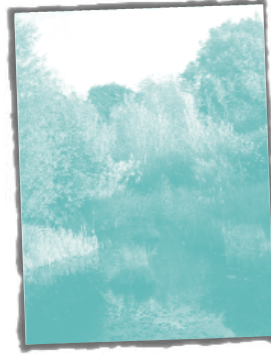
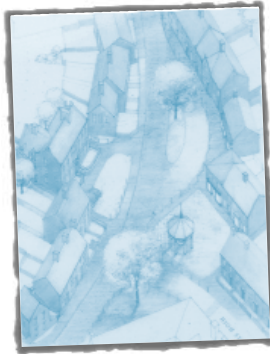


# Staffordshire Residential Design Guide



**Supplementary  
Planning  
Guidance on  
Design Quality in  
Residential Areas**

Staffordshire County  
and District Councils  
2000

# Acknowledgements

**This guide was prepared by a working party of the Staffordshire Planning Officers group made up of officers from Staffordshire County Council and Staffordshire District Councils.**

Particular thanks for their participation and assistance in the preparation of the guide to,

**Staffordshire Police Architectural Liaison Service**

**The House Builders Federation** (Midlands Region)

**Staffordshire Technical Officers Group**

and particularly to,

**Ian Davison** (Director, The Planning Co-operative) for his advice and support to the working party.

**Graphic Design by Janine Smith** (Lichfield District Council)

Illustrations of scheme development at Darwin Park, Lichfield and Pipers Croft, Fradley by kind permission of Bryant Homes and Wilcon Homes.

# Foreword



The projected increase in the number of households in Staffordshire will lead to a significant amount of new housing development on both greenfield and brownfield sites in Staffordshire. It is essential that we take every opportunity to develop the kind of communities in which people would like to live with minimal detriment to the environment.

In the past guidance on individual aspects of residential design has been provided by different Authorities and bodies. This guidance has been confusing and not always provided in a cohesive way.

The purpose of this Guide is to bring together all the elements that help contribute towards cohesive housing layout design so that residential developments are sustainable and integrated. The Working Party brought together to prepare the Guide comprised of officers representing a number of different disciplines. Their clear aim was to address conflicts of interest and develop a corporate vision for new housing layout design.

The Guide has undergone wide consultation involving County and District Councils, Staffordshire Police, the House Builders Federation and public utility and passenger transport operators. The intention is for it to be formally adopted by all Local Authorities in Staffordshire, as Supplementary Planning Guidance. This will enable its advice to be applied consistently across the County and will enable the Guide to form a material consideration in the determination of Planning Applications.

The new structured approach to design set out in this document is intended to help the design process and ease negotiations between developers and Local Authorities. This should simplify planning procedures, avoid the submission of abortive work and lead to the creation of more pleasant and safer residential environments.

A handwritten signature in black ink that reads "Bill Hughes". The signature is written in a cursive, flowing style.

**W. HUGHES, CC.**  
**Leader of Development Services**  
**Staffordshire County Council**

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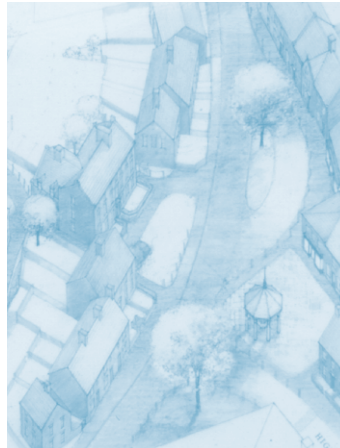


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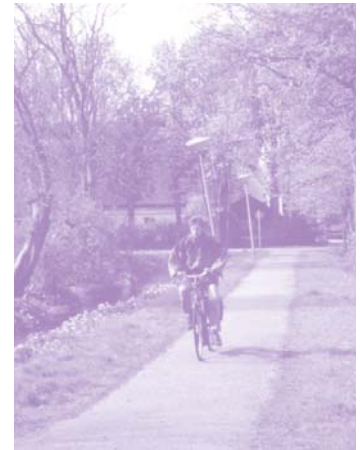
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...to create residential environments that are visually attractive, safe, convenient, secure and economical in both construction...

1. The intention of this design guide is to provide information and advice to help everyone involved in the design of new residential developments in Staffordshire to create residential environments that are visually attractive, safe, convenient, secure and economical in both construction and maintenance.
2. The most lasting impression of any housing area is created by the spaces between the buildings rather than the houses themselves. These spaces are defined by the buildings, the landscaping, the gardens, the boundary treatments, the roads and the footpaths. Roads and footpaths affect the arrangement, spacing and appearance of the houses they serve, the size and shape of gardens, the choice of planting, the location of open areas and play spaces and the routes for public utility services.



3. The layout of roads and footpaths is an integral part of the design of residential spaces and should not be regarded as a separate technical task. This design guide creates opportunities for designers to achieve a better balance between spatial elements, by reducing the physical and visual dominance of roads and by making it easier to group buildings in ways that create attractive spaces. This change in emphasis means that the landscape design becomes more important and will have a greater influence on the character of spaces between the buildings
4. Since the first edition of DB32, the concepts of shared vehicle and pedestrian roads and road hierarchies have gained widespread acceptance. Experience in practice has now enabled earlier principles to be refined into clear aims and objectives that increase the opportunities to develop new residential areas with innovative designs that respond to the characteristics of each individual site. These more flexible standards will facilitate better design, enabling new housing to respect its setting and be economically viable.
5. It is appropriate that this should be the case as the nature of development sites for house building is also changing. An increasing emphasis is being placed on the re-use of previously developed land and on the development of the more difficult sites within the built up areas of villages, towns and cities. Development at higher densities is also being considered, to reduce the amount of green field land needed for new housing.
6. The form and layout of the buildings, the use of local materials, construction techniques and the relationship of buildings to adjoining streets and spaces all contribute to their character and visual distinctiveness. The design process set out in this guide will help designers to respond to the context of new development, drawing on the qualities of our established towns and villages, and reinterpreting these in a manner, which caters for the needs of present and future generations.



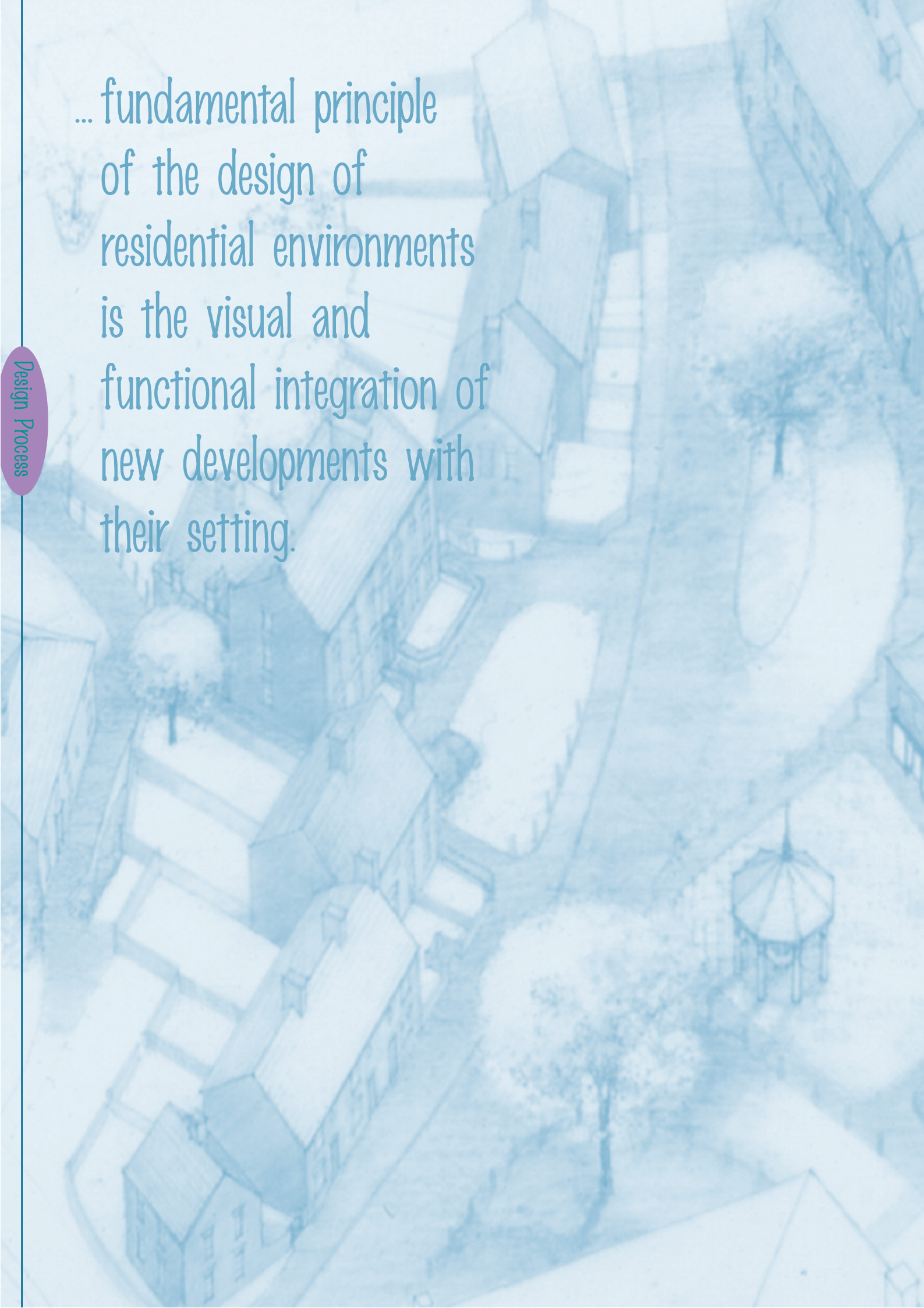
7. The design of the built environment should be treated holistically, as advocated in the companion guide to Design Bulletin 32 “Places Streets and Movement”. This draws from the historic context to inform the character of future developments and identifies the need to create a sense of place and community as a key design objective.
8. A close working relationship between highway engineers, architects, urban designers, planners and landscape architects should be encouraged to recapture this sense of overall vision.
9. This guide is particular to Staffordshire, and sets out Staffordshire’s design philosophy for residential areas, their roads, built form, landscape and open spaces. It has been prepared by officers of the County and District Councils, with support from the house building industry and amenity bodies. It draws on many years of experience, with the aim of making a better and more sustainable environment for the future. Individual Councils will build on this general advice and adapt it to the particular situations in their areas, but the underlying principles will be applied consistently throughout the County.



10. Standards have a tendency to become rigid, limiting regulations. This is not their purpose and it is to be avoided. The important consideration is the spirit and not the letter of the law. This guide should be regarded as a flexible and creative tool, which explains a philosophy and sets out principles and design objectives. These seek to achieve economy, safety, attractiveness and sustainability while imposing the minimum constraint on designers.
11. The Staffordshire Authorities encourage innovation in design. It is hoped that as sites become more challenging, then the design solutions will become less standardised. Any examples of road form and layout put forward in this design guide are neither definitive nor exhaustive. Most importantly, they cannot be a design response to a particular site.
12. The identification of the design parameters of each site can only be decided through a systematic study of the context of each site, identifying the character of its surroundings and the important features of the site. In some settlements, Village Design Statements may be a helpful way of identifying important local design characteristics. By adopting this method, an overall concept can be conceived to help establish design objectives to which the layout proposals must respond. **If a developer or designer can demonstrate that a particular layout solution satisfies the principles set out in this design guide, and that it flows from a logical analysis of the site in its context, then that solution should receive the support of the planning and highway authorities.**
13. The design of residential areas can also play a part in reducing the risk of crime and opportunities for vandalism. The advice contained within this guide is intended to produce more secure residential environments, where there is less actual crime and less fear of crime. To achieve this objective, road and footpath systems, landscaping and the position of houses in relation to them, should be considered in relation to their contribution to crime reduction and personal security.

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... fundamental principle  
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# Design Process

14. To achieve the aims of this design guide it is essential to recognise the opportunities and constraints of individual sites. An analysis of the site must be the starting point in the design process. Too often in the past, designers, developers, and planners have attempted to fit all the design considerations to a pre-determined road layout with disappointing results. Road layouts should be designed to contribute to a distinctive spatial identity for each scheme, giving access in ways that respect the characteristics of the site and meeting the performance requirements of this design guide.



15. Nearly all new housing developments in Staffordshire will be either within or on the edge of an existing settlement. A fundamental principle of the design of residential environments is the visual and functional integration of new developments with their setting.



## VISUAL INTEGRATION

16. Visual integration requires the harmonisation of new development with its surroundings by reflecting the form, character and materials of existing buildings, especially where there is an existing high environmental quality and strong design character such as in or near Conservation Areas. The achievement of integration and harmony need not rely on copying past styles and architectural details. The most satisfying results can often be achieved by re-interpretation of historic forms expressed in a contemporary manner respecting existing character yet enhancing the overall environment.



## FUNCTIONAL INTEGRATION

17. Functional integration must ensure that movement and activities are accommodated in logical and convenient ways. It is necessary to consider the layout design in relation to movements within, through and beyond the site. Pedestrian and cycle routes should provide reasonably direct and safe connections to popular destinations such as schools, play areas, shops and bus stops. Particularly in mixed use projects and on redevelopment sites, new facilities within the development may also attract movements from other housing nearby and their location should recognise any potential wider role.

## EACH SITE IS UNIQUE

18. The starting point for the design of all new residential developments, from the single infill house plot, to large town or village expansion schemes, is an analysis of the site and its surroundings. The site appraisal should lead to the identification of key design features to structure the form of the new development and give the designer a context within which a concept statement or framework proposal can be prepared.



Distinctive identity for each scheme

**The Staffordshire Local Planning Authorities will require site appraisals and concept statements in annotated plan and/or written form as part of planning applications for most new residential development of any scale, or for relatively small scale developments in particularly sensitive surroundings.** Site appraisal and concept work is particularly valuable in pre-application discussion and forms a basis for the early agreement of development principles. This should result in quicker decisions when planning applications are submitted.

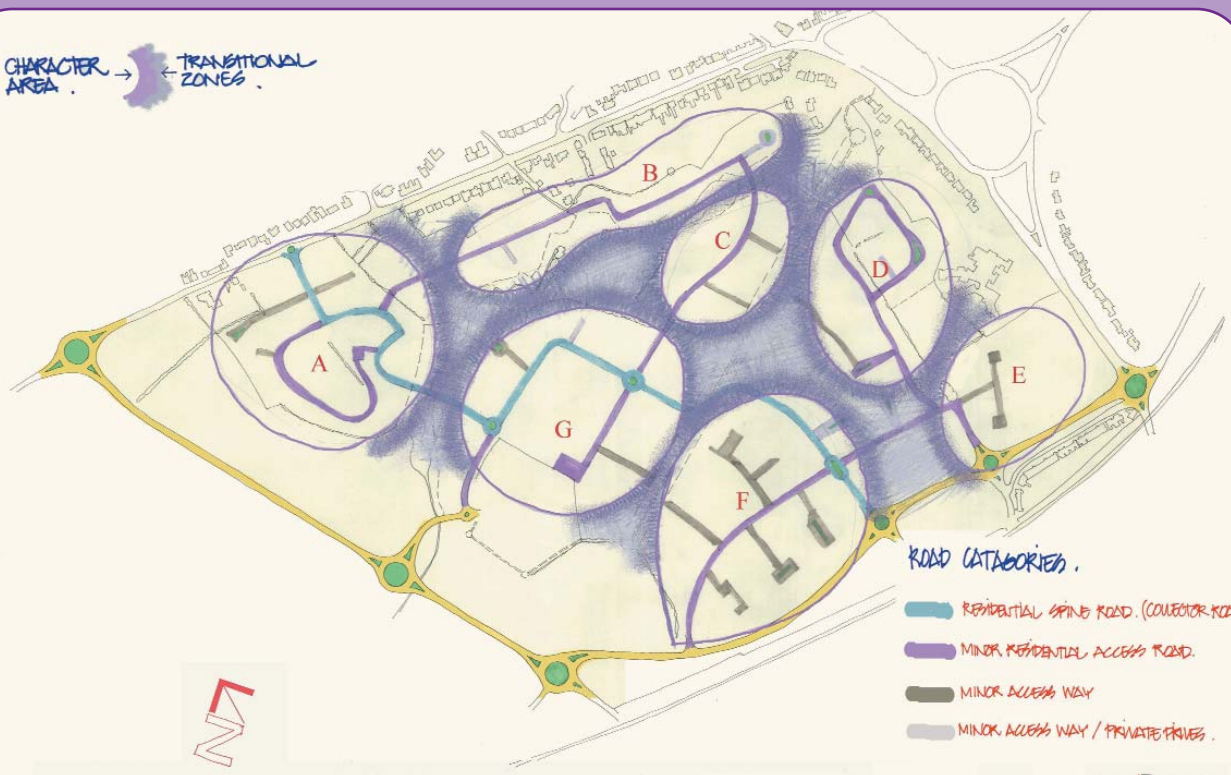
19. The size and complexity of the site will determine the emphasis of the appraisal and the depth in which specific factors are analysed. To avoid delay due to inadequate information, the content of site appraisals should be agreed with the Planning Authority. The checklist opposite is a guide to issues that may be relevant.

#### SITE CHECKLIST

- ✓ The topography of the site and its surroundings and the identification of natural and built features.
- ✓ The natural landform; ground conditions; the steepness of slopes and the availability of shelter, ridges or hollows etc. Slopes facing within 45° of south should be identified as these may present opportunities for the orientation of dwellings to maximise solar gain. Slopes facing within 45° of north will present particular problems for daylighting.
- ✓ Existing trees and hedgerows on the site and its boundaries, their size, age and condition should be recorded by full tree surveys.
- ✓ Existing ponds, watercourses, water table and natural drainage should be surveyed. The extent of any flood plain and the rate of water infiltration to aquifer could strongly influence the form of development.
- ✓ Features of archaeological, historic or natural history interest such as habitat for particular species of wildlife or plant should be recorded giving particular attention to the possible presence of protected species.
- ✓ The form and character of the existing settlement and the immediate environs of the site, and existing rights of way.
- ✓ The shape of the settlement and its main built characteristics.
- ✓ The scale and density of nearby development and its townscape characteristics; use of local building traditions or materials.
- ✓ Views into and out of the site; particularly to and from open countryside or public spaces.
- ✓ The existence of any contaminated or filled land, main sewers, pipelines or overhead electricity supplies.



CHARACTER AREA → TRANSITIONAL ZONES



- ROAD CATEGORIES
- RESIDENTIAL SPINE ROAD (COLLECTOR ROAD)
  - MINOR RESIDENTIAL ACCESS ROAD
  - MINOR ACCESS WAY
  - MINOR ACCESS WAY / PRIVATE DRIVES

# DARWIN PARK, UCKFIELD.



# DARWIN PARK, UCKFIELD.



Masterplan 1: 1250

LF 04

## SITE APPRAISAL TO DESIGN CONCEPT

20. Taking account of the findings of the site appraisal, the design of the layout for a new housing development should start by the creation of a spatial design concept for the site. The concept is built up by integrating two aspects of design, a spatial and landscape strategy and a movement network strategy.



## SPATIAL AND LANDSCAPE STRATEGY

21. The spatial and landscape strategy uses existing site features and the site's relationship with the surrounding landscape, to develop the preferred pattern of green and urban spaces within the site and the linkages between them. It should incorporate existing footpaths and landmarks such as trees and hedgerows and identify how key views can be retained.
22. The use and disposition of spaces, whether green or urban spaces, should be the strong defining element of the layout. Open spaces should be designed as nodes around which people can organise their sense of direction. Each should be distinctive and focused on the main movement routes through the development for vehicles and pedestrians. Variety should also extend to front boundary treatments where walls, fences, railings and hedges can be used to emphasise the shape of spaces and introduce neighbourhood identity. New planting can strengthen these ideas, with shrubs and trees helping to define spaces and enclosure, and species selection reinforcing local identity. All of these measures can be used to integrate new housing with its surroundings and help the legibility of the housing environment.

## MAIN AIMS: SPATIAL STRATEGY

- ⊗ Integrate new development with the character of its surroundings.
- ⊗ Incorporate existing site features such as footpaths, trees and hedgerows wherever possible.
- ⊗ Provide variety and contrasts between spaces, the more diverse and distinctive the spaces, the easier it is for people to find their way around and to have a sense of identity.
- ⊗ Create diversity in a logical way, for Example, focal points or central nodes should have noticeably higher densities whereas it may be appropriate to reduce densities at the edges of settlements reflecting the traditional gradual transition between development and countryside.
- ⊗ Identify those places where landmark buildings, distinctive boundaries, or other design elements should be used to reinforce the perceived spatial structure.
- ⊗ Maximise the benefits of existing trees, hedgerows, and other natural features, in public spaces or in public views.
- ⊗ Protect and use any heritage elements as assets within the layout, notably archaeological sites, but a response to heritage could also include use of historic boundaries, routes or field patterns in the layout.



Distinctive use of open space as a node

### MOVEMENT NETWORK STRATEGY

23. The network or hierarchy of spaces, which results from the consideration of these issues, should form the basis for the detailed design and layout of the site. The network of public spaces created within new housing schemes should be varied and visually stimulating to encourage walking and cycling journeys. A well-designed housing layout introduces contrasts within the scheme so that the spaces between the houses are not merely standard culs-de-sac, but avenues, squares, crescents, mews, courtyards, lanes, alleys and greens. Many of these words describe both the nature of the space and the route through it, emphasising that road design must be integrated with the spatial concepts.



24. A movement network strategy takes account of the way that the site will link into the existing pattern of roads, footpaths, cycleways and bus routes and the internal links necessary to connect all parts of the site to them. Priority should be given to ensuring that direct footpath and cycleway connections are made to existing local facilities and public transport stops. Wherever possible, access for bus services should be included in the residential development.

### MAIN AIMS: MOVEMENT STRATEGY

- ⊕ Provide safe and convenient surroundings for the movement of people, including those with restricted mobility and cyclists.
- ⊕ Create safe routes for pedestrian, cycling and vehicular movement.
- ⊕ Keep vehicle flows and traffic speeds low in the vicinity of homes, and minimise the danger and nuisance created by non-access traffic.
- ⊕ Ensure that reasonable, and where possible direct, vehicular access to dwellings is available, and enable easy access for public transport and emergency vehicles.
- ⊕ Minimise the danger and inconvenience caused by indiscriminate on-street parking.
- ⊕ Allow for a diversity of spatial, architectural, and landscape elements appropriate to the unique character of the site and its surroundings.



## THE DESIGN CONCEPT

25. The concept should begin to evolve during the site visit. Walking the land, understanding its shape and its setting is the start of the design process. The priority is to identify every opportunity to bring special elements of quality into the design, to use views, slopes and planting, to build on local identity and respond to the surrounding context.
26. Often the concept stems from the constraints of the site. That is one of the reasons why it is more common to find well designed schemes proposed for difficult urban infill sites than for flat and featureless green fields. The lack of constraints on many suburban sites means that designers have to create a concept from their imagination, using built form and spatial contrasts to inject character into the layout. These sites present the most difficult design problems and require good planning and design skills to create an imaginative concept.
27. The concept establishes an overall form for the housing layout and proposes elements that will provide a clear spatial structure leading to strong identity and legibility in the new housing. It should be expressed in the form of a spatial framework diagram, with some supporting interpretive notes. This will provide a useful basis for preliminary discussions with planning and highways authorities.
28. Designers should explain how their sketch proposals have developed from the concept, before drawing up a final scheme. It is essential that design information is explicit in describing the three intellectual stages of understanding the site, evolving a concept, and preparing a sketch layout. Developers should also be able to show how they have responded to the concept in a written statement supporting their planning application. The mutual understanding gained by this approach to design should result in better development proposals that can be processed and approved more quickly.
29. The design concept and spatial framework diagram should show how the hierarchy of roads serving the site relates to the character and intensity of the development proposed. It should also show the location of key local facilities such as shops, schools, community or recreation provision where these are to be included as part of the development or where they already exist close to the site. This will demonstrate how the facilities relate to the proposed road, footpath and public transport systems and will function as a community focus.



The existing site



Development of strategies



Working up the design concept - Rocester, East Staffs.

...an important role in  
the move towards  
more sustainable  
forms of development  
and patterns of  
movement.



# Sustainable Design

30. The design of residential development has an important role in the move towards more sustainable forms of development and patterns of movement. Considerations, ranging from the facilities provided in residential areas, to designs for individual houses to conserve energy and reduce water use, could all contribute to a more sustainable environment. It will also be important to ensure that the materials and construction techniques are appropriate for the location and will remain in a safe, durable and visually presentable condition, without the need for frequent maintenance or premature replacement.

## MIXED USE

31. Mixed use developments, which provide a range of employment, shopping, social and recreational facilities alongside or as part of the residential development will help to reduce overall distances travelled to facilities and promote cycling and walking by providing facilities locally.
32. Mixed uses will normally only be appropriate as part of large developments. Staffordshire Planning Authorities will seek a broad range of local facilities on large sites; for example sites of over 500 dwellings should provide employment and shopping uses within the development.



Canalside mixed use development



Provision for cyclists

## MOVEMENT

33. Layout designs should ensure that the convenience of access for pedestrians, cyclists and public transport operators is given priority over the need to accommodate the car. Local facilities such as shops, schools, clinics, leisure and recreation facilities should be grouped along main footpath and cycleway routes. Main footpaths and cycle routes should be built in the early phases of development.
34. Bus routes should focus on local facilities offering opportunities for interchange, and bus services should be provided at the early phases of development to establish patterns of movement. To reduce the use of private cars for local trips houses should be within 350 metres of a regular bus stop wherever possible. Ideally all houses should be less than 600 metres from a primary school or 1500 metres from a secondary school, and layouts should seek to achieve this where new schools are included in development proposals.
35. Cycling and footpath networks should be accessible and direct and only provided where they are likely to be overlooked and where they are likely to generate high levels of movement. This encourages community interaction and aids natural surveillance, which discourages criminal and anti-social behaviour. (More advice on the design of footpaths, cycleways and public transport needs is included in Appendix A).

## SURFACE WATER

36. Surface water systems should be designed to capture as much surface water as possible. Surface water should be designed to discharge to local streams or ponds or to recharge aquifers through maximum use of absorbent rather than hard surfaces. Swales, filter strips and storm water balancing basins can be provided in areas of open space to channel water over absorbent ground. Depending on ground conditions roofs and hard surfaced areas within house plots can be drained by soakaways sited a minimum of 4.5 metres clear of the building and highway boundary.
37. The suitability of these features will depend upon site characteristics and should be discussed with the land drainage authority. Maintenance and safety aspects will need to be carefully considered.

## BIODIVERSITY

38. Existing features of ecological interest should always be retained within a development and incorporated into open space networks or corridors which can serve a number of functions, such as wildlife corridors and refuges; surface water discharge; shelter belts and for noise and pollution absorption. Such features will contribute to biodiversity, whilst providing local features of educational and visual interest. Green corridors designed for wildlife movement should be a minimum of 5 metres in width and include natural linear features such as hedgerows or streams to provide shelter for wildlife and a rich habitat for a diversity of plants. Where there are corridors, cross roads, or other hazards, thought should be given to providing safe crossovers by culverts for example.



A pond created to accept surface water



Capturing solar energy

## ENERGY CONSERVATION

39. Within the design concept and layout principles proposed for the site the designer should consider means of reducing energy use. Adhering to the layout principles in this guide will reduce car journeys. Energy use in buildings can be reduced by careful attention to the design and orientation of dwellings, particularly the position of windows to maximise solar gain.
40. Alignment of principal elevations to  $30^\circ$  of south maximises solar gain potential, care should be taken to avoid overshadowing during winter months (in Staffordshire less than 5% of total potential solar gain are lost if an obstruction angle of  $13.5^\circ$  is not exceeded). The use of terraced house types also helps to reduce energy loss; but terraces aligned north-south should be avoided wherever possible because of their limited solar gain potential.

## SECURITY AND CRIME

41. The design of housing layouts can make a major contribution to the prevention of crime and anti-social behaviour and in alleviating the fear of crime. The following factors are particularly influential:

- Crime depends on concealment - well used and overlooked streets will deter criminals.

- Anonymity provides opportunity for crime; there should be a clear definition of ownership and responsibility for all parts of a development, and defensible space around houses.

- Routes through a development for all forms of movement should be as clear and direct as possible.

42. Crime reduction measures must be considered as an integral part of the overall design and moderated by the design concept for the whole residential environment. Normally this will lead designers to rely on natural surveillance and overlooking to act as a deterrent. This will impose fewest restrictions on the permeability of the development especially for pedestrians and cyclists; the public realm quality and opportunities for community development and interaction.

43. The starting point is an assessment of the potential risks and crime rates in the locality, in consultation with the Police Architectural Liaison Officer. Measures, which are considered necessary to deter crime in an area of particularly high risk, may be unjustifiable elsewhere. In the interests of maintaining the quality of the public realm and to increase the convenience of walking and cycling measures to

exclude access by gating entrances or closing connecting routes should only be necessary in areas of particularly high crime risk. In most of Staffordshire designs to deter crime should be based on natural surveillance; increasing pedestrian activity on the street, creating defensible space and clear and direct movement routes.

44. Local Authorities have a responsibility under Section 17 of the Crime and Disorder Act to take account of the need to deter and prevent crime (particularly burglary and speeding) in exercising their functions including forward planning and development control. However, security considerations will not always take precedence; Planning Authorities will need to balance security considerations against other design objectives as described above.

45. Security and crime deterrence will always be assisted if the following basic principles are adhered to in designing housing development:

- Front gardens, the approach to front doors and car parking areas should be visible from neighbouring houses.

- Long segregated footpaths should be avoided, where possible footpaths should follow the line of roads and be visible to road users. Any segregated footpaths should be well lit with visibility from end to end with no places where criminals can hide from view.

- Shared car parking areas or garage courts should be no larger than 15-20 parking spaces and visible from windows in the houses they serve.

- All open spaces should be overlooked from the front of some houses and play areas for small children should also be within earshot of nearby houses.

- Open spaces or segregated footpaths adjoining the rear gardens of houses should be avoided wherever possible.



Open space overlooked from the front of houses

## DEFENSIBLE SPACE

46. Designs should clearly establish the hierarchy of spaces from public to private. The spaces related to Lower Order Roads should be designed as semi public spaces where only residents or visitors to individual houses or groups of houses are expected. These should be directly supervised from surrounding houses.
47. Front boundaries of private gardens should be clearly defined, although the boundary treatments and structural planting should be part of the overall spatial concept.
48. Private spaces in rear gardens should not be overlooked except by immediate neighbours and should not abut public or semi public spaces without secure boundary treatment such as walls or high fences.
49. Segregated footpaths linking culs-de-sac can provide alternative escape routes for criminals to avoid pursuit and should not be used indiscriminately. Footpaths should be seen as part of the overall movement strategy and linked to facilitate easy and direct routes for pedestrians. In high crime areas this ease of movement may need to be tempered by concerns for safety.
50. Entrances into semi public areas should always be visible from adjoining houses to oversee the entrance, providing natural surveillance over comings and goings.



Natural surveillance of an entrance

## PRIVACY

52. Reliance on spatial separation from other properties to maintain privacy through rigid enforcement of 'back to back' distances can result in stereotyped and uninteresting layouts of regularly spaced parallel rows of housing offering no spatial variety or visual interest.
53. Equivalent or higher standards of privacy can be achieved by designing layouts and individual house types to avoid problems of overlooking. The careful orientation of houses, the positioning of upper floor windows, inclusion of walls, fences and planted screens provide opportunities for more varied and interesting relationships between buildings without compromising privacy.
54. Some overlooking of rear gardens from adjoining property is inevitable except in the lowest density layouts and is generally accepted by residents. Opportunities for small privacy zones which are entirely not overlooked, for example a screened patio at the rear of a house, should be included wherever possible.



Attractive space where traffic moves slowly

## PROMOTION OF NEIGHBOURLINESS

51. The design objectives for roads and footpaths that are set out in this guide will also assist the development of community spirit. Places which achieve these objectives will make residents feel more secure and deter crime. Key elements are:
  - Safe and attractive public spaces where traffic moves slowly.
  - Direct, short connections for pedestrians and cyclists to local facilities.
  - Overlooked and supervised public spaces where residents can meet each other, children can play in safety, neighbours can support each other, and strangers can be identified.
  - All development must take account of elderly and disabled people. Particular care and attention needs to be given to parking (and servicing) arrangements for sheltered housing and retirement homes; this includes development that, whilst not dedicated to such uses, is attractive to the elderly or infirm.

## MANAGEMENT AND MAINTENANCE

55. The issue of maintainability should be an important consideration in the design of any housing development. Schemes should be designed to minimise future maintenance requirements.
56. At an early stage, the responsibility for the future maintenance of roads, footways/footpaths, verges and open spaces should be identified. Developers will be required to submit maintenance proposals with their planning applications to show who the intended responsible maintenance organisation will be for all areas of land that are not intended to be conveyed to the owners of dwellings. See Appendix C 'Adoption Procedures and Requirements' for further guidance on normal maintenance responsibilities.
57. Appendices B 'Street Lighting' and E 'Highway Specification' including para. 60 below provide detailed advice on the permissible specification for new street works. The use of an alternative specification should only be used where justified by the design objectives set out in the Design Concept Statement (see Design Process) and when considerations of durability and maintainability are satisfied.
58. To ensure that new street infrastructure is retained in a safe and durable condition, developers may be required to provide a commuted maintenance payment, to be secured via the Section 38 Agreement, to offset any abnormal future maintenance costs likely to be associated with the use of some materials. Appendix E sets out the 'Permissible Materials for New Streets' where no maintenance payment will be required. Whilst proposed departures from this will be considered, if accepted, they will most likely be subject to a maintenance payment.

59. It will be necessary to ensure that the materials used within the limits of the public highway as well as the form and function of amenity landscaping are acceptable to the responsible organisations. (See Appendix C 'Adoption Procedures and Requirements').

## CARRIAGEWAY AND FOOTWAY MATERIALS

60. The following broad principles should be followed when choosing the most appropriate materials:

In most developments the permissible range of materials attracting no maintenance payment, as set out in Appendix E shall be used. Materials outside this, including some materials used for the purpose of providing speed restraints, over-run areas and central islands for mini-roundabouts may be subject to a maintenance payment.

Modular block paving can fade in colour, absorb oil and rapidly become stained. It is therefore essential to limit the acceptable range for adoption to particular colours and textures. (see Appendix E 'Highway Specification' for further guidance). Care also needs to be given to the locations at which they are provided as where surfaces are subjected to stress caused by tight driving manoeuvres and significant volumes of heavy vehicles the formation and edge restraints are liable to fail. As such, their use should be limited to Shared Surface Roads, roads serving small developments in Conservation areas and villages and for the construction of some speed restraints. As far as speed restraints are concerned, block paving should only be used on Minor Access Roads that have not been identified as a bus route and Minor Access Ways.

Coloured or natural finished aggregate surface dressings can be used for small developments not exceeding 50 dwellings. They should generally be restricted to rural locations where such materials will provide a recognisable continuation of existing surface treatments. Their use is likely to give rise to a requirement for a commuted maintenance payment due to their limited durability.

All footways/footpaths that accommodate utility equipment shall have a conventional surface specification to avoid attracting a maintenance payment.

Wherever possible, the use of recycled or secondary aggregates should be considered. Guidance on the acceptability of such materials is included in the Appendix E 'Highway Specification'.

## SOFT LANDSCAPING

61. Where landscaping is proposed within the limits of the new street, which is intended for adoption as a publicly maintainable highway, the following broad principles should be observed:

Tree, shrub and hedge planting should be sited well clear of statutory undertakers services so that the root systems at maturity will not damage underground apparatus and so that planting will not be damaged by excavations to maintain the services.

Where licences to plant are granted in service strips on Minor Access Ways, only shallow root plants are appropriate because of the difficulty of reinstatement after maintenance excavations (see Appendix D 'Landscaping' for further details).

In visibility splays, caution is necessary in the treatment of areas critical to visibility. (See Appendix A 'Design Layout Technical Criteria', 'Planting in Sight Lines' for further details.)

The aim of soft landscaping is generally to provide amenity value by the retention of existing trees, the provision of new trees, shrubs and ground cover planting. Where this is proposed in new street areas, intended for adoption as publicly maintainable highways, it is important to ensure that a satisfactory maintenance arrangement is established and agreed with the Highway Authority so that they may be considered for adoption as a publicly maintainable highways. The table right sets out the maintenance arrangements required in these circumstances.

## Maintenance Responsibilities for Areas to be Adopted as new Highway

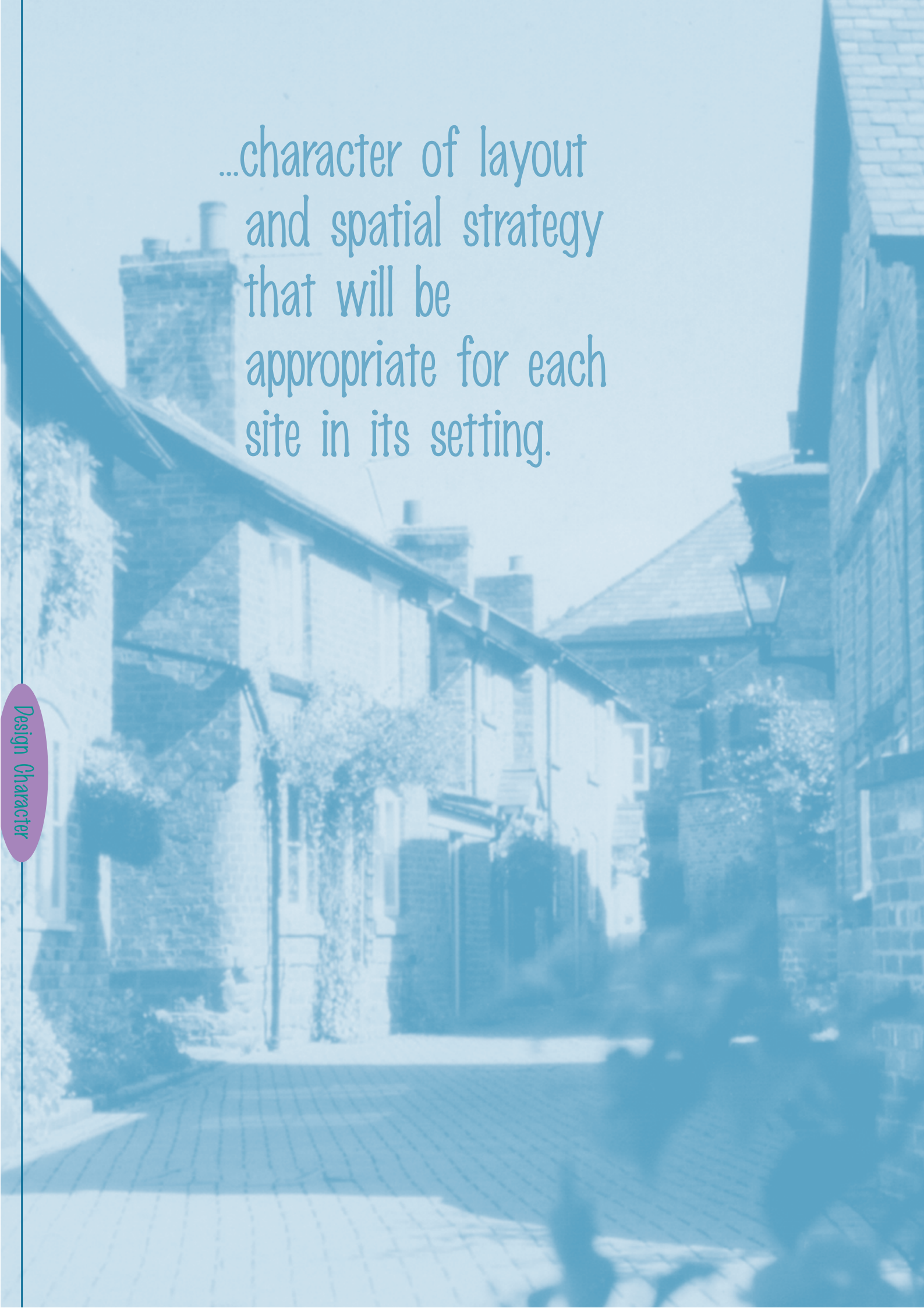
	Maintenance Sum Required	Maintaining Authority
Grass	No	Highway Authority
Grass/Trees	Yes	Highway Authority
Grass/Trees/Shrubs and Ground Cover Planting	Yes	District Council

### Notes:

1. The sum will be based on the number of trees, old and new and the areas of soft landscaping.
  2. See Appendix C 'Adoption Procedures and Requirements' for further guidance.
  3. The commuted maintenance sum will be deemed to cover the initial period, during which the trees and shrubs become established.
62. The 12 month maintenance period for the roads will not commence until the associated landscaping has been satisfactorily completed.







...character of layout  
and spatial strategy  
that will be  
appropriate for each  
site in its setting.

# Design Character

63. This section considers the design and form of layouts, spaces and individual buildings and the objectives that local authorities will have for new residential development in Staffordshire.
64. The site appraisal process set out in this guide will provide a basis for determining the character of layout and spatial strategy that will be appropriate for each site in its setting. The wide variety of development contexts should stimulate a similarly wide variety of responses.
65. Towns and their surroundings normally display a gradient of increasing density from the edge (less dense) to the centre. The character of development sites should normally respect the established density gradient and create lower density forms on the edge of settlements and more intense forms in inner urban locations. The design objectives and most appropriate form of development will be different across this range. This part of the guide provides some principles and examples of successful development ranging from inner urban brownfield sites to development in wholly rural locations.
66. New housing schemes in Staffordshire will be built on one of seven broad divisions or categories of development site.
67. The examples illustrate the use of design principles which recognise the different character to be created in urban, suburban and rural situations. Differences in density result from the application of these principles rather than as a design tool in itself. The scale and form of buildings, their siting in relationship to one another and the spaces between them establish the design character and must be considered as a totality. For example large detached houses with high plot coverage and minimal separation will not fit satisfactorily into either rural or urban situations even though they display elements of both. Nevertheless, following the principles recommended in this guide should result in an overall increase in the density of development and more efficient use of land. Less land should be required for road space, extensive forward visibility lines and junction sight lines as more enclosed urban forms are created.
68. The following pages illustrate some of the diversity of imaginative designs achieved on these various types of site, as a source of inspiration and encouragement to achieve a similar quality in new housing developments that reflect the particular character of their setting in Staffordshire.
69. On the largest sites, it will often be necessary for the designer to create different character zones within the development. These should also be based on the design gradient principle with the most intensive forms of development being used to emphasise the community focus for the development around shops, a school or a community centre for example.
70. High density developments most appropriate to inner urban or suburban infill sites will rely upon a relatively formal pattern of development where buildings are arranged to contain and enclose spaces by use of continuous building frontages arranged as street terraces, crescents, squares or mews. The design objective is to create enclosure between buildings which will lead to a visually interesting street scene if used with a varied building line and a harmonising range of materials and architectural detail.

- Inner urban or “brownfield” sites.
- Suburban infill sites.
- New suburban estates and development on the urban fringe.
- Rural, village or small market town infill sites.
- Greenfield development on the edge of rural villages or small market towns.
- Development in wholly rural locations.
- Development in or adjacent to conservation areas or historic settlements.



Recognising existing design character

71. Enclosure depends upon establishing the correct proportions between the width of the street or space and the height of the enclosing buildings. The taller the building the greater width must be given to streets or open spaces so that they will be defined and enclosed but not dominated or over shadowed. The relationship will vary to reflect the type of space being created, an urban enclosed space relies upon a height/width ratio in the range of 1:1 to 1:2. For more relaxed suburban environments the width proportion should be increased. DETR publication 'Places, Streets and Movement' shows how the elimination of parked vehicles from the front of dwellings helps to create the appropriate proportions and how interest can be created in the streetscene by aligning footways to building lines and varying road widths. When this approach is used the scheme must ensure that the necessary vehicular manoeuvring space (the 'tracking') can be provided within the highway. Garaging and parking should normally be provided in small courtyards at the side or rear of dwellings, which should be overlooked from the dwellings for security. If frontage parking is used it should be well screened by flank walls or hedges although care will be required to avoid visibility being restricted at the private accesses (see Appendix A 'Visibility').



Examples of different character created by varying height / width ratio (Essex)

72. On some sites it may be appropriate to have houses opening direct from the pavement. The close siting of dwellings to the road can create a pleasing and intimate effect. It can create visual variety and higher density land use. Elsewhere, the alignment of a gable end close to back of pavement can close a view; or lead the eye through from one part of a street to another emphasising the spatial structure of the layout.

73. Much recent housing development in Staffordshire has been on the edge of towns or in smaller village sites where highly urban development is not appropriate. These suburban developments too often appear to be standardised with repetitive use of a small range of house types, frequently the emphasis is on the provision of detached houses but on relatively small plots giving little room for visual space or landscape planting between dwellings. This type of site presents the biggest challenge to the designer and it will be important to establish a strong design concept, to produce living environments of variety, quality and visual interest. The inclusion of geometric patterns of roads, squares, crescents and boulevards etc. can provide a clear framework for development which must include intensive planting within and between plots or building groupings as part of the landscape strategy and variety in the siting of dwellings in relation to the road.



74. Regimented rows of house frontages set behind a standard parking depth creates monotonous townscape and should be avoided. With off-street parking accessed from the residential road frontage, developers should adopt a flexible and varied building line although ensuring that any structure has a minimum clearance of 500mm from the edge of the adopted highway.



75. In wholly rural locations or where development is infilling in very low density areas the design emphasis must be on fitting the development into the broader landscape through extensive planting and landscaping. The objective is to create development where the landscape and planting is dominant and buildings are contained or set within it. Sufficient space between dwellings and front garden space should enable dense planted screening to develop.
76. The form and layout of the buildings, the use of local materials, construction techniques and the relationship of buildings to adjoining streets and spaces all contribute to their character and visual distinctiveness. The design process set out in this guide will help designers to respond to the context of new development, drawing on the qualities of our established towns and villages, and reinterpreting these in a manner, which caters for the needs of present and future generations.

77. Too much or too elaborate detail of the design of individual house types creates a streetscape which is visually confused. The competition for visual attention between design elements such as gables, porches, decorated windows, patterned brickwork etc. reduces the coherence of the environment. Successful urban compositions balance individual feature buildings within a context of plainer house types, which should predominate. High quality residential environments should be restful and design details should be kept muted and simple.

78. The design of the built environment should be treated holistically, as advocated in the DETR publication 'Places Streets and Movement' (companion guide to DB32). This draws from the historic context to inform the character of future developments and identifies the need to create a sense of place and community as a key design objective. A close working relationship between highway engineers, architects, urban designers, planners and landscape architects should be encouraged to recapture this sense of overall vision.

79. The site appraisal process set out in this guide will provide a basis for determining the character of layout and spatial strategy that will be appropriate for each site in its setting. The wide variety of development contexts should stimulate a similarly wide variety of responses.

### INNER URBAN OR BROWNFIELD SITES

80. These are likely to be enclosed by or adjoining existing built development. Some sites may also be reusing and adapting existing structures. No standard solutions will take account of the particular constraints and local context from which the developers must take their cue. Buildings may be terraced and heights could vary, dependent on the prevailing environment. Walling and roofing materials should reflect local character. Often, relatively formal "urban" road layouts may be expected, with well designed areas of hard standing or hard landscaping.

### SUBURBAN INFILL SITES

81. These will normally be small sites, such as the redevelopment of former garden land, and will be adjoined by existing development. The scale, layout, materials and proportions of any new dwellings will need to be particularly sensitive to their setting and the character of neighbouring housing. The small scale of such sites may give scope for individual house designs, rather than relying on the standard models of volume builders or trade publications. Such sites will often enjoy established landscaping that should be carefully analysed and safeguarded to help the new development to blend into its setting.



Successful use of simple traditional details



## NEW SUBURBAN ESTATES

82. These sites are the largest scale of new housing development and are likely to be developed by companies that rely on standard house type designs. Some developers are now seeking opportunities to experiment with new designs, or recreate older forms of development that are more innovative and imaginative. This more flexible approach is to be encouraged. Even standard house types should not inhibit the creation of a diverse and interesting spatial structure, provided that the distribution of houses is not repetitive and that priority is given to creating a sense of place. In most cases this will mean that the layout of the estate should respect and follow the existing topography and use significant landscape features as focal points. This response to natural features rarely results in a rigid disposition of streets and house plots.

83. Particular care will be needed on the edges of greenfield sites to avoid an abrupt and incongruous transition from open country to housing estate. Geometrical alignment of houses and rear garden boundaries should normally be avoided. Dense belts of landscaping may be required, but should not be used as mitigation for poor design or layout.



New houses - traditional forms



Successful infill developments respecting the locality



## RURAL VILLAGE OR SMALL MARKET TOWN INFILL SITES

84. Most of these sites will have their own distinct character, scale and density of building (even where they are not in conservation areas). The site appraisal will be essential to understanding the locality as well as the constraints and opportunities of the site itself. These infill sites are likely to be small with existing topographical and landscaping features worthy of retention or respect. The style, materials and proportions of new building should reflect their locality; standard house types are unlikely to provide this sensitivity and purpose designed properties will be needed in most cases.

## GREENFIELD DEVELOPMENT ON EDGE OF RURAL VILLAGES OR SMALL MARKET TOWNS

85. Such developments will usually be small and should appear as part of the organic growth or evolution of the settlement. It follows they will take their design cue from the better aspects of historic development locally. Normally they should seek to create a gradual, rather than an abrupt transition from open countryside. Some rural settlements are characterised by a hard built edge to the countryside, in which case the detailed building design will be especially important. The form, proportion and layout of the new development should reflect and work with local topography and tradition. The impact of new development on the appearance of the settlement in distant views should be treated with particular sensitivity. Individual house designs will be expected and building materials should reflect local character and tradition.



Modern development as part of the organic growth of a settlement

## DEVELOPMENT IN WHOLLY RURAL LOCATIONS

86. Planning policy will normally preclude such development but where exceptional circumstances prevail such sites should be laid out on an individual not a standardised basis. This will involve taking account all internal aspects of the site and its immediate context, and also its impact in the wider setting - perhaps when seen at some distance from surrounding countryside. Integration into the landscape will be important. Normally perimeter boundaries should be kept “soft”, and the disposition of houses varied to avoid linear edges to built development.



Soft perimeter boundary



## DEVELOPMENT IN OR ADJACENT TO CONSERVATION AREAS OR HISTORIC SETTLEMENTS

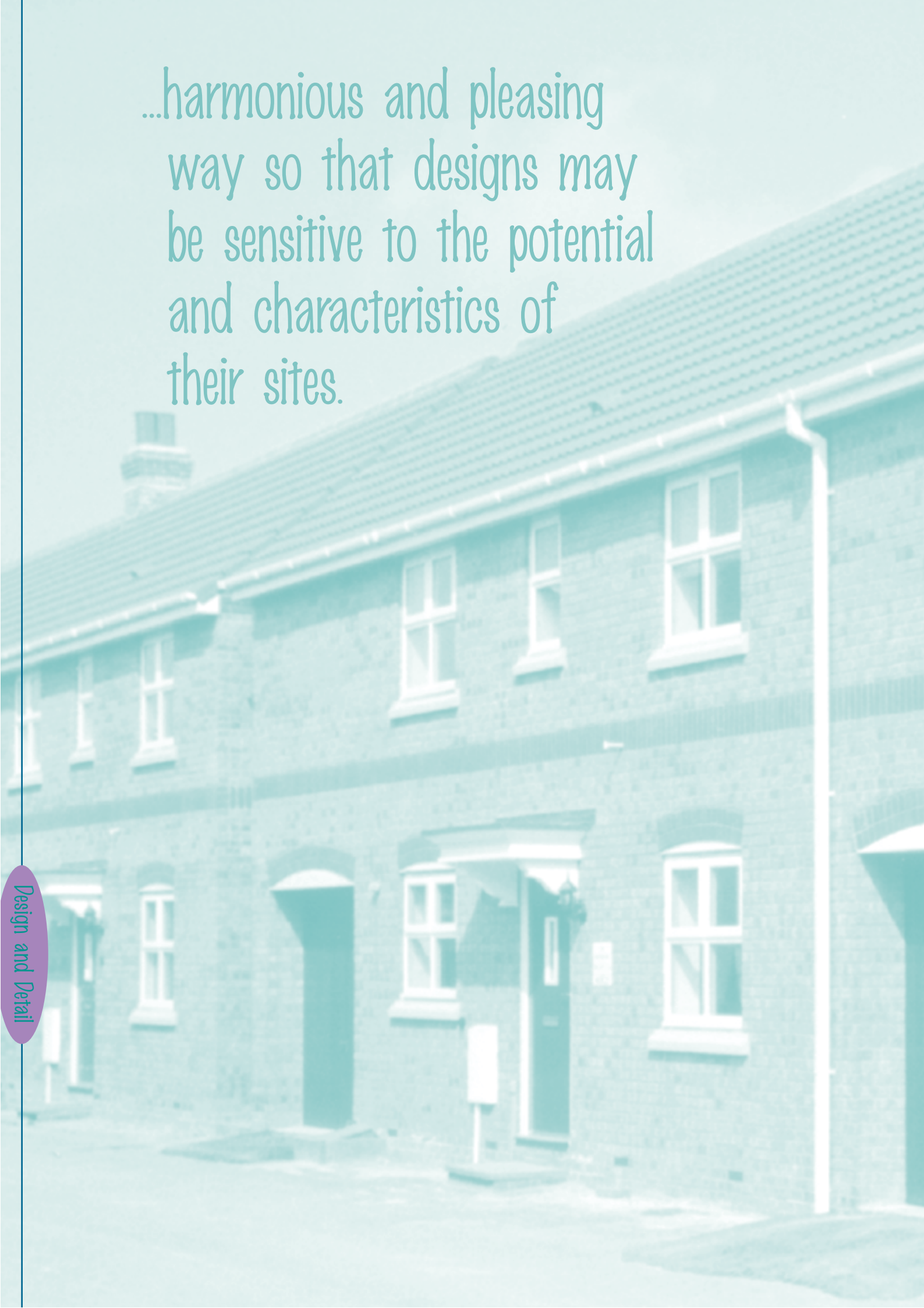
87. Conservation areas vary considerably in character and have limited opportunities for accommodating new development. Each area and site must be considered on its own merits, and even the flexible standards in this guide may need to be relaxed to achieve a satisfactory integrated development. Standard house types will rarely be appropriate, and schemes will normally require individual design solutions that are sensitive to the historic setting.



House types designed for conservation areas



...harmonious and pleasing way so that designs may be sensitive to the potential and characteristics of their sites.



# Design & Detail

88. New housing in Staffordshire must accommodate all income groups, age ranges and access groups. There is no reason why a complete range of house types should not be provided in a harmonious and pleasing way so that designs may be sensitive to the potential and characteristics of their sites.
89. Historically, most buildings in Staffordshire had steeply pitched roofs to accommodate clay plain tile slate or thatch. They presented a small sharply defined roof area to the road. Larger properties had additional rooms beneath parallel roofs or gabled at right angles. Modern broad roof spans are less impressive. Standard house types use regular eaves and ridge heights making a repetitive roofscape, unrelieved by chimneys which helped to break up rooflines and provide rhythm to the street scene. In sensitive areas, it would be desirable to revert to more traditional proportions that relate more satisfactorily to most surrounding existing development. The possibility of moving from truss frames to allow for rooms within the roof spaces might also be explored.

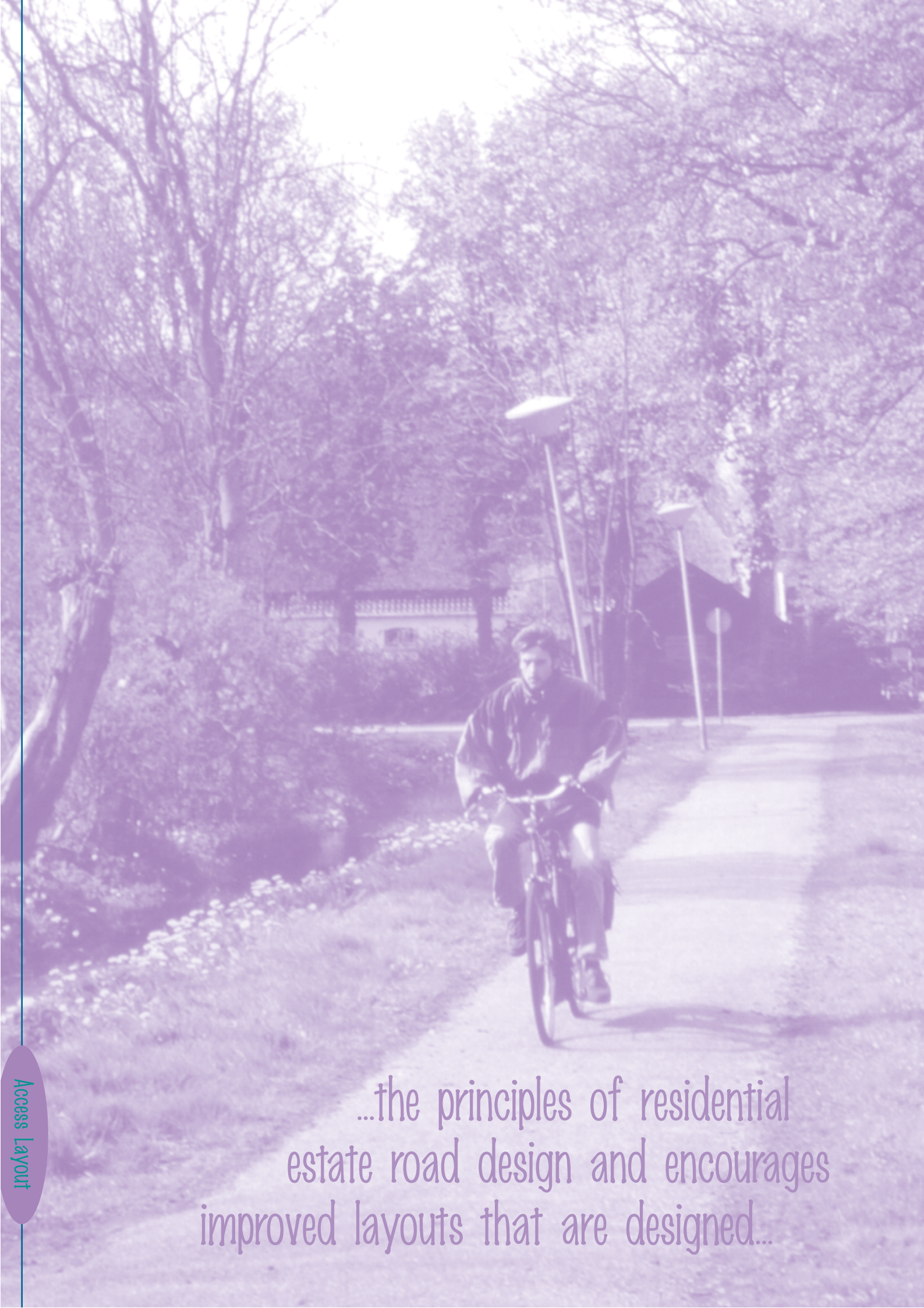


90. Modern development tends to incorporate large areas of window set flush with the outer face of the wall. This lacks shadow lines and creates bland elevations. The emerging interest in energy conservation creates an opportunity to revert to smaller, recessed windows.
91. Traditional detailing such as decorative bargeboards and crested ridge tiles have been rediscovered in an effort to lend individuality to standard house designs. Regrettably, these architectural devices have themselves become standardised, being applied regardless of the style of local houses. Staffordshire has its own vocabulary of detail, as well as a distinct repertoire of local building materials. Designers should seek to understand these historical motifs and draw inspiration from them. The skilful interpretation and use of such details to give individuality to new housing will work best where it is an integral part of the design. Such details include chimneys; decorative ridges; patterned tiles; brick corbelled eaves; moulded eaves brick; encaustic tiles and terra cotta boards; besides a wide range of timber decorative features: porches; eaves corbels; bargeboards and fascias.



Reflecting traditional details in new development





...the principles of residential  
estate road design and encourages  
improved layouts that are designed...

# Access Layout

92. This section of the guide provides advice on the principles of residential estate road design and encourages improved layouts that are designed to reflect the local context. The advice is intended to be sufficiently flexible to allow the design of road layouts that are both imaginative and suitable for adoption.

## PRINCIPAL DESIGN OBJECTIVES

93. The primary function of the residential road is to create a safe, convenient, and attractive environment in the vicinity of the home. It is therefore important that the highway standards and advice contained in this guide are used as part of an integrated approach to the design of residential areas and that full use is made of the range of road types and configurations included in this guide.

### The principal design objectives for the road network are:

- To achieve high environmental quality in new residential developments.
- To ensure that the groupings of buildings and the layouts of roads and footpaths combine to achieve a distinctive identity and environment for each housing development in its context.
- To secure through a hierarchical system of roads, layouts which produce acceptable vehicle speeds and which provide for the needs of public transport, cyclists and pedestrians, as appropriate.
- To restrict traffic within the housing area to that generated by those who live there and to those who need to be there, such as visitors, tradesmen, public utilities and refuse collection, and thus limit traffic flows in close proximity to homes.
- To provide a safe and convenient environment for residents of new development.
- To provide adequate access for service vehicles, including emergency service and refuse collection vehicles.
- To ensure that the needs of the disabled are catered for. Unacceptable gradients and steps without alternative ramps should be avoided. Consideration should also be given to the location of lamp columns, sign posts and the design of gratings etc.
- To ensure an acceptable quality and standard of construction for adoptable areas which can be satisfactorily maintained at reasonable cost.
- To allow for the efficient provision of public utilities and other services.

## DESIGN PRINCIPLES

94. A journey has three components - leaving, travelling, and arriving. It is only during the travelling stage that vehicular movement is a major consideration. In the residential context, therefore, travelling roads would be the distributor and collector roads where drivers should have a greater sense of dominance. In this guide these roads are referred to as **Higher Order Roads (HOR)**.
95. All other roads are places where people actually live and where journeys start and finish and the human environment takes priority over the needs of the vehicle. On these roads the primary considerations are environmental quality and safety for pedestrians and cyclists. In this guide these roads are referred to as **Lower Order Roads (LOR)**.
96. Good road design depends on the establishment of an appropriate Design Speed Value. The design speed value of a road is the maximum speed, which is considered appropriate for each type of road in the hierarchy. There are three controlling factors:
- Traffic volume; the number of motorists trying to use a road at a particular time affects driver tolerance towards a low design speed and hence the effectiveness of that design speed value.
  - Physical discomfort for the driver; this is induced by vehicle behaviour when travelling more quickly than the design speed and is directly related to the geometric characteristics of the road.
  - Psychological unease; this arises from driving quickly through an environment which is quite obviously associated with the home and where there is a high level of visual event, pedestrian movement and children at play; this is affected by the layout and disposition of buildings, walls and landscaping features.

97. All three controls are important to the achievement of appropriate speeds but the most direct and effective control of speed is by careful consideration of the geometric characteristics of the road and the way it relates to its surroundings so that it is both difficult and undesirable to exceed the established design speed value.

## ROAD SAFETY

98. Highway safety studies indicate that the number of road accidents is very much reduced where traffic is moving slowly, where through traffic is eliminated and where on-street parking is minimised. Safety in housing areas must be a priority for designers and local authorities.
99. Potential risks must be minimised even though the level of vehicular traffic movement will be low within new housing areas. The Staffordshire authorities will demand the desirable design speed values be achieved and a level of off-street parking provision appropriate to the location of the site and the size and type of house being provided.
100. This design guide aims to achieve safe speeds by advocating a three-dimensional approach to layout design and by encouraging alternative road layout arrangements. Vertical speed restraints such as humps and speed tables may be used as a last resort, but only as an integral element of a coherent design strategy - not as an afterthought!
101. Clear differentiation between road types is a key requirement in improving safety, influencing the way in which drivers behave and the speeds at which they travel. This can be achieved by providing distinct physical characteristics for each type of road and at the junctions between them, both in the details of the road and in the spatial environment around the road. Shared surface roads must be clearly distinguishable from segregated road types.

## SPEED RESTRAINT

102. All new residential developments containing a road system which measures more than 100 metres from the entrance to the development to the furthest extremity of the road system are to constitute, or form part of a, 30 kph (20 mph) zone and will require the support of a Traffic Regulation Order.
103. Speed restraint measures are to be used throughout 30 kph (20 mph) zones and do not require warning signs within the zone. Signs (in accordance with the DoT Traffic Advisory Leaflet 2/93) and an entrance Gateway are, however, required to indicate to drivers that they are entering a zone.



Achieving speed control by layout design - Dickens Heath

104. The aim should always be to achieve the desirable design speed values set out in this guide by layout design. In the great majority of developments this should be through the use of junction design and changes in horizontal alignment. This approach should be complemented with the careful arrangement of buildings and landscaping so that forward visibility and sight lines at junctions reflect the design speed. It is also recognised, however, that occasionally additional speed restraint measures may be required or may even be considered to aid the overall design.
105. There are many different speed controlling devices that achieve the necessary levels of physical discomfort and psychological unease to achieve the design speed value. Speeds should be controlled through changes in horizontal alignment that should be complemented by the design of adjoining landscaping and location of buildings and walls. If necessary, these should be supplemented by changes in vertical alignment. Physical restraint measures should be distinguished by use of different surface materials from the rest of the carriageway and should be well lit.



Speed restraint achieved by speed control bend. Please note that a mountable hard shoulder is required in certain locations - Dickens Heath

## ROAD HIERARCHY

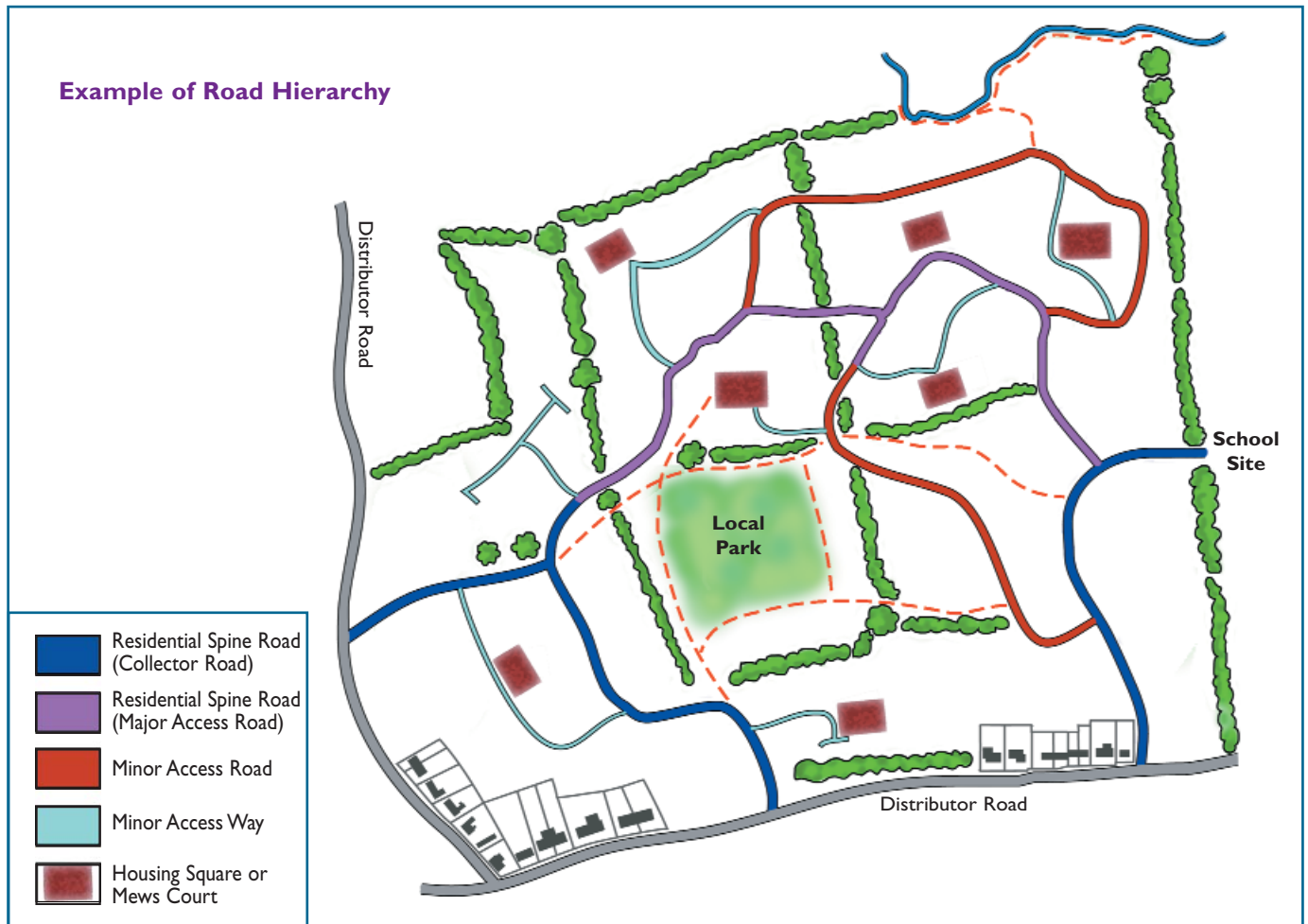
**106.** A tree-like configuration of culs-de-sac has become commonplace, especially in large developments. Road systems based on extensive systems of unconnected culs-de-sac served from a local distributor road or collector road can give priority for access by car over the requirements of the pedestrian and make pedestrian routes longer and less direct. Although they have much to commend them, other types of layout may provide better facilities for pedestrian and cycle movement and promote better social integration. For example, a well designed interconnected layout can discourage non-access traffic and ensure adequate speed restraint while providing better opportunities for bus, foot and cycle journeys. More connectivity in the road network results

in shorter journey distances, greater permeability, clearer and more direct pedestrian routes and a more even spread of traffic volumes across the road system. A combination of both types could form the basis for a very effective design.

**107.** An effective road hierarchy, which will signal the appropriate vehicle speed and the relative priority for vehicles and pedestrians, is mainly achieved by:

- A clear indication of priorities between roads which can be readily understood by motorists and other road users especially pedestrians and cyclists by distinctive junction design.
- Clearly appreciated changes in speed values between road types.
- The distinctive appearance of differing types of road by the imaginative use of surfacing, junction design, edge detail, landscaping and the changing relationships between the road and development fronting onto it.

### Example of Road Hierarchy



**Higher Order Roads** are:

**Local Distributor Road** - a road distributing traffic within a large residential estate.

**Residential Spine Road (Collector Road)** - a spine road which collects traffic within a residential estate. A typical formal highway serving up to 500 dwellings by means of a loop road or inter-connected street pattern served by at least two points of access to the distributor road network. This may be increased by 250 dwellings with each additional access point. It provides access to Lower Order Roads, which includes a Major Access Road. The latter can form part of the same Residential Spine Road.

**Connector Road** - a hybrid collector road providing a single access to a Lower Order Road system.

**Lower Order Roads** shall comprise of:

**Residential Spine Road (Major Residential Access Road)** - this is a loop road or connected street that serves up to 300 dwellings. This road can form part of the same Residential Spine Road serving beyond 300 dwellings although to emphasise the transition a well-defined entrance feature will be required where it meets the Collector Road.

**Minor Residential Access Road** - a loop road or connecting street serving up to 200 dwellings, or cul-de-sac serving up to 100 dwellings which gains access directly to either a Major Residential Access Road or a Higher Order Road.

**Minor Access Ways** - roads serving up to 25 dwellings in the form of a cul-de-sac or up to 50 dwellings as a connecting street providing that at no point on the road there is traffic generated from more than about 25

dwellings (i.e. subject to equal traffic distribution). This can be achieved either by creating a link (two accesses onto higher category roads) or by creating a loop configuration, beginning and terminating at the same junction with a higher category road.

**Mews Court** - serving no more than 25 dwellings as a loop or link subject to equal traffic distribution, or 12 as a cul-de-sac.

**Housing Square** - a joint use pedestrian/vehicle cul-de-sac serving up to 10 dwellings.

## DESIGN PRINCIPLES FOR HIGHER ORDER ROADS

### Local Distributor Roads

- 108. A Local Distributor Road is the highest category road likely to be constructed as part of a new residential development. Its function is to facilitate the passage of vehicles from residential roads to Distributor roads. It may be a bus route and serve shopping and business units.
- 109. Built frontage is required to these roads (i.e. houses should face the road rather than turn their backs). Access to frontage dwellings should be by parallel access roads or shared private drives which are served from the rear or from the Local Distributor Road itself at a minimum spacing of 120 metres. See Appendix A for details on visibility requirements at private accesses.



Interconnected road hierarchy.

- 110. Pedestrian and cycle routes should cross these roads where necessary in order that the road does not act as a barrier to local cross movement. The location of these will need to be carefully considered, however, to ensure safe crossing points. They will therefore need to be considered at the **Site Appraisal** stage



and when a **Movement Network Strategy** is being developed.

- 111. Depending on the mixture of uses to be served by the Local Distributor Road a carriageway width of 7.3 metres or 6.75 metres with bus lay-bys is required. A 2.0 metre wide footway is required each side of the carriageway separated from it by a minimum 1 metre wide verge which shall be widened to 3 metres to contain tree planting, as required.
- 112. The design speed is shall be 48 kph (30 mph) and this is to be ensured in the vicinity of residential areas by bends of a maximum centre line radius of 90 metres with a minimum 30-degree deflection separated by a straight length of 36 metres. The centre line radius can be reduced to a minimum 60 metres which combined with a greater than 30° deflection can have the effect of reducing the forward visibility requirement (see Appendix A for further details on Forward Visibility). Long straight sections will not be appropriate although where these are unavoidable consideration should be given to the provision of roundabouts at site accesses to provide a form of speed restraint.
- 113. This road type may only take access from an existing road or another local distributor road.
- 114. The design of a junction with an existing county road will depend on the characteristics of the road, local circumstances etc. and should be agreed with the Highway Authority. In general, however, priority junctions require a minimum kerb radius of 10 metres. The minimum length of minor road from the junction, which is required to be straight, is 30 metres from the channel of the main road. (See Appendix A for junction details and visibility requirements.)

**Summary of Local Distributor Road Technical Standards**

Maximum number of dwellings served	Unlimited
Carriageway width	7.3 metres/6.7 metres
Design speed	48kph(30mph)
Centreline radius	Max. 90 metres
Footway width	2.0 metres
Minimum junction spacing (opposite)	40 metres
Minimum junction spacing (adjacent)	80 metres
Minimum kerb radius	10 metres
Verge width*	3 metre to 1 metre

\* **Width of verge will depend upon tree planting requirements and need to ensure that appropriate forward visibility is provided (see Appendix A for further details).**

- 115. The effects of centrifugal force can cause safety problems and be a source of discomfort for drivers. This can be resolved by super-elevating the Local Distributor Roads as shown in the table below.

Radius	90 metres	95 metres	100 metres	Less than 300 metres
%	4	2.8	2.5	-

**Residential Spine Roads**

- 116. This is a spine road that forms part of a looped road or inter-connected street pattern. It generally requires a minimum of two access points from a distributor road to a residential area serving up to a maximum of 500 dwellings. This can be increased by 250 dwellings with each additional access point providing it can be demonstrated that there will be equal traffic distribution between all access points.
- 117. It is to be designed to cater only for traffic serving dwellings within the development including dwellings off existing streets that are not distributor roads. Extraneous traffic should be discouraged.
- 118. A minimum 1.8 metre wide footway is required on each side of the carriageway. If a verge for tree planting is desirable this should be at least 3 metres wide and located between the footway and the carriageway.

119. This road type may take access from an existing county road or Local Distributor Road. The design of the junction will depend on the characteristics of the road, local circumstances etc. and should be agreed with the Highway Authority. In general, however, priority junctions require a minimum kerb radius of 10 metres. The minimum length of minor road from the junction, which is required to be straight, is 25 metres from the channel of the main road. (See Appendix A for junction details and visibility requirements).

120. A Residential Spine Road can be both a Collector Road and a Major Residential Access Road. Its design speed value and hence its design characteristics, the scope for frontage access to dwellings and the spatial arrangement of development can change throughout its length. This is dependent upon the number of houses served, as described below, and enables a more gradual transition between Higher Order Roads and Lower Order Roads.

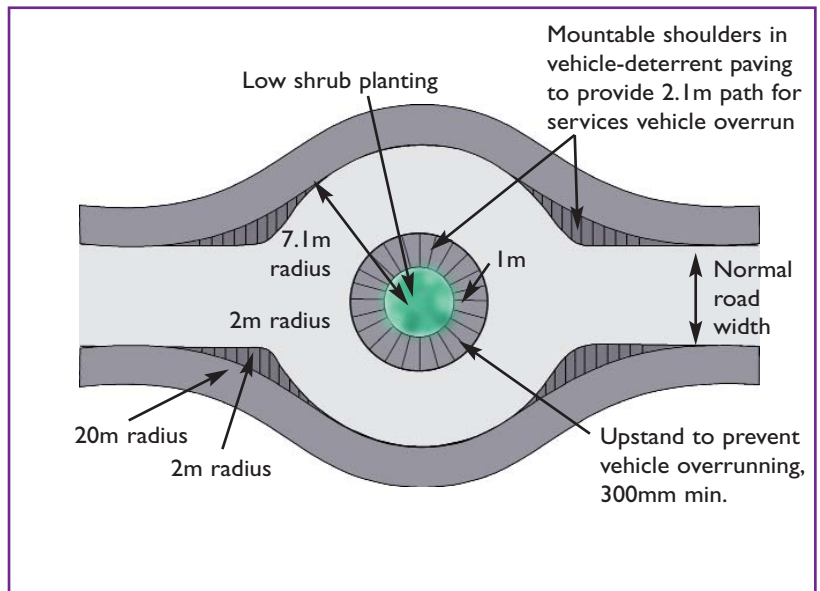
**Residential Spine Road serving 300 + Dwellings (HOR): Collector Road**

121. The road shall be 6.0 metres wide and designed to ensure a maximum design speed value of 40 kph (25 mph). This is to be achieved by ensuring that the maximum centre line bend radius is 60 metres with a minimum 30° degree deflection separated by a straight length of 30 metres. The centre line radius can be reduced to a minimum 20 metres which combined with a greater than 30° degree deflection angle can have the effect of reducing the forward visibility requirement (see Appendix A for further details on Forward Visibility). The additional use of other speed control devices (see Appendix A) and imaginative and sympathetic landscaping are also essential requirements.

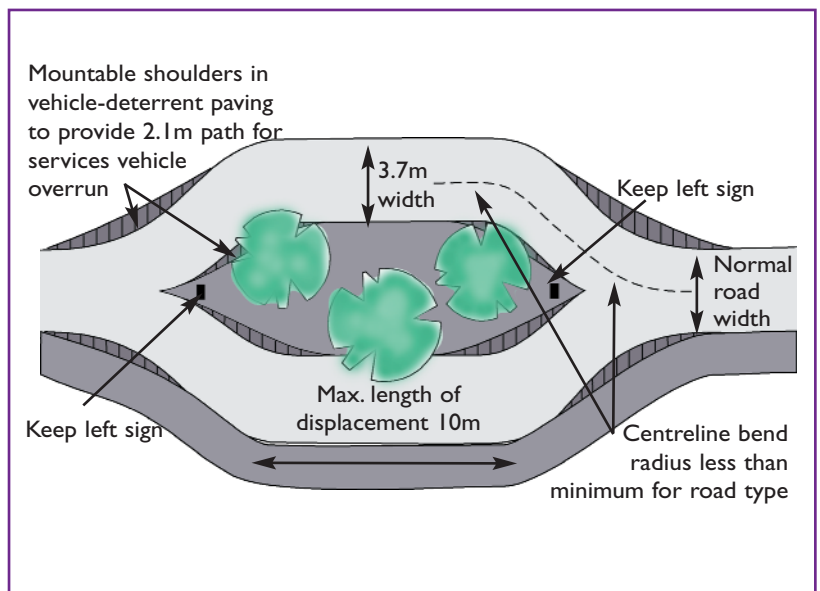
122. The road may provide shared direct access to dwellings although these must enable drivers to emerge onto the road in a forward gear only.

**Point of Transition between Collector Road and Major Residential Road**

123. The change in design approach is largely dependent on the **Movement Network Strategy** and the **Spatial Strategy**. Where it is desirable to introduce a change this should be emphasised by a different relationship between road and buildings. The point of transition should reinforce a speed reduction. This can be achieved by providing a well-defined entrance such as a gateway or an island (see Appendix A “Speed Restraints” and “Gateways”).



**EXAMPLES OF ENTRY TRANSITION**



### Summary of Collector Road Technical Standards

Maximum no. of dwellings served *	500
Carriageway width **	6 metres
Design speed	40kph (25mph)
Centreline radius	Max. 60 metres
Footway width	1.8 metres
Minimum junction spacing (opposite)	40 metres
Minimum junction spacing (adjacent)	80 metres
Minimum kerb radius to LDR or existing County Road	10 metres
Verge width ***	3 metres to 1 metre

\* This can be increased by 250 dwellings with each additional access point to the distributor road network.

\*\* On roads, which are used frequently by buses (i.e. half-hourly or more frequent), a minimum carriageway width of 6.5 metres is required. At junctions on frequent bus routes the minimum acceptable radius is 10 metres but the use of over-run areas should be considered, where appropriate, to achieve the design speed.

\*\*\* Width of verge will depend upon minimum forward visibility/tree planting requirements.

### Connector Roads

124. The particular function of a connector road is to connect a loop or network system serving between 100 and 300 dwellings to the distributor system without a secondary access. These should only be used where it is not possible to provide a secondary means of access to the site. A connector road must, by its extra width, be able to operate in the event of a partial blockage caused by roadworks or traffic accidents. Hardened verges could complement the additional width. Its length will be strictly limited to a maximum of 150 metres whilst the minimum length will not usually be less than 40 metres.

125. The design speed is 40 kph (25 mph). A minimum 1.8 metre wide footway is required on each side of the carriage way. Verges of at least 3 metres wide are only required if tree planting is considered to be desirable and shall be located between the footway and carriageway.

126. A carriageway width of 6 metres is required.

127. Frontage access will not normally be permitted but limited access to shared driveways may be acceptable under certain circumstances.

### Summary of Connector Road Technical Standards

Maximum number of dwellings served	100-300
Carriageway width *	6 metres
Design Speed	40 kph (25 mph)
Footway width	1.8 metres
Maximum length	150 metres
Minimum length	40 metres

\* On roads, which are used frequently by buses (i.e. half-hourly or more frequent), a minimum carriageway width of 6.5 metres is required. At junctions on frequent bus routes the minimum acceptable radius is 10 metres but the use of over-run areas should be considered, where appropriate, to achieve the design speed.

## DESIGN PRINCIPLES FOR LOWER ORDER ROADS

**128.** Lower Order Roads should be designed as places where people live rather than traffic routes. Vehicles should be subordinated to the needs of the pedestrian, the cyclist, and the child playing in the street. The objective is to ensure that the scale and proportion of the road reflects this distinction. Whilst highway needs should continue to be met in the interests of safety and access the road layout and design should largely be determined by the spatial organisation of buildings and open spaces in the development.

**129.** The types of Lower Order Road set out in this guide each have their own distinct uses and advantages depending on the intended housing form. It is, therefore, important that the correct principles for the development, which will encompass the selection of road types, are included and agreed at the **Design Concept** stage.

**130.** The desirable road design speed should be achieved through layout design, mainly through changes in horizontal alignment. These restraints cause the least possible discomfort and inconvenience to cyclists, drivers and pedestrians. This approach should be complemented with the careful arrangement of buildings and landscaping so that forward visibility and sight lines at junctions reflect the design speed. Excessive visibility provision should be avoided.

### Residential Spine Road: Major Residential Access Road

**131.** The Major Residential Access Road is a connecting street or loop that can serve up to 300 dwellings. It can also form part of a Residential Spine Road serving a much larger development although to emphasise the transition a

well-defined entrance feature such as a gateway or an island will be required (see Appendix A “Speed Restraints” and “Gateways”).

**132.** The carriageway width should be 5.5 metres with a minimum 1.8 metre wide footway each side of the carriageway. The road may provide frontage access to dwellings although any access within 30 metres of a junction with a distributor road must enable drivers to emerge onto the road in a forward gear.

**133.** If a verge for tree planting is desirable this should be at least 3 metres wide and located between the footway and the carriageway.

**134.** The road should be designed for a maximum speed value of 30 kph (20 mph). This is to be achieved by ensuring that the maximum centre line bend radius is 30 metres. The minimum centre line bend radius is 15 metres unless a tighter restraint bend is being used. The additional use of other speed control devices (see Appendix A) including imaginative and sympathetic landscaping are also essential requirements.

**135.** The design of a junction with an existing Road will depend on the characteristics of the road, local circumstances etc. and should be agreed with the Highway Authority. Where priority junctions are used the junction radius requirement to County Roads and Higher Order Roads will be 10 metres. At its entrance the access road must always be straight for a minimum distance of 20 metres back from the channel of the main road.

**136.** Vehicle/pedestrian visibility splays are required at private accesses onto this road type.

**137.** See Appendix A for junction details and visibility requirements.

### Summary of Major Residential Access Road Technical Standards

Maximum no. of dwellings served	300
Carriageway width	5.5 metres
Design Speed	30 kph (20 mph)
Footway width	1.8 metres
Minimum junction spacing (opposite)	20 metres
Minimum junction spacing (adjacent)	40 metres
Minimum kerb radius to Higher Order Road or existing County Road	10 metres

### Minor Residential Access Road

- 138. The Minor Residential Access Road is a cul-de-sac, connecting street or loop road. If designed as a single access cul-de-sac it can serve up to 100 dwellings but as a loop or inter-connected street pattern it can serve up to 200 dwellings.
- 139. A carriageway width of 5 metres is required. The road may provide frontage access to dwellings although any access located within 30 metres of a junction with a distributor road must enable drivers to emerge onto the road in a forward gear.
- 140. A minimum 1.8 metre wide footway is required each side of the carriageway although a single 1.8 metre wide footway is acceptable where less than 25 dwellings are being served. On the opposite side of the carriageway either a service or grass verge strip is required, as appropriate.
- 141. If a verge for tree planting is desirable this should be at least 3 metres wide and located between the footway and the carriageway.
- 142. It should be designed for a maximum speed value of 30 kph (20 mph). This is to be achieved by ensuring that the maximum centre line bend radius is 30 metres. The minimum centre line bend radius is 15 metres unless a tighter restraint bend is being used. The additional use of other speed control devices (see Appendix A) including imaginative and sympathetic landscaping are also essential requirements.
- 143. The design of a junction with an existing County Road will depend on the characteristics of the road, local circumstances etc. and should be agreed with the Highway Authority. Where priority junctions are used the junction radius requirement to existing roads and Higher Order Roads will be 10 metres. At its entrance the access road must always be straight for a minimum distance of 15 metres back from the channel of the main road.
- 144. Vehicle/pedestrian visibility splays are required at private accesses onto this road type.
- 145. See Appendix A for junction details and visibility requirements.

Summary of Residential Minor Access Road Technical Standards	
Maximum no. of dwellings served	
- cul-de-sac	100
- loop or connected street	200
Carriageway width	5 metres
Design Speed	30 kph (20 mph)
Footway width	1.8 metres
Minimum junction spacing (opposite)	20 metres
Minimum junction spacing (adjacent)	40 metres
Minimum kerb radius to Higher Order Road or existing County Road	10 metres
Maximum cul-de-sac length	150 metres
Ideal cul-de-sac length	40-100 metres

### Minor Access Way

- 146. A Minor Access Way is an informal shared use pedestrian/vehicle surface on which pedestrians are given a priority by virtue of distinctive design features.
- 147. Access ways are particularly suitable for low to medium density developments of up to 50 dwellings, which have adequate off-street parking for residents and visitors. A cul-de-sac of up to one hundred metres in length can service developments of up to 25 dwellings. Developments of more than 25 dwellings should be served either via a loop road, designed to ensure equal traffic distribution, or with a second link to a higher category of road, normally Minor or Major Residential Access Roads.
- 148. At the entrance to the access way, a strong physical definition of the changing character of the space is essential. This can be achieved by various means, such as the provision of a 900 millimetre wide ramp at the entrance or by a form of traffic calming/gateway treatment.

**149.** At densities less than 20 dwellings per hectare, for developments that allow adequate off-street parking for residents and visitors the access way can have a variable width which should be designed to provide emphasis to the sense of spatial organisation sought. For practical reasons, however, the narrowest sections of the variable width road should generally not be less than 4.5 metres wide.



**150.** Low-density schemes (i.e. below 15 dwellings/hectare), for developments that allow adequate off-street parking for residents and visitors may enable, where appropriate, the use of narrower road widths down to 3.5 metres with passing places widened to 6.0 metres at the private access points.

**151.** Where developments do not meet the density requirements or allow for adequate off-street parking for residents and visitors roads should not be less than 5.0 metres in width. The ultimate determining factors being:

- The need to ensure adequate room within the carriageway area for the reversing of cars on to private drives;
- The location, frequency and juxtaposition of private accesses.

**152.** Direct access to Distributor Roads will generally not be permitted. The design of a junction with other existing County Roads will be dependent upon the characteristics of the road, local circumstances etc. and should be agreed with the Highway Authority. In general, however, priority junctions to Higher Order Roads will require a minimum kerb radius of 10 metres. This may be reduced to 6.0 metres where the junction is to a Major or Minor Residential Access Road.

**153.** At its entrance, the Access Way must always be 5.0 metres wide and straight for a minimum distance of 15 metres back from the higher category of road.

**154.** The design speed should be 24 kph (15 mph) and this is to be ensured by speed restraint measures which shall comprise primarily of changes in horizontal alignment, variable widths, sensitive surface treatment and by the careful disposition of buildings and landscaping. The minimum centreline radius is 15 metres unless a tighter speed restraint bend is being used. The maximum centreline radius bend radius should be 30 metres.



**155.** A footway is generally not required. In certain instances, however, it may be necessary to provide a 1.8 metre wide footway on one side of the road e.g. for a public footpath running through the site or due to the density of development. Where a variable width road of 3.5 metres is used with widened areas for private accesses and passing places a footway will always be required which can be reduced to 1.35 metres (min) if not connecting a public footpath subject to utility requirements.



New LOR using landscape design to reinforce speed control



156. Vehicle/pedestrian visibility splays are required at private accesses onto this road type (see Appendix A for visibility requirements).



157. Service strips should be 1.8 metres in width. Where services are to be provided on one side only a strip of 1.0 metre will suffice on the opposite side to allow sufficient room for vehicles to overhang the carriageway when manoeuvring and to accommodate street lighting needs.

#### Summary of Minor Access Way Technical Standards

Maximum no. of dwellings served	25-50
Footway width	1.8 - 1.35 metres
Design Speed	24 kph (15 mph)
Carriageway width	3.5 - 6.0 metres
Minimum kerb radius to:	
- Higher Order Road	10 metres
- Minor Access Road	6 metres
Maximum length	100 metres
Minimum length	40 metres

#### Mews Court

158. A Mews Court is suitable in built up locations within towns, villages and conservation areas. It is a more formal and shorter cul-de-sac than an Access Way and may serve up to 25 dwellings as a loop or link road (subject to equal traffic distribution) or 12 as a cul-de-sac. It is a joint use pedestrian/vehicle surface on which pedestrians are given priority by virtue of distinctive design features. It is essential that this joint use surface should be visually distinct from vehicle priority roads.
159. Mews Courts are particularly suitable for higher density developments. In general, almost all of the space between the houses will be paved. The entrance to the Mews Court will always be narrow and restricted and the designer should seek to contrast with this by using buildings to enclose a 'courtyard' space for the housing group.
160. Direct access to distributor roads will generally not be permitted. The Mews Court must always be 4.5 metres wide

at its junction with other roads. Its entrance should be marked by a shallow ramp 900 mm wide at the tangent point of the junction radius curves which lifts the carriageway level to that of the shared use surface. This entrance should be restricted to form a 'neck' to the cul-de-sac by using walls or dense planting on each side of the core. The walls may be dwellings, garages, porches, garden walls, etc., and should normally be not less than 1.8 metres high and at least 2 metres long. In creating this restriction it is important to ensure easy pedestrian movement by extending the footpath around the junction to 1.8 metres beyond the back point of the ramp. A contrasting surface finish for the ramp and Mews Court will distinguish it from the adjoining highway.

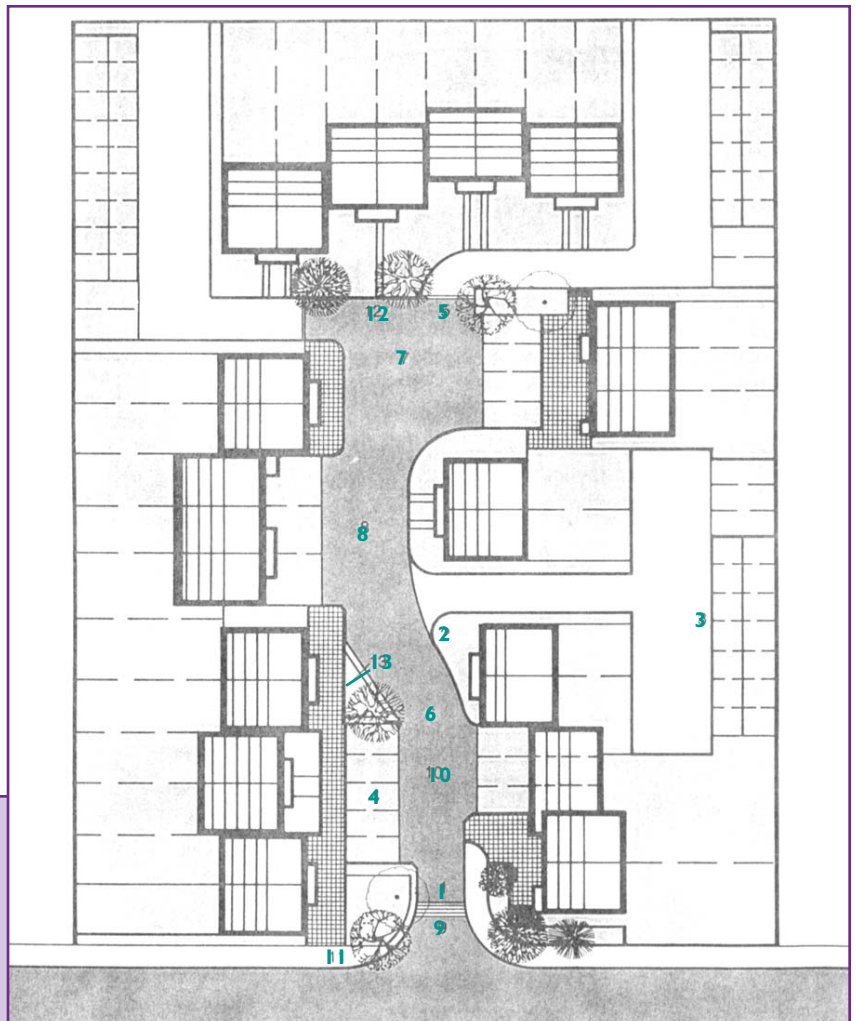
161. At its entrance the mews court should be straight for a minimum distance of 10 metres back from the junction. A turning head should be incorporated in a Mews Court (see Appendix A for junction details) and a footway is not required.
162. To define the area to be adopted by the Highway Authority a kerb with a constant upstand of 50mm should be provided which should continue, although be dropped, across the entrance to private drives. Where protection for adjacent buildings is required, a minimum clearance strip 500mm wide must be provided and the kerb height should be increased to 125mm. Other similar protective treatments will be considered.
163. All services should be kept within the same zone at one edge of the adopted area. The service layout, in the restricted space available, must be carefully considered with the public utilities as an integral part of the design process, and consultation must take place at an early stage.

- 164. Where site conditions permit, the adopted area should fall towards the court entrance to avoid any risk of flooding if gullies block.
- 165. Visitors' spaces should be provided within the Mews Court but a clear 'core' area must be safeguarded. Where they are contiguous with the 'core' area, the Highway Authority may accept responsibility for their maintenance. A clear distance of 6.0 metres is required between a parking space abutting the Mews Court and its opposite edge.
- 166. Other grouped parking spaces must be provided in a separate garage or parking court. This should have its entrance as near as possible to the dwellings being served. The garage court will not be adopted.

**THE ESSENTIAL CHARACTERISTICS OF A MEWS COURT ARE:**

- 1 Buildings or dense planting may form narrow entrance neck.
- 2 500mm clearance strip required.
- 3 Private parking spaces outside the adopted area.
- 4 Visitors parking for communal use may be within the adopted area but should be distinct from the 'core area'.
- 5 Adopted area defined by kerb.
- 6 4.5 metres clear 'core' area with separate provision for an adoptable service strip for use by the statutory undertakers.
- 7 Turning head required.
- 8 Footway not required.
- 9 Ramp or setts at entrance, 4.5 metres wide.
- 10 25mm bumper course carries through kerb line of major road.

**NOTE:** It will be essential for developers to programme work in co-ordination with the statutory undertakers to avoid disruption and extra expense.



**Housing Square**

- 167. These are suited to built up locations within towns, villages and conservation areas where the aim is to serve high density development. Direct access to distributor roads will generally not be permitted.
- 168. A housing square is a joint use pedestrian/vehicle cul-de-sac providing up to 20 parking spaces in communal form, which are not allocated to specific dwellings.
- 169. Parking areas (not individual bays) devoted to the regular parking of residents' cars, in lieu of drives and garages, must be clearly defined on the ground. These spaces must be controlled by a housing association, a District Council or similar body which may be regarded as a 'street manager' under the New Roads and Street Works Act.
- 170. The Highway Authority may be prepared to accept responsibility for carrying out maintenance of these areas subject to agreement. In the absence of such agreement the responsibility will lie with the developer to propose satisfactory alternative arrangements.



171. The housing square must always be 4.5 metres wide at its entrance where a strong physical definition of changing character is required. A ramp 900mm wide should be provided to lift the carriageway to the level of the housing square. The ramp and the housing square must be surfaced in a contrasting material and the parking areas should be defined in a different colour.

172. A kerb is required with a 50mm upstand where access is provided to garages. Otherwise a 125mm upstand kerb should be used. All kerbs should be at least 500mm from any dwelling or wall.

173. Any footpath provided to link the housing squares should be of variable width, averaging 1.8 metres and not less than 1.0 metre. Some public utilities may have to pass under the housing square. Service access difficulties can be minimised by allowing services to follow footpath routes, in which case the footpaths should not be narrower than 1.8 metres. The space needs of the public utilities should be considered before the layout of footpaths and landscaped areas are agreed with the Local Authorities.

174. The success of a housing square depends on a high standard of landscaping, earth mounding, shrub planting and the introduction of suitable trees combined with existing mature trees. It is essential that security is taken into account in the detailed design of footpaths and planting. Soft landscaping should be in private ownership unless a suitable manager such as a Housing Association is prepared to accept contractual responsibility for its maintenance.

#### THE ESSENTIAL CHARACTERISTICS OF A HOUSING SQUARE ARE:

- Landscaping is essential with this type of layout.
- Possible change to a less formal kerb material.
- Parking areas must be clearly defined. All parking is communal; no garages or drives within individual house sites. Garage courts may be served from the housing square.
- Adopted area contiguous with the major road.
- The 'square' proportions are essential to discourage any attempt to drive fast.
- Extra kerbing may be useful to inhibit overriding of landscaping.
- Ramps or setts at entrance 4.5 metres wide.



Modern housing squares





Examples of shared parking areas at Poundbury

## TRACKING FOR LOWER ORDER ROADS

**175.** The design of urban spaces with continuous building frontages requires the alignment of the footpath with the building line. The overall width of the street may vary but should provide the minimum width for vehicular movement (the tracking). The width should not be below that specified for the appropriate category of road. Tracking is only suitable for Lower Order Roads.

## PRIVATE DRIVES

- 176.** A road serving up to 5 dwellings need not be adopted by the County Council.
- 177.** Private drives are useful in many 'infill' situations. Their extensive use should be resisted, however, due to problems likely to arise in the provision of public utility services, neighbour disputes and the maintenance liabilities, which become the responsibility of the occupiers.
- 178.** Providing careful thought is given to the design of the layout, this guide should enable all forms of housing development to be adequately served by an adopted road. Nevertheless, where private drives are used, it is recommended that they be constructed to a similar standard to that of an adoptable road to avoid future problems.



**NOTE:** Where private drives are proposed to serve in excess of five dwellings it will be necessary for the local planning authority to ensure that there are appropriate mechanisms in place which will enable the developers to seek exemption under Section 219 of The Highways Act, 1980. An example, would be the establishment of a Maintenance Management Company whose terms of reference are secured by means of a Section 106 Agreement.

**179.** The minimum width for a drive serving a single dwelling is 3.2 metres although this may need to be widened to accommodate access to double garages. A width of 3.2 metres can also be used for shared driveways to Lower Order Roads. Shared accesses to Higher Order Roads and existing County roads should be 4.2 metres in width, which should be maintained for the first 6 metres into the site from the highway boundary.

## FACILITIES FOR THE DISABLED

**180.** Public access to any development should be equally available to all sections of the community and therefore the housing layout should take into account the special needs of the disabled and elderly. Particular attention needs to be paid to the latest DETR guidance on pedestrian crossing points and use of tactile paving surfaces.



Tactile paving combined with speed controlling device to provide safe crossing points - Tamworth.

- 181. Dropped kerb crossings with tactile paving will be required at any “natural” crossing point or junction radius area of priority junctions on Local Distributor Roads, Residential Spine Roads and Minor Access Roads.
- 182. The design for the construction of new footways/footpaths should aim for a general maximum gradient of 5% (1 in 20) or an absolute maximum gradient of 8% (1 in 12). In these circumstances special provisions might be required dependant on the circumstances e.g. handrails, landing areas, anti-slip surfacing etc.

## SAFETY AUDITS

- 183. Safety Audits may be required, by an independent assessor, at the Highway Authority’s discretion. This may involve Stage 1, 2 and 3 audits with amendments at all stages being implemented at the developer’s expense.
- 184. The Stage 1 Safety Audit should be undertaken prior to planning consent being granted to the detailed layout.

## ACCESS TO BUS SERVICES

- 185. Large developments are likely to lead to the introduction of specific new bus services. Operators will wish to consider adapting existing services for all but the smallest housing schemes.
- 186. The aim is to have at least one bus stop within 350 metres walking distance of every dwelling. This should be reduced to 200 metres on hilly sites. The type of bus to be used by operators when development is complete and the roads most likely to be used by buses should be identified at the **Design Concept** Stage. Ideally the Local Distributor Road layout should permit circular routes but in some cases turning areas for buses may be necessary. Higher Order Roads and, where appropriate,

Lower Order Roads,

should therefore, be designed to accommodate bus provision. Local bus operators should be consulted and the County Council’s Passenger Transport Section can also provide advice.

- 187. The construction phasing of large scale developments should allow bus services to conveniently serve the development from the earliest possible time, even if this means making temporary arrangements for stops, shelters etc.

## Bus Stops

- 188. The County Council’s Passenger Transport Section can provide guidance on the need for bus stops and shelters. Where these are required they should generally be located at intervals of about 300-500 metres to satisfy local demand. Bus stops on opposite sides of a road should be staggered in order that buses stop ‘tail to tail’ and move away from each other. The staggered stops should be approximately 45 metres apart. Care should be taken to attempt to locate bus stops where they will not cause a nuisance or loss of privacy to residents.
- 189. Pedestrian routes should link to all bus stops. At bus stops, it may be appropriate, in addition to bus passenger shelters, to also locate telephone kiosks, post boxes and information boards. Where this is carried out the footway must be well lit and be widened, usually to a minimum of 3 metres.

## School Sites

- 190. Particular attention will be necessary to ensure that safe set-down and pick-up arrangements are made at schools for timetabled services and also for special school buses that bring pupils in from other neighbourhoods. Ideally these facilities should be off-street but where this is impractical then lay-bys may be necessary and these can be extensive at larger schools.

## Carriageway Widths

- 191. On roads, which are used frequently by buses (i.e. half-hourly or more frequent), a minimum carriageway width of 6.5 metres is required. At junctions on frequent bus routes the minimum acceptable radius is 10 metres but the use of over-run areas may be considered, where appropriate, to achieve the design speed.

## FOOTWAYS AND CYCLEWAYS

- 192. The provision of footways, footpaths and cycle paths should be considered at the **Design Concept** Stage to ensure safe and convenient access between dwellings and to local facilities such as schools, shops and employment areas. It is essential that footpaths and cycle-routes within the site and which are to connect to external routes are established at the earliest

possible time before car dependant travel habits become established.

### Cycle Facilities

193. The County Council require cycle audits to be undertaken to ensure that schemes provide improvements to, or, at least, have no negative impact on, the coherence, directness, safety attractiveness and comfort of routes used by cyclists.



Safe cycleway crossing combined with speed controlling devices - Tamworth

194. Depending on the size and location of the development, the features for cyclists may include cycleways (separate or in combination with roads or footways), cycleslips at traffic calming measures. Cycle stands outside shops and community facilities will usually be required.

195. In developments of up to 200 houses, cyclists can usually be accommodated safely on the residential road network. For larger schemes or where a small scheme combines with existing housing it will be necessary to consider provision of segregated facilities on key cycle routes. These should take the form of cycle lanes within the road, or where this is not possible segregated cycleways next to footpaths or footways. The need for segregated cycle routes must be addressed at the design concept stage.



196. Cycle networks are being provided and planned jointly by the Highway Authority and Local Planning Authorities through the County Cycling Strategy and developers should check the latest position.

### Roundabouts

197. Roundabouts are recognised as being particularly difficult for cyclists and therefore full consideration for cyclists must be given to ensure continuity and safety of cycle networks through roundabouts.

### Footways and Footpaths

198. Footways and footpaths should be located to maximise their use by pedestrians. Routes should be as direct as possible from point to point, especially between dwellings and local shops and employment, schools, play areas and all community buildings. They should not generally be segregated from passing traffic and dwellings.
199. Pedestrian crossings such as Zebra, Puffin and Toucan crossings should be included to serve schools or shopping areas to aid pedestrian movement and safety and avoid severance between residential areas and associated amenities.

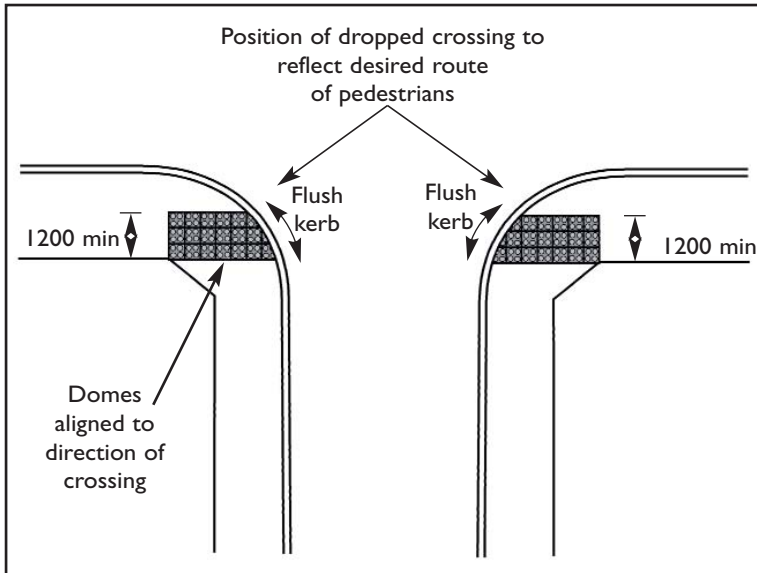
### Pedestrian Crossing Points

200. The provision and location of adequate places for pedestrians to cross roads is a key safety consideration and needs to be considered at the **Design Concept** Stage. This will enable consideration to be given to combining crossing points with speed restraint measures where these are required. It will also ensure that crossings are not only convenient and safe points to cross but also on 'desire' lines.



Pedestrian crossing combined with speed controlling devices - Abbots Bromley

201. Dropped crossings and tactile paving will be required and be designed in accordance with the diagram below.



## CAR PARKING AND SERVICING

202. The standards for off-street car parking provision should be consistent with the local area strategy in the Local Transport Plan (LTP) and/or the appropriate Local Plan.
203. All dwellings should have safe, secure and convenient parking arrangements to minimise the dangers that can be caused by on-street parking and ensure easy access for the emergency services.
204. Car parking must be considered in relation to the surrounding area to ensure existing on-street parking conditions are not worsened.
205. Particular care and attention needs to be given to parking (and servicing) arrangements for site locations which are highly accessible by walking, cycling and public transport. This also applies to instances where dwellings are provided to meet special needs where the demand for car parking is likely to be less.

### Parking Layout Design

206. Research suggests that for some housing developments the use of unassigned communal parking areas might be an effective use of the available land.
207. In order to ensure that parking provision is kept to an operational minimum whilst making sure that on-street parking

does not cause problems design of parking areas should take account of:

- the use of shared communal parking areas to enable the smallest number of total spaces to be provided (particularly useful where space is at a premium, where high densities are required and where the aim is to increase the use of non-car modes);
- where the above approach is considered to be unacceptable the provision of one in-curtilage parking space with the remainder to be provided as unassigned spaces located elsewhere;
- use of tree planting and other means to make communal parking areas visually more attractive;
- greater provision for general storage areas within the house design to reduce the under use of garages, or providing larger garages to accommodate large family cars, or replace garages with an increased number of hardstandings/car ports;
- more effective layout design to ensure that parking courts and communal parking areas provide convenient access and so that the spaces can be informally supervised from windows and the entrances of the dwellings they serve;
- laying out spaces on driveways so that they are independently accessible without other cars first having to be moved out of the way.

#### Note:

1. Unless layouts carefully consider the above requirements consideration will not be given to reducing road widths below 5 metres.
2. See Appendix A for additional details.

## PROVISION FOR SERVICE VEHICLES

### Headrooms

208. A minimum clearance of 5.3 metres over public highways is required for new construction. For footbridges over public highways headroom of 5.7 metres must be provided.
209. Minimum vertical clearance to serve car parking areas should be 2.1 metres but the following clearances should be considered if certain types of vehicles are expected:

Vehicle Type	Vertical Clearance (m)
Small service vehicles	2.5 m
Touring caravans	2.8 m
Motor caravans	3.3 m
Fire appliances	4.0 m
Most large service vehicles	4.1 m
The largest service vehicle	4.5 m

### Servicing Distances

210. The most regular large servicing vehicles are those used for refuse collection; provided that the standards for these are met other servicing vehicles should have no difficulties. However, a special check, needs to be made to ensure that access for emergency services is not compromised.
211. Turning facilities should be provided for refuse vehicles where they would otherwise have to reverse more than 40 metres.
212. The recommended maximum servicing distances are as follows:

From	To	Max. Distance (metres)
Resident & visitors cars	Dwelling	As near as possible
Residents & visitors cars	Furthest dwelling in a pedestrian court	40m
Refuse collection vehicle	Dustbin	Vary according to district policy.
Refuse collection vehicle	Communal container bin	9m
Oil tankers	Fuel inlet point	30m
Service vehicles	Dwelling	3m (approx.)
Fire Appliances	Main entrance to 1 and 2 storey dwellings	45m

## Emergency Service Requirements

213. This guide has been careful to ensure that emergency service requirements will not be compromised. There is now a greater emphasis on keeping dead end access routes to a minimum. This is to be achieved by the greater use of loop roads, connecting streets, or culs-de-sac with emergency link access. If this is not achieved the maximum length of any single access cul-de-sac should be 180 metres. (See Appendices A and E for additional details on Emergency Access requirements).