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

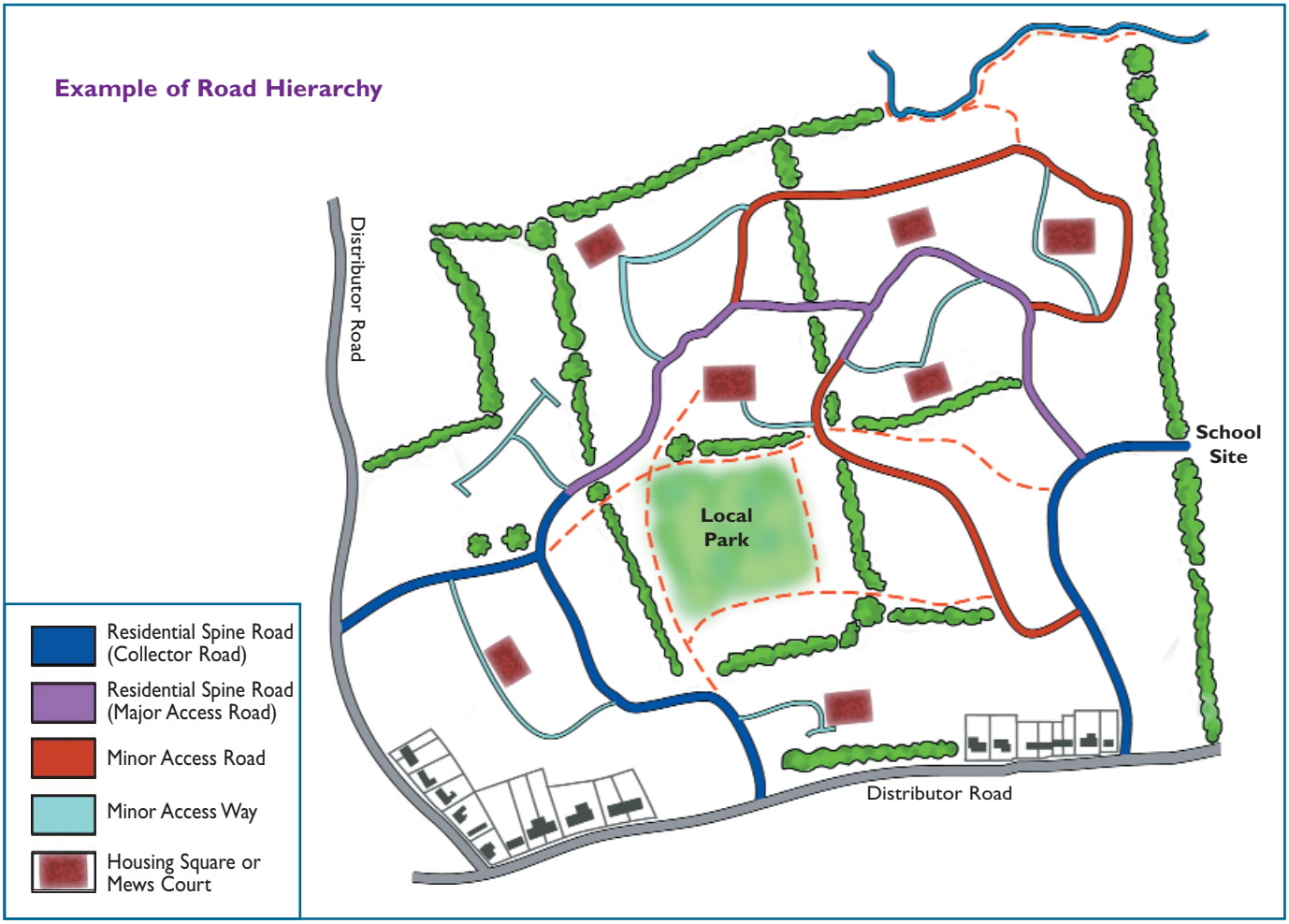
ROAD HIERARCHY

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 maybe 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 1metre

* **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.

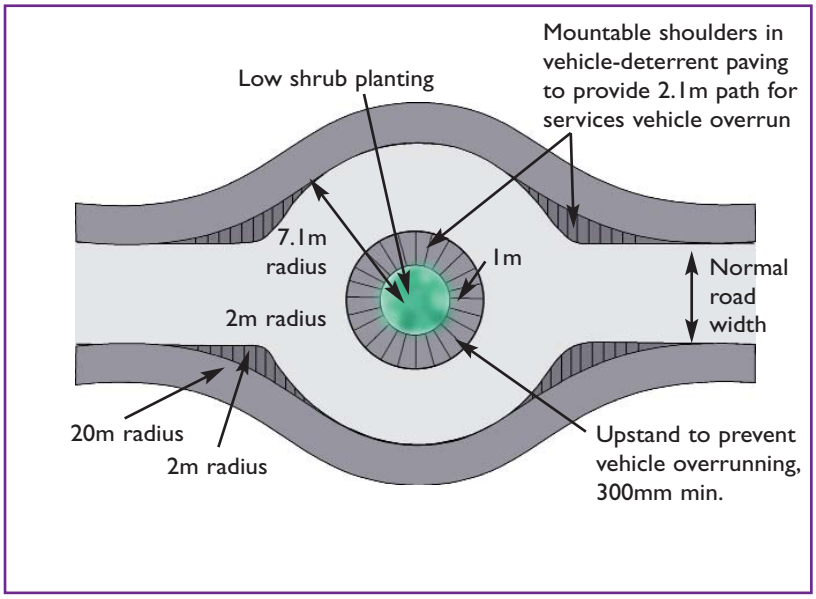
Residential Spine Road serving 300 + Dwellings (HOR): Collector Road

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.

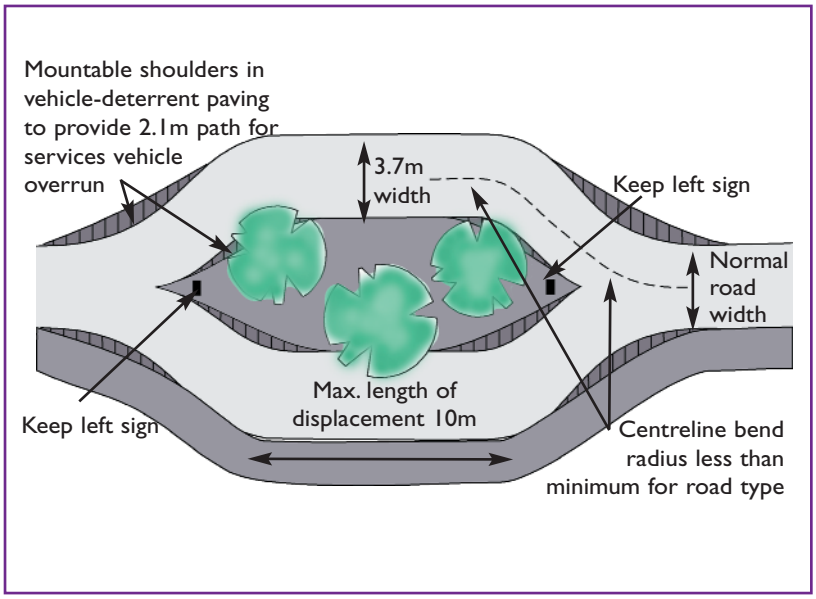
122. The road may provide shared direct access to dwellings although these must enable drivers to emerge onto the road in a forward gear only.

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 - loop or connected street	 100 200
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 maybe 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 - Minor Access Road	 10 metres 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.

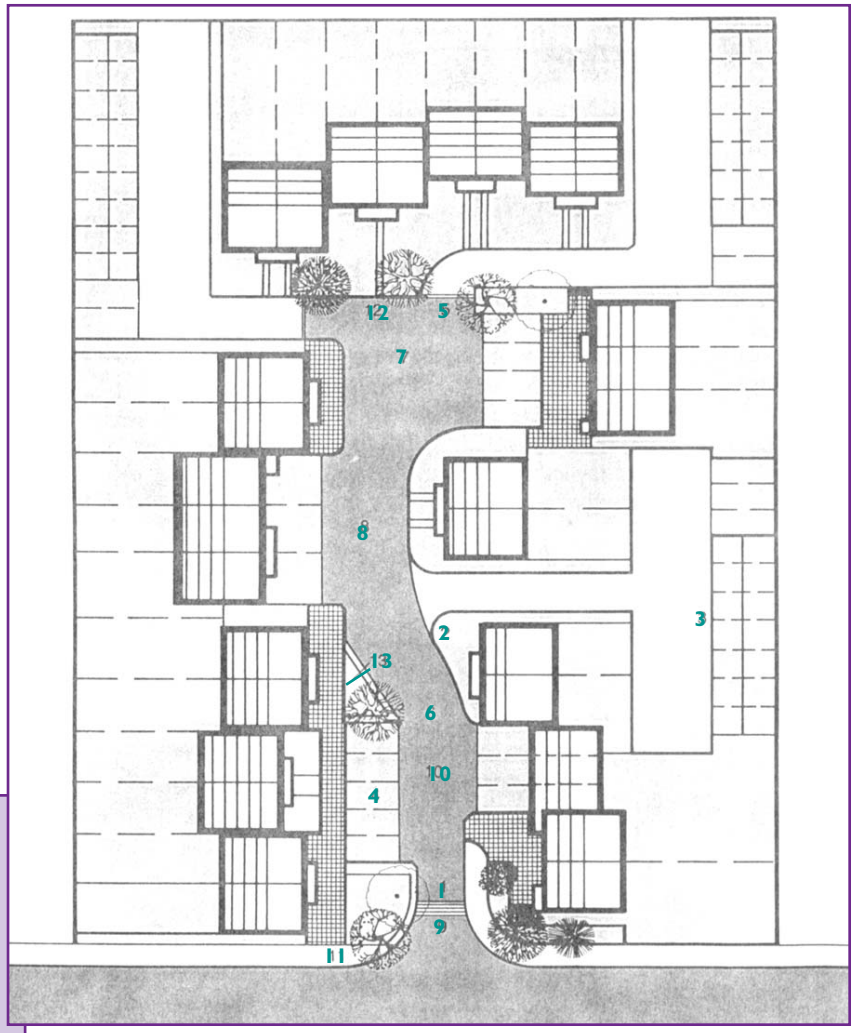
162. To define the area to be adopted by the Highway Authority a kerb with a constant upstand of 50mm should be provided which should continue, although be dropped, across the entrance to private drives. Where protection for adjacent buildings is required, a minimum clearance strip 500mm wide must be 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 adequatelyserved 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% (1in 20) or an absolute maximum gradient of 8% (1in 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.

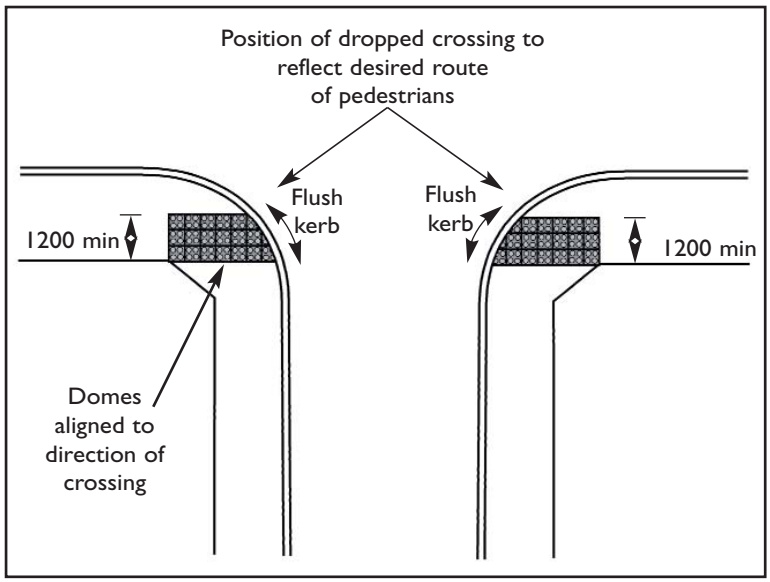
199. Pedestrian crossings such as Zebra, Puffin and Toucan crossings should be included to serve schools or shopping areas to aid pedestrian movement and safety and avoid severance between residential areas and associated amenities.

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).