

04

MAKING THE CONNECTIONS

4.1 Walking **4.2** Cycling **4.3** Public transport **4.4** Streets and traffic **4.5** Parking and servicing
4.6 Utilities infrastructure



What is meant by the Connections

Towns exist for interaction. They depend upon movement systems - roads, streets, footpaths and public transport routes; also the service utilities (water, gas, electricity, etc.) which make urban life possible. These connections allow towns to work and link to the wider world.

None of these movement systems exist in isolation. As well as being the means by which we get around and buildings are serviced, they are a crucial component of urban character. Just as much as architecture or landscape they help determine whether places are good or bad. So whatever their function, connections need to be thought of as an integral part of the urban fabric.

Why the Connections are Important

The success of a town or new development depends on how well the connections work. The measure of their success is not just their functional performance, but how they contribute to the quality and character of the urban area:

Linking up

New developments need to be clearly linked to existing routes. The more direct links there are, the more successful will be the integration of new and old.

Movement choices

Connections should give people the maximum choice in how to make their journeys, with a presumption in favour of walking, cycling and public transport.

A sense of place

Making connections is an essential part of creating a sense of place. This means that roads, streets and the routes for utilities should be designed in response to the local context.

Safe routes for all

Maximising choice in how people move around means creating routes all of which are felt to be safe. Segregated routes for people on foot and cycles are not always the best solution.

The parking problem

Parking needs as much thought as connections. Indeed a poor parking strategy can wreck a scheme.

Better traffic management

Design the layout of buildings and spaces to help control the flow and density of traffic. Signs and add-on traffic calming features should only be relied on as additional measures.

This section considers accessibility within the urban area – how easy it is for people to travel and the choice they have about how they travel. The concern here is how to design developments that offer people travel choices that are widely accessible and meet the needs of everyone.

Layout is a major influence on how people choose to travel. Over the last 50 years or more the planning of development has been dictated primarily by the geometry of road design, and this has had the effect of encouraging car use, even for journeys which would be much better made by walking or cycling.

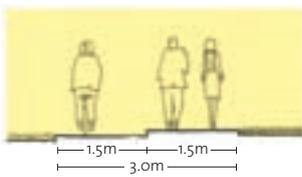
To reverse this tendency means designing with all forms of movement in mind, not just the geometry of road layouts. What matters is that, wherever possible, movement on foot, by bicycle or by public transport should be as easy and convenient as using the car. This doesn't mean excluding the car: what is needed is an appropriate balance between traffic and other uses to create attractive, lively, safe and interesting places.



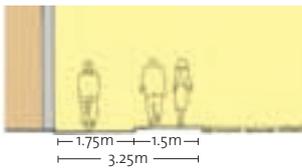
Bede Island North, Leicester: Connecting a new neighbourhood	
Location	Former derelict railway land to the west of Leicester city centre, near to the De Montfort University campus.
Design team	Leicester City Council's Urban Design Group
Client	Leicester City Challenge Ltd / Leicester City Council
Site area	13.7 hectares
Project	A mixed-use development including housing (housing association, privately rented and student accommodation), a business park, shops, and a pub in a converted pumping station. The heart of the development is a new 1.9 hectare park. The movement framework has three main aspects: <ul style="list-style-type: none"> • main pedestrian link through the square and park provides excellent route from the university and city centre to adjoining housing areas. • site also relates to the Great Central Way, a main cycleway/footpath through the city. • because of proximity to city centre and public transport, residential parking is restricted to one bay per house, parking for the business park is three spaces per 100m², lower than the provision at first demand.
Contact	Environment and Development, Leicester City Council, New Walk Centre, Welford Place, Leicester LE1 6ZG Tel: 0116 252 7239



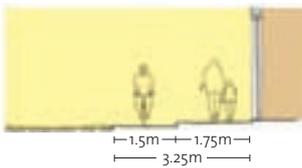
A wide, well lit underpass in Grant Park, USA



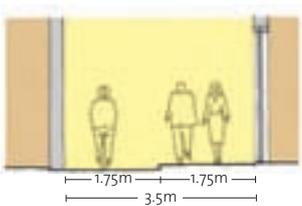
Kerb segregated facility open on both sides



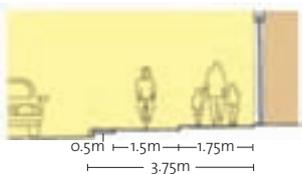
Kerb segregated facility bounded on cycle track side



Kerb segregated facility bounded on footpath side



Kerb segregated facility bounded on both sides



Kerb segregated facility bounded on footpath side with verge between cycle track and adjacent carriageway

Minimum dimensions for shared cyclist / pedestrian routes, segregated by a change in level

The needs of people on foot require careful analysis, and should be paramount in development layouts.

4.1.1 THE PEDESTRIAN ENVIRONMENT

Pedestrians and cycle-friendly streets

It is a useful approach to design the pedestrian environment using the 'Five C' principles:

- **Connections**
Do good pedestrian routes connect the places where people want to go?
- **Convenience**
Are routes direct, and are crossings easy to use? Do pedestrians have to wait more than 10 seconds to cross roads?
- **Convivial**
Are routes attractive, well lit and safe, and is there variety along the street?
- **Comfortable**
What is the quality and width of the footway, and what obstructions are there?
- **Conspicuousness**
How easy is it to find and follow a route? Are there surface treatments and signs to guide pedestrians?

If the street is designed for low speeds, pedestrians, cyclists and vehicles can mix safely. Generally speaking conventional streets provide the most convenient, direct routes to places which cyclists and pedestrians, like everyone else, want to get to.



Cyclists, pedestrians and cars can learn to live together. Freiburg, Germany



A bridge giving access to the town centre over the railway is for trams, cycles and pedestrians only. Freiburg, Germany.

It’s good to walk

A safe, attractive and well cared for public realm will encourage people to walk. The key considerations are:

- people prefer to walk along streets where they can be seen by drivers, residents and other pedestrians;
- if segregated footpaths are provided, they need to be well-connected and overlooked by houses and other buildings;
- all measures that slow traffic help pedestrians feel safer. At junctions, the use of raised surfaces and tight radii make it easier for pedestrians to cross;
- well designed shared surfaces avoid conflicts of movement yet encourage other activities to take place. To achieve this, subtle variations of material or bold changes of detail are appropriate, depending upon the location;
- footpaths should lead where people want to go, rather than follow a preconceived geometry;
- footpaths in new developments should be positive, direct and barrier-free.



A linear park of exceptional quality runs along the top of the viaduct.

The Bastille Viaduct, Paris: <i>Landscaped walkways to raise the spirit</i>	
Location	The viaduct is located in the centre of Paris close to the Gare de Lyon.
Design Team	Architect: Patrick Berger Landscape Architect: P. Mathien, M. Vergely
Developer	City of Paris
Details	This development is on a disused urban railway viaduct built in the mid-1800s and unused since 1969. There are two elements to the scheme - a park along the length of the viaduct and below in the arches, shop units have been created taking advantage of the area’s tradition for arts and crafts. The park comprises a promenade formed along its length with planting, water features and pergolas providing interest and shade on sunny days. Linked and adjacent to the viaduct promenade are the Hector Malot Park and Gardens, laid out on the roof of a multi-storey car park. These developments take advantage of rare spaces in the urban fabric to provide beautifully landscaped open spaces offering tranquillity above the bustle of the city below.
Contact	Patrick Berger Ecole Polytechnique Fédérale de Lausanne Tel: 00 21 693 46 59 32 51



On busy roads, separate cycle facilities should be provided. Here, an escalator and wheelchair lift provides access to underground trams.

Cologne, Germany (above and below)



Converting car parking spaces nearest the station to cycle racks encourages cycle and ride. Dortmund, Germany



We cycle less in Britain than in many other European countries, not so much because of topography and climate as because cycling appears to be unsafe and inconvenient. Like walking, many of the measures to encourage cycling are low key and simple. Cycling can be made more popular by providing direct and convenient traffic-calmed routes, with a safe place for people to leave their bikes at their destination.

4.2.1 THE CYCLIST ENVIRONMENT

Design for convenient cycling

Cyclists need clear, direct routes which take them to the shops, school or station without stopping short at awkward junctions or obstacles:

- on low-speed streets (below 30 kph: 20 mph) cyclists can mix with vehicles;
- on busy streets, where there may be higher traffic speeds (30-50 kph: 20-30 mph) there should be clearly defined cycle lanes;
- separate cycle tracks are a major incentive for people to cycle, and should be introduced where space allows.

Passing parked cars

Parked cars can be a particular hazard to cyclists. Effective parking enforcement and the clear designation of parking bays along the street help make cycling more safe.

4.2.2 CYCLE LANES

Streets that are safe for cyclists

Traffic-calmed streets are ideal for cycling, especially where the speed reducing features have been designed as part of the overall layout rather than treated as later additions.

On busy streets, or where it is difficult to reduce traffic speed, separate cycle lanes should be provided, with special provision at junctions. These routes should be clear and coherent: disjointed sections of cycle route are ineffective.

On wide pavements, pedestrians and cyclists can share the same space, but an arrangement with a raised kerb or clear markings is helpful to segregate cyclists from pedestrians. This arrangement also has distinct advantages for blind and partially sighted people.

4.2.3 CYCLE SECURITY

Design-in cycle parking from the outset

There are numerous designs for cycle parking. They should always be considered with other street users in mind, and as an integral part of the overall street layout. Cycle racks added as an afterthought are generally inconvenient and under used.

Make cycle storage for new homes second nature

Where people park their bicycles when at home is all too often forgotten. Bicycles take up a lot of room if parked in the hallway of a typical house or urban flat. Communal indoor cycle storage can make owning and using a bike easier and more attractive, especially in high density areas.



Dedicated busway, Leeds



This automatic bus gate, Cambridge, ensures bus priority



Bus-underground interchange, Canning Town, London

When it's too far to walk or cycle the best alternative to the car within an urban area is generally the bus. The movement framework for new development should provide for a direct bus route, or failing that easy access to an existing route. Discussions with potential operators will identify what kind of service can be provided and the type of bus to be used.

4.3.1 PUBLIC TRANSPORT CATCHMENTS

The people on the bus

A bus route will be viable if there are enough people within a 400m radius (5 minutes walk) of each stop. If bus stops are at 200-300m intervals, a density of around 80 persons per hectare will provide a catchment of 2,000 people per stop: 100 people per hectare provides up to 2,500 people per stop. Densities much below 80 people per hectare may not be attractive to bus operators. Bus routes also need to be direct, rather than forming a contorted series of loops and dead ends. Table 4.1 shows the ideal catchment per stop for different kinds of public transport. There are few schemes that will justify a light rail system or tram, and even fewer that will merit a new railway station. But where these already exist, links to these facilities should be strengthened. Disused railway routes should not be built over to retain the future possibility of retrofitting.

Table 4.1 Catchment areas for public transport

	Minibus	Bus	Guided bus	Light rail	Rail
Stop interval	200m	200m	300m	600m	1,000m+
Corridor width / area served	800m	800m	800m	1,000m	2,000m+
Catchment per stop	320-640	480-1,760	1,680-3,120	4,800-9,000	24,000-

4.3.2 BUS PROVISION

Make it convenient to catch the bus

Even if there are potentially enough people in an area to make a service viable it still needs to be made attractive. What matters most are:

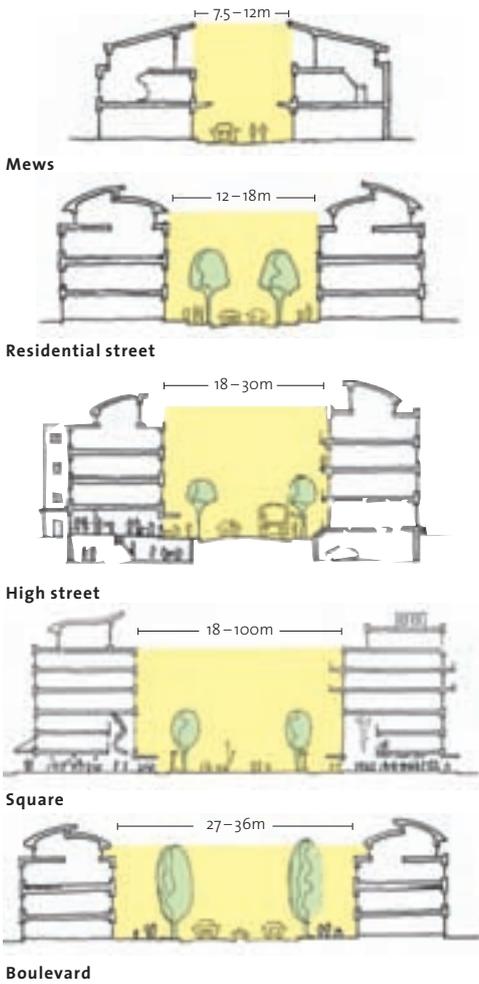
- clear, direct routes to the bus stop, including well-placed crossings on major roads;
- locating bus stops where activity takes place, near shops or a road junction. Ideally a stop should be close to the centre of a place;
- provision of effectively policed bus lanes and bus priority at junctions.



Before: Congestion involving buses is concentrated in one area



After: Reducing the number of lanes and dedicating some of the road-space as a bus lane and a widened footway enlivens the western end of the street and ensures pedestrian and public transport priority.



As well as providing access to buildings and the services to them, streets are our most important public spaces. Streets serve many functions, not only the circulation of traffic, but walking, cycling, play and meeting people. The spaces defined by buildings frame the street.

Streets are multi-functional spaces and there is always the risk of conflict between uses. The key is to design for all the uses and users.

4.4.1 STREET TYPES

Define street types by capacity and character

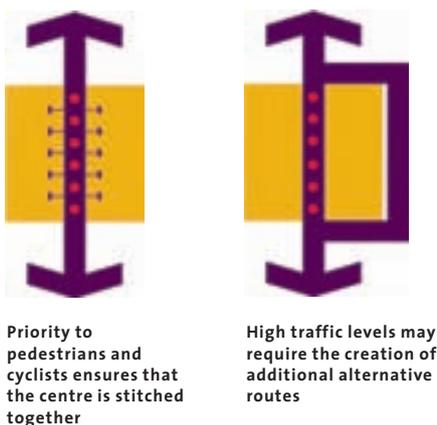
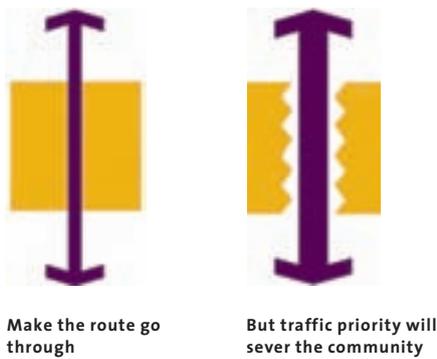
The types of street to be included in a scheme are the key to its overall character. The conventional engineering-led approach to street classification is based solely on vehicular capacity. This regards streets as traffic conduits and ignores their multi-functional role. A new terminology is required to describe all the roles that streets can play in making successful places.

The classification of street types in Table 4.2 considers the street in terms of:

- **Capacity:** how movement of every kind can be accommodated safely.
- **Character:** the role of the street in the urban realm and the types of building and landscape that line it (which is also influenced by enclosure – see 5.1.3).

Table 4.2 Street types that combine capacity and character

Conventional capacity-based terminology	Streets that combine capacity and character
Primary distributor	Main road Routes providing connections across the city
District distributor	Avenue or Boulevard Formal, generous landscaping
Local distributor	High Street Mixed uses, active frontages
Access road	Street or Square Mainly residential, building lines encouraging traffic calming
Cul-de-sac	Mews / Courtyard Shared space for parking and other uses



4.4.2 MAIN ROUTES

Make the route go through

Through routes give life - they are the city's arteries. Determine the main route through the scheme, its relationship to the centre, and its links into the grid.

Pedestrian and vehicular through-movement are an opportunity to create lively, viable mixed-use, rather than a problem to be re-routed. Only where traffic levels threaten environmental quality (noise, fumes etc.) is remedial action necessary.



Pedestrian-friendly street, Hove

4.4.3 STREETS AS SOCIAL PLACES

Streets for everyone

In any development the design of streets should start by asking “what will happen on this street?”. The street should be designed to suit the activities that we would like to see carried out on it. For example, if the street is lined with shops it should be designed to enable people to get to the shops, cross the road, have a chat and linger in front of shop windows, or have a beer in the sun.

The re-integration of traffic and other activities is best done by creating a network of spaces rather than a hierarchy of roads. The arrangement of spaces will take full account of the movement framework for the area, including the analysis of vehicle movements. Inevitably there will be some main roads, either within the development or nearby. These are the main routes for vehicle movement, but should be designed:

- to minimise their negative effects on the area through which they pass;
- to allow their safe, pleasant and convenient use by pedestrians and cyclists.

Places not roads

Adherence to the rigid geometry of road layouts and highway authority adoption standards produces bland, uniform developments. In designing streets, give priority to analysis of the local context, and on that basis design an appropriate network of spaces - such as streets, squares and courtyards. The principle of tracking, described here, and the careful design of junctions, will allow a level of movement to suit those spaces. In already developed areas, the designation of home zones helps produce low traffic speeds (below 30 kph: 20mph) and reinforces the sense of place.

4.4.4 TRACKING

Put the urban space first

The principle of tracking allows the roadway to flow through the middle of the space created by the arrangement of buildings without dominating it. Instead of giving priority to highway engineering requirements, its starting-point is the arrangement of buildings and enclosure. Footways are laid out in front of buildings to reinforce that arrangement. The carriageway width is then checked by plotting the vehicle tracking paths, using the minimum required widths. The kerb of the footway need not follow the line of the vehicle tracking, but sight lines and on-street parking should be taken into account.

A street designed on the principle of tracking will normally be traffic-calmed because of its layout, without the need for add-on measures. The arrangement of building frontages, and the sight lines created, induce drivers to go slowly.



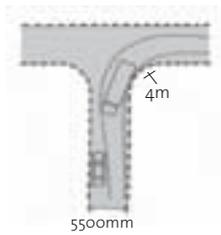
Arrange buildings to form street enclosure



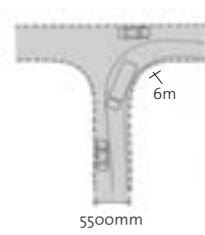
Design footways to reinforce this



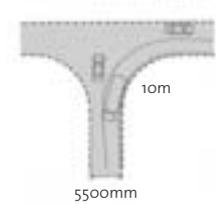
Plot vehicle tracking path, to check carriageway width is sufficient



4m radius – refuse vehicle turning blocks movement for other vehicles on priority road and non-priority road



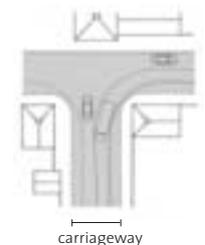
6m radius – refuse vehicle turning allows movement on priority road but blocks movement on non-priority road



10m radius – refuse vehicle turning does not block movement for other vehicles



If footway edge follows the wide swept path of refuse vehicles and buildings are set back to maximise sight lines, a vehicle - oriented layout will result

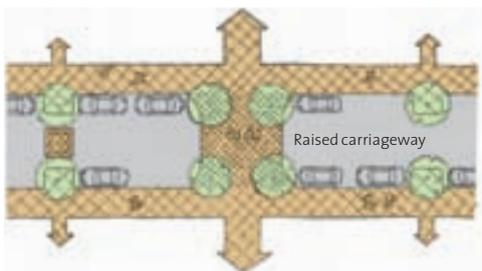


Tighter kerb radii can be used with a wider carriageway. The refuse vehicle turning requirement is still accommodated, yet vehicles do not dominate

By applying the concept of tracking, tighter kerb radii can be used with a wider carriageway to ensure that highway geometry does not undermine the quality of space and traffic calming is designed-in from the outset



Wide pedestrian crossing put people first



The creation of a 20mph zone establishes pedestrian priority

4.4.5 JUNCTIONS

Keep it tight

As with the street, so with junctions: it is the buildings and footway that should define the space at a junction, not the rigid requirements of the vehicle movement. A wide carriageway plus tight, enclosed corners, makes a better junction than cutback corners with a sweeping curve.

The arrangement of a junction will always depend on the local context, and the amount of pedestrian and vehicle traffic that roads are expected to carry. Tight corners with restricted sight lines have a major traffic calming effect.

4.4.6 TRAFFIC CALMING AND PEDESTRIAN CROSSINGS

How much traffic can the street take?

Be aware of the limits to mixing activity. The higher the volume of traffic, the more difficult it becomes to mix activities.

Streets with up to 500 vehicles per hour (two-way) offer pedestrians easy opportunities to cross the road. Streets with between 500 and 1,000 vehicles per hour (two-way) require specific crossing opportunities to be incorporated into the street design to allow pedestrians to cross. Flows of over 1,000 vehicles per hour mean that pedestrians will have to wait to cross the road.

Wide Crossings on Main Roads

A frequent difficulty is where major traffic routes cross major pedestrian routes. The answer here is frequently wide, well landscaped crossings, with the floorscape, lights, and other devices used to define the crossing area. We should seek to rid our towns of the barriers, the uncrossable central divides, for example, by changing main routes to urban avenues, which people walk along and cross regularly in safety and convenience.

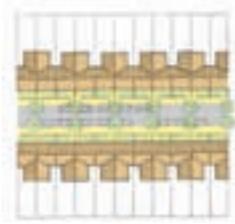
Slow traffic down

For streets to work as social places the traffic must be slowed. The best way to do this is to design streets that encourage drivers to drive with caution. The arrangement of buildings, spaces and activities can act as a natural traffic calmer and has the double advantage of being visually less intrusive and far more pleasant for pedestrians and cyclists.

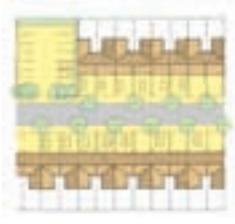
But there are many cases where a development inherits an existing street layout that cannot be traffic-calmed except through add-on measures.

When that is so, two points to bear in mind are:

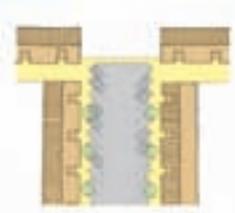
- The measures should be designed with pedestrians, cyclists, public transport, service and emergency vehicles in mind e.g. raised junctions make it easier for pedestrians to cross and chicanes can be used to create informal spaces in the street.
- Traffic calming measures should be designed to suit the local context, avoiding the use of standard solutions. This is the job of the urban designer and landscape architect, not just the traffic engineer.



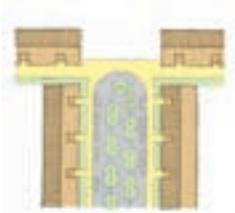
The traditional terrace comfortably accommodates parking on street



Planning policies and standards can create a car-dominated streetscape



The standards-based approach creates standards-based spaces



Traditional courtyards provide attractive spaces within which the car is accommodated

Cars are stationary for most of the time. Where and how they are parked can be a major factor in the quality of a development. Having decided what level of parking provision to make, the main consideration is how to incorporate parking in a development without allowing it to dominate everything around.

Cycle parking is as important, but often overlooked. As well as designated parking near to popular destinations thought should be given to where people will leave their bike when they get home.

4.5.1 PARKING STANDARDS

Keep parking levels down

As a guide in master planning a development, try to keep parking levels (especially off-street) down to no more than a 100% ratio - that is one space per dwelling, with visitor parking accommodated on-street. Special needs housing or housing close to public transport nodes may sometimes be provided with less parking, such as 25% for sheltered accommodation for the elderly.

In considering parking levels, analyse the parking provision and use in the area around. If it can be shown that existing parking levels are lower than the minimum required it will be easier to justify the proposed provision. Look at the possibility of communal parking spaces. For instance, as people leave work at the end of the day their spaces can be taken by people coming to the shopping centre, swimming pool or cinema.

In residential areas, with terrace houses, flats and maisonettes for example, the scheme can be designed on the basis of communal, rather than designated owner parking.



The lack of forecourt parking ensures building thresholds are not dominated by cars



Parking areas are well overlooked

Wick Village, Hackney, London: Limiting the impact of the car	
Location	In London Borough of Hackney, between A102 East Cross Route and the Hackney Cut Navigation.
Design team	Levitt Bernstein Associates
Client	Wick Village Tenant Management Co-operative and London Borough of Hackney.
Site area	1.6 hectares
Project	The replacement of three towers of a 1960s estate by a new development of 123 houses, arranged in a sequence of courts and squares.
Details	<p>Provision for parking at Wick Village has been designed with two priorities in mind:</p> <ul style="list-style-type: none"> To avoid large clusters of parked cars. These are generally no more than ten spaces in any one area. To ensure that parking areas are always overlooked by neighbouring houses. <p>Routes through the area give priority to pedestrians through the provision of frequent raised crossing places. The frontage to the Hackney Cut Navigation is a traffic-free walkway.</p>
Contact	Wick Village TMC Tel: 020 8533 4311



Sensitive on-street parking at Chingford Hall, Waltham Forest



Sensitively located on-street car parking can aid traffic calming



Well designed car port, Devon



Traffic calming is designed in from the outset



Interior parking courts are designed as attractive spaces, overlooked by adjoining buildings

4.5.2 POSITIONING PARKING

Put parking behind, under, above or to the side of the building

The manner in which car parking is arranged has a fundamental effect on the quality of place. Vehicles should not be allowed to dominate the space, or to inconvenience pedestrians and cyclists. The best places for off-street car parking are in secure rear courtyards, where these are well overlooked. What to avoid is parking within the front curtilage. This breaks up the frontage, restricts informal surveillance and is generally ugly.

Keep cars in view

In residential areas, a very careful balance has to be struck between the expectations of car owners, in particular the desire to park as near to their houses as possible, and the need to maintain the character of the overall setting. Where cars are parked in courts or squares, the design should ensure that they are overlooked by adjoining buildings. To avoid parked cars dominating the surroundings there should generally be no more than 10 - 15 spaces in a courtyard.

Parking next to the house

When parking is provided within the building curtilage, cars should be parked at the side of the house rather than the front, or can be enclosed by short lengths of wall which continue the building edge (see 5.1.2). Parking spaces can be provided to the rear of properties within the garden behind the front building line.

Poundbury, Dorset: An integrated approach to traffic calming	
Location	A mixed-use development on the outskirts of Dorchester.
Design team	Masterplanner: Leon Krier Lead consultants: Alan Baxter + Associates
Client	The Duchy of Cornwall
Site area	71.5 hectares
Project	The first phase, including 135 houses, has been completed. By 2018 there will be 2,189 houses, plus workspaces, shops and other facilities.
Details	The development makes full provision for car ownership, but has been designed to encourage travel on foot, by bicycle and by bus. There is clear evidence that those who already live and work there are less car dependent than people in comparable communities elsewhere. Each phase of the development has been designed around a network of spaces to create a series of distinctive neighbourhoods. Streets and squares are formed by the arrangement of buildings, with the carriageway designed on the tracking principle. Traffic calming is designed into the overall layout, rather than treated as a later addition. Parking provision is mainly in squares and courtyards, where the parking spaces are overlooked by adjoining houses and buildings.
Contact	Duchy of Cornwall Office, 2 Longmoor Street, Poundbury, Dorchester, Dorset DT1 3GN. Tel: 01305 250 533



Landscaping of car parks should screen vehicles and establish direct footways connecting with nearby buildings

4.5.3 CAR PARKS

Divide up the commercial car park

In commercial developments the best way to alleviate the effect of large parking areas is to ensure that they are designed as an integral part of the landscape treatment and managed communally. This also ensures that pedestrian movement is not determined and restricted by vehicular movement requirements. Parking layouts should be obvious and logical and avoid the creation of leftover space.

Make car 'parks' just that

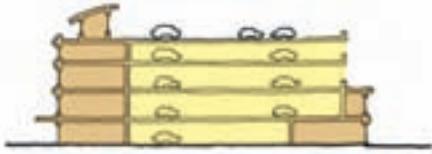
Shared surface treatments can be effective although it is important to ensure that pedestrian routes are clearly defined - particularly in teaching children about road safety and maintenance of the pavement as a 'safe' area. Adequate space should be allowed for tree planting to all parking areas. This can be one of the most successful devices for integrating parking in to the urban landscape.

Parking can enliven the street

On the street, a certain amount of parking has a beneficial traffic calming effect, but the layout should be designed to accommodate it. Parking can be incorporated within a widened carriageway that also allows room for street trees and gives pedestrians greater freedom of movement.



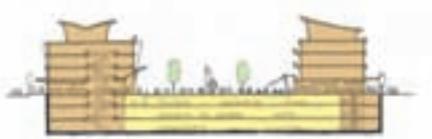
The Waitrose car park in Witney, Oxon, has been well-designed around existing mature trees



A shielded multi storey parking structure



An undercroft parking space



A basement parking space

Basements and multi-storeys: soften and screen

The benefit of underground parking is that it allows the street frontage of buildings to be maintained. It may be possible to service ground storey shops and businesses from the underground area. Parking spaces demand a rigid geometry - a 16m wide space accommodates two rows of parking bays, but this geometry should not necessarily dictate the design of the above ground building.

Multi-storey car parks should generally only be considered when they can be designed to incorporate ground level activities such as shops or offices, and then need to be carefully designed to contribute to the street scene. Sensitively designed, multi-storeys integrate with the surrounding urban fabric when they are 'wrapped' by single aspect buildings for other uses.



Multi-storey car parks can be disguised by wrapping single-aspect housing around the perimeter ...

... but do it in a subtle way!

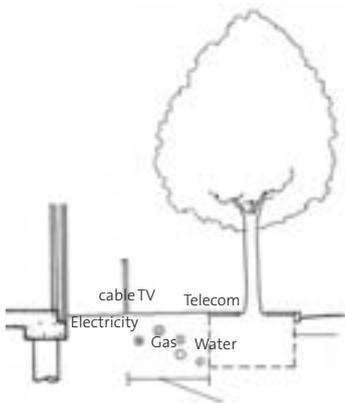
4.5.4 SERVICING

Service from the street

The ideal form of delivery is from the street directly to the building in the traditional way. Where a delivery/storage yard is required, place it at the rear and frame it with buildings to avoid the invariably unsightly yards and building edge. In largely urban situations basement servicing may be possible and encouraged. Time management regimes can be a very useful device especially where there is not a means of reaching a satisfactory design solution.



Disturbance caused by reversing lorries should be avoided in designs (here in the otherwise impressive Brook Green flats-over-superstore development in Hammersmith, London)



Grouped service strips help minimise maintenance disruption and avoid features such as trees

The services infrastructure is an essential part of a development, but it can be a source of clutter and a major irritant when services have to be renewed.

4.6.1 SERVICES ROUTING

Make services subservient to layout

The standard arrangement of service corridors beneath the pavement can have a detrimental effect on the layout of new developments. The routing of services should be designed to suit the kind of place that is being created.

There are two variations on the standard services corridor design:

- routing the services away from the main street, for instance down a back street or through rear courtyards. This may be more direct and economic, and make life easier for those living in the area when the services have to be dug up;
- fitting the services into the landscape, for instance by bunching them to avoid features such as trees.

Services to individual houses and buildings do not always have to be provided from the road frontage: with the agreement of the utilities they can be routed from the rear of communal areas.

Co-ordinate design development with service providers

Today's extensive site services often require extra space, which can be particularly disruptive to the floorscape during the early periods of development. The key is good planning and liaison with the service providers. They need involving early in the design process. This consultation should cover routes, requirements and programming. Care should be taken to coordinate routing and access covers with paving design.

Put services underground in shared strips

Services conventionally follow the routes taken by roads and footpaths, and the standard arrangement of a 2m wide corridor beneath the pavement has a major influence, sometimes detrimental, on the layout of new developments. One main reason for the use of this arrangement is that utility companies have a statutory right to install apparatus in the highway. However, subject to the agreement of the utilities, services can be routed away from the adopted carriageway. Multiple services can be accommodated in shared service strips.

4.6.2 EQUIPMENT BOXES

Hide the boxes

With the proliferation of service providers (particularly the number of cable TV companies) the number of equipment boxes in the street multiplies. Junction boxes for telecommunications and cable TV are needed at frequent intervals (about one per eight houses for cable TV) but are relatively unobtrusive. Having said that, care should be taken over where they are placed in the footway. Larger equipment boxes, access points and traffic light control boxes are much more obtrusive. They should not be allowed to obstruct the footway but should be sited elsewhere, for instance set into boundary walls or masked by shrubbery. Equally, the unsightly clutter of satellite dishes on houses can be avoided by the provision of communal equipment.



1960s tower blocks have been replaced with a mix of low rise flats and housing

Waltham Forest Housing Action Trust, North-East London: <i>Focusing on the infrastructure</i>	
Location	Three sites in North East London.
Design team	Masterplan: Hunt Thompson Associates Alan Baxter & Associates
Client	Waltham Forest Housing Action Trust
Architect	Hunt Thompson Associates
Project	Partial demolition and phased redevelopment of three 1960s East London high-rise housing estates. Involves relocating 3000 residents into 1400 new housing units consisting of terraced housing and low-rise flats.
Details	<p>In creating the masterplan for the redevelopment of the estates, a key issue was the services infrastructure. Important points were:</p> <ul style="list-style-type: none"> • The integration of new infrastructure into the existing. • A coordinated approach to infrastructure, covering all facilities including roads and services. • Identifying the location of existing services despite inaccurate existing information. • Taking into account major existing services and accommodating them within the overall framework. • Allowing for future access and ease of maintenance by sensibly locating new services and buildings and by using common trenches. <p>The existing infrastructure necessitated particular solutions:</p> <ul style="list-style-type: none"> • In one instance there were an EHV (Extremely High Voltage) mains and a 4ft gas mains running across the site. It would have been prohibitively expensive to relocate these, with the result that the site layout was adapted so that these mains would run beneath roads. • By contrast, in another case the proposed street plan necessitated the diversion of a culverted river. It was found to be the most economical solution. The culvert was relocated along the periphery of the site and runs for most of its length beneath one of the new streets. • A major sewer ran beneath the proposed site of a new housing block. After initially rejecting the idea of building over, it was decided to construct the block so as to straddle the existing sewer using piled foundations on either side.
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