5   Building Communities

The purposes of this chapter are to:

- Reprise the principles of sustainable communities set out in Chapter 1

- Look at how we can learn from historic places

- Set out design concepts for the structuring of towns and cities including recommendations for a change of practice towards connected layouts

- Set out principles for walkable neighbourhoods

- Illustrate appropriate layout and street forms

Key recommendations include:

- Structuring communities around walkable densities

- Ensuring the internal permeability of developments

- Ensuring that developments connects into surround areas

5.1   INTRODUCTION

5.1.1   The concept of sustainable communities is at the heart of the philosophy and principles set out in Manual for Streets. The guidance contained with in the Manual, if used creatively and in an holistic way whereby the nature of the places that are being built is well considered, will help deliver environments and communities that will truly sustain themselves over time.

5.1.2   The Government set out the key criteria that help make up sustainable communities and that information forms the basis of the following paragraphs.. Sustainable communities are places where people want to live and work, now and in the future. They meet the diverse needs of existing and future residents, are sensitive to their environment, and contribute to a high quality of life. They are safe and inclusive, well planned, built and run, and offer equality of opportunity and good services for all.

THE COMPONENTS OF A SUSTAINABLE COMMUNITY:

- Active, inclusive and safe

- Well run

- Environmentally sensitive

- Well designed and built

- Well connected

- Thriving

- Well served

- Fair for everyone

5.2   THE CITY AND HOW WE STRUCTURE NEW COMMUNITIES

AN HISTORICAL PERSPECTIVE

5.2.1   An understanding of how towns and villages have developed can help in designing new communities. The study of existing places helps to establish which street

layouts and forms work, and which do not. It can also help to provide an appreciation of the local context for contemporary design.

5.2.2   The places where we live have been shaped by a wide range of influences; primarily by their location, function and patterns of ownership but also, over the last half a century or so, by the requirements of the planning system. This latter period included experimentation with urban forms that rejected the traditional "street", and we now know that this was a serious error. Layouts where buildings were set in space rather than on streets, and where front doors were at the back, or where movement on foot and by vehicle was segregated with decks, bridges and subways have in almost every case failed. Large estates with such dysfunctional forms that were built in the 1960s and 1970s have either been demolished or scheduled for clearance or major re-modelling. We cannot afford to make mistakes on such a huge scale again. Thus we learn from history that the street is the most important structural element of urban development, and we tinker with it at our peril.

A 'Radburn' style layout in Manchester where pedestrians and vehicles were segregated – the area is now undergoing regeneration.

5.2.3   Most historic places owe their layout to their original function. Towns have grown up around a market place, a bridgehead or a harbour; villages have been formed according to the pattern of farming and the ownership of the land. The forms were organic in the sense that they catered for movement mostly on legs rather than wheels. The era of motorised wheeled transport and especially individual motorised vehicles has, superficially at least, removed the constraint that kept urban settlements compact, and designed at the human scale.

Newark, the Market Place, 1774

5.2.4   Whether planned or not, all places rely on movement as their lifeblood. This is as true for the ordinary back street as it is for the crossroads at the heart of a town. At the most basic level housing cannot function without access and servicing, but the street is also a place where people meet and pass the time of day. The challenge now lies in striking a balance between the "compacting" forces of movement on foot, and the

"explosive" forces of the car. As now recognised from North American experience, a walkable neighbourhood cannot be created where there is provision for people to make every journey by car, and where people's every day destinations are too far flung to be reached on foot, or even by collective motorised transport.

5.2.5   When the regulation of roads and streets began it was the danger of fire that was the uppermost in people's minds. Subsequently the issue of health came to the forefront and the classic 36ft wide bye-law street was devised as a means of ensuring the passage of air in densely built up areas. Later still, the desire to guarantee that sunshine would get to every house produced the requirement for a 70ft separation between house fronts which shaped so many developments from the 1920's onwards.

5.2.6   It was not until after World War Two, and particularly with the dramatic increase in car ownership from the 1960s onwards, that traffic considerations came to dominate the regulation of road design. Developers and house builders were obliged to follow the local highway requirements because if they failed to do so their streets might not be adopted by the local authority. The result was an over-rigid application of standards at the expense of other considerations that contribute to the making of good places.

5.2.7   This manual therefore is designed to help in the creation of new developments that respond to contemporary aspirations while accepting the basic lesson from history that the street provides the basic element of urban development.

5.2.8   In terms of how we design the layout for new streets there is a need and desire to get away from a car orientated and 'zoned' nature of development (see bottom half of diagram). We need to have the tools to be able to design places that are mixed use and have a connected network of streets (see top half of diagram)
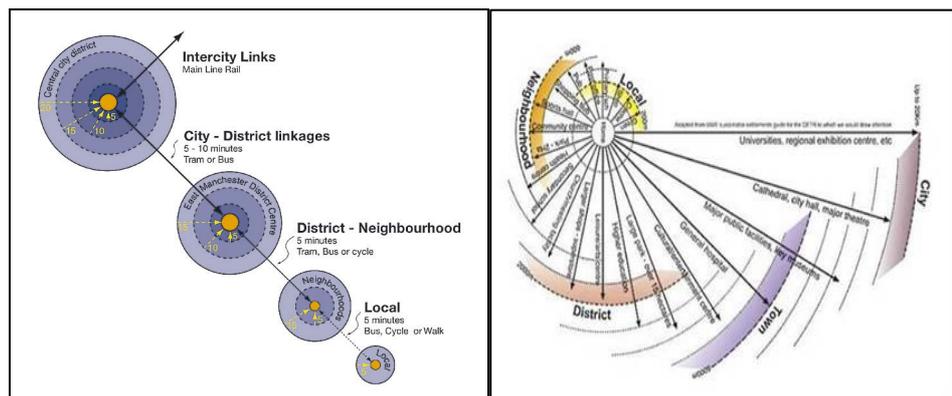

Image: Duany Plater-Zyberg
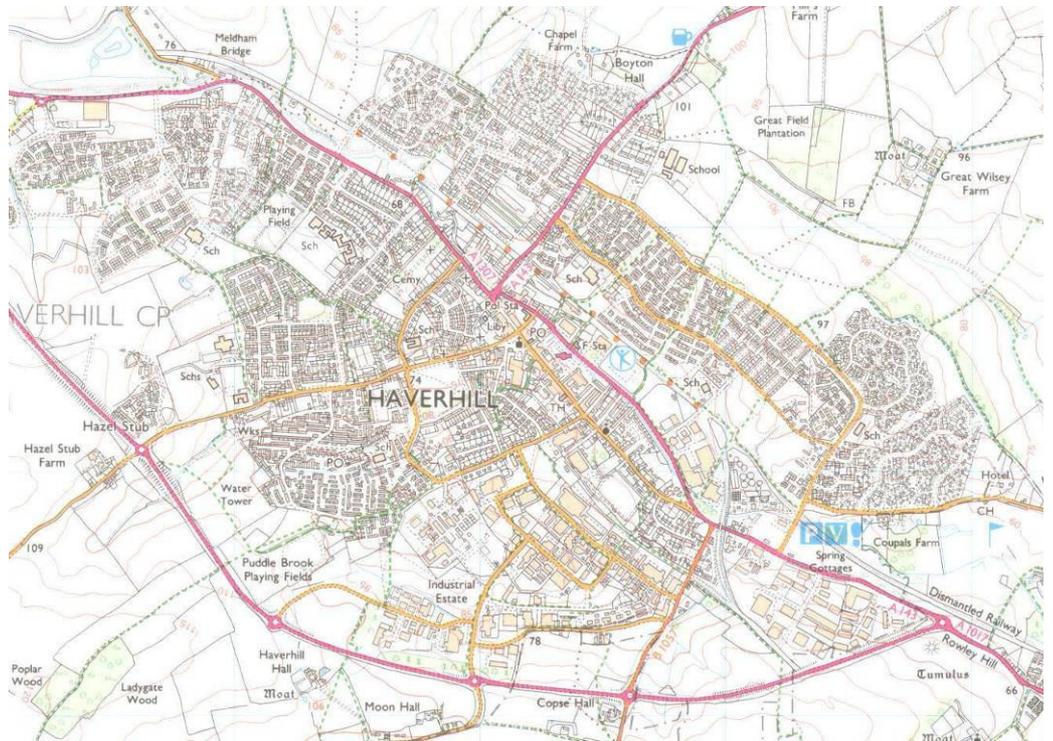
5.2.9   As we look at the plans of many of our UK villages, towns and cities we see the patterns of development over time, from historic cores (A), through to experimental 'Radburn' layouts from the 1960's (B) to recent cul-de-sac / DB32 layouts (C).

5.2.10   When looking at a site there needs to be a broader understanding of how it has developed through history and how it relates to other communities – whether at the village, town or city scale. At the regional and sub-regional scale there should be an analysis of alternative modes of movement to the car and how these can be promoted – rail, tram, bus, cycle and at the local level how walkable neighbourhoods can be enhanced and designed.

5.2.11   The provision and viability of facilities should be assessed in relation to the location and scale of development. In certain cases it may be better for new developments to help reinforce existing centres and existing facilities rather than to try and support an alternative competing offer. An assessment should be made of the appropriate scale of new development, the greater the critical mass of development then the more facilities that can be supported.

5.2.12   The above diagrams from the Urban Task Force Report 'Towards an Urban Renaissance' 1999, illustrate (left) the scale of settlement and how they can relate to one another in terms of size and connection and (right) the distances that different facilities will attract people from and the scale of settlement within which they are most appropriate i.e. local shops within a neighbourhood and the function of the city as a place for core institutions

5.3   THE WALKABLE NEIGHBOURHOOD

5.3.1   Best practice in design, and lessons that we have learnt from places that work well and do sustain themselves, focuses on the idea of an urban structure based on walkable mixed use neighbourhoods with interconnected street patterns to facilitate movement and to disperse traffic.

5.3.2   The diagram below and its use in the development of masterplans for sites are fundamental to the generation of sustainable places and communities. Daily needs are within walking distance of most residents within a walkable neighbourhood. With good design, more people will actively use local streets, enhancing their vitality and their safety. Local employment opportunities are facilitated within the town structure rather than being exclusively 'zoned', providing the community with a firm economic base and enhancing the self containment of neighbourhoods and towns. As a masterplan for a new development is developed there should also be as many connections to existing facilities and existing communities as possible. This is essential so that new developments connect into the existing fabric of our villages, towns and cities – the notion of a 'green buffer' between existing and new communities is not conducive to sustainable places.

The key components of a mixed use and integrated urban neighbourhood

5.3.3   Research (unpublished) from Space Syntax suggests that there is up to 30% more walking in the centres of traditional and historic towns as opposed to British new towns. Research undertaken in the USA by Dr Richard Jackson also demonstrates that people who live in car orientated developments weigh on average 6lb more then those who live in traditional towns with a connected street network.

5.3.4   As the concept walkable neighbourhood diagram (above) is applied to a real place the five minute walking distance will distort. The diagram below looks at actual walking times to a centre based on constraints such as topography and watercourses.

5.3.5   As density is increased within a walkable neighbourhood, places become more sustainable and more facilities and public transport provision can be supported. The diagrams below explore the impact of greater density and its ability to 'contract' the walkable neighbourhood and add to the viability of public transport and other facilities. The diagrams from left to right examine the implications of building at 50, 100 and 150 people per hectare and how this allows for more compact development and better access to public transport, shop, schools etc.
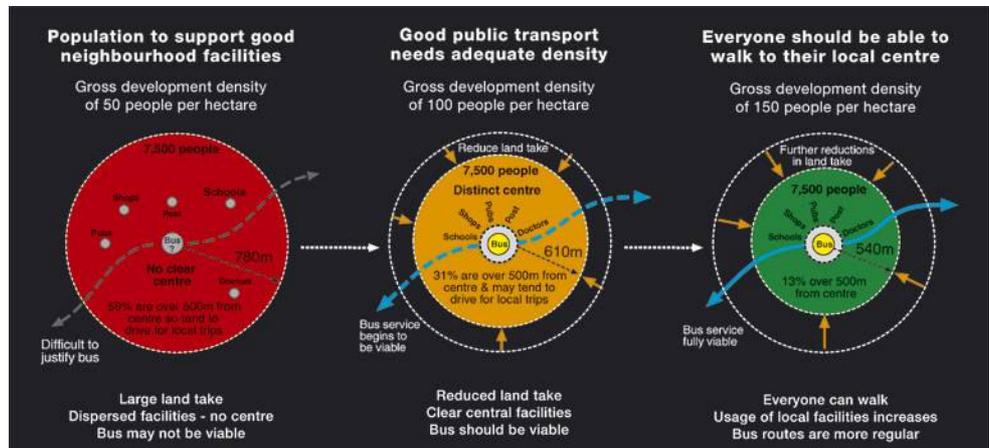
Urban Task Force report 'Towards an Urban Renaissance' 1999

5.3.6   Walkable neighbourhoods also need to be part of a greater structure and how they are clustered with good connections must also be considered (see below).

Urban Task Force report 'Towards an Urban Renaissance' 1999

5.3.7   Development within the walkable neighbourhood should be of mixed tenure and mixed use – and by this definition the ability to build mixed use streets i.e. the 'high street' or 'main street' should be allowed for.

5.4   LAYOUT CONSIDERATIONS

5.4.1   A key determinant of layout and structure is the importance of the street as the focus of all movement within a neighbourhood. Pedestrians, motor vehicles and cyclists should all be accommodated together, which means that, in the main, areas should be designed without segregated cycle paths, underpasses or alleyways. For reasons outlined in Chapter 2, the primacy of the street is a guiding tenet of this document, and hence how we plan for traffic in residential environments.

5.4.2   This principle of integrated access and movement means that the perimeter block is usually the most effective structure for residential neighbourhoods. A block structure works in terms of providing direct, convenient, populated and overlooked routes. In addition, it makes very efficient use of land, offers opportunities for enclosed private or communal gardens (or parking) and is a tried and tested framework within which a quality place can be crafted.

A highways dominated layout with buildings that have a poor relationship to the road.

5.4.3   The opposite of a structure based around perimeter blocks is one based around a dead-end road system of 'loops and lollipops'. This has been the dominant layout of suburban housing developments for the last thirty years. It could be argued that most housing developments of this type – including those where the street and the perimeter block have been abandoned altogether in favour of open space and deck access – lack any sense of coherent urban structure. As a result, many suffer from layouts that make orientation difficult, create left over and ill-defined spaces, have too many blank walls and facades and are inconvenient for pedestrians, cyclists and buses due to a dead-end movement framework. Such layouts may have met, or indeed be a result of, previous

guidance on residential streets. But they cannot be said to be conducive to quality places.

5.4.4   This is why the Manual for Streets recommends that any variations should be within a block structure. The creative freedom of the designer is important to uphold. As defined in Better Places to Live, the palette available to the designer includes:
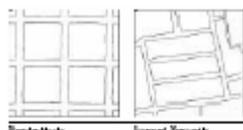
Rectilinear blocks based on a grid.
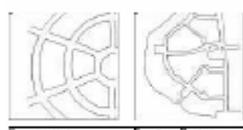
Concentric grids designed to promote access to local centres or public transport routes.
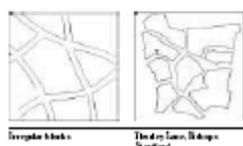
Irregular layouts with a more 'organic' character.

5.4.5   Each of these, and variations on them (such as a 'broken grid' with occasional dead-ends), can be considered when master planning residential and mixed use neighbourhoods.

CONNECTING LAYOUTS TO THEIR SURROUNDINGS

5.4.6   Much is made of the need for permeability. What is commonly misunderstood is the need for connectivity between areas, not just internal permeability of the scheme itself. If a development is an enclave, without good connection to the surrounding areas, then people will inevitably favour movement from and to the area by car rather than by other means. Moreover, the quality of the connections must be attractive and convenient to use.

5.4.7   This point has been illustrated by Stephen Marshall (Stephen Marshall, "Streets and Patterns", Spon, 2005, page34). This shows a theoretical situation whereby an internally permeable layout (i.e. Poundbury) becomes the model for similar enclaves attached by distributor roads to a main highway network. Note that there are no other connections between the enclaves.
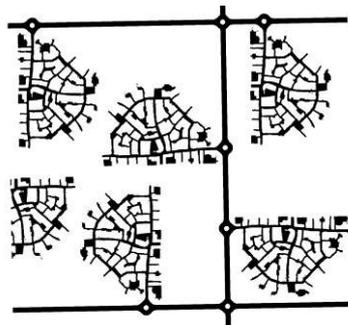
5.4.8   The problem of lack of connectivity was found in some of the case studies carried out in the preparation of this manual, even those where general permeability

within the scheme was good. Crown Street, Glasgow, is illustrated below with an indication of where connectivity was not realised as intended in the masterplan.
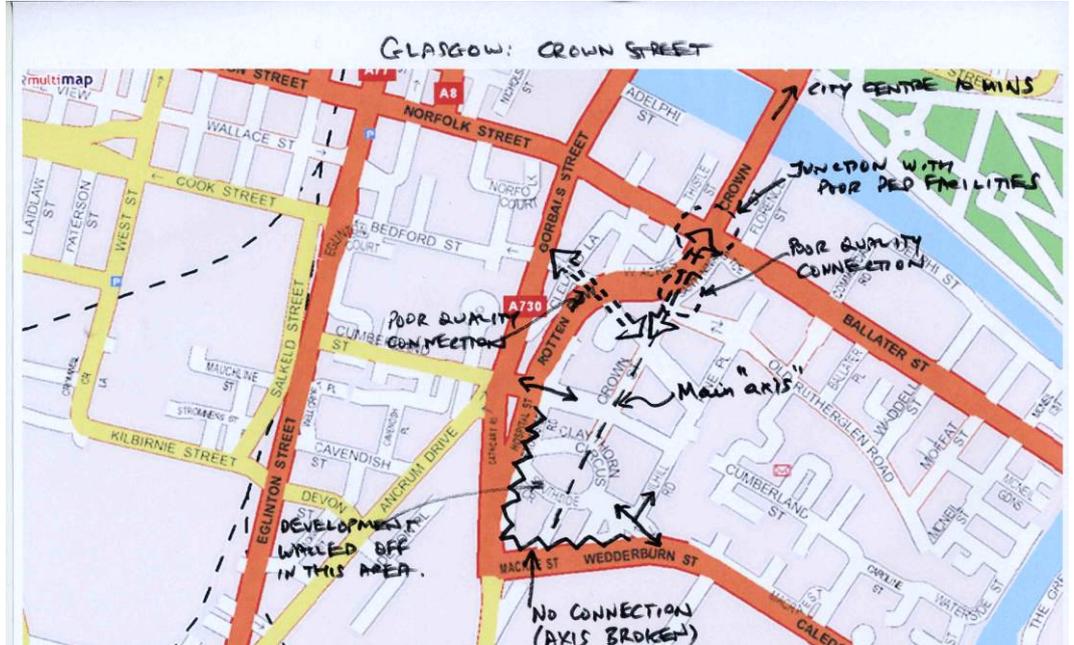

Image: Crown Street, Glasgow
Shows main axis street with mixed-use activities (beyond railings) virtually closed off from the main access road to the city centre (foreground).

Image: Crown Street, Glasgow
Connection is provided to the west, but is of very poor quality for pedestrians.

5.4.9   The number of junctions onto a main street should relate to an appropriate level of connectivity within a block structure and where new development is within or adjacent to existing areas there should be as many access points (for all modes of movement) as

possible. There will need to appropriate levels of community consultation during the negotiation of new access links and often the provision of vehicular links that may increase traffic on existing streets can be a key issue – however without a permeable network of streets, traffic will not be able to disperse within a network and will end up being channelled into higher order streets in an inflexible road hierarchical fashion.

GEOMETRIC CHOICES - THE MERITS OF STRAIGHT STREETS AND RECTILINEAR STREET PATTERNS

5.4.10   There are no hard-and-fast urban design rules on the geometry of streets. On one hand, there is an argument that straight streets are the most efficient in terms of infrastructure and use of land and maximise connections between places. On the other hand, it can be argued that short and curved or irregular streets add to variety and sense of place. However we must always consider the pedestrian as the key design element and they like to walk in straight lines – and hence this manual recommends that there is a presumption in favour of straight streets and rectilinear street patterns. This should be followed except where there is some compelling and explicit purpose for departing from this rule. Reasons for departing from this might include irregular site boundaries, extreme topography of other difficult features such as railway or river barriers. Another way of expressing this is to recommend "avoid gratuitous curves".

5.4.11   There are at least four justifications for street patterns to be rectilinear.

1.   Efficient use of space:

Streets enclose and define building blocks or plots. Buildings within the plots are almost always rectilinear. Even more certainly, rooms within the buildings are rectilinear. Therefore, departure from a rectilinear to a curvilinear street form will in some way lead to awkward left-over space. This is only really acceptable when densities are low enough to enable the spare space to be absorbed into some positive landscape or open space feature.

Unsightly left-over space creating maintenance problems

2. Legibility:

People like to know where they are and to be able to find their way around. There are many stunning examples of townscape that deliberately avoid legibility - many mediaeval walled towns and most Italian hill-top towns for example – but this mostly was done to aid defence and is not relevant today. Even then, streets were often straight or only gently curving, with the legibility being broken by turns and T junctions.
Legibility is particularly good in the within the Crown Street (Glasgow) and Hulme (Manchester) case study areas.

3. Visibility and conviviality:

Visibility can be important to the success of a street. By this we mean the ability to see along the street when in the street, and also into and along the street from the buildings that front onto the street. This visibility helps to make a street feel lived in and convivial as well as safe. Street spaces that cannot be seen feel lonely and even unsafe to walk along.
The mixed use areas in the Crown Street and Hulme case study areas are both legible and consicuos In the Queen Elizabeth Park (Guildford) case study area, the non-residential facilities are legible within the scheme, but not conspicuous for people passing the scheme, which reduces commercial viability and vitality

4. Utility efficiency and tidiness:

Drains and other utility infrastructure are most efficiently and cheaply laid in straight runs. Where they change direction to follow bends or curves additional inspection pits may be needed. Covers and maintenance channels can be very unsightly in
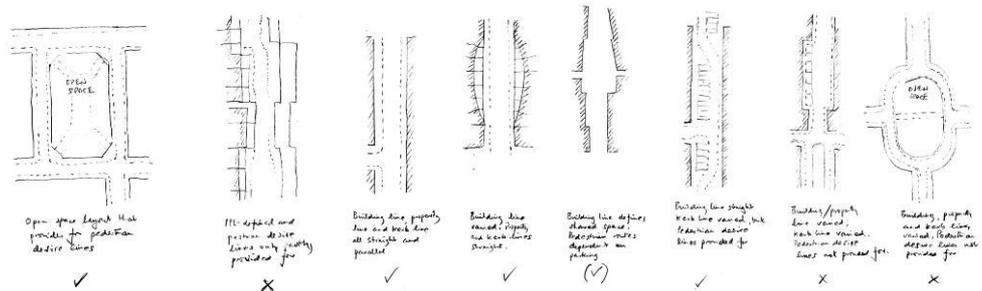
streets that are not straight, creating angles and lines that are discordant in the street scene.

Utility inspection covers unrelated to street or building lines as a result of curvilinear street pattern (Chelmsford, Beaulieu Park).
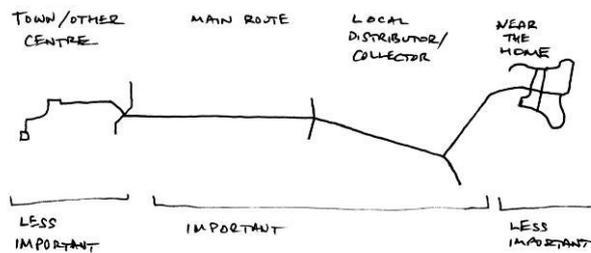
5.4.12   The important is of straight streets depends on where you may be in the hierarchy.

HIERARCHY CONTEXT

5.4.13   It is important that key routes are straight for reasons of efficiency and directness. Also, bends make travelling in buses less comfortable and possibly less safe. The avoidance of roundabouts on bus routes is important for this reason.

5.4.14   It is less important for local streets to be straight, unless they form part of a route to other streets, i.e. they have a collector function. The streets on the edge of a town also need to be straight as they may eventually form part of further town

extensions. The edge street at Chelmsford Beaulieu Park (case study) provides a good example of how it can be done.

5.4.15   Control of traffic speeds and the movement framework are discussed further in Chapter 7.

LAYOUT AND CRIME PREVENTION

5.4.16   The layout of a residential area can have a large impact on crime, against both property (homes and cars) and pedestrians, and the desirability for permeability must not be allowed to compromise the ability of householders to exert ownership over private or communal 'defensible space'.

5.4.17   The following principles should reduce the likelihood of crime in residential areas:

■   Access to the rear of dwellings from public spaces, including alleys, should be avoided. A block layout, with gardens in the middle, is a good way of ensuring this.

■   Cars, cyclists and pedestrians should be kept together. There should be no segregated footpaths or cyclepaths, especially if they are not wide, open, short and overlooked.

■   Routes should lead directly to where people want to go.

■   All routes should be necessary, each serving a defined function.

■   Cars are safest if parked in-curtilage. If not, they should be parked in view of the home. If parking courts have to be provided, they should be small and secure.

5.5   STREET TYPES

5.5.1   Detailed street design issues are set out in Chapter 7.

5.5.2   Street types should be determined by character rather than by highway functions and capacity. As discussed in Chapter 2 one way of defining streets is to look at them in terms of having link and place functions.
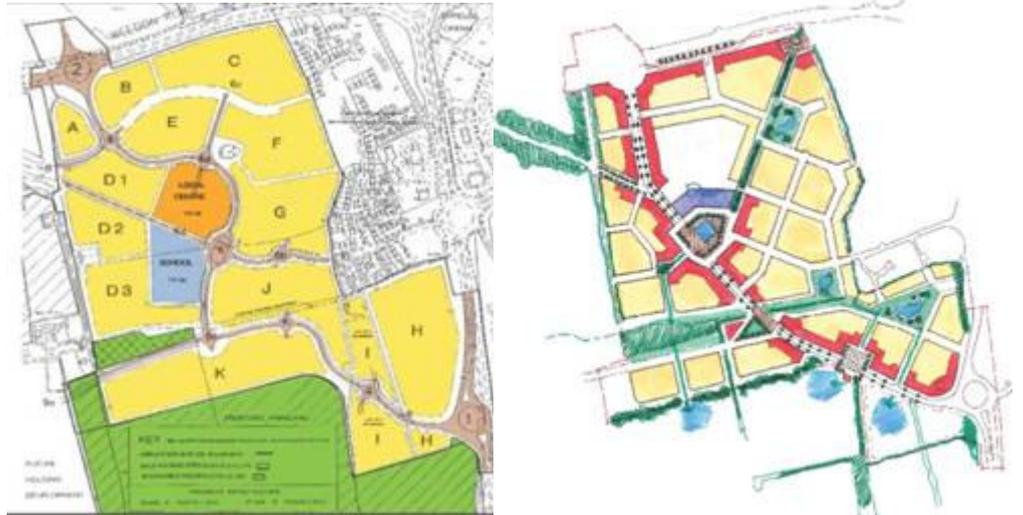
5.5.3   The traditional capacity and highway based classification of streets is discouraged; a suggested alternative is set out below. For each development an agreed hierarchy of streets and spaces should be set out based on the existing character and scale of the place.

Traditional capacity and highways based terminology	Street and place character terminology
Primary distributor	Main street
District distributor	Avenue, boulevard
Local distributor	High street
Access Road	Street (may include squares etc)
Cul-de-sac	Mews, lane, courtyard
✗	✓

5.5.4   The difference in terminology and approach is illustrated by the diagrams below. They represent proposals for development based on a highways led approach and a more place driven and pedestrian orientated approach.

- Road hierarchical network (distributor road, cul-de-sac etc) - Car movement orientated - Lack of legibility	- Permeable network of streets - Pedestrian orientated - Human scale - Defined spaces and a legible environment
✗	✓

Existing development in Upton turns it back on the street (left) whilst the new development has a strong presence on the street (right). The new development has been delivered through a collaborative workshop design process and a design code (see Chapter 4.)

FRONTAGE ACCESS

5.5.5   The provision of frontage vehicle access onto a street or road should be considered from the viewpoint of the people passing along the street or road, as well as that of people requiring the access. Factors to consider include:

- The speed of traffic on the street or road will affect how safely access manoeuvres can be undertaken. The volume of traffic will also be a factor, although increases in traffic over time can render judgements unsuitable.

- The number of accesses over any particular length of street affects their acceptability. Continuous individual accesses over a long stretch would be less acceptable than an a few individual accesses over a short length.

- The possibility of the vehicles turning within the property: if this is possible then both entry and exit can be done driving forward.

- "Gathered" accesses serving several properties or communal parking areas may be acceptable where a series of individual accesses would not.

- Visibility is affected by the distance between the property boundary and the carriageway and can greatly affect the ease and safety of turning movements.

- Research undertaken in the preparation of this manual suggests that frontage access is viable and safe on streets carrying up to 20,000 vehicles per day. This is described in more detail in Chapter 8.

SPEED

5.5.6   For all lightly trafficked residential streets a maximum design speed of 20mph should be promoted. As illustrated below the severity of accidents and likelihood of a fatality at 20mph or less are greatly reduced and, in additions, vehicle noise and the intimidation of other street uses are also likely to be lower.
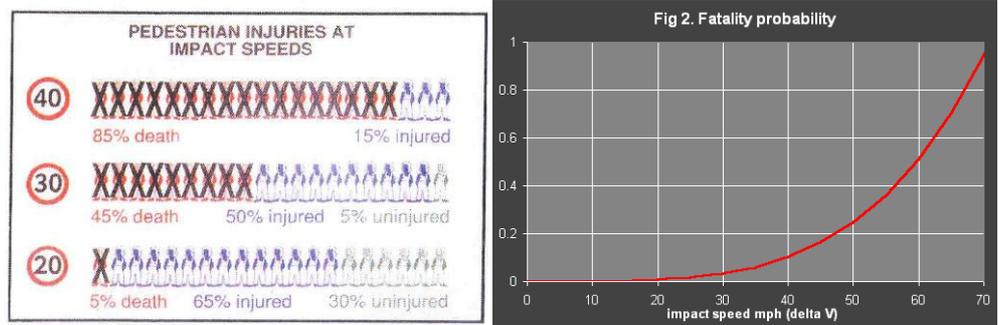
5.6   CONCLUSION

5.6.1   As described in Chapter 4, the design teams need to analyse the existing street hierarchy of a place and the set out a proposed street hierarchy for new development. The overarching principles for sustainable development (as set out in this chapter) must be adhered to and the walkable neighbourhood diagram applied to places in order to allow for walking to be the dominant form of movement.