# Shape of Development

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3.0.1. In Suffolk the integrated design approach will mean that the Highway and Planning Authorities will work closely together with other agencies to ensure that their standards for building density, layout, highway design, landscaping and parking provision are compatible. Those involved in designing roads on new estates must refer closely to the advice given later in this chapter as the layout has a fundamental effect on the shape and appearance of the development.

3.0.2. Early joint consultation with the respective officers of the District Planning Authority and the County Surveyor is strongly recommended. That consultation should include amongst other things the estate layout and the areas of roads, footpaths and verges which may be offered for eventual adoption by the County Council. Early consultations with developers are likely to result in time savings and avoid abortive work. In addition, an economical and well thought out layout could allow land which might otherwise have been wasted to be used for development purposes.

3.0.3. The capital cost of providing a new housing estate rests with the developer and all future maintenance costs are largely divided between highway authorities and service providers. At the design stage a balance has to be struck between these matters. Special care needs to be taken to keep maintenance to a minimum whilst still using materials which are visually acceptable. For example, layouts should be designed to eliminate the possible damage and recurring maintenance charges caused by vehicles overrunning footways and verges.
Design Options

3.1.1 Two types of hierarchical road layout arrangements are available: disconnected (tree-like) arrangements of culs-de-sac shown in Figure 3.1 and the interconnected network arrangement of roads shown in Figure 3.2. Large developments often contain a mixture of each type. Both concepts will be subject to the same overall standards with regard to the description of the road, its function, width and restrictions.

3.1.2 The design of the residential road layouts should indicate to drivers, in a progressive manner, that they need to reduce speed and be considerate to the needs of pedestrians. On the lower categories of residential roads such as shared surface roads, the maximum vehicle speeds should be well below 20mph.

3.1.3 The hierarchical road layouts recommended in this guide will help to ensure the progressive reduction in vehicle speeds. In large development areas, these layouts will also help strangers to find their way around.

Design Bulletin 32 (DB32)

3.2.1 DB32 is published jointly by the Departments of Environment and Transport and offers guidance for local authorities and designers on the layout of roads and footpaths within new residential development. The aim of DB32 is to create surroundings which are visually attractive, safe, convenient, nuisance free, secure and economical to construct and maintain.

3.2.2 The following guidance draws very largely upon the revised DB32 particularly from the point of view of road safety. Therefore any applicant wishing to depart from the guidelines in this document will have to demonstrate that the proposals satisfy the same safety criteria.
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3.2.3. No attempt is made within DB32 to prescribe standards for adoption of highways. Such standards can only sensibly be set locally and the Suffolk Design Guide seeks to achieve this.

**Types of Road and Access Requirements**

3.3.1. Within this document two main categories of roads will be described:

**Local Distributor Roads - Fig. 3.3**

3.3.2. Local Distributor Roads distribute traffic within districts of a town. In residential areas they form the link between District Distributors and residential roads and should not normally give direct access to dwellings.

3.3.3. Whenever practicable, points of access to the site together with the layout should ensure that all roads in the development serve fewer than 300 dwellings in order to avoid the over-provision of Local Distributor Roads.

**Residential Roads - Fig. 3.4 & 3.5.**

These will be:

- Major Access Roads
- Minor Access Roads
- Shared Surface Roads

3.3.4. Major Access Roads are residential roads with footways that would not normally serve more than 300 dwellings and may give shared direct access to dwellings.
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3.3.5. Minor Access Roads are residential roads with footways that provide direct access to dwellings and parking spaces but would not normally serve more than 100 dwellings.

3.3.6 Shared Surface Roads are residential roads without footways that would not normally serve more than 50 dwellings if looped or 25 in the form of a cul-de-sac.

3.3.7. Shared Driveways are unadopted paved areas that may serve the driveways of up to five dwellings.

Access Requirements

3.3.8. For Major Access roads serving more than 150 and up to 300 dwellings:

(a) two points of access should be provided to the part of the site being served and the road layout should conveniently connect those points of access (Figure 3.6a).

(b) where only one point of access is available the road layout should form a circuit and there should be the shortest practicable connection between this circuit and the point of access. This should always form the stem of a T-junction - usually with a Local Distributor Road. (Figure 3.6b)

3.3.9. From the point of view of safety and the need to consider access in emergencies, not more than 150 dwellings will normally be served by a single means of access.
3.3.10. Minor access roads serving more than 50 dwellings should normally be through-roads or looped. Cul-de-sac serving such numbers must have a footpath link with other roads that could be used by vehicles in an emergency (Figure 3.7).

3.3.11. Shared surface roads may serve up to 25 dwellings in a cul-de-sac (Figure 3.8) and up to 50 if looped (Figure 3.9).

3.3.12. The road layout should be compatible with the road hierarchy for the local area. Access points to the site and the road layout should provide the shortest practicable routes between the homes and off-site destinations and direct routes for service vehicles between different parts of the site. (Figure 3.10).

3.3.13. The range of road types described above will provide the developer with solutions for the great majority of applications, although situations will arise where more than the minimum values shown will be required.

Traffic Flows, Target Maximum Speeds and Speed Restraints.

Local Distributor Roads

3.4.1. Local Distributor Roads are provided to ease traffic flow and drivers would normally expect to be able to proceed at speeds of up to 30mph.

3.4.2. Vehicle speeds will normally be restrained to 30mph on Local Distributor Roads by their alignment. Where other measures are proposed these will need to be discussed with the Highway Authority.
Residential Roads

3.4.3. Residential roads will give direct access to dwellings but drivers will be aware from the layout that their progress is controlled by speed restraints. Through traffic will be discouraged from entering residential roads.

3.4.4. Residential roads not only give access to dwellings, they also form an integral part of the living environment within housing estates. It is essential that design measures be used to prevent drivers from exceeding the target maximum speed recommended below.

3.4.5. The target maximum speeds and the spacing of speed restraints will be as follows:

(a) Under 30mph along major access roads - by keeping unrestrained road lengths to no more than around 80m - 120m.

(b) About 20mph along minor access roads - by keeping unrestrained road lengths to no more than around 60m;

(c) Well below 20mph along shared surface roads - by keeping unrestrained road lengths to no more than around 40m (Figure 3.11).

3.4.6. Vehicle speeds should be restrained to well below 20mph outside schools and elsewhere where children may be especially at risk (Figure 3.12).
Layout Considerations

3.5.1. The layout of carriageways, bends, junctions and turning spaces should minimise vehicle flows and reduce vehicle speeds. When making decisions about these matters the following considerations should be taken into account:

(a) The expected volumes and speeds of vehicular traffic.

(b) The frequency with which various types of vehicles need to pass each other.

(c) The provision made for off-street and on-street parking.

(d) The availability of alternative means of access to dwellings to help ensure that carriageways are not blocked by incidents such as vehicle breakdowns and carriageway repairs.

3.5.2. Normally changes in horizontal alignment will be the only means necessary to control vehicle speeds. Speed tables and raised junctions (extended flat top road humps) may also be considered.

3.5.3. When speed restraints alone would not be sufficient to discourage through traffic from using residential roads:

(a) the routes provided should be made significantly longer than those provided by Local Distributor Roads (Figure 3.13a) or

(b) loops or culs-de-sac should be created to make it impossible for short cuts to be taken along residential roads by through traffic (Figure 3.13b).
3.5.4. Dwellings designed to provide natural surveillance could be located along stretches of road serving more than 300 dwellings (Local Distributor Roads), with vehicular access being located between the dwellings and the distributor road. Figure 3.14 illustrates access being taken from a road that is connected to a Local Distributor Road carrying low volumes of traffic and where:

(a) the spacing of connections along the Local Distributor Road is not less than the minima required for junctions;

(b) most drivers do not normally have to park on the Local Distributor Road (i.e. assigned and unassigned parking provision for both residents and visitors is adequate);

(c) drivers of cars and small service vehicles would not have to reverse out onto the Local Distributor Road (i.e. the design of the parallel road or shared driveway and individual driveways together allow such vehicles to turn).

3.5.5. Roads should be carefully planned to relate directly to open spaces and other community facilities.

3.5.6. The road layout should be designed to avoid breaking up areas of public open space such as playingfields or other features which need to be preserved intact.

3.5.7. Separate access from a Local Distributor Road should be provided where large service vehicles will frequently visit community facilities such as shops.
Road Widths for Residential Roads

3.6.1. A crucial factor in determining the width of any carriageway is the provision for off-street and on-street parking. Experience suggests that, wherever roads give direct access to dwellings, the carriageways are invariably used for parking by casual callers and service vehicles. Thus, in those locations and in any other places where parking by service vehicles will normally occur on the carriageway, a minimum carriageway width of 5.5 metres should be provided to allow one service vehicle to pass another which is parked.

3.6.2. Where no direct access is given to dwellings, the following widths could apply:

- Between 50 and 300 dwellings - 5.5 metres
- Between 25 and 50 dwellings - 4.8 metres
- Up to 25 dwellings - 4.1 metres

The diagram (Figure 3.15) opposite shows vehicles that can pass one another within those width bounds.

Buses

3.7.1. In the planning of new residential areas, early consideration should be given to road layouts which will permit adequate penetration by bus services to meet the needs of potential users whilst satisfying environmental considerations. The recent move towards more frequent services using smaller buses means it should be possible for such services to go further into developments. Local planning authorities should consult public transport organisations when considering the layouts of residential developments of more than 50 dwellings.

Fig. 3.15 Road Width Passing Diagram
3.7.2. Roads likely to be used by buses should be identified at the outset in consultation with the highway authority and public transport operators. Special consideration should be given to the location of bus stops and any provision that may be required for buses to turn or wait.

3.7.3. Only very large developments are likely to lead to the viable operation of a 'specific service'. Most new bus services are developments of an existing one. The majority of bus services are commercial operations and the decision on routing them lies with their operator.

3.7.4. Where new estates are reasonably close to a main bus route, the estate road design should permit a circulatory route with a safe entry and exit.

3.7.5. Where this layout is possible, unsatisfactory manoeuvres are avoided and the siting of adequate bus stops becomes the only consideration. The aim should be to site these along both Major Access and Local Distributor Roads so that, taking advantage of planned pedestrian routes, a stop becomes available within 400 metres of all houses. Where a circulatory route cannot be provided, bus turning facilities are essential.

3.7.6. Where laybys are required, hardstandings for pedestrians must be provided (Fig.3.16) and footpaths must link to housing areas. It is appropriate to site shelters, telephone call boxes, post boxes and information boards at these locations but hardstandings must be well lit and provided in the immediate vicinity to prevent those areas becoming muddy and wet in winter.

3.7.7. The provision of road links which can only be used by buses may need to be considered when the road layout has been designed to make it impossible for vehicles to take short cuts across a large development area.
3.7.8. The incorporation of selective traffic management measures to facilitate the provision of through bus services whilst discouraging such movements by private cars (where this is considered inappropriate) should be given careful consideration in planning road layouts.

3.7.9. In large developments the road should be made available to bus services at an early stage for the benefit of residents.

**Cycleways and Pedestrian Routes**

3.8.1. Design measures to restrain vehicle speeds and minimise vehicle flows will normally create sufficiently safe conditions for the movement of pedestrians and cyclists along residential roads. Footpath links for pedestrians and cyclists will only be required to create significantly shorter routes than those provided by the roads or to complement segregated provision in the area.

3.8.2. In larger schemes, however, joint pedestrian and cycle routes should link housing areas with community facilities, schools, shopping and places of employment. The footpath layout must meet the needs of elderly people.

3.8.3. The routes need to be carefully positioned and well designed in order that their use be maximised. It is particularly important that footpaths should follow the most direct route from point to point and have practical gradients; they should not be so segregated from passing traffic or dwellings as to encourage crime.

3.8.4. Footpaths should normally be provided as short links overlooked from dwellings. Whenever practicable, this should be achieved by designing the road layout so that turning spaces at the ends of culs-de-sac abut either each other or adjacent roads in order to provide continuous routes for pedestrians and cyclists and to serve dwelling entrances.
3.8.5. When the provision of a footpath or footway is required it will be necessary to ensure that it is sufficiently wide and well aligned to:-

(a) avoid the need for pedestrians when passing each other to step out into busy carriageways or to cause damage to planted areas;

(b) allow for ramped crossings to garage drives or parking spaces;

(c) allow, when necessary, for occasional access along footpaths by emergency vehicles;

(d) provide for statutory and other services underground.

3.8.6. Major routes will link housing areas with schools, shopping centres and employment areas. The minimum width shall be:-

(a) cycleway - 2 metres;

(b) footway - 1.8 metres.

A greater width may be required where the facility abuts walls or visibility is below the required standard.

3.8.7. Minor routes will provide access from groups of dwellings to the major routes or to link adjoining culs-de-sac and give access to bus laybys. In these cases a minimum width of 3.0 metres will be required for a combined cycleway and footpath, providing the facility abuts a level open area and visibility is to the required standard.
**Fig. 3.17.**

Visibility Splay Requirements

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<tr>
<td>Route</td>
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<td></td>
</tr>
<tr>
<td>Cycleway</td>
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<td>2.0 x 15.0 (min)</td>
</tr>
<tr>
<td>Vehicular</td>
<td>2.0 x 2.0*</td>
<td>2.0 x 30.0 (min)**</td>
</tr>
<tr>
<td>Carriageway</td>
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* Barriers may be required. The need for disabled persons to negotiate the barriers shall be taken into account in the design.

** If the road is a Local Distributor or a Major Access Road and the traffic flows are high, the provision of a subway, bridge or signed or signalled crossing will be required.

3.8.8. In cases where the cycleway and footpath adjoin, the uses should be segregated by a difference in level or by a difference in surface colour. Segregation of use by a difference in level is not recommended when the width of the combined facilities is less than 3 metres.

3.8.9. The forward visibility distance for both routes is 15 metres, measured along the centre line. This distance should be increased by 2 metres for each 1% of down gradient. If it is not possible to provide the recommended visibility distances physical constraints and markings should be used to avoid possible conflicts.

3.8.10. At all junctions of Pedestrian Routes and cycleways, visibility splays (as shown on the Figure 3.17) and dropped kerbs will be required. It should be noted that the maximum gradient of footpath is 1 in 8. For gradients in excess of 1:12 a handrail may be required. The maximum gradient is generally 1 in 20.

**Providing for people with disabilities**

3.9.1. Access to any development should be available to all sections of the community. Provision for motor vehicles should not, therefore, be to the detriment of the access requirements of pedestrians, including those with other disabilities.

3.9.2. It is a statutory requirement to have regard to the needs of people with disabilities in designing any building to which the public have access. This will include the provision of suitable access routes for wheelchairs and the marking out of parking spaces close to pedestrian entrances.
3.9.3. Provision should be made at all road junctions for pedestrians to cross the minor road with a minimum of inconvenience. Kerbs should, therefore, be dropped flush with the carriageway and tactile paving provided at all junctions. This does not apply where pedestrians are directed to a footbridge or underpass provided that it is suitable for persons with disabilities.

3.9.4. Suitable routes should be provided for pedestrians with prams or wheelchairs, from residential areas to shops, schools, clinics and community services. These routes should have a firm, non-slip surface and avoid steps even if this means slightly longer ramped routes. Steep crossfalls, gratings likely to trap wheels and obstructions such as lighting columns and sign posts should also be avoided. Long ramps should include rest platforms and there should also be level areas at the top, bottom and at every turn.

3.9.5. Particular attention should be paid to the locations at which pedestrian routes cross the carriageway (e.g. at road junctions) so that footway and footpath users are not exposed to unexpected dangers. Judicious use of hard and soft landscaping can guide pedestrians to suitable crossing points and help prevent children running directly out onto the road. Special consideration should be given to the need for crossing facilities adjacent to shops, clinics, community facilities, old people’s homes and other generators of pedestrian traffic.

3.9.6. Steps pose particular problems for prams and wheelchairs, and also for mechanised maintenance. However, since some people find walking on steeply sloping surfaces difficult or impossible, steps should be provided where appropriate in addition to ramps. Flights should comprise between three and twelve steps and longer flights should be split into sections by landings. Steps should be provided with handrails, have permanently non-slip treads, and have a minimum width of 1200mm clear between handrails.
3.9.7. Handrails should be easily gripped, and must be securely fixed. They should be provided at both sides of the steps (or centrally on steps a minimum of 3m wide) so they can be used by either hand, and should extend well beyond the top and bottom nosings.

3.9.8. Stepped ramps are unmanageable for wheelchair users and can cause acute difficulties for people with disabilities. They should never provide the sole means of pedestrian access unless no alternative exists, and hence will not normally be eligible for adoption.

3.9.9. Shared Surface Roads will not be permissible for access to sheltered accommodation where the elderly, blind or infirm would be regular users. Provision should continue to be made for prams and wheelchairs.

3.9.10 The location of car parking areas in a development should be considered at an early stage in the design process to achieve a balanced distribution of spaces throughout the site, conveniently related to user destinations. Pedestrian access to premises should be so arranged that it is easier and more convenient to use the designated parking areas than to park casually on the road.

3.9.11 The minimum size for car parking bays for people with disabilities shall be 4800 x 3300mm. Longer bays may be required in certain situations.