 Mid Devon's towns have developed over a long time and the more historic areas are not always well suited to the use of cars or other vehicles as part of everyday life. However, it is important to ensure that parking is provided wherever possible for development in such locations.

  Development without parking provision can lead to parking problems as residents or users of premises will often still need to use their cars as part of everyday life.
- For new dwellings, the Council will aim 30 to achieve the appropriate standard but in some circumstances the council may accept a lower provision, particularly where there is unallocated free public parking available near to the proposed development or the development will not generate a need for parking provision. Any proposal which does not provide parking in accordance with the standard, will be expected to be accompanied by a justification for the level of parking proposed. A similar approach will be taken to non-residential development but it is accepted that the existing provision of public parking will often be sufficient to serve proposed development.

#### Principle 11 – Electric vehicle charging points

The electric vehicle charging points required by the Local Plan (LP3 Policy DM/8 or its successor) should be built into the development within garages, into the walls of associated properties or as secure/vandal resistant posts at the edge of the footway for on street parking

- 31 Policy DM/8 in Local Plan Part 3 –
  Development Management Policies
  requires the provision of electric charging
  points in new development. Provision can
  be included within garages, in the walls
  of associated properties or as secure/
  vandal resistant posts. Within housing
- developments, new properties should have their own charging points. In shared areas there will need to be satisfactory maintenance arrangements. Capacity should be built in to allow for future upgrading including the provision of cabling to 40/50% of parking provision.

#### Principle 12 – Cycle parking/mobility scooter storage

Cycle parking or storage should be provided in accordance with the standard in LP3 policy DM/8. For residential development, the storage should be in a secure location, be weather resistant and capable of being accessed without passing through the dwelling. For non-residential development, cycle storage should be conveniently placed, preferably weather resistant, giving quick and easy access to the buildings on the development. In Lifetime Home properties the storage should be flexible enough to allow the storage of mobility scooters.

- 32 Cycling is a suitable alternative to the car for short journeys in urban areas and is used as a form of recreation by many. To encourage further use of this sustainable alternative to the car, it is important that the occupants of new housing have dedicated storage for bicycles which is accessible, secure and weather resistant. Where a garage is provided separate cycle storage will not be required but in all other cases the storage should be away from general public circulation, be lockable, permanently fixed and should protect the contents from the effects of weather. This could be by the provision of cycle cabinets in rear gardens or through the provision of communal cycle parking for dwellings which do not have gardens such as flats or coach houses. In all cases they should be accessible without taking bicycles through a dwelling as that would deter their use.
- 33 Meeting this requirement contributes towards the Ene 8/Cycle storage criterion of the Code for Sustainable Homes to promote the wider use of bicycles by providing adequate and secure cycle storage facilities. Principle 12 will also contribute towards the delivery of the Local Plan Part 3 policy DM/3 (sustainable design) which sets requirements regarding the Code for Sustainable Homes.

- 34 For non-residential development, the standards will be applied as set out in LP3 policy DM/8. Ideally, cycle stands or storage should be located near the entrances of buildings. Cycle stands located far from entranceways provide little incentive to encourage cycling, particularly if it is raining. Such storage should be easily visible and covered where appropriate, taking account of any visual impact on the surroundings (for example this may not be appropriate in High Street locations).
- 35 For some people a mobility scooter is an essential part of their life and in the case of Lifetime Homes, which are intended to be adaptable to cater for all occupiers of whatever age, the cycle storage should also be suitable for the storage of mobility scooters. To cater for the largest scooters such storage units should be 1500 mm long and 1000 mm wide.

#### Principle 13 – Motorcycle parking

Motorcycle parking provision should be in accordance with the standard of one space for all non-residential developments up to 50 car parking spaces with a further space provided for every 50 car parking space thereafter. It should be marked as such, and incorporate the facility to secure the motorcycle to a ground anchor or similar fixture.

Motorcycles or Powered Two Wheelers (PTW) can be used as an alternative to the car. Parking provision is therefore needed to prevent the parking of motorcycles on footways or other unsuitable locations. The standard set out above is lower than set by other councils but it takes

into account the fact that Census information shows that less than 2% of travel to work journeys in Mid Devon are undertaken by motorcycle. Where spaces are provided it is expected that suitable provision will be included for securing the motorcycle to a ground anchor or other such fixture. Without such provision motorcycles are at risk of theft.

#### Principle 14 – Disabled parking provision and design

Disabled parking provision in non-residential development and for Lifetime Homes should total 5% of proposed spaces, be located close to an accessible building entrance and be of sufficient size to allow the manoeuvring of a wheelchair to the rear and side of a vehicle.

A proportion of the population has mobility difficulties which make it difficult for them to utilise standard parking provision because of its size and potentially its location. Specific provision therefore needs to be included in parking areas for non-residential and residential development so that there are a proportion of spaces set aside for users with mobility difficulties. In nonresidential development spaces should be marked appropriately to discourage use by other drivers. In all cases parking for disabled persons should be of a size to allow the use of wheelchairs adjacent to the rear side of the vehicle. They should also be located as close as practicable to an appropriate entrance to the associated premises with appropriate surfacing and gradients.

#### Principle 15 – Parking provision for non-residential development

The provision of parking for non-residential development should be in accordance with the standards set out in LP3 Policy DM/8 except where alternative provision can be justified on the basis of existing parking provision or other factors.

38 Particularly in rural areas like Mid Devon, it is important that local people are able to access their places of work, shops and leisure facilities by private car as alternative forms of transport will often not be available. Provision should therefore be made in accordance with the standards set out in LP3 policy DM/8. Provision below the standards may be appropriate in some locations, such as where there is on street or public parking available nearby, or where the different types of use within a Use Class

justify a variation. Variations will have to be justified on a case by case basis. Parking and manoeuvring space for commercial vehicles will also be required for many non-residential developments. For those employment uses that require lorry parking on site this will be negotiated on the basis of the individual needs of proposed developments as, for example, distribution facilities will require much greater levels of lorry parking than other industrial units. Commercial turning areas will be expected to accord with Devon County Council's standing advice.

#### Principle 16 – Design of non-residential parking provision

Non-residential parking should be designed to complement the design of associated built development and the surrounding area, as well as incorporating sufficient manoeuvring space for all vehicles. The surfaces of all parking areas should be permeable.

Non-residential parking for business, retail or leisure developments can often lead to large expanses of tarmac which if unrelieved by planting and footways can result in a harmful impact on an area's amenity. Therefore it will be important for such parking to complement the design of associated built development, such as through the use of appropriate materials, as well as the inclusion of hard and soft landscaping to soften the impact of

parking provision on an area. For safety reasons, it will generally be advisable to segregate space for commercial vehicles from space for cars and motorcycles. The design of parking should take into account how car drivers and passengers will move safely from their vehicles to and from the associated buildings. To ensure that there are no implications for flooding from the run-off of surface water from parking areas and spaces, they shall all be surfaced with permeable materials.



