

**Design Details**  
**Streets and Roads**  
**V.1**

## Content

### Design Detail Section

#### 1. Architectural Details

- Building form
- Modelling
- Dormers
- Placing of openings
- Solid and void
- Balance
- Windows
- Appropriate use of materials
- Appropriate detailing for the materials used
- Chimneys
- Porches
- Other details
- Protection from noise sources
- Indicative house types
- Daylight and sunlight
- Garden size
- Rear privacy
- Private sitting-out areas

#### 2. Internal Design Details

- Accessibility for disabled people to dwellings
- Internal space provision
- Extendable houses
- Sound insulation
- Nationally described space standards

#### 3. Layout Details

- Permeability and legibility of the layout
- Legibility
- Criteria for layout at densities
- Below 20 dwellings per hectare
- Criteria for the creation of urban space at densities over 20 dwellings per hectare
- Criteria for placing buildings at densities over 20 dwellings per hectare
- Criteria for development types over 50 dwellings per hectare
- Housing layout and design – plots and internal spaces
- Urban grain
- Movement
- Mixed uses
- Private space

- Densities for sustainable development
- Influences upon sustainability
- Renewable energy for developments
- Electric vehicles

#### 4. Parking Design

- Accommodating the car
- Types of parking
- Visitor parking
- Residents parking
- Underground parking
- Under-deck parking
- Multi-storey parking
- Under-croft parking
- On-street parking
- Parking for electric cars, cycles, autonomous vehicles and mobility aids
- Car-sharing and car clubs
- Cycle facilities

#### 5. Street and Roads

- Services
- Post boxes
- Television and radio aerials and satellite dishes
- Street name-plates and markers
- Refuse collection
- Pedestrian and cycle movement
- Designing streets in support of buses
- Vehicular movement in residential areas
- Character and speed
- Street design
- Access to non-residential uses
- Speed restraint
- Surface materials
- Gateways
- Shared surfaces
- Smart technology
- Car-free zones
- Adoption criteria
- Street trees
- Public art

## 6. Highways Technical Manual

- Street type table
- Street type description
- Parking square
- Pedestrian and cycle movement
- Bus stops, routes and termini
- One-way street
- Speed restraint within a 20mph zone
- Junction types and design
- Junction spacing
- Visibility
- Planting in sight-splays
- Turning heads
- Vertical clearance under structures
- Driveways to individual dwellings
- Bollards
- Kerbs
- Street lighting
- Access for fire tenders
- Commuted sums
- Adoption and maintenance of roads, footpaths and open spaces

Recommended plant species

Urban public space

Mental health

Successful criteria for public open spaces

Ecology and Biodiversity

## 7. Flooding

- What are Sustainable Drainage Systems?
- Sustainable development
- Design criteria
- Local principles
- Local standards
- What are watercourses?
- Consulting the Lead Local Flood Authority

## 8. Landscape and Greenspaces

- The benefits of Green Infrastructure and Biodiversity
- Landscape - key requirements
- The key principles of public open space
- Allocating space for green areas
- Community space for growing food
- Public space for growing food in developments
- Technical and practical considerations of food growing
- Use of landscape in urban spaces
- Public open space

## 5. Streets and Roads

This section explores how well connected spaces can be created through permeable networks within developments and good signage. This section focuses on street and road design, giving consideration for how we should aim to design permeable layouts that link well to the existing transport, walking and cycle networks both inside and outside of the development.

It gives consideration for how utilities should be installed across the development including where to best locate services in areas such as shared surface streets or public open space, and advisory settings for components found on streets or roads.

This section also identifies types of road layout, speed limits and access considerations, lighting and parking information that should be provided to users of the space.

This document should be read in conjunction with the Highways Technical Manual which provides specific technical guidance on how to build a layout in compliance with Essex Highways and Manual for Streets standards.

### Key Messages

- Design permeable layouts that connect well with existing walking, cycling and passenger transport networks within and outside of the development.
- Consider the Healthy Streets ‘whole-street’ approach, including how to encourage active travel among all demographic groups.
- Prioritise (in order), walking, cycling and public transport desire-lines access, which maximise sustainable access between settlements and to key local movement generators.
- High-quality communal spaces should be provided with supporting facilities which encourage activity by users and should be co-located within the layouts of new developments.
- Unnecessary through traffic should not be attracted to new residential areas. The layout and attractiveness of the environment should be such as to discourage the use of the car for local trips and encourage walking and cycling.
- Design for future adaptation of spaces, enabling them to accommodate changes in the way we use streets and transport.
- Future technology infrastructure, such as smart street lights, street furniture, cycle parking and electric vehicle charging infrastructure, must be planned now and integrated successfully into new streets and spaces
- Provision and type of ground surface materials should be considered from the outset of any new development, and an approach taken to enable the development to strike the right balance between meeting the needs of users and addressing the technical requirements of highways.
- Materials should respond to and complement the specific built/landscape settings, with greater place-making emphasis in sensitive locations such as relating to conservation areas, protected landscapes and strategic open space.
- Good workmanship begins with good design, and to be effective it must be carried through all

stages of a project; that is, through the specification, detailing, implementation and site supervision to the maintenance regime. It must also be supported by the allocation of adequate resources such as skilled labour, time and funding.

## Key Questions

- Does the layout promote a coherent, direct, safe, comfortable and attractive network of walking and cycling routes?
- Does the layout promote the co-location and concentration of key retail, community and open-space uses?
- Are the walking and cycling routes and bus waiting areas within the layout safe, well-lit, overlooked, welcoming and attractive, well-maintained, durable, clearly signposted and supported by appropriate shelter, seating and resting points?
- Is secure and covered residential cycle storage provided in a prominent location which encourages cycle use over car use?
- Have private communal spaces been designed to encourage a range of activities for all genders, ages, cultures and abilities?
- Do the streets and spaces provide flexibility and allow for future changes in how they are used?
- Has consideration been given to how future utilities and technological infrastructure can be accommodated without detriment to the public realm?

## Services

- 5.1 Supply and disposal services should be provided in a manner that is both technically and visually satisfactory, i.e. both convenient and discreet. Services should be considered early in the design process as an integral part of a development's layout. Statutory undertakers and other service suppliers should therefore be consulted at an early stage.
- 5.2 The economic use of space in a layout means that underground services will almost inevitably be located under roads and footways. Indeed, the National Joint Utilities Group (NJUG) publication 'Provision of Mains and Services by Public Utilities on Residential Estates' (1979) recommends as a 'general aim' that services be laid under publicly adopted areas for improved maintenance access. Utilities providers typically do not wish to be forced to negotiate easements across private land.
- 5.3 In new developments, future disruption should be minimised by accommodating services under footways or service strips rather than under carriageways. Designs should also seek to future proof services provision by allowing space within the ducting for future technologies. Ducting should run to a point at the property boundary where it can be conveniently connected at a future date if required.

## Routing of Services

- 5.4 All services should be routed underground. In planning terms, the overhead distribution of electricity or telecommunications services is unacceptable. Free-standing street furniture and statutory undertakers'

markers should be kept to a minimum.

## **Routing of Services in Carriageways**

- 5.5 Sewers generally take priority in the laying out of services. As space under footways is limited, sewers should typically be located under carriageways.

## **Routing of Services in Footways**

- 5.6 Volume 1 of the NJUG publication 'Guidelines on the Positioning and Colour Coding of Utilities Apparatus' 2013 (Issue 8) indicates that electricity, water, gas, telecommunications and cable TV services can be accommodated in a 2m-wide strip under a footway. This strip should incorporate features that allow for easy maintenance access (such as lighting columns) while minimising the disruption caused by maintenance work.
- 5.7 If the various utilities providers are willing to cooperate, services should be accommodated within a single duct wherever possible. As mentioned previously, ducting should have space to accommodate additional services and utilities infrastructure in future – for example, district heating or waste systems. Superfast broadband should be included as an imperative within all new development, and should be accommodated within the same single-duct design. It can then be connected to individual premises as required.
- 5.8 Buildings near any service mains should have sufficiently deep foundations not to impose a structural load on the mains.

## **Routing of Services & Verges**

- 5.9 Roadside verges, whether publicly adopted or privately held, should be reserved for trees and other planting, and must therefore be kept clear of underground services.
- 5.10 Note: when trees are located within the highway verge, they are subject to commuted sums for maintenance.

## **Routing of Services in Public Open Space**

- 5.11 If a sufficiently large area of publicly adopted space is available beside a significant length of road, it may be possible to locate sewers under it. This avoids encumbering the carriageway – though sewers should be situated in such a way as not to prevent the proper planting of the space.

## **Routing of Services in Shared-surface Streets**

- 5.12 In streets with no separate footway, services should be carefully grouped so that excavation for maintenance does not block the street. Where there is a defined pedestrian margin, this is the correct location for underground services. Multi-way ducts and/or jointing chambers may be required, depending on the policy of the individual utilities providers; however, utilities should still be consolidated in a single ducting run wherever possible.

## **Routing of Services and Shared Private Drives**

- 5.13 The developer must negotiate the system of supply with the individual utilities providers, agreeing rights of access and apportioning any additional costs. Easements with individual householders should be avoided, and any general easements should be entered in the title deeds of all the properties sharing the access.

## **Service Intakes to Dwellings**

- 5.14 Meter cupboards and service intakes should be located either out of sight on flank elevations or in purpose-made joinery designed to fit the pattern of apertures on the elevation. They must be located at least 0.5m from the highway.
- 5.15 All intakes apart from gas should be run within the building and not be visible on the exterior. These requirements should be covered by conditions of the planning permission.
- 5.16 All new homes should be connected to ducting spurs with capacity to accommodate future utilities infrastructure. Space should also be provided within the home for the retrofitting of new technologies – for example, battery storage.

## Substations and Governors

- 5.17 Electrical substations and gas governors should be subtly located, considering visual and recreational amenity and self-policing, and housed in purpose-made buildings designed and located to blend in with the adjoining housing. Aside from the visual benefits, this will minimise noises and smells experienced by neighbours.
- 5.18 Electrical substations and gas governors must be shown on planning applications; it is recommended that a condition be imposed withdrawing utility providers' permitted development rights in such cases. Infrastructure associated with district and ground source heating systems (and similar) should be designed to blend seamlessly into both the landscape and the built form, with the opportunity for further adaptation should the relevant technologies evolve.

## Post Boxes

- 5.19 Where possible, post boxes should be integrated into walls. Delivery holding boxes should be integral with postal collection boxes, not strapped to the side. It should be noted that the existing format of provision is a longstanding traditional appearance which is readily recognisable by all. While integration is considered appropriate in the future, these features should still be easily recognisable and/or located – such visual prompts are particularly important for people with dementia, who require recognisable waymarkers to help them navigate the local environment.

## Television and Radio Aerials and Satellite Dishes

- 5.20 To reduce TV and radio aerial clutter, developers should consider either a communal aerial with wired supply to each dwelling, or covenants requiring aerials to be located in lofts.
- 5.21 A block of flats should always have a communal aerial and satellite dish if cable TV is not available; a condition should be attached to the planning permission to this effect.
- 5.22 Cable networks, in those areas where they are available, supply all channels currently available by conventional aerial or satellite dish, and developers should combine provision of cable TV with covenants banning both aerials and satellite dishes. In those areas where cable distribution is not available, satellite dishes should be located as inconspicuously as possible. This means that dishes should be of a dark-colour mesh and placed away from the front and roof of the dwelling. Again, this principle is best supported by attachment of a relevant condition to the planning permission.

## Street Name-plates and Markers

- 5.23 These are best fixed to walls and buildings where they can be clearly seen – though it is worth considering ways to integrate such features into the fabric of buildings themselves. This can be achieved through the use of materials, brickwork or rendering.
- 5.24 Free-standing street furniture and statutory undertakers' markers should be kept to a minimum.

## Refuse Collection

- 5.25 Refuse-collection vehicles will circulate on all parts of the adopted road system but not on private drives. In the case of mews court cul-de-sac, they will enter in reverse gear and not turn. Refuse collection will be made only from those dwellings within 25m of an adopted road local operatives may have different criteria.
- 5.26 In other cases, it is necessary to provide a shared bin-collection point screened by an above-eye-level wall. This should be located within 25m of an adopted road.
- 5.27 In the case of terrace houses, refuse-collection points or related access should be located at the rear of properties rather than at the front. Refuse collection points should be accessible to people of all ages and across a range of physical and mental abilities. Such facilities should also be clearly identifiable, particularly for the partially sighted, blind and those with dementia.
- 5.28 Many innovative developments have implemented vacuum waste and storage facilities, reducing the number of on-street bins as well as the frequency of refuse collection. This method involves constructing an underground vacuum-pipe system connected to refuse-deposit points above ground (locations may include central hubs, nodal points or community spaces). The vacuum-pipe system removes deposited refuse and recycling to a central store for convenient storage and collection.
- 5.29 Progressive refuse disposal systems should be considered wherever possible. Where it is not feasible to incorporate such a system into a development, street design should allow for their introduction at a future date.
- 5.30 Other refuse systems that reduce the visual and practical impact of large numbers of bins include large-capacity standalone in-ground waste stores shared by streets or neighbourhoods. These stores can be mounted, lifted and emptied by refuse-collection vehicles. Again, such infrastructure should be considered at an early stage to avoid the need to retrofit with its ensuing disruption and detrimental impact on the streetscape.

## Pedestrian and Cycle Movement

- 5.31 In new residential areas, pedestrian and cycle movement should be coherent, direct, safe, comfortable and attractive. The pages in this section outline the design guidelines for how this can be achieved identifying considerations around pedestrians and cycles, cycle movement in developments and design principles.
- 5.32 Route design should overcome any physical barriers to pedestrian and cycle movement while taking into account topography, the lighting of routes and appropriate shelter, seating and resting points. The latter



in particular should be accessible to and suitable for users of all ages and a range of physical and mental abilities. It is worth noting that this may result in the creation of less direct but flatter routes.

- 5.33 Direct routes should be provided to local facilities and adjacent neighbourhoods in such a way that it is more convenient and attractive to walk or cycle than to drive to such destinations.
- 5.34 The overarching aim should be to discourage the use of cars for local trips and to encourage walking and cycling between homes and local facilities. It is also important to ensure good accessibility and multiple pedestrian and cycle access points to residential areas from major roads.
- 5.35 A wealth of cycling infrastructure is available to designers; for more information, refer to Sustrans' 'Guide to Cycle Friendly Infrastructure' and 'Essex Cycling Strategy' documents.

## Pedestrians and Cycles

- 5.36 With regard to the protection of the ageing population, people of reduced mobility, the partially sighted, the blind and people with dementia, the clear demarcation and identification of pedestrian routes is essential. Therefore it can be preferable not to locate cycle and walking lanes beside each other.

## Cycle Movement in Developments

- 5.37 Designers need to ensure that they understand what cyclists need and how they behave, i.e. widths required by cyclists, visibility needs at junctions, preferred gradients, low-speed manoeuvres, parking manoeuvres etc.
- 5.38 In addition, designers need to understand the characteristics of a cycle network and should demonstrate how their proposals will enhance existing strategic networks in Essex. For more information, refer to the suite of cycling plans created by Essex County Council.
- 5.39 Networks within new developments should link to the wider community while providing access to and through local centres. This often requires the introduction of mixed-priority streets, direct connections, filtered permeability, area-wide 20mph limits, cycle-friendly junctions, on- and off-carriageway cycle tracks and traffic-free routes. As a rule, developments should maximise route opportunities with secure and convenient cycle-parking at both ends.
- 5.40 Designers should consider the principles that underpin cycle-friendly design and how they can be applied to route design and development. The central principles of cycle-friendly design seek to encourage routes that are coherent, direct, safe, comfortable and attractive.
- 5.41 The following principles have been adapted from the Sustrans publication 'Principles and processes for cycle friendly design' and are recognised as industry standards.
- 5.42 Table below shows the core cycle-friendly design principles.

Criteria	Description	Typical measures
Coherence	<ul style="list-style-type: none"> <li>• Link all potential origins and destinations</li> <li>• Be continuous and recognisable</li> <li>• Offer a consistent standard of protection throughout</li> <li>• Be properly signposted</li> <li>• Include well located cycle parking</li> </ul>	<ul style="list-style-type: none"> <li>• Continuity of suitable provision along the route</li> <li>• Routes through areas inaccessible to motor traffic</li> <li>• Route must be recognisable - and ideally intuitive enough that cyclists do not need to depend on frequent signing</li> </ul>

Directness	<ul style="list-style-type: none"> <li>Be based on desire lines</li> <li>Result in minimum detours or delays</li> <li>Provide a positive advantage in terms of directness and priority over motor traffic</li> </ul>	<ul style="list-style-type: none"> <li>Cyclist being able to maintain an appropriate speed</li> <li>Minimised delays in junctions and crossings</li> <li>Route not perceived as a detour (this may include a trade-off between distance and gradient)</li> </ul>
Safety	<ul style="list-style-type: none"> <li>Be safe and be perceived as safe</li> <li>Provide personal security</li> <li>Limit conflict between cyclist, pedestrians and other vehicles</li> </ul>	<ul style="list-style-type: none"> <li>Reduce traffic speed and volume</li> <li>Relocation of road space as the norm</li> <li>Safe provision at crossing and junctions</li> <li>Adequate width, forward visibility and turning radii on traffic-free routes</li> <li>Provide lighting where used for utility trips</li> </ul>
Comfort	<ul style="list-style-type: none"> <li>Be smooth, non-slip, well maintained, drained and free of debris</li> <li>Offer sufficient width for the level of use</li> <li>Offer an easy gradient</li> <li>Be designed to avoid complicated manoeuvres</li> <li>Enable cyclists to maintain momentum</li> <li>Minimise impact of noise, spray and headlight-dazzle from other traffic</li> </ul>	<ul style="list-style-type: none"> <li>Dropped kerbs are flush</li> <li>Minimise requirement to give way at junctions</li> <li>Adequate turning radii</li> <li>Lighting on routes used for commuting and utility trips</li> <li>Attention to detail</li> </ul>
Attractiveness	<ul style="list-style-type: none"> <li>Be attractive and interesting</li> <li>Integrate with and complement their surroundings</li> <li>Contribute to good urban design</li> <li>Enhance personal security</li> <li>Be well maintained</li> </ul>	<ul style="list-style-type: none"> <li>A pleasant environment for cyclist exposed to their surroundings</li> <li>Incorporate green space and trees</li> <li>Be situated in front of buildings rather than behind them</li> </ul>

## Design Principles

- 5.43 This diagram illustrates how traffic volume and speed should influence decisions about the segregation of cyclists from other traffic. It also demonstrates how the restraint of traffic speeds and volumes may be used to create conditions likely to encourage new and novice cyclists to use the carriageway.

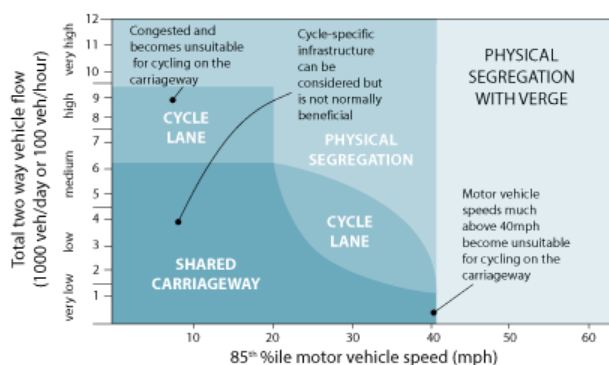


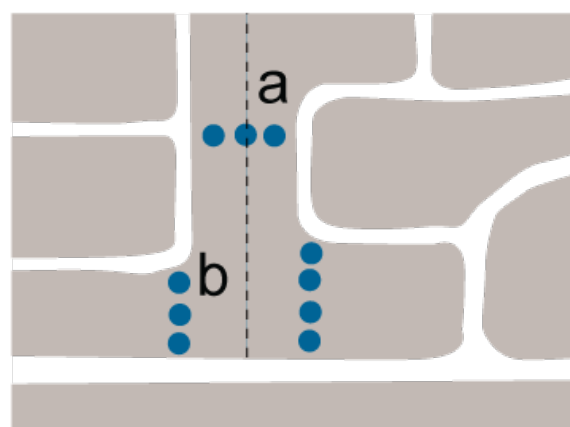
Diagram graph showing traffic volume and speed

## Cycle Links and Designs

- 5.44 Incorporating the relevant infrastructure from the outset is key to the success of both pedestrian and cycle routes – as are adequate storage/cycle-parking facilities.
- 5.45 In new developments, good design can create opportunities for children to cycle to school unaided and unaccompanied – unfortunately, unsafe routes and a lack of safe cycle-parking at or near schools can prevent this becoming a reality.
- 5.46 Note: an Essex Cycle Design portal is currently in development.



*Preferential routes through a network*



*a. Link between adjacent areas without  
b. Multiple accesses preferable to channelling pedestrians and cycles through one vehicular access*



*(Left) Pedestrian and cycle link*

*(Right) Pedestrian and cycle link with private drive serving houses*



## Designing Streets in Support of Buses

- 5.47 Public transport use should be actively encouraged, whether as part of shorter local journeys or longer journeys using different modes of transport.
- 5.48 Shopping, employment zones, schools and community areas should be served directly by buses, where the stop may also be used as a terminus with a stand or layover facility.

- 5.49 The pages in this section outline the considerations to ensure streets and roads are designed to effectively incorporate buses into the layout.
- 5.50 Bus stops, Routes and Termini
- 5.51 To ensure effective passenger pick-up and drop-off, the approach to the bus stop should be kept permanently clear of parked vehicles.
- 5.52 The associated infrastructure of passenger shelters, real-time passenger information and Disability Discrimination Act (DDA)-compliant raised kerbs should be incorporated as the development progresses.
- 5.53 All 'intelligent' services at a bus stop – such as internet connectivity and real-time passenger information – should be connected and functioning before the stop is put into operation. Where such services are not included, it is important to provide the underground infrastructure to allow for their provision in future.
- 5.54 Streets used by buses should be laid out to provide a reasonably direct route in and out of the development. They should also incorporate good access to and from key attractors (such as schools and community or retail centres) as well as trip-generators (such as residential areas). Stops should be provided at key intersections within the local pedestrian network, so as to comply with ECC policy that all new homes are located within 400m actual walking distance of a bus stop.
- 5.55 It may also be appropriate to incorporate bus links or gates and/or bus lanes. These features can encourage use of public transport by affording buses a journey-time advantage.
- 5.56 Bus routes should be designed to avoid the need for buses to make reversing manoeuvres. Where developments sit alongside each other, routes should be designed to run through one development and into/out of the other via a bus gate or similar arrangement. In cases where a terminus is unavoidable, it should be noted that a full-size bus requires a turning circle of 26m in outside diameter.
- 5.57 In general, where the stipulated traffic speed is 30mph or under, bus stops should not be located in laybys unless the location is likely to become a timing point or bus terminus (where buses may wait several minutes for their departure time). Bus stops should instead be located within the overall limits of the carriageway. In situations where a bus standing in the carriageway is likely to cause congestion, it may be necessary to consider the provision of a half layby.

## Service Provision

- 5.58 Bus operators are generally required to offer their services as soon as the street carrying the bus route is in place or when it is agreed that a reasonable number of passengers will benefit from the service. Developers may have to provide a subsidised bus services in the early years of a development so that the service can be made available as the first occupants move in; this helps to establish the habit of using public transport from the outset. Developers of large residential areas must show proposed bus service provision in their planning applications.

## Traffic Calming on Bus Routes

- 5.59 Traffic calming by vertical deflection is not recommended on bus routes, though it may be unavoidable in order to achieve other important place-making objectives. Where vertical deflection methods are employed on a bus route, they should take the form of table arrangements with a table over 12m in length. This helps to avoid buses' 'grounding' and thereby minimise negative impacts on bus drivers and passengers.

## Vehicular Movement in Residential Areas

- 5.60 The design of new residential areas should allow for safe and pleasant vehicular movement while ensuring vehicular access does not negatively impact the visual environment, the needs of the pedestrian or the needs of cyclists sharing the same corridors.
- 5.61 While it is important to design developments that accommodate current standards and types of movement, it is also necessary to recognise and plan for the changes that will be brought about by future developments, not least the introduction of autonomous (self-driving) vehicles. This could result in changes to the streetscape such as the removal of on-street parking bays, the removal of street furniture associated with vehicular movement and the narrowing or tightening of roads, radii and junctions (due to the reduction in the additional space required to accommodate driver error). At present, definitive information regarding such changes is unavailable; nonetheless, all new developments should be designed with future adaptation in mind.

## Character and Speed

- 5.62 Unnecessary through traffic should not be attracted to new residential areas, and the layout and attractiveness of the environment should be designed to discourage the use of the car for local trips. Conversely, walking and cycling should be encouraged.
- 5.63 To achieve these aims, the environmental requirements of the urban space within which each street is located should determine the width and maximum speed of the street. This means that the character and pleasantness of a space takes precedence over the speed and throughput of traffic that will be carried by the street contained within it. By calming traffic in residential areas in this way, the safety and enjoyment of pedestrians and cyclists is increased.
- 5.64 All new residential areas should be considered as elements of approximately 700 dwellings. Each of these elements (as well as any development of less than 700 dwellings in size) are to be served entirely by streets with a design-speed of maximum 20mph.



*Character and pleasantness of space takes precedence over speed and traffic*

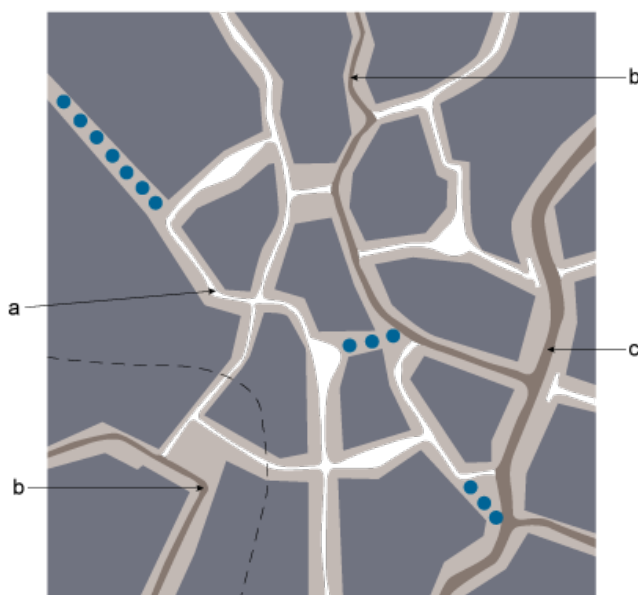
## Street Design

- 5.65 Eight different street types (Types A-H) are identified within this guide; their design specifications, main attributes and uses can be found in the 'Highways Technical Manual' section of this guide. All street types will contribute to a well-structured network in and relating to settlement areas and can help to accomplish the aim of reducing driving speed. It is generally preferable to use changes in horizontal alignment to restrict drive speed, as physical obstructions like speed humps and chicanes should only be used in those less frequent cases where straight sections of road are required for urban design solutions. In some contexts, such as town centres, a more bespoke approach is appropriate; this should be discussed with the Highway Authority and the Local Planning Authority.

### General Design Criteria

- 5.66 The design of new developments should strike an appropriate balance between meeting the needs of all users over their lifetimes and addressing the technical and future maintenance requirements of highways.
- 5.67 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.
- 5.68 Well-designed 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, and can allow 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
- 5.69 Streets and roads that are connected in a grid or deformed grid pattern, aid permeability and promote active travel, and there should be a preference to construct networks from linked streets. Cul-de-sac should be limited in number and restricted to those parts of a site which cannot be served in any other way.
- 5.70 The use of cul-de-sac layouts can also deter the elderly, less mobile or those with dementia from engaging in the community. The design lends itself to walking long distances to access services and facilities, which is unattractive to older people and the less mobile, while the presence of dead ends can cause confusion and anxiety for those with dementia. The repeated nature of these layouts, with no clear distinction between areas, can also cause confusion.
- 5.71 While the street types and configurations within the street type table will be adopted by the Highway Authority for the purposes of maintenance, it is open to planning applicants to propose other solutions that achieve the same purposes; these will be considered on their merits.





*a. 20mph/30kph network. Types E-G*

*b. Higher capacity feeder road 20mph/30kph. Type D*

*c. Larger road linking groups of up to 700 dwellings 30mph/50kph. Type B*

## Mixed-use Streets

- 5.72 This street type links neighbourhoods in urban areas where commercial or retail use may be mixed with residential use, and where loading access may be required for service vehicles over 7.5 tonnes. This road type may also serve as a local bus route. Mixed-used streets are designed to be the major streets within any urban or neighbourhood centre, but can also be used where the intention is to attract a variety of uses requiring more spacious servicing and access arrangements.
- 5.73 The best quality surface materials are reserved for this type of street. Variations on the standard street type are possible, though differences will should be discussed with the local Highway Authority.
- 5.74 Built frontage will be required along the rear of the footway, but occasional set-backs are permitted where these create small spaces for sitting out. Street trees, lighting columns, parking ticket machines and bus shelters can be incorporated within this zone as integrated features of the street design, taking sight-line constraints into consideration. For dimensions, refer to the Highways table.
- 5.75 Goods and loading provision must be considered at the design stage to ensure that the requirements are dealt with in the most satisfactory way. To accommodate delivery vehicles, laybys for unloading will need to be 2.5m in width, which will have the effect of localised narrowing of the footway. Small delivery vehicles may service units from these on-street loading bays providing that they do not restrict traffic flow. Development proposals should consider the operational requirements of mixed-use units that front the street, and issues relating to deliveries must be discussed and agreed with the Highway Authority.
- 5.76 Rows of street trees should generally be spaced at 17m centres, which should allow for the placement of two single-car parking spaces or one short loading bay between them. Trees should be set back a minimum of 1m from the kerb-line of the carriageway.
- 5.77 Mixed-use streets should be designed to restrain the speed of traffic to 20 mph (30kph) or less. This should be achieved by raised tables at street junctions. Road humps should not be used. Speed-restraint

measures are required to be located at least every 60m along the street. As it is desirable that side-junctions will occur approximately every 100m, an interim speed-restraint measure is required between such junctions.

- 5.78 Mixed-use streets may take access from an existing county road of either type 1 or type 2. Junctions require a minimum kerb radius of 10.5m. There must be a minimum straight length from the junction of 22m from the channel of the main road. Sight-lines should be as recommended in Manual for Streets (2007).



*Retail activity extending into the public realm, Westbourne Grove, London*



*Successful mixed-use street, Hennef, Germany*

## Access to Non-residential Uses

- 5.79 Non-residential uses such as churches, community halls, shops and small businesses would preferably be located within a 20mph zone. Schools should preferably be located within 20mph zones and should not be accessed via a cul-de-sac. The school entrance should be arranged to provide a frontage of non-vehicular public space. Adjacent footways should be at least 3m in width.
- 5.80 Businesses likely to be regularly serviced by vehicles larger than 7.5 tonnes, such as retail stores or supermarkets, must be served on their delivery side by a road no smaller than type D, or else by a 6m-wide one-way loop road.
- 5.81 Heavy industrial uses will not be appropriate in or near a residential area without suitable mitigation to avert unacceptable impacts on human health and wellbeing. Other businesses will be considered on their merits, dependent on their size and the traffic they are likely to generate.
- 5.82 Parking and service areas for non-residential uses will not be adoptable by the Highway Authority, but where they are shared by a number of small retail or business users and not frequented by vehicles larger than 7.5 tonnes, developers should consider fronting buildings onto them and encouraging through pedestrian movement. This will help to ensure that they do not become enclosed areas liable



to criminal activity. These should be wrapped by perimeter development to form a private, discreet and secure rear court, or framed by overlooking development frontage and landscaped to provide attractive and self-policed public realm.

- 5.83 Parking for non-residential uses should be provided according to how accessible those uses are by means of transport other than the car, and by whether trips are shared between a number of adjacent uses or peak at different times. Consideration should be given during the design of such spaces for how deliveries and servicing are likely to change in future, and to how the layout can accommodate such changes without detriment to the urban form and public realm.
- 5.84 As the purpose of locating non-residential uses in or adjacent to a predominantly residential area is to encourage trips by means other than by car, car parks should not be placed in front of main entrances but at the side or rear of buildings, where they will not form an obstacle to pedestrian or cycle access.
- 5.85 Larger car parks such as those operated by retail stores should be fragmented into a number of smaller car parks and generously tree-planted. Secure cycle parking should be provided in accordance to the EPOA Essex Parking Standards.
- 5.86 Consideration should also be given to how larger car parks are likely to change over time as a result of a reduction in private car ownership and increase in autonomous vehicles. These large areas of hard surfacing often occupy a significant proportion of land in key locations, and it is important to consider how the space can adapt and change should car use reduce.

## Speed Restraint

- 5.87 All new residential developments containing a road system which measures more than 100m from the entrance of the development to the furthest extremity of the road system are to constitute, or form part of, a 20mph zone.
- 5.88 Speed-restraint measures are to be used throughout 20mph zones and do not require warning signs within the zone. However, signs (in accordance with DfT Traffic Advisory Leaflet 2/93) and an entrance gateway are required to indicate to drivers that they are entering such a zone. While this guidance is intended for developments being designed and constructed in the present, it is worth considering how design measures taken to reduce vehicle speeds could be future proofed, removed or have their space re-allocated if speed-controlled autonomous vehicles become the predominant mode of travel in future.
- 5.89 Speed Restraint designs should not appear 'engineered' or unduly clutter the street scene. They should instead be subtly incorporated to form an integral part of an attractively designed public realm, including using a coherent (usually simple) palette of materials, colours and textures, and where appropriate exploiting opportunities for increased planting, play and other usable space. Designs should also respond to the general style of route, for example being formal in nature on regular boulevards but informal where an organic ad-hoc character is desired.

### Speed Restraint Within a 20mph Zone

- 5.90 All new residential developments containing a road system which measures more than 100m from the entrance of the development to the furthest extremity of the road system are to constitute, or form part of, a 20mph zone.
- 5.91 To encourage adherence to the designed maximum speed of 20mph, it is necessary to implement one engineering measure drawn from lists (a) or (b) in each 20mph zone. In many circumstances, it will also

be necessary to implement a complementary measure drawn from list (c). Lists (a) to (c) can be found in the Speed restraint within a 20mph zone section of the Highways Technical Manual.

- 5.92 Measures to reduce visibility for the driver are not acceptable by themselves. Rumble strips are also not an adequate speed-restraint measure. Speed-restraint measures should be located at maximum intervals of 60m, starting within 50m of the entry junction or zone. They must be in a different surface material from the rest of the carriageway and well-lit. They may take the form of changes in horizontal alignment, changes in vertical alignment or complementary measures.
- 5.93 The visibility of a route can be agreed on a case by case basis, with the standard being applied to the geometry of the road.
- 5.94 In order to qualify for relaxation of signing requirements for speed-restraint measures, each development must receive a Department of Transport Certificate. This should be applied for by the Planning and Highways Authorities after speed checks to confirm that design speeds are being achieved on the completed scheme. However, developers can be reasonably certain that their schemes will comply if the Highway Authority has approved their submitted drawings.

## Surface Materials

- 5.95 A change in materials or, for example, higher kerbs can serve to emphasise other speed restraint measures and reduce the apparent width of the carriageway. Higher kerbs or retaining walls should be protected from pedestrians by thick planting or railings.
- 5.96 The provision and type of materials used for ground surfacing should be considered from the outset of any new development, and an approach taken to enable the development to strike the right balance between meeting the needs of all users, over its lifetime, without the need for adaptation in the future, and addressing the technical highway requirements, and future maintenance.
- 5.97 Consideration needs to be given to the colours, patterns and type of materials to be used. A varied mix of colours can sometimes be confusing for people affected by certain health conditions, including dementia, where black and/or dark colours can be viewed as a hole, trip hazard or barrier, and a variety of patterns can create the illusion that there is no clear route to follow, and result in disorientation and anxiety.
- 5.98 Consideration should also be given to the potential for conflict between the provision of tactile surfaces that are 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.

## Gateways

- 5.99 The main purpose of a gateway is to indicate visually to drivers that they are entering a special area, such as home-zone or mixed-use street. The gateway may consist of a pinch point of buildings or walls approaching the carriageway, or of a physical gateway either arching over the road or taking the form of a pair of substantial brick piers, close to the carriageway, public art and a change surface treatment.
- 5.100 Gateway features may be used on the approach to a development, but any structure within the highway would be subject to a licence and/or commuted sum for maintenance.

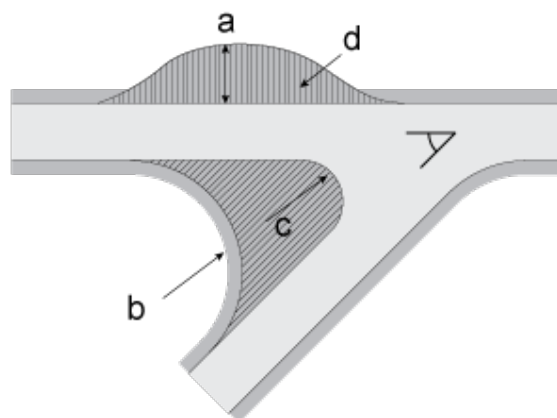
- 5.101 The footway may pass through the gateway or around it. In the case of a physical gateway, structures should be designed to withstand vehicle impact and should provide a minimum headroom of 4.2m. Arches over the highway need to be licensed, and physical gateways will not be maintained by the Highway Authority.
- 5.102 Gateways should also be distinct in appearance, so that pedestrians from all parts of the population – including the partially sighted, older people and people with dementia – can understand their purpose without confusion.



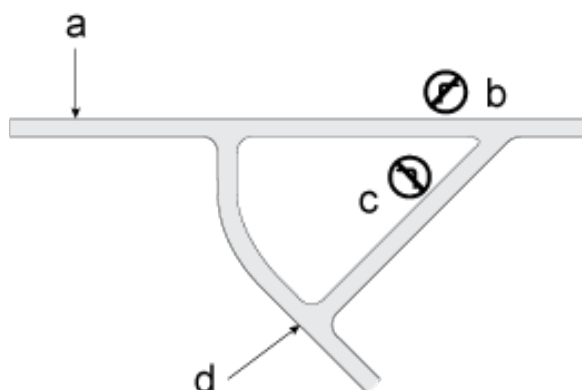
a. Gateway consisting of 'pinch point' of buildings b. Soft approach to gateway c. Physical gateway

## Shared Surfaces

- 5.103 Where a shared surface such a parking square forms an incident along a conventional road, its approaches should be ramped as described in the 'Speed Restraint Within a 20mph Zone' section of this guide, so that the whole shared surface is treated as a plateau. Channels or rows of setts demarcating the vehicleway and a different colour of paving for the perimeter footway will be sufficient indication for the visually impaired and people with dementia.
- 5.104 The advent of autonomous vehicles offers significant potential benefits to shared-space areas. Partly, this is because speeds will be restricted automatically and vehicles will be aware of potential hazards. This will reduce collisions and incidents caused by human error, thereby eliminating many of the concerns currently associated with this street typology.
- 5.105 With this in mind, the future form and arrangement of the street needs to be taken into consideration at the design stage. For example, can vertical or horizontal traffic-calming methods (which are perhaps detrimental to visual design but fundamental to creating effective shared spaces) be designed so as to be easily removed in future? What alternative, improved forms can shared spaces and their associated hard and soft landscaping take when there is no longer a risk of collision or speeding vehicles?



*a. 5.6m service vehicle overrun b. 10.5m radius for service vehicles c. 4.5m radius for cars d. Mountable shoulders in vehicle-deterrent paving to provide service vehicle overrun*



*a. 45° b. 'No right turn ahead, turn right here for Road X' sign c. 'No right turn' sign d. 'No left turn' sign e. 'No left turn in Road X, straight on for Road Y' sign*

## Smart Technology

- 5.106 As our streets become smarter, opportunities arise to accommodate new technology within –and thereby to enhance – street furniture.
- 5.107 While many lighting columns are now fitted with sensors to control their operation remotely, trials have been undertaken for the installation of smart lanterns on key streets, which can host a variety of smart technology to measure aspects such as pollution, weather, pedestrian flows and vehicle traffic.
- 5.108 The large number of street lights in Essex constitute an unrivalled opportunity to roll out smart technology on a large scale, providing a significant amount of data and information about our streets and living environments.
- 5.109 Instead of allocating specific technological functions and associated hardware to lighting columns, the latest trials have involved the testing of software integrated into intelligent lanterns which can be adapted and run alongside a series of programmes or apps related to specific needs. This effectively futureproofs the installation and allows it to adapt as new technology becomes available.

- 5.110 Development should consider how smart street furniture can be integrated into the public realm and streetscape through the provision of necessary underground infrastructure and connections (such as superfast broadband and additional power capacity). The same principles should be applied to other street furniture items with similar potential, such as refuse bins that report when they are almost full or wayfinding measures that offer connectivity to smartphone apps.

## Car-free Zones

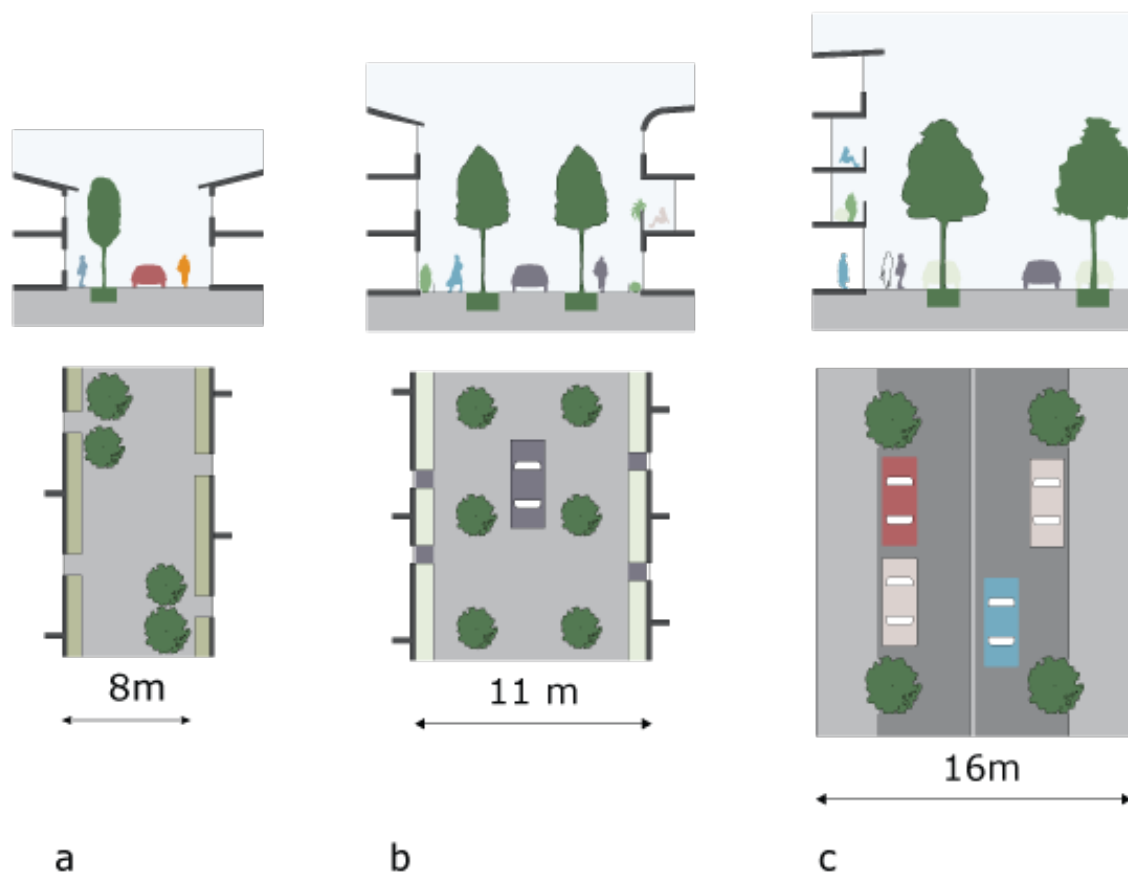
- 5.111 In order to reduce traffic and its detrimental effect on the environment, as well as the amount of space given over to car parking, Local Planning Authorities may designate car-free residential zones. These will normally be areas in or with easy access to the centre of large towns where a wide range of facilities, employment and access to public transport is available within walking distance of the home. In this situation residents are likely to be prepared to sacrifice the benefits of car ownership in exchange for enjoying increased walking/cycling convenience and to enjoy a car-free environment. Where possible, remote car parking should be available within 400m (a 5 minute walk) of homes within the zone. Entirely new carfree zones are relatively new to the UK, though there are a number of continental schemes to be learnt from, notably the Vauban neighbourhood in Freiburg. For town centre zones, remote car parking might be in the form reserved spaces in existing public car parks, perhaps as part of a town centre wide initiative promoted by the local authority. Car clubs are encouraged to further reduce car ownership, parking demand and costs.
- 5.112 Formal restrictions on the property purchase/tenure of residents of car-free zones must be arranged in order to ensure that the initiative is not compromised. Parking restrictions are likely to be required in the vicinity of car-free zones.
- 5.113 As the purpose of a car-free zone is the exclusion of private vehicles, there should be no parking provision either on or off the highway for either residents or visitors. However, provision must be made for access within reasonable proximity of most dwellings for emergency services and deliveries.
- 5.114 The street system should consist of an overall paved surface that reads as ‘pedestrian’ and thus discourages vehicular traffic – i.e. square paving slabs, interlocking clay-block paving, granite or artificial setts, stable blocks or tar spray and shingle dressing. Entrances to the zone should be over a dropped kerb from access streets leading to the zone.
- 5.115 Up to within 45m of the furthest part of the ground floor of the furthest dwelling, the street system of the zone should be laid out to the requirements in the preceding paragraph for access for fire tenders. However, the vehicle path thus determined should not be marked out, the paving being laid between the faces of buildings, walls, garden boundaries, and designed primarily for pedestrian and cycle use. The paved area should contain trees and other suitable obstacles that discourage parking but still allow a free path for delivery and emergency vehicles.
- 5.116 The pedestrian street system should link up with other streets outside the zone and offer a choice of routes through the area, but the Highway Authority will only adopt those streets that form part of a main pedestrian or cycle through route.

## Adoption Criteria

- 5.117 To secure the adoption of estate roads as public highway on completion, the developer is strongly advised to enter into an agreement with the Highway Authority under Section 38 of the Highways Act 1980. When a development receives approval under Building Regulations, the Highway Authority will seek a guarantee that all roads, footpaths, verges and so on will be completed in accordance with the standards set down by that authority. Before any building construction work begins on a site the developer must:
- complete payment of the estimated costs of the works under the Advance Payment Code of Section 219 of the Highways Act 1980; or
  - enter into a Section 38 Agreement and provide a bond for due completion.
- 5.118 Once work has commenced on-site, the Highway Authority should be notified so that arrangements for regular inspection and approval can be made. Any highway work which has not been inspected will remain unadopted until relevant tests have been carried out at the developer's expense.

## Street Trees

- 5.119 Trees have an important role to play in the sustainability of our towns. Species that are appropriate for their location, well-planted and maintained can deliver many benefits including shelter, improved air quality, support for wildlife, climate moderation and reduced risk of flooding. They also have the effect of softening and humanising what can otherwise become a hard, urban environment.
- 5.120 Choosing the right tree is vital, and a list has been compiled in conjunction with this guidance to suggest trees suitable for specific locations (refer to the Landscape and Greenspaces section of this guide). These species are typically better suited to the sometimes difficult conditions found within urban areas while also requiring minimum levels of maintenance. The list is not exhaustive and other appropriate species can be considered. Where services are close to street trees, a suitable root barrier (such as root deflectors) should be provided, so as to protect against damage to services, cables and pipes.
- 5.121 Root barriers are constructed before planting and can incorporate single trees or protect entire tree-lined streets. For established streets, creating root barriers around each tree is often the best solution, whereas for new roads and footways a long, straight barrier between the planted zone and services is preferred.
- 5.122 Tree-planting should be undertaken by appropriately qualified contractors who understand the technical requirements of pit size, irrigation and staking. The design of tree guards, grilles and porous gravel should be compatible with the chosen design theme of the space as a whole and submitted for planning permission as part of the public space proposals for any development.



*a. Play Street: informal tree-planting to guide and slow down vehicles b. Narrow street: trees to zone the space c. Mixed-use street/wide street: trees between on-street parking spaces*

## Public Art

- 5.123 The pursuit of beauty and sensory stimulation within public space requires, among other things, the presence of public art. Artists are among a number of professionals whose skills can be brought to bear on improving the visual and cultural richness of the environment through a wide variety of measures, including structural fabric and infrastructure design, landscape and environment management, education and community development.

## Cultural Wellbeing and Public Art

- 5.124 Public art can make a significant contribution to the cultural wellbeing of a community and the physical landscape. The National Planning Policy Framework (NPPF) explains that the purpose of the planning system is to contribute to the achievement of sustainable development. It sets out three dimensions to sustainable development: economic, social and environmental. The social role is considered to include cultural wellbeing.
- 5.125 The NPPF's 12 core planning principles include a requirement that developments take account of and support local strategies to improve cultural wellbeing for all, delivering sufficient community and cultural facilities and services to meet local needs.



## Definition of Public Art

- 5.126 Public art is the term given to art projects created by professional artists, creative practitioners and craftspeople, that can be enjoyed in public spaces by residents of and visitors to a community, rather than in an art gallery or institution.

## Characteristics of Public Art

- 5.127 Public art can be freestanding, fixed, permanent or temporary, and can take the form of:
- Functional artworks – for use in the design of the environment (seats, gates, flooring, fences, arches, lighting etc.)
  - Decorative artworks – such as mosaic floors, wall murals, stained glass windows, textile hangings, photography, sculpture and paintings.
  - Artist residencies – leading to the creation of installations or exhibitions where the artist works with local communities, schools etc.
  - A shared cultural experience – such as performances or creative workshops.
- 5.128 The outcomes and narrative of public art vary considerably; however, consistent qualities of successful public art are that it is site-specific and relates to the local context.

## Aims When Including Public Art Within a Development

- 5.129 Public art might contribute towards cultural wellbeing through:
- building community cohesion by involving the community, encouraging members to share ideas about and experiences of their lives and living in the new community;
  - developing a positive identity for the development, or spaces within the development;
  - creating links between the new development and existing communities or institutions;
  - conserving cultural heritage;
  - creating or celebrating local character and distinctiveness;
  - enhancing the design of the built environment; and/or
  - encouraging people to use public spaces in a new development.

## Making Public Art

- 5.130 Developers should ensure that the brief for the public art addresses this guidance and is as wide as possible, allowing artists themselves to suggest different approaches, concepts and ideas.
- 5.131 The budget for public art activity should be clearly set out in advance; as a guide, a figure equivalent to £250 per property for all developments over 20 houses is considered to be suitable.
- 5.132 The Local Planning Authority may have a policy and strategy to guide the commissioning of public art; if so, developers should follow this policy.
- 5.133 Developers should ensure that they have access to expertise in commissioning and managing the delivery of public art. There are a number of agencies that provide this service and that can help in selection of artists, managing design, contracting and briefing artists, fostering community engagement and evaluating results. The project budget should include any costs associated with these activities.



- 5.134 Community engagement should be built into the creation of public art. It should be considered at the earliest possible stage in the process so that local residents have the opportunity to help scope the project, select the artist and influence project delivery. The project budget should include any costs associated with this public engagement.
- 5.135 Programmes of public art should include appropriate evaluation that is shared with the Local Planning Authority and residents of the new development.

## **Ownership and Ongoing Maintenance of Public Art**

- 5.136 It is essential that ownership of any public art assets is clearly determined and recorded, as future liability for repairs and maintenance will follow ownership. Ownership should be agreed at the start of any commissioning process. Possibilities include vesting ownership with the relevant Local Authority, with a community organisation (such as a community management trust) or with a local arts institution.
- 5.137 Any budget for public art should include an appropriate allocation for ongoing maintenance requirements. Typically, the responsibility for maintenance will rest with the owner of the artwork. The developer should consider giving the owner of the public art a capital sum to cover future maintenance.