



Design Details
Parking Design
V.1

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4. Parking Design

This section looks at design solutions to accommodating the car and if that means reduced parking or parking designed into areas so as to not compromise quality or quantity of public/private space.

Topics covered include types of car parking and arrangements, car sharing, cycle parking, facilities, routes, and how to achieve a safe and attractive environment; attention should be given to changing requirements for parking in the future and how these changes can be effectively futureproofed into current design, however it remains important to address how parking at the existing rate of car ownership can be accommodated successfully into design. Either the amount of parking has to be substantially reduced or cars need to be accommodated in a way that does not compromise the required quality and quantity of public and private space. This has been demonstrated through adaptable layouts or varieties of parking.

Key Messages

- All forms of parking should be clearly identifiable yet suitably integrated into the public realm. The provision of parking should not dominate the public realm.
- The EPOA Essex Parking Standards should be referred to in terms of parking provision and detailed design.
- Covered and secured cycle storage should be located in prominent and accessible locations, for all ages and range of physical and mental abilities, as part of the design of new homes. Cycle parking should be provided as part of the internal arrangement of residential garages.
- Cycle parking should be provided at key destinations and should be easily accessible, prominent, safe, conveniently located and secure. Welfare facilities for cyclists should also be provided at all large employers.
- On-street vehicle parking should not restrict access to footpaths and cycleways.
- All forms of parking should be connected to and enabled for smart infrastructure.
- All forms of parking should be futureproofed, allowing for adaptation at a future date.

Key Questions

- Have the EPOA Essex Parking Standards been complied with?
- Are walking and cycle routes supported by infrastructure such as seating, shelter and cycle parking?
- How many cycle parking spaces have been provided per property?
- Is safe, convenient and secure cycle parking provided for all types of cycles at all key destinations?
- Is dedicated cycle parking provided at the front of community and non-residential buildings?
- Is secure, convenient and covered residential cycle storage provided in a prominent location that encourages cycle use over car use?
- Has on-street parking been designed to avoid cars parking on footways and cycleways?
- Has thought been given to connecting the parking to relevant smart technology?
- Has consideration been given to how car parking spaces can be adapted and changed in future?
- Are all forms of parking accessible to people of all ages and a range of physical and mental abilities?

Accommodating the Car

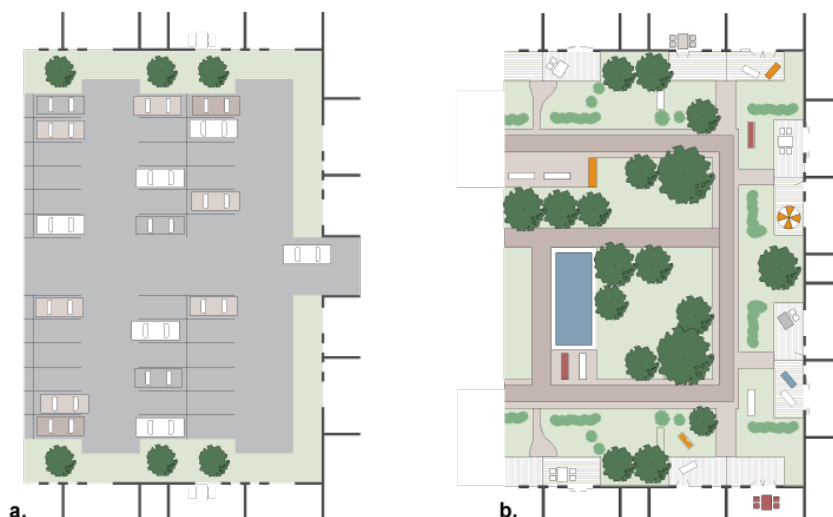
- 4.1 Providing the appropriate levels of infrastructure for parking relies upon robust and thoughtful design. The aim should be to:
- prioritise and promote cycling and walking for all ages and a range of physical and mental abilities;
 - achieve a safe and attractive environment which encourages activity; and effectively future-proof current provision in preparation for future changes in technology, car ownership, driving behaviour and so on.
- 4.2 Issues such as site management, deterring crime, active travel modes, car parking are fundamental to good design – and it is necessary to radically rethink the way such issues are dealt with. Solutions to such problems should form a key part of the development concept of any planning proposal.
- 4.3 It can be difficult to provide space for car parking at ground level while still achieving an attractive urban living environment at housing densities greater than 50 dwellings per hectare. In order that public space is not compromised while current parking standards for Essex are applied, well design and innovative parking schemes should be provided, particularly, on schemes of greater density. If the public realm and space behind buildings are cluttered with parked cars, it allows little scope for creating quality space for socialising, play, walking or cycling. Solutions may include underground, underdeck parking, roof top and multi storey car parking.



Creating a quality space

- 4.4 While new technology such as on-demand or automated vehicles may negate the requirement for parking spaces outside dwellings in future, it is still important to address how parking at the current rate of car ownership can be accommodated successfully into design. Two design solutions are possible: either the demand for parking has to be substantially reduced or cars need to be accommodated in a way that does not compromise the required quality and quantity of public and private space.

- 4.5 Developments located centrally within urban areas clearly benefit from their proximity to jobs, services, cycling routes, public transport and facilities. Successful garden communities can share similar benefits (which are also applicable to large, new developments), whereby self-contained development encompasses both housing and employment. They offer a lifestyle non-reliant on car use, which is increasingly important for older and less mobile members of the community.
- 4.6 Current issues pertaining to an ageing, often unhealthy population reliant on the car results in high demands on the existing road network, so there is a clear need to encourage more people to travel sustainably. However, the current reality is that people often use private cars to travel. Many facilities and employment areas are located on the edge of settlements or in relatively inaccessible places where public transport services can be poor.
- 4.7 Sustainable communities are dependent upon creating a balance within the population – a balance that includes families, the young and old, and people of a range of physical and mental abilities. The conditions required to make this possible are complex and numerous, but there is currently a clear tension between nurturing this aspiration and restricting private car parking – particularly when considering the needs of the ageing population and those with mobility restrictions.
- 4.8 Proposals with reduced parking can be acceptable in sustainable locations. However the proposal should clearly demonstrate how parking will be managed across a wider area, so that parking inappropriate parking on local streets does not occur. It should also demonstrate that alternatives to car travel are viable and practical. Such proposals should be discussed with neighbouring communities.



a. Unsatisfactory parking arrangement

b. Underground or under-deck parking with landscaped private and communal outdoor space

Design and Layout

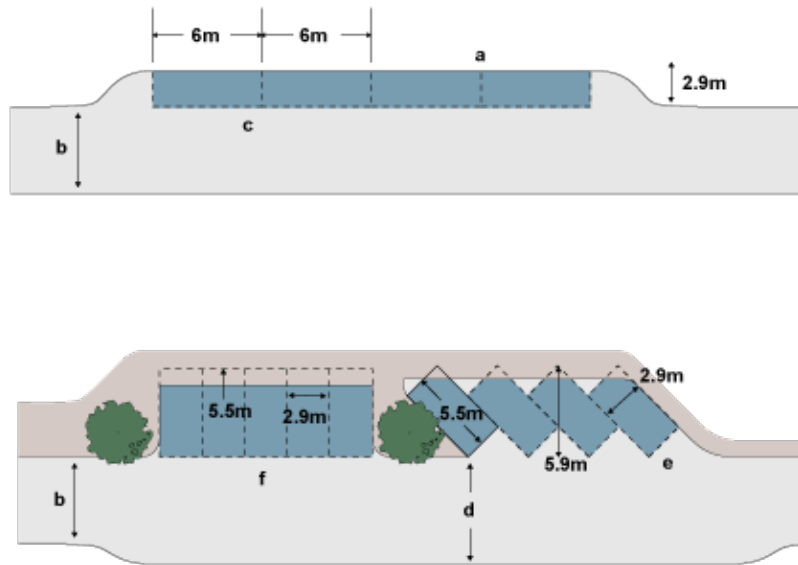
- 4.9 As well as providing an appropriate level of car parking, it is important that new or extended developments incorporate good design for the layout, landscaping and lighting of parking. This should be user-friendly and should not interfere with the public highway or access adjacent to the parking area. Further advice can be sought from the British Parking Association.

Types of Parking

- 4.10 At densities of less than 50 dwellings per hectare, parking for residents should be provided on-plot, on-street or in small rear parking courts.
- 4.11 Dedicated parking spaces for bicycles and, where appropriate, mobility aids (such as mobility scooters), should be provided either within an on-plot garage or in safe and secure communal parking spaces.
- 4.12 Rear parking courts can have allocated or non-allocated spaces; if less than 100% parking is provided, spaces should be non-allocated.
- 4.13 Parking areas should be surfaced in materials which provide suitable access for users of all ages and a range of physical and mental abilities, and should include tree and shrub planting to sub-divide each group of 5 spaces. Such planting should be suitable to its location and climatic conditions, and should have appropriate growth habits.
- 4.14 At densities above 50 dwellings per hectare, one or more of the following car parking arrangements (together with the exceptions stated below) are generally expected:
- Underground parking
 - Under-deck parking
 - Multi-storey parking (either within block or 'remote')
 - Under-croft parking
 - Unallocated on-street parking for visitors and customers, and other short-stay parking or designated disabled parking bays
 - A combination of any of the above
- 4.15 Exceptions to these arrangements may apply for:
- Schemes with a very low provision of parking (see above)
 - Surface-level parking in a very small area that relates directly to a small cluster of accommodation

Visitor Parking

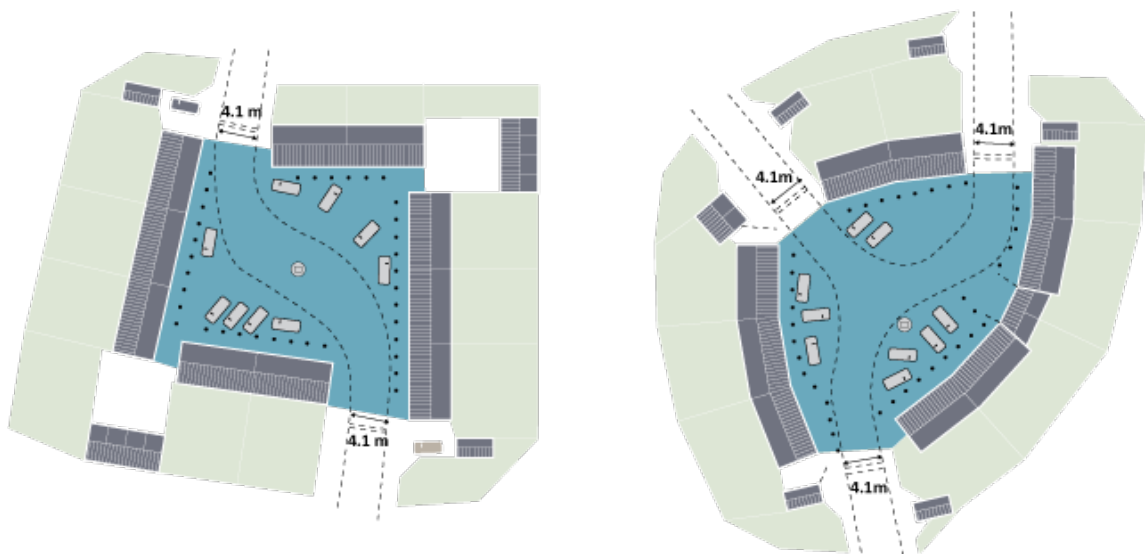
- 4.16 All residential developments should be designed to include unallocated visitor parking in accordance with the Essex Parking Standards, and this should be distributed evenly across the site. This will help to ensure that inappropriate parking does not occur within the development, hindering walking, cycling and access to the development by vehicles and emergency vehicles.
- 4.17 Location of Parking Spaces
- 4.18 Visitor spaces should be located on or near the road frontage; more flexibility is possible in the location of residents' spaces. Visitors' spaces for communal use may be provided by widening the road, with bays, to accommodate a row of cars parallel, at right-angles, or at an angle to the kerb (except on road types A and B, or D within 30m of a junction).
- 4.19 Where spaces are at an angle to the kerb the footway should be widened by 800mm to accommodate vehicle overhang. Such groups of spaces will be adopted, but should be limited in size and number so as not to dominate visually.



- a. Limited number
- b. Normal road width
- c. Cars parked parallel to road
- d. Road widens to allow turning
- e. Cars parked at angle (echelon)
- f. Cars parked at right-angle

In exceptional circumstances parking bays can be 2.5m x 5m

4.20 A parking square may accommodate a group of visitor parking spaces within the highway domain, as may a turning loop. Other solutions will be considered on their merits.



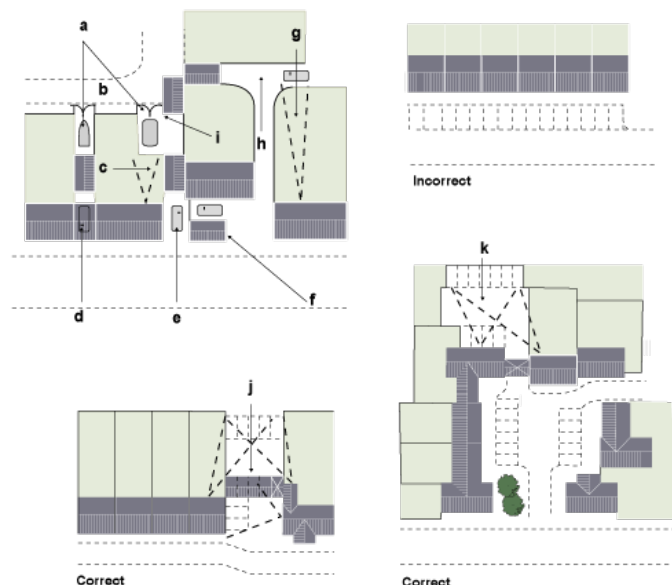
Visitor parking within parking squares

Residents Parking

- 4.21 Residents' spaces or garages may be located on or near the frontage, but in such a way as not to dominate the street scene – for example, through a carriage arch under the building, placed sideways-on to the frontage or down a side-way between houses. Residents' spaces may also be located at the rear of houses, approached between the houses or from a separate road or drive. In the latter case, care should be taken that the parking space is overlooked from the dwelling served, or else is located within a secure garage so as not to provide an opportunity for theft.
- 4.22 One advantage of rear access to individual plots is the possibility of on-plot parking for caravans and boat trailers.
- 4.23 Communal parking areas should ideally be located so as not to be unduly conspicuous in the layout. In other words, a continuous row of parked cars in front of a terrace of houses is unacceptable. Instead, communal parking areas should be divided and distributed around the layout, with some spaces convenient for visitors on or near the frontage, and others at the side or rear of dwellings. Again, in all cases care should be taken that communal parking areas are overlooked by the kitchen or living-room windows of at least some dwellings, or else by footways in regular use, in order to discourage car-related crime.

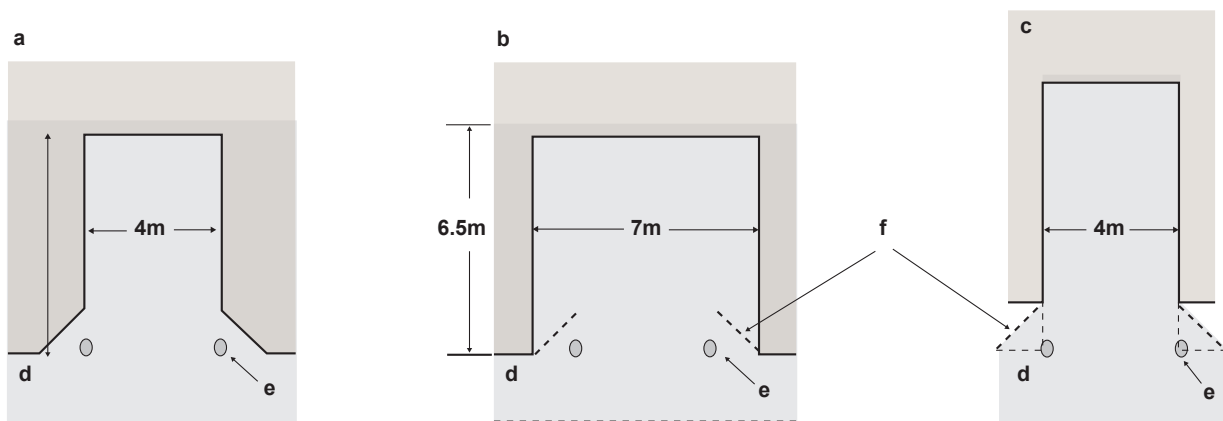
Parking Space

- 4.24 The preferred size of a parking space is 5.5m x 2.9m. When the parking space is located in front of a garage, the long dimension should be 6m so as to allow space to open the garage door. A vehicle and pedestrian sight-splay of 1.5m x 1.5m will typically be required so as to give clear visibility above a height of 600mm where the parking space abuts the rear edge of the footway. Exceptions to this requirement include garages and parking spaces off type F and G roads, parking squares and private drives.



a. On-plot parking for boats and caravans via rear access b. Rear-access road or drive c. Rear spaces visible from house d. Parking space under carriage arch e. Parking and garage down side-way f. Garage sideways on to frontage g. Rear parking space visible from house h. Rear garage approached between houses i. Rear garage approached from rear-access road or drive j. Spaces overlooked k. Rear spaces overlooked

- 4.25 Parking spaces between structures may require an increased area for pedestrian movement around the vehicle. The length and width will relate to the internal dimensions of garages, currently 7m x 3m. In the case of layby parking on a highway, spaces should be 6m x 2m where adjoining a footway or 6m x 2.4m where no footway is provided.



Alternative ways of accommodating parking spaces between or within buildings facing Road Types C-E

- a. Splays cut out from building
- b. Widen space
- c. Set building back from footway
- d. Footway
- e. Bollards
- f. 1.5m x 1.5m sight-splay

- 4.26 A parking space capable of use by disabled people must be widened to 3.6m or adjacent to an area on the same level, such as a lowered footway, containing at least a 1.2m-wide space for getting in and out of vehicles.

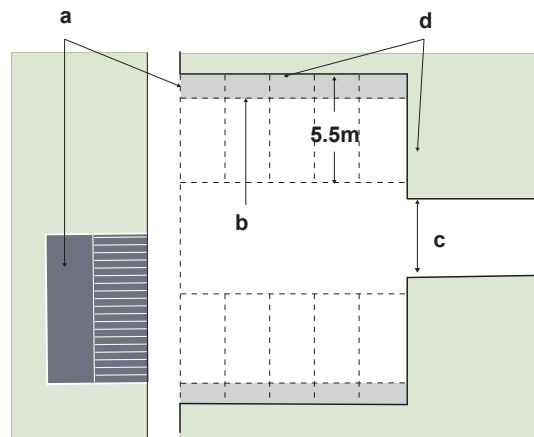
Garages

- 4.27 The minimum internal garage size is 7m x 3m. Where a garage door abuts the back edge of a footway or shared-surface road, the garage should be set back sufficiently for the swept path of the door not to obstruct circulation. However, it should not be set back more than 0.5m unless a full 6m parking space is provided in front. The use of through garages, with doors front and back, is useful in giving access to the rear curtilage for additional parking and storage.

Communal Parking Courts

- 4.28 Parking spaces should be at least 5.5m x 2.9m, and rows should be separated by at least 6m to allow manoeuvring in and out. It may be desirable for some spaces to be designed to accommodate caravans or boats. At least 5% of spaces (with an absolute minimum of one space) in each parking court should be suitable for use by disabled people (see the 'Parking Space' section of this guide).
- 4.29 Entrance ways to parking courts should adhere to the following criteria:
- Up to 8 parking spaces – as for shared private drives.
 - Nine parking spaces and over – access to be 4.1m in width, centreline bend radius 6m minimum, sight-lines as for private drives, headroom 2.5m. If access for fire tenders is required, refer to the 'Access for Fire Tenders' section of this guide.

- 4.30 Apart from small groups of visitor parking spaces on or near the frontage, parking courts should be well-enclosed by buildings or walls to reduce their intrusiveness. At the same time, they should be overlooked by at least some dwellings or footways in regular use, in order to discourage car-related crime. The incorporation of tree and shrub planting will soften the appearance and reduce the apparent size of parking courts, as will the use of more attractive surface materials, such as tar spray and pea shingle dressing, concrete or clay block paving, granite or concrete setts, stable blocks and cobbled edges.
- 4.31 Fences should not be used to enclose parking courts as they are vulnerable to vehicle impact. Walls should be used, and where used at the ends of parking spaces should be protected by a kerb set 600mm into the parking space.



Communal parking court

- a. Overlooked by footway and/or dwelling
- b. Kerb set 600mm into parking space
- c. Appropriate-width entrance way
- d. Above eye-level walls

Garage Courts

- 4.32 A minimum width of 7.3m is required between the fronts of garages. The end wall or kerb of a garage court should be recessed so that most types of car are able to manoeuvre. Sufficient space and gullies should be provided for car-washing. Entrance ways should follow the same criteria outlined for parking courts, but headroom may reduce to 2.1m provided fire tender access is not required.

Underground Parking

- 4.33 Underground parking is the optimum solution to the problem of a lack of parking in urban areas. It is discreet and ideal for large-scale parking, and also allows complete flexibility in the design of buildings and the disposition of uses and activity at ground level. The covering of underground parking provides a deck for development or landscaping, while surrounding buildings can face or back onto this space without constraint upon their configuration or aspect.



Underground parking with communal space above

- 4.34 Viability is the biggest issues in developments using underground parking. Some sites lend themselves to underground parking more than others, either because of the value achievable for the completed property or because of site topography, where natural slopes can be used to reduce site excavation costs.



Underground parking with communal space above

- 4.35 A variation on this arrangement is possible where the parking is not entirely underground.
- 4.36 The depth of excavation can be reduced by raising the ground-floor deck level above the surrounding site, though this arrangement will only be acceptable where the parking floor is entirely enclosed by perimeter buildings. The semi-basement directly under the buildings can be used for additional accommodation either as part of the main property, as part of a live-work unit or as a separate annexe or basement apartment. Short flights of steps or a ramp from the street to the raised ground-floor entrances of the buildings offer the opportunity to introduce some variety in the appearance of the street scene. This design can also enhance the privacy of activity within the ground floors but can limit the range of uses possible on the upper ground floor. It may therefore require alternative access arrangements for disabled, older or less mobile people.



Partial underground parking with raised ground floor

- 4.37 Vehicular entrance ramps to underground parking must be located directly off a street and, while they should be designed to be as unobtrusive as possible, should be clearly identifiable to all users. They should have a maximum gradient of 1-in-7 and ideally incorporate under-slab heating to avoid ice in cold weather. All underground car parks must incorporate a lift to a ground-level entrance lobby. Security issues are paramount and underground car parking provision needs to consider the usual criteria for deterring crime.
- 4.38 As with other parking solutions, the provision and type of ground surfaces should be considered from the outset of any new development, and an approach taken that enables the development to strike an appropriate balance between meeting the needs of all users over its lifetime, without the need for adaptation in the future, and addressing the technical requirements and future maintenance of highways.
- 4.39 Consideration needs to be given to the colours, patterns and types of surface used for ground cover. A varied mix of colours can be confusing for people affected by certain health conditions, including dementia, where black and/or dark colours can be viewed as holes, trip hazards or barriers. On a related note, a variety of patterns can create the illusion that there is no clear route to follow, and result in disorientation and anxiety.
- 4.40 Consideration should also be given to the potential for conflict between the provision of tactile surfaces designed for the blind or partially sighted, and the implications of such surfaces on accessibility for less mobile people, who may be using wheelchairs, mobility scooters or walking aids.
- 4.41 Wherever possible, underground car parking should be designed to be naturally ventilated.
- 4.42 With both underground and under-deck parking, consideration needs to be accorded to potential flood risks. In areas at high risk of flooding, the use of underground parking should be restricted.

Under-deck Parking

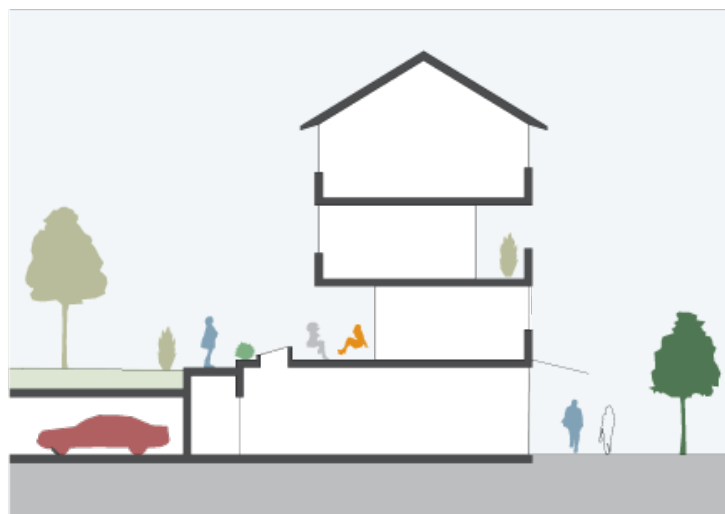
- 4.43 This arrangement requires less site excavation but imposes constraints upon building design at ground level. Ground-floor uses have only a single aspect towards the street and consequently the amount of daylight penetrating the space through the depth of the building is limited. However, the ground floor in this arrangement is very suitable for commercial uses, which can take advantage of the flexible depth the parking area provides to the rear. For retail uses, the space at the back of the shop would be situated under, and ventilated through, the deck above.
- 4.44 Residential and other uses within these building types must take their pedestrian access directly off the street either via individual front doors serving houses or via common entrance lobbies. These should be clearly identifiable to all users. Lobbies must link to the parking area to the rear. All under-deck and underground car parks must incorporate a lift to a ground-level entrance lobby.
- 4.45 Occupiers of buildings will typically find it convenient to have an external staircase from the internal, communal courtyard to the parking area below.
- 4.46 Entrances to underground or under-deck parking areas must:
- be located directly off a street. While entrances should be designed to be as unobtrusive as possible, they should be clearly identifiable to all users. The entrance points should be located so as to avoid the possibility of queuing causing problems within higher category streets. Entrances and access ramps should be no wider than 3.5m with signal-controlled entry and exit for one-way working. Separate pedestrian access needs to be provided to avoid people using the ramps;
 - have a maximum gradient of 1-in-7, with a separate entrance for pedestrians. Ideally, ramps should incorporate under-slab heating to avoid ice in cold weather; and
 - incorporate electronic entrance gates or shutters to provide a secure environment that can be accessed only by residents and other occupiers of the building.



Sketch of internal lobby with through-passage from street to under-deck parking

- 4.47 Underground or under-deck parking areas should also:
- incorporate lifts to ground-level entrance lobbies;

- have a clear floor-to-ceiling height of at least 2.5m;
- be well-lit and finished, ideally with painted floors;
- be naturally ventilated;
- use high-quality materials; and
- consider which colours, patterns and types of surface will best ensure accessibility to users of all ages and a range of physical and mental abilities.



Single-aspect ground-floor uses with rear under-deck access

Multi-storey Parking

- 4.48 Another acceptable method of accommodating parking is in a multi-storey facility on the site, either in conjunction with more conventional patterns of parking or as a way in which car access can be managed and limited within specific parts of a large development.
- 4.49 This arrangement can produce substantial benefits for the quality and safety of the public realm as cars can be effectively removed from some of the spaces around buildings. Occasional access to houses and apartments is required for loading and unloading, service and emergency vehicles and for deliveries, but the resultant total vehicular flow in these places should be extremely low.
- 4.50 For this to be successful requires robust site management. It is important to choose the right site for a multi-storey parking deck to avoid unacceptable impacts upon the development or the location. Access needs may dictate that it is sited close to a street of adequate capacity, pushing the building to a prominent edge of a site, positioned to include a 'vener' of single-aspect uses along sensitive elevations. Good architectural design and landscaping can help to ensure that these buildings do not look out of place within their setting.
- 4.51 The design and location of cycle and mobility aid parking should be carefully considered as part of the internal arrangement of the car park. Such parking should be designed to be easily accessible, conveniently located and safe and secure for users of all ages and a range of physical and mental abilities.

Under-croft Parking

- 4.52 The provision of parking at ground level below buildings is the least satisfactory arrangement for compact urban developments, as it tends to sterilise the space facing the parking. The only circumstance where under-croft parking is acceptable is:
- on small developments of 0.1 hectares or less, or as a small part of a larger scheme; and
 - where it is served from private space, screened from public view; and
 - where no more than 10 under-croft car parking spaces are provided within any courtyard.
- 4.53 As with other parking solutions, the provision and type of ground surfaces should be considered from the outset of any new development, and an approach taken that enables the development to strike an appropriate balance between meeting the needs of all users over its lifetime, without the need for adaptation in the future, and addressing the technical requirements and future maintenance of highways.
- 4.54 Consideration needs to be given to the colours, patterns and types of surface used for ground cover. A varied mix of colours can be confusing for people affected by certain health conditions, including dementia, where black and/or dark colours can be viewed as holes, trip hazards or barriers. On a related note, a variety of patterns can create the illusion that there is no clear route to follow, and result in disorientation and anxiety.
- 4.55 Consideration should also be given to the potential for conflict between the provision of tactile surfaces designed for the blind or partially sighted, and the implications of such surfaces on accessibility for less mobile people, who may be using wheelchairs, mobility scooters or walking aids.



Poorly designed under-croft parking creates dead fronts and divorces the building from activities on the street

On-street Parking

- 4.56 If designed carefully into a development, on-street parking can serve a useful function. Visual quality, traffic flow and pedestrian safety are only compromised when the cars overwhelm the design performance of the street type. Cars inconsiderately parked on pavements or in front of entrances are symptoms of inadequate street management and unsuitable street types for higher-density developments.
- 4.57 This guidance is intended to resolve this issue in a combination of five ways:
- By ensuring that compact development is located in the most accessible locations, making it likely that cars are used less often.
 - Through the introduction of new approved street types that are designed to accommodate short-stay parking.
 - Through the requirement to place adequate levels of parking in secure, communal facilities while making provision for short-stay, on-street parking.
 - Through the possible introduction of private management arrangements.
 - By ensuring that opportunities exist for the conversion or adaption of car parking bays in future.
- 4.58 It is also permissible to design new streets to accommodate some on-street parking spaces. These would be controlled by parking permits as part of a wider strategy for area management, and can be provided as part of the overall parking provision for the site.
- 4.59 As stated within the Parking Standards, some on-street parking (in bays) must be provided for visitors. This should be limited so as not to dominate the street scene and may be better clustered in small groups at convenient points. However, consideration should be given to ensuring accessibility to convenient parking for the ageing population and less mobile people.
- 4.60 Outside these designated spaces, physical constraints and parking management should be employed to make parking elsewhere unlikely.
- 4.61 If the streets are to be adopted by the Highway Authority, parking restrictions should be signalled through the use of traffic signs at the entrances to the development; yellow line markings should not be used. Further guidance on car parking standards for all development can be found in the Essex Parking Standards.
- 4.62 As the way we move about our towns and cities evolves, due in no small part to the anticipated increase in the use of autonomous and on-demand vehicles, changes will occur not only in terms of the location and number of parking spaces, but in the dimensions of those spaces and how smart technology can be employed to make parking more efficient. This could include automated identification of parking-space availability by sensors in kerbs, surfaces or street furniture, directing vehicles to free spaces – which could in turn reduce circulating traffic and minimise the number of required parking spaces. Although this technology is still evolving and the precise forms it will eventually take remain uncertain, developers should already be considering how their schemes might respond to such changes, and should ensure they build adaptiveness into current designs.

Parking for Electric Cars, Cycles, Autonomous Vehicles and Mobility Aids

- 4.63 Passive provision for electric charging points, which can be used by cars, motorcycles, bicycles and mobility aids, should be provided for all proposed on-plot car parking spaces within new developments.
- 4.64 In larger car park settings, such as parking courts, car parks or unallocated street parking, infrastructure should be put in place (via underground ducting) to allow for connection to an electric charging point in future.
- 4.65 The level of provision of electric charging points should be appropriate to the development size and type, its level of parking provision and its context and location. In the case of car parks, upstanding or inset charging points can be integrated into the design, whereas more innovation may be required for on-street charging points – which should be integrated into street lighting columns or other smart street furniture items so as to reduce street clutter.
- 4.66 Autonomous vehicles are likely to have a large role not only in shaping mobility and how we use cars, but in the future of development layouts. It is likely that instead of using on-street or parking court areas, autonomous vehicles will self-navigate to large parking areas or multi-storeys on the edge of urban areas, where they will be serviced and charged between trips. The amount of space given over to on-street car parking is therefore likely to reduce substantially in future. Instead, short-term drop-off and pick-up areas will be integrated into highways close to homes.
- 4.67 While there are currently many unknowns (and while present parking standards should still be adhered to), designs should strive for flexibility in the face of technology-driven changes to the way we use cars. Wherever possible, designs should be adaptable, allowing for features such as new charging technologies or the conversion of parking areas to green space.

Car-sharing and Car Clubs

- 4.68 The potential for car-sharing is not necessarily directly related to the total provision of car parking on any site, but it can be an attractive proposition for some. Not everyone needs to use a car every day and there are clear personal, financial benefits in spreading the cost of car ownership and travel among friends, colleagues or neighbours.
- 4.69 Car-sharing schemes can be introduced into new developments as part of a package of measures (including safe and attractive streets, good lighting and convenient cycle storage) designed to give residents and employees a realistic and attractive alternative to owning a car. Ideally, the car-share vehicles themselves should be low-emission, electric, dual-fuel hybrid models.
- 4.70 Such schemes are becoming more popular and assistance in establishing them is available from a number of organisations and public partnerships within the region.
- 4.71 Car clubs offer a pay-as-you-drive rental arrangement. This is particularly suitable within compact mixed-use developments where there is likely to be a sufficient market to make such a scheme commercially attractive
- 4.72 A development of at least 100 homes is considered to be the viable economic threshold for car clubs, though this does not mean that they are unsuitable for smaller developments, particularly if the scheme can be extended to the surrounding area.

- 4.73 Developments should be designed to facilitate car clubs either now or in the future. They should also be responsive to changes in local car-driving and car-ownership dynamics, offering the opportunity to change on-street parking spaces to car-club spaces with ease and without detriment to the streetscape.

Cycle Facilities

- 4.74 Cycling is a carbon-neutral means of transportation and a good form of exercise and activity. Increasing the use of cycles can reduce traffic congestion and pollution, and all developments must be designed to encourage cycle ownership and use. It is important that the appropriate infrastructure is embedded from the start so it is considered the norm, rather than expecting residents to adapt to cycle use at a later date.
- 4.75 To this end, all new developments should consider the needs of cyclists with regard to:
- Cycle parking, changing and charging facilities at destinations.
 - Routes between destinations.
 - Cycle storage that is safe, prominent, secure, covered and close to home and work.
 - Opportunity for cycle-hire stations and docks at hub and node locations, community hubs, bicycle repairs, ‘last-mile’ cargo bike deliveries, bike-share schemes etc.
 - How best to embrace new cycle technology.

Cycle Parking Facilities at Destinations

- 4.76 Cycle parking should aim to be more convenient than car parking. New developments should offer appropriate locations to park cycles at popular destinations both internally and in the wider locality, as well as providing supplementary changing and charging facilities.
- 4.77 While the adopted Vehicle Parking Standards for Essex specify the minimum provision required for storage and visitor parking, there is an expectation that the minimum standards will be insufficient to meet the future needs of compact urban development. The requirement is therefore to include additional short-stay cycle parking wherever this may reasonably be considered to be necessary.
- 4.78 For instance, streets must incorporate short-stay parking at frequent intervals located close to building entrances. Within a mixed-use street, stands should be sited in small clusters along its length, on each side of the thoroughfare. Within local and minor streets, stands should be incorporated into the design for space management, possibly acting as traffic-calming features or sited to protect fixed-play equipment.
- 4.79 In appropriate areas, where density and local population is sufficiently high to ensure their use, cycle-hire stations and docks should be provided either at hub locations or key local nodal points. For example, private company Brompton Bikes offers bikes to hire on a short- or long-term basis from convenient lockers located on-street in West London locations. This scheme has proven successful, with a major advantage for urban areas being the relative lack of space required to accommodate folding bikes. It is therefore also important to consider innovation in cycle design and hire technology, and how space (and relevant underground services) can be allocated within developments, now or in the future.
- 4.80 It is also important to note that developers may be asked to contribute to the provision of cycle parking at important locations within the immediate area.

Routes Between Destinations

- 4.81 Connections between home and other destinations should be as safe and practical as possible, including the incorporation of appropriate resting points. The better and more convenient these are, the more likely that they will be used; developments should identify opportunities to add new or improve existing routes within the Context Appraisal. The improvement of routes to local schools and between neighbourhoods is of primary importance.
- 4.82 The community should also be connected to local and structural green space; every new development needs to play a part in contributing to the fulfilment of green infrastructure plans. Well-designed, laid out and landscaped cycle routes, footpaths and other linear features can provide essential links for people of all ages and a range of physical and mental abilities, encouraging users as well as allowing wildlife to move safely between habitats. Development can help ensure a connected green infrastructure by undertaking small, incremental interventions and improvements as opportunities arise over time. Any network should seek to effectively integrate into existing networks beyond the development boundary.



Direct and safe cycle routes

Cycle Storage Close to Home

- 4.83 Facilities for overnight and long-term cycle storage can be made in a variety of ways, although all stands should be secure and under cover, as well as clearly identifiable and accessible to people of all ages and a range of physical and mental abilities. They may share underground, under-deck or under-croft car parking areas or they may be located by a street entrance on the ground floor of a building. In the latter case, it is good practice to position these storage facilities close to the ground-floor entrances to apartments in purpose-designed spaces. Sufficient cycle parking should be available for all residents of apartments.
- 4.84 Larger developments such as garden communities should consider the potential for more collective, managed arrangements, such as cycle-hire, that would work well in association with a cycle-repair workshop. With such alternative arrangements in place, the level of long-term cycle storage elsewhere on the site could be reduced.



Cycle stand, Sweden