1. Introduction

York was founded by the Romans in AD 71 at the confluence of two rivers giving them a commanding position with good access to the sea. The civilian town of Colonia soon developed to serve the empire. After the Dark Ages the Vikings occupied the area becoming farmers and trading with much of northern Europe. In the Middle Ages the town was surrounded by a medieval city wall which still provides a useful boundary to the historic core. With the advent of the railways and the industrial revolution York expanded and as a result the city contains many fine Georgian buildings and Victorian streetscapes.

During the 1930s, 40s and 50s the city grew to cater for the aspirations of its residents and produced many large housing estates. This growth continued through the latter half of the 20th century resulting in several estates that had no real identity and became isolated and dependent upon the private car for transportation.

This legacy of historic development coupled with urban sprawl has produced a city that is varied and interesting, surrounded by a rural landscape dominated by York Minster. These aspects provide a challenge to any developer who seeks to integrate a new housing development into this environment.

All too often in the past the design of a residential area has been approached by the slavish application of highway design standards, with the result that the residential area is dominated by the highway and not the features of human scale and the surrounding environment.

This Design Guide therefore seeks to change the emphasis away from one dominated by the highway to one where the external and internal environment is dominated by people and their activities.

UK governments guidance, through its publication *Design Bulletin 32 Residential Roads and Footpaths* (second edition) and companion document *Places, Streets and Movement*, offers the opportunity to reduce the scale and impact of roads by applying standards which are responsive and appropriate to different types and levels of development.

The aims of any new development must therefore be to:

- Ensure that new housing estates relate to its context and integrates with its landscape and townscape setting;
- Improve the quality of new estates for the benefit of new residents, adjacent occupiers and existing communities;
- Provide convenient, safe and attractive pedestrian, cycle and public transport links within new estates and to existing communities, and to provide accessible, safe and attractive spaces and road networks with low traffic speeds;
- Ensure that new development provides easy and safe access between footways, car parking areas and dwellings for everyone, including those with impaired mobility; and
- Ensure that new developments are safe, secure and incorporate the principles of sustainability.

2. Planning for the Future

2.1 General

The City of York Council's Planning and Highway Departments are working together and seek to work with developers, architects and other agencies to bring about high quality residential developments. The objective is to create a residential environment that is safe, secure, pleasant and sustainable, reasonably economical to build and in harmony with its surroundings.

The revised version of *PPG3-Housing*, and its companion guide, *By Design – Better Places to Live*, reduces the emphasis on providing for cars and promotes good design in housing developments in order to create a more attractive environment for people to live.

The designer therefore needs to stimulate innovative road design by reducing the need to travel, particularly by car, and integrating transport modes that promote more sustainable forms of transport including walking, cycling and public transport. The implementation of such principles can promote social cohesion, reduce the demand for travel and improve the overall quality of the environment.

2.2 Consultation

Early consultation is strongly recommended and will often result in less abortive work and time wasting. The consultation should address the important issues such as assessing the surroundings, designing in features, scale and density, and how access and vehicles can be best integrated to achieve a pleasant environment.

An essential part of preparing any development will be the undertaking of a site appraisal by the developer which will include information on topography, existing land drainage arrangements, existing vegetation and other landscape and townscape features. It should indicate major views, and eyesores, show access links and desire lines. It should also indicate form, scale and character of the surrounding area and illustrate visual links to viewpoints and landmarks. The developer will no doubt have their own ideas on the mixture of uses and scale of the development; the appraisal therefore needs to

incorporate these so as to ensure that the potential and opportunities offered by the site are fully realised. This appraisal should be submitted with either a pre-development inquiry or a formal planning application in order to demonstrate that such issues have been given detailed consideration.

Most new developments will be an extension of an existing settlement, a 'brownfield' site or an infill into a built environment and thus the character of existing roads, open spaces and landscape will provide a starting point for the design. A few simple questions need to be asked:

- Is the existing area landscape or building dominated?
- What is the scale of the existing area?
- Is the pattern of the area formal or informal – linear or enclosed?
- Is the topography of the site a significant influence?
- Are there any important views or features that can benefit the new development or its surroundings?

It is not a case of what can the site do for the development, but what the development can do for its surroundings.

A walk round a historic town is usually a pleasurable and a thought-provoking experience. This is more often than not a result of a constantly changing pattern of small and large spaces, enclosure and openings, surprise and uncertainty. By using this approach to housing layouts it is possible to ensure new housing areas are both interesting and attractive.

All too often a new development does not relate to its landscape setting with large estates placed on 'greenfield' sites next to small-scale development. New housing areas on the edge of the towns and villages should respect the local landscape bringing out any special features, with special attention being paid to the boundaries of the site. Within the area the nature of the development is likely to be governed by its shape and the relationship to other buildings in terms of size, scale and form; also by the way surface treatment and landscape interact. Examples of a good relationship can often be found in urban areas where scale of design is more readily influenced by its immediate surroundings.

The function of a residential area is to provide a pleasant living environment. Designs that provide excessive penetration of these living areas by motor vehicles and encourage unnecessarily high vehicle speeds will create an unpleasant and dangerous environment. Such designs will not be supported by the Council.

Whilst homes can be modified to reflect the personalities of its occupants the layout cannot. One of the main aims of the developer must be to produce

layouts that reflect the relationship between buildings, landscape and space which characterise their locality. A useful tool in taking advantage of these elements, and enhancing vistas and visually attractive features, is the use of highways and pedestrian/cycle links to create the focus.

In the past it has often been the practise to determine the basic road layout first, then incorporate the houses and lastly consider speed restraint, public transport, cycling and walking. The emphasis must now change; the designer should endeavour to ensure a comprehensive framework in preparing and detailing the different elements that need to be incorporated including pedestrian and cycle facilities, bus requirements, traffic calming etc. as an integral part of the initial layout. The most successful layouts are those that from the outset ensure equal attention is paid to all aspects of design and which respect the context of the site.

The scale and density of any development is influenced by highway and parking considerations. Roads are visually prominent and parking can dominate a space thereby dictating townscape both positively and to its detriment. These requirements are directly, in turn, governed by the extent of the development being served. This must no longer be of incidental consideration as it has a fundamental effect on the quality of the place.

3. Local Transport Plan

The City of York's Local Transport Plan, follows the guidelines set down in the *National Policy Guidelines*, particularly *PPG 3* and *PPG 13,* which seeks to reduce car usage and make greater use of walking, cycling and, public transport. The aim is to reduce traffic speeds and improve safety particularly for pedestrians and cyclists, and provide more environmentally friendly deliveries, including those to the home.

In developing the Local Transport Plan, the City of York Council's vision is the creation of a sustainable and integrated local transport system that includes:

- The need to widen travel choices including walking, cycling and public transport;
- Restraining demand for car travel throughout the district;
- Managing traffic to improve road safety;
- Managing the impact of traffic on local air quality, noise, vibration and the environment;
- Planning and managing the highway network;
- Addressing the transport needs of rural areas; and
- Integrating local transport with wider policies such as health and social inclusion.

The City has also developed a speed management plan classifying three categories of road; traffic, mixed priority and residential. Each category has target speeds and identifies the types of measure to be used to achieve these targets if speed and accident problems exist. The plan sets out a framework for traffic calming, safe routes to schools, and enforcement by the police, with the result that schemes are more acceptable to the public and key road user groups such as the Emergency Services and Bus Operators.

The transport strategy is viewed through transport-related objectives of accessibility, traffic reduction, road danger reduction and air quality. The building blocks of the strategy include walking, cycling, public transport, freight and parking. The objectives are set out in the Local Transport Plan (LTP) in order of importance.

At the heart of the York Transport Strategy lies the commitment to a 'Hierarchy of Transport users', a priority listing applicable when making and implementing land use and transport related decisions. The order of priority is as follows:



i. Pedestrians
ii. People with mobility problems
iii. Cyclists
iv. Public transport users (includes rail, bus, coach and water)
v. Powered two wheelers
vi. Commercial/business users (includes deliveries and HGV)
vii. Car-borne shoppers and visitors
viii. Car-borne commuters.

Note: pedestrians include especially those with mobility difficulties.

The essence of this transport strategy and the hierarchy of road users will apply to all new development within the control of the City of York Council and will include the historic core and the rural hinterland.

4. Policy and Objectives

4.1 Introduction

The dominance of motorised travel, especially the car, limits choice and opportunity, particularly for those without a car. To address these problems, there is a clear need to improve conditions for 'vulnerable' road users such as pedestrians and cyclists, as well as developing a public transport system that is integrated and accessible to all potential users. This section refers to the Council's current sustainable transport policies and proposals that aim to provide people in York more travel choice, as set out in the Local Transport Plan.

4.2 Policies

4.2.1 Walking

The Council will seek to promote more walking and to improve conditions for the convenience and safety of pedestrians by reducing walking times and enhancing the pedestrian environment taking into account pedestrian access, security and the needs of those with mobility handicaps.

In support of this policy the City of York Council approved a 'Paving Policy' on the 6th December 2001 which approved the general use of 'bitumen macadam' for use in all streets except for certain Historic or Shopping streets, or where the retention of natural materials was desirable.

4.2.2 Cycling

The Council will seek to promote more cycling and improve road safety by building on routes and facilities already in place to create a safer and more pleasant environment. Where necessary, space will be reallocated away from motorised road users to achieve the best facilities and most direct routes which are both safe and convenient and which do not have a detrimental effect on pedestrians.

Figure 1 – A designated cycle route

4.2.3 Buses

The Council will promote the use of buses through developing:

- Quality Partnerships with bus operators;
- Improve bus service information; and
- Invest in bus priority measures and other facilities.

4.2.4 Motorcycle and Powered two Wheelers

The Council will support the use of powered two-wheelers as an alternative to the motor car by improving the security of parking and providing priority over other private motor vehicles where appropriate.

4.2.5 Cars

The Council will seek to provide suitable, safe and uncongested routes to enable those journeys which might best be undertaken by private car to be carried out without undue detriment to the environment or quality of the people of York.

4.2.6 Traffic Management and Demand Restraint

The Council will seek to reduce both the need to travel and the length of journeys, and discourage the use of private motorised vehicles in favour of walking, cycling and the use of public transport (as appropriate) through utilising appropriate traffic management and demand restraint measures.

4.2.7 Parking

The Council will seek to control the parking of vehicles and movement of private vehicles for less essential trips, whilst maintaining the economic vitality of the City. It will achieve this through:

- Controlling the number of parking spaces provided, the charges made and the periods of availability;
- Controlling the number of non-residential parking spaces in the City;
- Using appropriate standards to limit the provision of parking spaces (particularly strongly in all new developments) and require a high standard of parking for bikes to promote cycle usage; and
- Using location planning policies to support the above aim.

4.2.8 Road Safety

The Council will ensure that in all of its Planning, Engineering and Educational activities, every opportunity will be taken to reduce, minimise or eliminate road danger through a co-ordinated strategy.

4.2.9 Travel Awareness

The Council will seek to raise public awareness of the benefits to be gained from sustainable travel and the problems that are caused by increasing car dependency. The Council aims to change attitudes and behaviour towards car use in favour of more environmentally friendly modes of travel, through an on-going local travel-awareness campaign.

4.2.10 Safe Routes to School

The Council will encourage increased walking and cycling to school.

4.2.11 Air Quality and Noise

The Council will:

- implement measures to reduce N0x and PM10 pollution levels at relevant locations in accordance with the objectives specified in the National Air Quality Strategy; and
- contribute to national targets in reducing greenhouses gas emissions through developing its sustainable transport strategy.

4.2.12 Other Users

The Council have developed similar policies in respect of Park and Ride, Voluntary and Community Transport, Rail, Taxis and Private Hire vehicles, Water Transport, Public Transport Interchange, Airport Surface Access and Public Transport Information.

4.3 Other Objectives

4.3.1 Noise

The Council aims to minimise the impact of noise especially in sensitive locations through appropriate planning, highway engineering and other noise mitigating measures.

4.3.2 Rural Areas

The Council recognises that the car will be the general mainstay of transport in the rural area, but every opportunity will be taken, particularly for short journeys, to extend pedestrian and cycle facilities in and around villages and linked where practical to the Park and Ride sites. The Council will also aim to minimise the impact of noise on the countryside, especially tranquil areas.

4.4 Integration with Wider Policies

4.4.1 Security and Crime

The Council is working in partnership with the Police, through the Safer York Partnership to enable people to travel without fear for their personal safety, and to create a safe environment around their home, having regard for section 17 of the Crime and Disorder Act 1998.

5. Conservation Areas

5.1 General

A 'Conservation Area' is an area designated by the Local Planning Authority under Section 69 of the *Planning (Listed Buildings and Conservation Areas) Act 1990*. It is an "area of special architectural or historic interest, the character or appearance of which it is desirable to preserve or enhance". It is the duty of the Local Planning Authority to formulate and publish proposals for the preservation and enhancement of any parts of their area which are Conservation Areas.

The City of York and its environs provide an interesting mixture of townscape and landscape; from the historic core, through urban development to the rural setting. This section sets out principles which will be adopted when considering proposals in Conservation Areas. The guidance should be taken as applying equally to the setting of any Listed Building of architectural or historic interest irrespective of whether or not it is in a Conservation Area.

One of the recurring problems in Conservation Areas is the accommodation of traffic without adversely affecting buildings and their setting. The City of York Council will seek to exercise a major influence in ensuring the success of local conservation policies, and will apply the following principles when considering new highway proposals in Conservation Areas or when carrying out maintenance works to existing highways.

New development should preserve or enhance the architectural or historic character or appearance of Conservation Areas and should respect the character and setting of Listed Buildings and of adjacent Conservation Areas.

The Authority will give due regard to the advice given in *PPG 15 – Planning and the Historic Environment*. This document highlights ways in which the highway can be dealt with sensitively, including the following:

- limited car access to particular areas;
- providing traffic calming features which reinforce rather than diminish local character, such as by using traditional materials;
- using traditional surfacing materials, such as paving;

- noting that all trees in Conservation Areas are protected;
- preserving street furniture which is of historic or architectural interest, e.g. pillar boxes, telephone kiosks, and railings;
- taking advantage of permitted flexibility in the size, siting and colour of traffic signs, and avoiding a proliferation of signs and markings where possible, and
- selecting and positioning street lighting equipment appropriate to the age and character of the surrounding area.

The Authority will permit the reduction of normal highway standards in Conservation Areas where this is compatible with safety, provided that there is a genuine environmental benefit to be gained from reducing the standards. For example:

- reduced road widths over short distances;
- reduced centre line radii;
- reduced visibility splays requirements;
- greater variation of footway widths; and
- non-standard kerb details.

Each Conservation Area has its own character, and proposals for special treatment will be individually considered. Hybrid designs may be acceptable provided that they are compatible with highway safety.

5.2 Urban Conservation Areas

Many Conservation Areas in York have an ‘urban’ character and particular features of these areas are:-

- a sense of street enclosure as a result of the proportions of road and footway width to building height; and
- the absence of large gaps in the street frontage.

New development should repeat these features and the layout and highway should be carefully designed so that large open spaces between buildings are avoided and areas accessible or visible to the public are not dominated by parked vehicles. The design guide provides sufficient flexibility to allow the width and alignment of carriageways to be varied to properly reflect the character of the area.

It is also important to consider the details of street furniture, materials, signs, etc. as an integral part of the proposal. In particular, posts, lamp columns, bollards, signs, bins, seating etc. should be positioned and designed so as to

reduce potential visual clutter. Details of carriageway and footway design should reflect the character of the Conservation Area and take into account the surrounding buildings and their functions and features. Developers will also be required to have regard to the Councils 'Paving Policy' in the design of footways and footpaths.

Natural materials traditional to the area should be used, where possible, and the colour and texture of new materials should reflect those of the rest of the Conservation Area. Both design and materials should assist those with disabilities. However, developments that seek to use a proliferation of different materials found in Conservation Areas do not work well and a simple application of local materials often achieves the best results. Should 'difficult to obtain' materials be used then the developer may be requested to provide for future replacement of small sections of these materials, following repairs undertaken by Utilities. This might take the form of additional ancillary hard landscaping, the materials from which could be relocated to the carriageway and footway as and when needed. The Highway Authority will be willing to consider alternative solutions.

5.3 Village Conservation Areas

New development in village Conservation Areas should generally respect the predominant form of the particular village and a standardised approach to highway design and detailing is unlikely to be appropriate. As in section 5.2 the highway must be designed to reflect the character of the area.

A characteristic of many villages is the informal appearance of highway edges; grass verges or village greens without kerbs. In these areas standard pre-cast concrete kerbs may not be appropriate. New roads may be edged with informal stone kerbs where a vehicle deterrent is necessary.

For maintenance reasons the Highway Authority will only accept a grass verge between the footway and front boundary walls of new properties under an agreement. However, they will be accepted for new development in village Conservation Areas where it is the normal pattern and where other arrangements would appear incongruous.

5.4 Signs

Careful attention should be given to the siting of signs as an integral part of the design of any development in Conservation Areas. Developers should ensure that they consult the Highway Authority at an early stage in the design

process to establish requirements, and should take account of the following guidelines and those contained in the Department for Transport's *'Traffic Signs Manual'*.

the minimum number and size of signs should be used consistent with road safety and traffic management needs;
Support poles should be avoided wherever wall mounting can be achieved;
Signs should be illuminated only where absolutely necessary; and
Care must be taken when positioning signs close to existing trees.

The Civic Trust/English Heritage Towns Forum booklet *'Traffic Measures in Historic Towns – an introduction to good practice'* contains useful information and suggestions in this respect.

5.5 Road Lighting

The Highway Authority will relax normal standards applicable to road lighting where this will avoid a multiplicity of columns or where a high level of illumination would be detrimental to the character of the conservation area. Well designed columns or wall mounted lanterns should be used, appropriate to the particular character of the area, and cables, fuse and switch cabinets should be hidden or incorporated into the walls of buildings where possible. All trees are protected in a Conservation Area, therefore great care will needed in the positioning of any lighting unit.

5.6 Parking

Wherever possible, opportunities for unobtrusive off-street parking should be considered where this is compatible with conservation aims, see section 11. In the design of car parking areas, care should be taken to harmonise their features with the character of the area. The visible materials of road construction should complement the character of the Conservation Areas.

5.7 Trees in the Highway

New buildings must not be built under, against or within the canopies of existing highway trees, as these can cause damage to the root system, prevent future pruning taking place, and be a source of nuisance to residents. See paragraphs 14.8 and 15.5 for further advice.

6. Priority Road Users

6.1 Private cars

6.1.1 General

The Government's White Paper declares that providing people with more travel choices was a major objective for Local Authorities to address in developing their Local Transport Plans. The City of York Council has embraced the objectives and created a 'hierarchy of transport users' to challenge the dominance of motorised travel, especially the car, which limits choice and opportunity, particularly for those without a car or for whom one is not available for most of the time.

6.1.2 Pedestrians

Most residents are pedestrians for some of their journeys. They therefore require the opportunity to use safe, direct, secure and visually attractive routes to destinations such as local bus stops, shops, schools, parks and other community facilities, as well as the surrounding countryside.

Over the past decade initiatives implemented by the City of York have resulted in a significant growth in pedestrian activity; up to 16% of journeys to work and 54% of journeys to schools (June 2000). This encouraging increase is due in part to the creation of a Pedestrian Strategy which includes an awareness of the benefits of walking and the development of a city-wide network of priority pedestrian routes which are safe, convenient and easy to use.

The key to accommodating the pedestrian is the creation of a walkable neighbourhood. This can be achieved through the detailed design of footpaths and pedestrian areas which reduce the dominance of the car. Consideration should also be given to children's play patterns as it is common for residential roads to be crossed frequently by children. Carriageways and parking areas may also be used as play areas within the development.

Pedestrian footpaths should link up with traffic calming schemes to provide a safer and more pleasant environment. Access for the elderly and people with

mobility problems can be improved by providing dropped kerbs, tactile paving etc.

6.1.3 Cycling

Cycling is one of the most environmentally friendly forms of transport, but unfortunately despite the health benefits cyclists are one of the most vulnerable groups of road user. Children are particularly at risk when out at play around the home or when going to and from school. Their safety is largely dependent on the flow and speed of motor traffic which can be regulated through the design process. It is therefore paramount when designing a residential area that proper provision is made for cyclists by the creation of safe, direct and secure routes and facilities.

Figure 2 – Pedestrian/Cycle link

York has continued to exhibit a high level of cycling with over 19% of journeys to work being made by cycle (2000 survey) in the new administrative district. The cornerstone of maintaining high cycle usage in the York area is the designation of a 200 Km network of Safe Cycle Routes made up of open spaces, riverside paths, cycle lanes, shared use footpaths and facilities at traffic signals. The network is being extended to link outlying villages to the City Centre, Park and Ride sites, and major developments on the edge of city i.e. retail/leisure and employment centres.

It will be a requirement for all new development to encourage the use of cycling by the creation of direct, low traffic flow and low traffic speed links to the cycle network and to local shops, schools and other facilities.

6.1.4 Public Transport

It is estimated that some 30% of the population do not have access to a private car. It is therefore essential that a viable network of public transport services is available to these people. Whilst it is acknowledged that a percentage of residential developments will not be large enough or of such design that the penetration of buses will be practical, it is nevertheless essential that good, direct and secure links are provided to the public transport network for both pedestrians and cyclists.

Whilst the patronage of public transport may appear low compared with other modes, the partnership between the City and public transport operators has led to an increase of more than 50% since the partnership began. The development of "metro" style services along major corridors of movement, complemented by the Easylink Service, help to provide services in areas of lower demand. They also provide more accessible services with good penetration of residential areas for those people for whom a good local bus service is vital to their personal mobility, and should encourage greater usage.

In all new residential developments the potential for improved public transport accessibility needs to be assessed, whether this is through direct access or via links to the existing network. Further advice on this can be obtained from the Department of Transport publication *'A guide to best practice on access to pedestrian and transport infrastructure'.* Pedestrian and cycle links to bus stops with improved facilities for waiting passengers in a safe, secure and well lit manner will be a requirement in new development.

6.1.5 Emergency and Service Vehicles

Access for emergency vehicles goes without saying, but dependent upon the nature and size of the development will depend on the degree of access required, particularly for fire emergencies, and early consultation with the Fire and Rescue Service is required. Access for ambulances is often taken for granted as they are a 'vehicle' but again if a new layout is to be more pedestrian and cycle orientated it is essential that the Ambulance service is consulted to ensure properties are easily identified and accessible so as to minimise lost time that could save lives.

Whilst crime and security are covered elsewhere in this guide it is essential that the police can gain easy access to the area and a balance needs to be

struck between access for pedestrians and cyclists, and escape routes for criminals and vandals.
Residential estates will not be expected to provide access for the ultimate size of service vehicles, but each road and turning area will be expected to be able to accommodate the standard “Design Vehicle”.

Similarly large Housing Courts and Mews will be expected to provide reasonable access for service vehicles, through archways for example, where it is intended to preserve the character of a street frontage.

6.1.6 Private Cars

The City of York Council acknowledges that there is a clear role for the private car in the economic and social life of the city and, whilst the restraint of private car usage for certain journeys is an objective of the Local Transport Plan, car ownership continues to grow. There is a clear need therefore to promote alternative modes of travel to encourage restraint. However, as a high priority for the majority of residents is to own a car, proper provision for the parking of vehicles at home is essential.

The speed of traffic on our roads is a major cause of accidents. A child or pedestrian struck by a vehicle travelling at 40mph is likely to be killed, whereas a similar incident involving a vehicle travelling less than 20mph may only result in minor injuries. The control of the speed of traffic in residential areas will therefore be a major element in the design of new residential roads, and the developer must address this at the onset of the design. Speed restraint measures should be built into the design and not ‘bolted on’ as an after thought; there is plenty of scope within the design to adapt highway standards to achieve a co-ordinated approach to speed restraint and encourage other forms of travel for local journeys.

Figure 3 – Off-Street Parking

The parking of vehicles is discussed later, but parking provision should be framed with good design in mind recognising that car ownership varies with income, age, and the type of housing and its location. It is however, important to state at this point, that proper and adequate car parking must be provided in a safe and secure location, close to the home and in sight of their owners, but must not dominate the street scene, as can happen with high density housing. The Council will seek to minimise car parking standards dependent upon location and the recommended maximum car parking provision as outlined in *PPG 3* where good alternative forms of transport are available. The judicious use of landscaping and screening can play an important role in reducing the impact of the private car.

7. Estate Road and Footpath Layouts

7.1 General

Residential roads are required to fulfil a number of functions. In addition to movement by pedestrians, cyclists and vehicles, they provide access to property, routes for statutory services, space for occasional parked vehicles and are often used as a play space by children. They also form a major part of the visual environment within housing areas.

The Planning Authority, in approving layouts, will need to take into consideration the interests of the following parties in how roads are laid out:

- **Residents** require convenient access to their property for themselves, visitors and service vehicles, a safe and attractive environment, and security for their property and vehicles;

- **The Local Highway Authority** will be concerned that the above requirements are met effectively and safely and that areas proposed for adoption will be safe and economical to maintain;

- **Statutory Undertakers** require that the installation and maintenance of their services be economical and convenient, and generally within the public highway;

- **House builders** want layouts that permit their site to be developed efficiently, economically and in a manner that enhances the marketability of their houses;

- **The Police** want to ensure a safe and secure environment;

- **Fire and Rescue Service** require reliable access at all times to deal with incidents, particularly those involving rescues.

The design of the road layout should reflect the anticipated vehicle usage and the impact this may have on residential amenity and highway safety. In general, the above objectives are likely to be met if design principles 1 to 5 are followed. On occasions there may be conflict between objectives, but these can only be resolved with reference to the particular circumstances of each site.

1. Sections of road over which vehicle speeds are unrestrained should be limited to a length appropriate to the intended design speed of vehicles by the use of short culs-de-sac or loops, by the positioning of junctions or by the incorporation of specific speed restraint measures:

2. The number of dwellings accessed from each individual section of road should be appropriate to the type of road;

3. Major generators of traffic should be accessed from distributor roads rather than from access roads;

4. The use of residential roads by non-access traffic should be discouraged. The means of achieving this will depend on the circumstances of the site and the likelihood of any such traffic being attracted. Where non access traffic will be attracted this must be accommodated in the design of the road.

5. As far as consistent with other objectives such as excluding non-access traffic, layouts should provide as many routes through a development as practical to spread traffic flows and to keep flows on individual access roads low.

The use of a network of routes through a development will also assist in providing the most direct practical links between the distributor network and individual properties and, in larger developments, between different parts of the development.

The appropriate structure for an access road layout will depend on site characteristics such as size, shape, topography and other features. Developers are encouraged to take advantage of landscape and townscape features when planning the layout of the estate. The appropriate layout will therefore be site specific, reflecting what is desirable and practical while following closely the principles set down in this document.

‘Tree Like’ structures based on culs-de-sac and curvilinear road alignments as shown in Appendix 1 work well with small sites, but on larger developments they can be confusing and cause difficulties for movement around them. There will also be a need to provide an alternative access for emergency vehicles.

A loop form of development as indicated in the Appendix accessed by the use of a short transition road can overcome the problem of multiple accesses, facilitate access for public transport and be easier to navigate. Care needs to be taken in the design of the loop to ensure traffic speeds are controlled.

Appendix 1 shows how a ‘loop’ arrangement and a ‘tree-like’ layout can be combined to give a desirable type of road layout.

To assist Developers, Public Utilities and other bodies, the Highway Authority has defined three categories of verge;

- **Roadside verges -**These lie between the carriageway and the footway (or carriageway and highway boundary where no footway or provided) and are intended primarily for amenity purposes to soften the appearance of the road and to permit tree planting. They will be adopted as Public Highway but Public utilities equipment will not be permitted without approval and special protection measures will be required.

Figure 4 – A roadside verge

- **Service Verges -** These are specifically intended for use by Public Utilities to carry their mains, cables and equipment. They will be adopted as Public Highways but the responsibility for their maintenance will rest with the frontager under agreement. Shallow rooted shrubs will be permitted.

Figure 5 – A service verge

- **Amenity verges -** These lie between the footway and the highway boundary and are again intended to soften the appearance of the road and give the frontager an opportunity for some planting. Public utility equipment will not be permitted. They will be adopted as Public Highways but the responsibility for their maintenance will rest with the frontager under agreement. Soft landscaping will be permitted.

All elements of layout design, including the alignment, cross-section and surface treatment of roads and footways, landscaping and the relationship between buildings and roads, should be co-ordinated to give a clear message to drivers and other users as to the function of individual roads and how they are expected to proceed. This is particularly important with regard to distinguishing traffic routes from residential roads and identifying shared pedestrian/vehicle access ways. Adoption of this principle will enhance safety and help to provide some variety of layout within larger schemes.

Lengths of estate road without frontage development should be kept to a minimum. They tend to be an uneconomic use of space, and be visually unattractive elements of residential developments.

Housing layouts must take full account of the access needs of the emergency services, as established through consultation. Access for emergency services will be of particular concern in determining the need for alternative access to culs-de-sac, the provision of access to property not directly accessible by vehicle, and in the design of speed restraint measures.

Not all parking will take place within individual curtilages. Research has shown that casual visitors, a substantial proportion of regular visitors and, at

times, residents, will park their vehicles on-street. Areas intended for parking must therefore be convenient for the properties they are intended to serve if they are to work properly. Delivery and service vehicles will invariably be parked on-street The provision of on street parking should be in addition to the off street parking provision required in accordance with Appendix 23.

Layouts must therefore allow for a realistic level of on-street parking and ensure that such parking takes place in a manner that is safe and with the least intrusion into the residential environment.

7.2 High density/Apartment Blocks

As a result in changes in family structure and the demand for more single person accommodation, more applications are being received for high-density developments and apartment blocks. Many of these developments will occur on 'brownfield' sites or as infill development and will reflect their surroundings. Many developments will be served via the existing highway without new road construction. However, the Council considers that many of the principles laid down in this guide will be applicable to such developments, to ensure good design and enhance the marketability of the units.

Whilst the development will be privately owned and probably maintained by a Housing Association or Management Company, adherence to the recommendations and standards laid down in this guide, should help to keep maintenance costs down.

In vetting these proposals the Highway Authority will have particular regard for the following;

- **Access -** The geometrical design and visibility of the entrance must ensure an easy and safe use for both residents and users of the public highway, and the internal access roads should enable vehicles to pass and repass without damage to landscaping or structures;

Figure 6 – Access to apartment blocks

- **Pedestrians -** The pedestrian access and movement within the development must be safe and secure, with direct links that are well lit and devoid of dark corners;
- **Cycling -** Proper and adequate cycle access and parking must be provided;
- **Parking -** Car parking must be provided to meet the requirements of the residents and their visitors, depending on their circumstance and access to the city centre and local amenities, public transport and the pedestrian and cycle networks. Such parking should not dominate the development and must be landscaped and secure;
- **Refuse -** Refuse collection points must be easily accessible for residents and refuse vehicles but must not dominate the limited space available;
- **Landscaping -** Every opportunity should be taken to incorporate ground cover and low maintenance shrubs and trees to enhance the development and provide security and all year round interest.

7.3 Consultation

There are a number of bodies with an interest in housing layout who can provide valuable guidance and assistance in the design process. The

importance of early consultation with such bodies is stressed. In addition to consultation with the City of York Council on the overall design brief for the site, the following organisations can provide useful guidance at an early stage in the preparation of road and footpath layouts:-

- Department of Environment and Development Services (City of York Council);
- Local Bus Operators;
- The Police (Architectural Liaison Officer and Traffic Management Officer)'Secured by Design' programme'.
- Statutory Undertakers;
- Fire and Rescue Service.

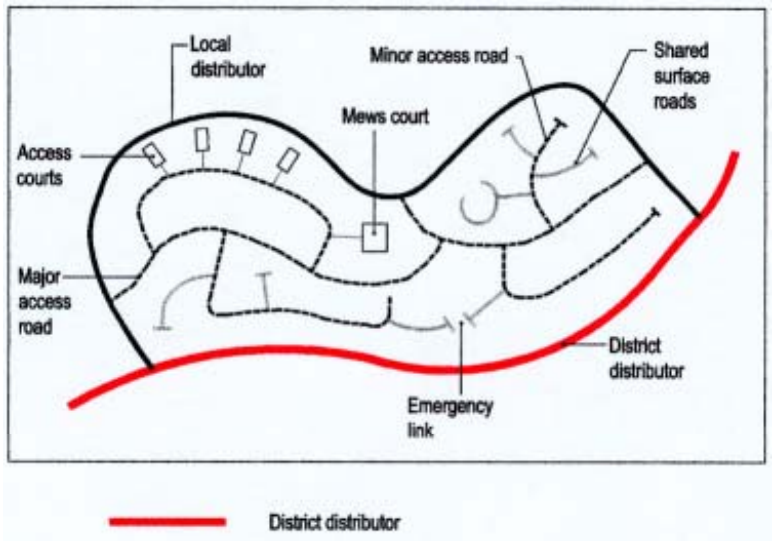
8. Hierarchy of Roads

8.1 General

8.1.1 The highway forms an integral part of any new development, and therefore cannot be considered in isolation from the overall design; all elements involved in the production of a satisfactory and pleasing final product must be considered together at as early a stage as possible.

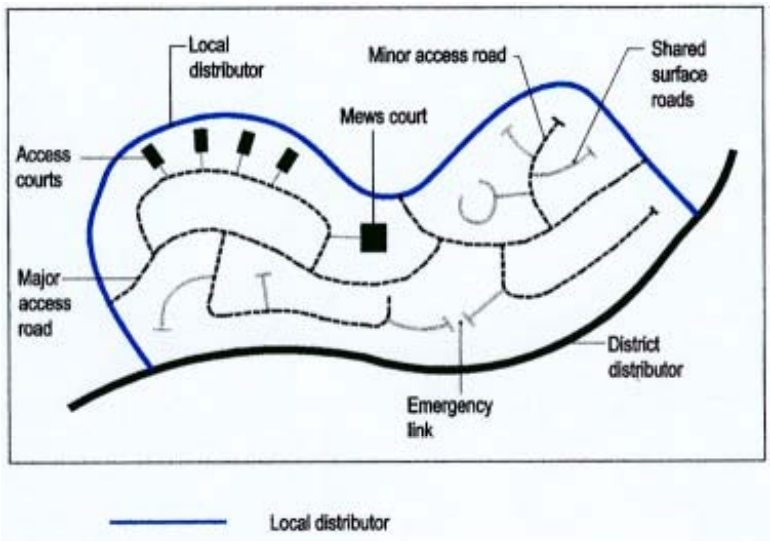
8.1.2 This section employs the concept of a hierarchy of roads within residential estates, from a small-scale cul-de-sac where pedestrian movements are predominant and vehicle speeds are restricted, to distributor roads catering for the free flow of vehicles. The design of the housing area using this hierarchy should prevent areas where people live being intruded upon by traffic from outside their immediate area whilst maintaining ease of access for residents, visitors and service vehicles to their homes.

8.1.3 The road hierarchy within the administrative district of York includes Primary Distributor Roads, District Distributor Roads, Local Distributor Roads and Residential Roads. This guide is only concerned with the lower categories of this hierarchy. However, it must be stated at this stage that access to Primary or District Distributors Roads will not be permitted except in exceptional circumstances.



Local Distributor Roads

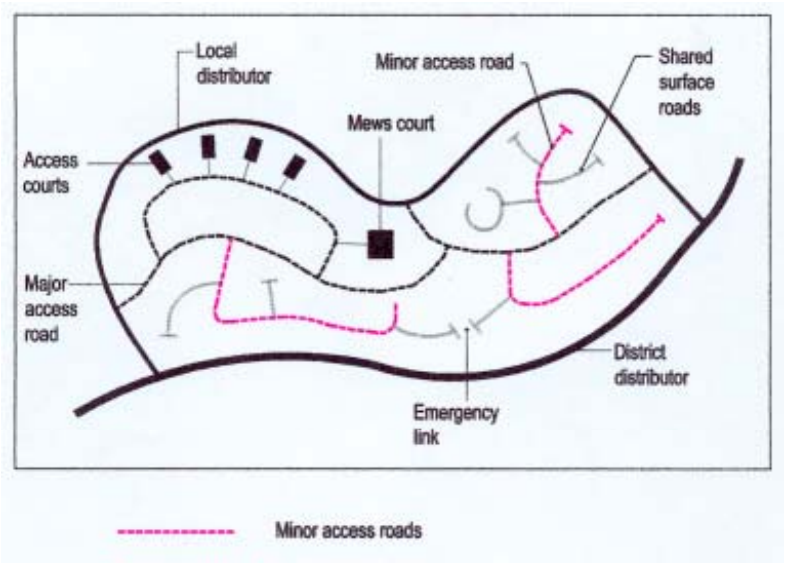
These roads together with Transition Roads are generally without direct access to properties and which, in larger developments, connect the new residential access road network to the existing distributor road network.



Residential Access Roads

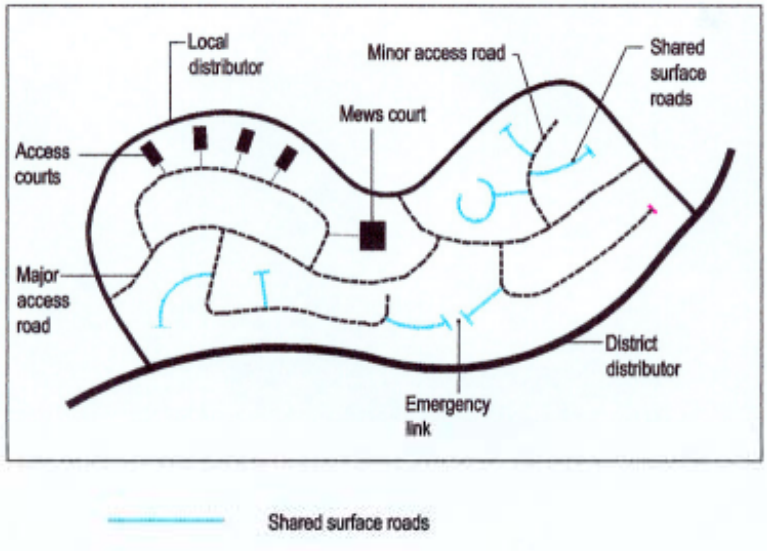
8.1.4 These are roads linking Shared Surface Roads, dwellings and parking areas to the distributor road network. The different categories are:

- Major Access Road
- Minor Access Road



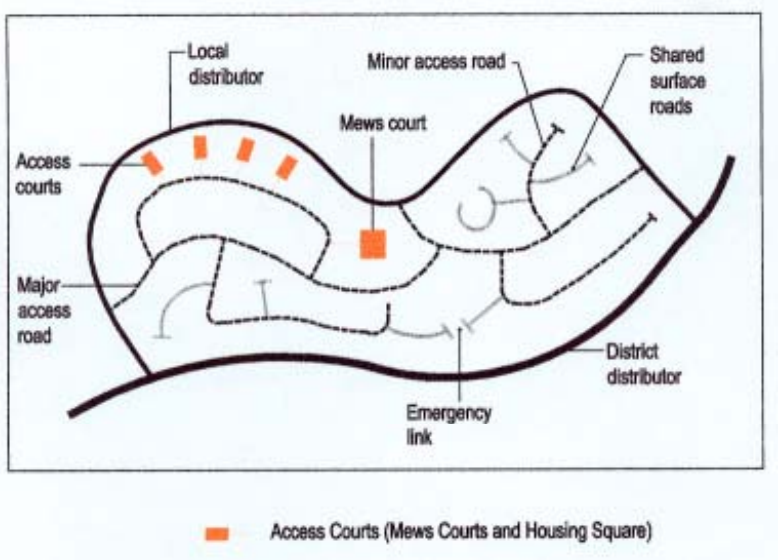
Shared Surface Road

8.1.5 The primary purpose of these roads is to provide direct access to dwellings, they are engineered with low traffic speeds and help create a sense of community.



Informal (loops & Culs de sac)

Access and Mews Courts



Minor Access Ways

8.1.6 Housing sites in York are typically small so that the need for local distributor roads will not arise in most cases. Therefore the guidance given below focuses mainly on the design of residential access roads.

8.1.7 The layout and design of roads and footpaths must be an integral part of the overall design concept. The approach adopted by this Guide is not to present a rigid set of rules to be followed in the design of residential layouts or to present standard layouts that can be applied 'off the peg' to developments in York. Rather it advises on objectives and principles while indicating minimum standards to be met where necessary.

8.2 Local Distributor Roads and Transition Roads

Local Distributor (With 'bolt on' traffic calming)

8.2.1 Local Distributor Roads are roads within larger developments carrying higher traffic flows and will be required where a residential road would serve, directly or indirectly, over 400 dwellings. Distributor Roads should have two points of access. Attention is drawn to the recommendations of *TA 20/84* that a right turning lane junction or a roundabout should be considered for new urban junctions with side road traffic flows in excess of 500 vehicles per day (2 way AADT).

8.2.2 Local Distributor Roads are designed to facilitate traffic movement and the motorist generally enjoys priority although the safe movement of pedestrians is still catered for. They will generally be designed to restrain vehicle speeds to 30mph through the alignment of the road and the use of roundabouts at significant junctions. At particular locations, such as outside schools, restraint of speeds to 20mph will be required and the use of design measures such as raised junctions and speed tables may be considered. Any speed restraint measures on Local Distributor Roads must take into account the requirements of buses and the emergency services.

8.2.3 Where a Local Distributor Road is required the visual monotony, such as the continuous views of garden fencing or walls can be reduced by a limited amount of frontage development, provided it is accessed by a specially constructed access road parallel to but separate from the main highway, or by the use of minor access ways. Where permitted, dependent upon other junctions along the local distributor road, such accesses/shared private drives shall be provided with adequate turning facilities for service vehicles, and an additional parking space shall be provided for each dwelling above the normal provision.

Transition Roads

8.2.4 Access Road network to the Distributor Road network where the access road system serves over 100 dwellings and it is impractical to provide two links to the distributor road network. As Transition Roads are short a carriageway width of 6.0 metres is acceptable. If, for particular site-specific reasons, long Transition Roads are proposed, then a 6.5 metre carriageway may be required.

8.2.5 In other respects their design characteristics are as for Local Distributor Roads.

Standards

No. of Dwellings Served	Over 400

Design Speed	30mph (48kph)
Minimum Carriageway Width	6.5 metres minimum (7.3m may be required where traffic types dictate).
Footway Width	2 No. at 2.0m minimum. Segregated from carriageway by verges.
Verges Width	Average 2 metres (variable width recommended for visual interest – 3 metres minimum where no footway provided.
Min centre line radius	60 metres
Maximum Gradients	6%
Junction Spacing	Same side 60m Opposite sides 35m

NB. Care will be needed in positioning junctions to ensure that the combination of curving alignment and visibility splays does not sterilise excessive land.

8.3 Residential Access Roads

Major Access Roads

8.3.1 Major Access Roads serve between 100 and 400 dwellings, they provide direct access to property and are intended to cater for access traffic only. In their layout, the needs of safety, security, and the creation of an attractive environment predominate over the needs of moving traffic.

8.3.2 Major Access Roads should preferably have two points of access or if a second point of access is not available a Transition Road should be provided. For properties accessed directly from Major Access Roads, serving more than 200 dwellings or within 200 metres of a junction with a Local Distributor Road, space for turning a car may be requested within the curtilage.

8.3.3 Generally Major Access Roads layouts should be such that they do not form an attractive through route and vehicle speeds are restrained. Design speeds should

generally aim for 20 mph, however, on some longer layouts 30 mph may be appropriate where the lower speed would give unacceptably long access times. Generally design for 30 mph should be considered where vehicles would have to travel over a kilometre (0.62 miles) by '20 mph' roads.

8.3.4 Target speeds will be achieved by keeping lengths of road without speed restraints to the lengths not exceeding 120 metres. Except for speed restraint bends the full range of speed restraint measures are available on Major Access Roads. Urban design considerations will, however, be important in determining the appropriate measures for specific locations.

8.3.5 It is accepted that where frontage road access is provided on-street parking will often occur. The requirement for a minimum carriageway width of 5.5 metres is designed to cater for vehicles reversing but also allow for this. Where there is no direct access to property, or for other reasons it can be demonstrated that on-street parking will not take place, widths may be reduced. Where more than 300 dwellings are served by a Major Access Road on-street parking should be provided clear of the carriageway.

Standards

No. of dwellings served	100 to 400
Design Speed	20mph (30 mph)
Minimum carriageway width	5.5m – 6.0 where a bus route may be provided.
Footway width	2 No. 2.0m minimum
Verges	May be required for roads serving over 300 dwellings.
Minimum centreline radius	20m
Maximum gradients	7%
Junction spacing	Same side 30m Opposite side 15m

Notes: Casual off street parking places may be required where a road serves more than 300 dwellings.

On plot turning spaces may be required where a road serves more than 200 dwellings or within 200 metres of a Local Distributor Road.

8.4 Minor Access Roads

8.4.1 Minor Access Roads serve up to 100 dwellings as a loop or cul-de-sac. For any cul-de-sac serving more than 50 dwellings, an alternative access for emergency use should be provided. For other culs-de-sac an emergency link may be provided where this can be accommodated within the layout proposed.

8.4.2 Minor Access Road layouts should be such that vehicle speeds are restrained to below 20mph.

8.4.3 The minimum width for minor access roads where there is no frontage access should be 4.8 metres, or 4.5 metres where less than 25 houses are served.

8.4.4 Carriageway widths should not be reduced below 5.5 metres within 20 metres of junctions with Local Distributor Roads or Major Access Roads.

8.4.5 In certain circumstances where there is minimal pedestrian demand along one side of a road it may be possible to substitute a service verge for one footway.

Standards

No. of Dwellings	up to 100
Design Speed	20mph
Minimum Carriageway Width	5.5 metres
Footway Width	2 No. at 2.0m (See note 1)
Verges	2m where only one footway is provided (See note 2)
Minimum Centreline radius	20m

Maximum Gradients	7%

Note 1: For roads serving less than 25 dwellings it may not be necessary to provide two footways

Note 2: Verges may be planted with low ground cover as described in Annex B: Approved planting.

8.5 Shared Surface Roads

8.5.1 Shared Surface Roads have been used in the United Kingdom for some 20 years and have enabled the designers to produce layouts with more innovation, due mainly to the acceptance of less rigid engineering standards. When designed with care they can create the basis for developments with a greater sense of identity. In addition when vehicle speeds are restrained by gateways, variable widths and other measures, together with a variety of building design and landscaping, statistics show that they have a very good roar safety record.

8.5.2 A shared surface is provided for use by pedestrians and vehicles and are dominated by soft landscaping and suited to low density development with buildings set back from the road.

8.5.3 Since pedestrians and drivers share the same surface it is most important that all road users are made aware of the separate and distinctive nature of these roads. The distinction between other residential estate roads must be made, not only by the presence of traffic calming measures, but also by the uses of differing carriageway surfacing materials. These roads MUST, therefore, be constructed using block paviours, or other coloured/textured materials to the approval of the Highway Authority.

Informal Shared Surface Roads

8.5.4 An informal Shared Surface Road can serve up to 25 properties as a cul-de-sac, and around 50 properties in a loop form where junctions with roads with footways are located at each end of the shared surface. No dwelling must be more than 25 properties from the access road.

8.5.5 The transition from access road to a Shared Surface Road must be made abundantly clear to drivers, usually by the introduction of a shallow level change at the entrance to the shared pedestrian/vehicle surface or by the use of distinctive surfacing rumble strips or transition ramps. The detail of a typical entrance to a shared surface is shown in Appendix 5.

8.5.6 The shared surface is flanked by a 2.0 metre wide adoptable service verge. The shared pedestrian/vehicle surface should be a variable width between a minimum of 4.5 metres and a maximum of 6.5 metres. Casual parking should be provided within the wider sections clear of the 4.5 metre core area. The width of shared surfaces adjacent to accesses to properties must be sufficient to permit vehicles to manoeuvre to and from those accesses, taking into account the alignment of the shared surface and location of parking. The width required will also depend on the kerb radii, driveway width and location of any gateways at the entrance to the access.

8.5.7 The service verge must be clearly defined in detail, and reference to it being part of the public highway must be clearly stated in the 'Deeds to the Property'. Planting or rockeries by individual householders will not be permitted; although they will be required to cut grass or maintain the planting as an extension of their garden.

8.5.8 Where landscaping is provided within an adoptable service verge it will be required to be of a high quality; either grass or dense low shrub planting may be appropriate. Guidance on landscape design is given in Section 14. Details of planting must be approved by the Highway Authority. A list of approved species for planting within the highway is contained in Annex B: Approved planting

8.5.9 It is not appropriate to provide formal footways adjacent to the shared surface road and therefore any road where footway links are required will need to be designed as Minor Access Road.

Standards

Number of dwellings	up to 25
Design Speeds	below 20mph
Carriageway Width	4.5 to 6.5m
Footways	not required
Service Verges (adoptable)	2 No. at 2.0 metre wide
Minimum centre line radius	10m (See note 1)
Maximum Gradient	10%

Note 1: Overrun areas may be required on bends

8.6 Access Courts

8.6.1 Access Courts are suitable for serving up to 25 dwellings as a cul-de-sac. Designs must restrict vehicle speeds to well below 20mph.

Mews Courts and Housing Squares

8.6.2 Mews Courts have a shared surface for use by pedestrians and vehicles and where buildings and hard landscaping dominate. Careful consideration needs to be given to how and where parking is provided and surface materials chosen to delineate the functions of different parts of the highway.

8.6.3 Housing Squares are suitable for high-density developments in an urban area, conservation area or village infill site providing it is in character. These layouts are characterised by dwellings around a central space, which allows clear access for parking and turning. Parking must not be allowed to dominate the central space. It is of considerable importance to include special features and soft landscaping to make the area distinctive and an attractive place to live

8.6.4 The transition from access road to Access Court must be made abundantly clear to drivers, usually by the introduction of a shallow level change at the entrance to the shared surface and by the use of distinctive surfacing. The detail of an entrance to a shared surface is shown in Appendix 5.

8.6.5 The shared surface should comprise a core area of minimum width 4.5 metres and a 2.0 metre service strip contiguous to the core area but delineated from it by a drainage channel. Casual parking and in some layout forms, communal residents' parking must be kept clear of the core area, and must not dominate the space.

8.6.6 In all cases a 0.5m clearance strip must be provided between the highway edge and the wall of any dwelling (to accommodate foundations and householder services if these areas are surfaced to the satisfaction of the Highway Authority they may be adopted as public highway). Boundary walls are acceptable immediately adjoining the highway.

8.6.7 It is not appropriate to provide formal footways adjacent to the shared surface of an Access Court and therefore any road where footway links are required will need to be designed as Minor Access Road.

8.6.8 The access court may take many forms. Indicative layouts are illustrated in Figures 2 and 3.

Standards

No. of dwellings	up to 25
Design Speed	15mph
Carriageway Width	6.5m (4.5m + 2.0m)
Footways	not required
Service strip	included as carriageway

Minimum centreline radius	10m (See note 1)
Maximum gradient	10%

Note 1: Overrun areas may be required on bends

8.7 Minor Accessways

8.7.1 Minor Accessways were developed in response to concerns by residents of shared private drives, where problems caused by indiscriminate parking were a particular source of complaint. They may serve up to a maximum of 5 properties, and will be adopted as public highways.

8.7.2 Minor Accessways can be used where, because of the shape of a site, parts could not be developed or could only be developed with shared private drives. They are not intended for widespread use in layout design, nor to be used as an expedient to increase the numbers of houses accommodated on a site. In general Minor Accessways will be preferred to Shared Private Drives.

8.7.3 Minor Accessways are similar in layout to Shared Surface Roads. They may connect to a Residential Access Road or a Shared Surface Road. They should have the following characteristics:

- serve up to five dwellings
- be no more than 25m long
- have a width of 4.5m
- have sufficient on-plot parking for residents and visitors
- provide at least one parking space for deliveries/casual callers, that space to be convenient for all dwellings served and clear of the driveway or turning area.
- provide a turning head for cars (see Appendix 6)
- provide approved lighting
- provide an adoptable surface water outfall

An illustrative layout is shown in Appendix 7.

8.8 Private Drives

Shared

8.8.1 Shared Private Drives are unadopted and may serve as a primary access up to a maximum of 5 dwellings. However, in view of the on-going maintenance liabilities for householders, the Council encourages developers to minimise the use of private drives for communal use and seek to extend adoptable areas wherever practical.

8.8.2 Where private drives are shared the communal area should be easily distinguished from areas associated with individual plots. Areas for individual plots should be of sufficient size to accommodate the required parking standards (an additional parking space shall be provided for each dwelling above the normal provision) to prevent blocking of communal areas. Responsibility for the future maintenance of communal areas should be established.

8.8.3 Private drives are similar in layout to minor accessways. They may connect to Minor Access Roads and Share Surface Roads. They should have the following characteristics:

- Serve up to 5 properties;
- Be no more than 25 metres long;
- carriageway width of 4.5 metres at the junction for the first 10 metres of private shared drive;
- minimum carriageway width of 3.2 metres;
- A margin of at least 0.5 metres must be provided between the edge of the drive and any boundary wall;
- Where any building (ground floor plan) is more than 45 metres from the an adopted highway, the carriageway shall be 3.7 metres wide (suitable for emergency vehicles);
- adequate sight lines ;
- a turning head will not normally be required ,but vehicles should be able to enter and leave in a forward gear;
- no shared driveway shall be located within 20 metres of a junction;
- provide approved lighting for adoption;

- Provision shall be made for the collection and disposal of surface water so as to prevent it discharging onto the public highway;
- Where properties are more than 23 metres away from a public highway, an area must be set aside within that distance for the storage of refuse bins off the main drive, on collection days;
- Discussions must take place with Public Utilities to ensure each property can be adequately served and provision is made for future access and maintenance of their services.

8.8.4 In view of the many problems caused by the nature of shared private drives the Council urges developers to reconsider their use and seek instead to provide Minor Accessways.

Single drives

8.8.5 The minimum width of a single private drive shall be 3.2 metres, which may be reduced to 2.4 metres where a separate pedestrian path is provided. The width must also be sufficient to enable vehicles to manoeuvre satisfactorily into and out of parking spaces/garages. The minimum length of the drive shall be 6.0 metres.

8.8.6 To enable a vehicle to leave or enter the highway in a forward gear, turning spaces will need to be considered when the access driveway:-

- Serves more than one property
- Is directly from a classified road
- Is more than 25m in length
- Exits onto a highway at a hazardous location

8.8.7 For turning spaces to be effective they must include adequate additional space for parking so that the turning area is free from parked cars.

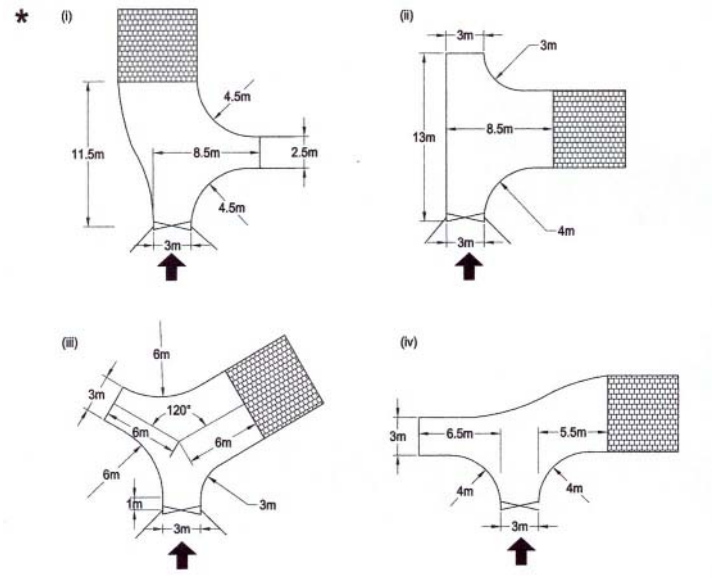


Figure 4 Turning areas

8.8.8 The entrance to a private drive should be in the form of a dropped kerb crossing and any part of the above which will lay within the public highway shall be constructed to an adoptable standard. A 2.0 wide transition strip, between the edge of the highway and the drive, must be provided in hard paving, if the drive is not to be fully paved.

Road Type	Minimum Carriageway width*	Minimum Centreline radius	Minimum footway width	Minimum verge width	Design Speeds for visibility etc	Max Gradient	Junction Alignment	Minimum Spacing junction (m)	
	(m)	(m)	(m)	(m)	(mph)	(%)	(6)	Same side	Opp side
Local Distributor	6.5[1]	60	2 x 2.0	2 x 2.0[2]	30	6	90°	60	35
Transition Road	6.0	60	2 x 2.0		30	6	90°	60	35
Residential Access Roads:									
Major	5.5	20[3]	2 x 2.0	N/A	20/30	7	90°	30	15
Minor	5.5	20	2 x 2.0	N/A	20	7	90°±10°	N/A	N/A
Shared surface roads									
Informal shared surfaces	4.5 - 6.5	10	N/A	2 x 2.0	<20	10	90°±10°	N/A	N/A
Access courts	6.5[4]	10	N/A		<20	10	90°±10°	N/A	N/A
Minor Accessway	4.5[5]	10	N/A	1 x 2.0	<20	10	90°±10°	N/A	N/A

Widening on bends required in accordance with section 8.11.

1 Greater widths up to 7.3 may be required in particular circumstances i.e. where traffic flows will be high (large development or where through traffic is likely) or where a higher proportion of heavy vehicles is expected (mixed developments).

2 A variable width is recommended for visual interest and to provide opportunities for landscaping. Verges shall be at least 3.0m wide where no footway is provided.

3 Other than at speed control bends.

4 Included in this width is a 2.0m service strip.

5 Variable width required with wider sections to incorporate casual parking

6 Junction alignment is the angle the minor road joins the major road.

8.9 Junctions

8.9.1 A high proportion of accidents occurs at junctions so it is essential that they are designed to minimise the hazards to road safety. They need to be designed to ensure that they are adequate for the vehicles likely to use them, and provide good visibility, but must not encourage high speed. In residential areas, or low trafficked routes their design can make a positive contribution to managing the speed of vehicles.

8.9.2 Junctions must be pedestrian friendly with crossing points conveniently located to encourage proper use, and situated where visibility in all directions is optimised; excessive walking distance must be avoided. Tactile paving must be provide to assist the visually handicapped

8.9.3 Off street parking facilities near junctions are essential in order to discourage on-street parking. No private access drives must enter the kerb radii or be within 15 metres of the intersection of the junction centre lines.

Geometrical Shape

8.9.4 Within new residential areas, roads should meet each other at right angles to form a single T-junction, and dependant upon the category of the major and minor roads will determine their design. Junctions with Local Distributors will be required to be built to national standards, to cater for the speed, size and nature of the traffic using then, whereas in residential estates a more restrictive approach will be taken to contain traffic but avoiding overrun.

Side Road Type	Local Distributor	Transition Road	Major Access Road	Minor Access Road	Share surface Road	Access court
Local Distributor	10.0					
Transition Road	10.0	10.0	10.0			
Major Access Road	10.0		6.0	6.0		
Minor Access Road	10.0		6.0	6.0	4.0	4.0
Share surface Road	10.0		6.0	6.0	4.0	4.0
Access court	10.0			6.0	4.0	4.0

NB Radii given in metres

Table : Minimum kerb radii at junctions

Visibility at junctions

8.9.5 The provision of adequate visibility at junctions is vital for road safety, and the dimensions of visibility splays are directly related to the anticipated traffic speeds on the major road, and the expected traffic flows on the minor road.

8.9.6 The visibility splay is made up of two components; the 'X' distance measured along the centre line of the minor road from the edge of the major road carriageway and the 'Y' distance measured along the edge of the major road carriageway from the centre line of the minor road, thus;

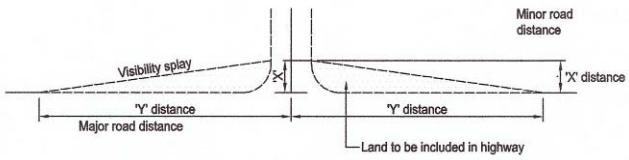


Figure 5 Visibility splays at junctions

8.9.7 On all junctions with Local Distributor Roads and Transition Roads shrubs or obstructions must not exceed 1.05 metres high (measured above the centre line of the carriageway within the visibility splay, although exceptions will be made for trees (providing they have a clear stem of 3 metres) and street lighting columns. On residential access roads a height of 600m will be required to ensure the observance of, and by children.

		Main Road Type 'Y' Distance				
Minor Road Type	**'X'Distance**	**Local distributor**	**Transition Road**	**Major Access Road**	**Minor Access Road**	**Shared Surface Courts and Accessways**
Transition Road	8.0	90	-	-	-	-
Major Access Road	4.5	90	-	70	-	-
Minor Access Road	4.5	90	-	60	45	-
Shared Surface Courts and Accessways	2.4	90	-	45	45	33

Table: Visibility splays at junctions

NB. In urban areas and conservation areas the Authority reserves the right to relax these standards providing the safety of all road users is not compromised.

Visibility zones.

8.9.8 Visibility for drivers turning left into a minor road can be problem and potentially hazardous for pedestrians and children playing, therefore visibility zones around the left hand entry radii may be required, thus:

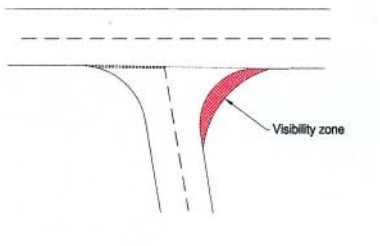


Figure 6 Visibility zones

8.9.9 The following table gives a guide to providing a visibility radius, tangential to the kerb, for different junction angles and kerb radii.

Junction deflection (degrees)	**Kerb radius (metres)**		
	4m	**6m**	**10m**
80	10	11	19
90	9	10	19
100	8	9	19

Note: Again the Authority reserves the right in Urban Areas and Conservation Areas to relax these recommendations where other features are built into the road environment and road safety is not compromised.

8.9.10 At all junctions the gradient of the minor road shall not exceed 5% for a distance of at least 10 metres back from the edge of the major road. If a junction is located where the minor road is steep special attention must be paid to the footway to ensure that its gradient does not exceed 10%.

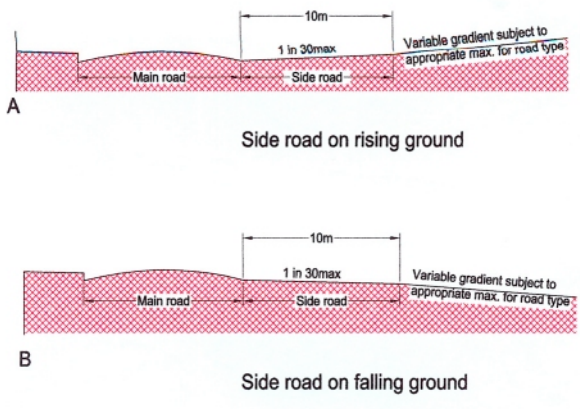


Figure 7 Side roads at a gradient

8.10 Forward Visibility

8.10.1 Bends and curves form a natural part of road design and are important both visually and for maximising the development potential of a site. But it is important that the driver has good forward visibility of any possible hazard when negotiating a bend. The forward visibility is based on the stopping distance for the average vehicle travelling under normal conditions. An allowance should however be made for icy and wet weather conditions and therefore it is recommended that the distances set out in the table should be increased by 20%.

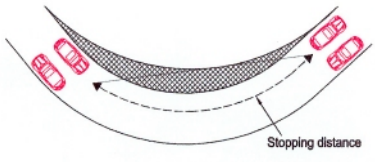


Figure 8 Stopping distances

8.10.2 A maximum clear height of 1.05m must be maintained over the forward visibility curve, but trees and lamp columns are excluded as above. The method of determining the forward visibility curve is set out in Appendix 8.

8.11 Widening on bends

8.11.1 Widening on bends is provided for safety reasons to accommodate large vehicles whose swept path is more than the width of the carriageway and is particularly important on Local Distributors and Major Access Roads. However, on internal residential roads an assessment of the likelihood of two large vehicles actually meeting on a bend needs to be considered. Where vehicle speeds are controlled and large vehicles are only infrequent i.e. refuse vehicles etc. then the need for localised widening is reduced. In such circumstances the larger vehicle can utilise the whole carriageway width available, and wait for any oncoming

vehicle to clear the way ahead, however it is important that there is good forward visibility and lamp columns etc, are clear of the swept path to avoid damage by the overhang of vehicles

8.11.2 On roads under 4.5 metres wide within the residential areas, consideration will have to be given to the swept path of large vehicles to avoid environmental damage, and the danger to young children and cyclists. Localised widening via an overrun strip will have to be provided in such circumstances, and the choice of materials is very important. Granite setts, set in mortar look attractive, but don't stand up well to heavy traffic, and easily come loose and a danger to other road users. They also provide a ready source of material for vandals.

8.11.3 As a general guide, carriageway widening is normally needed on bends curving through more than 10 degrees along roads serving over 25 dwellings.

Centre Line radius (m)	20	30	40	50	60
Min Widening (m)	0.60	0.40	0.35	0.25	0.20

Vertical design

8.11.4 Wherever possible roads should follow the topography of the site to avoid an unnatural appearance, however there are limits to the design to ensure the safety of all road users.

8.11.5 The maximum design gradient shall be 6% for local distributors increasing to 8% for Shared Surface Roads and Access Courts etc. However care should be taken when using steep gradients because of the problems they cause for pedestrians particularly the elderly in inclement weather. Where dipped crossings are used on steep gradients they can be particularly hazardous, as the 'dips' on either side of the vehicle crossing can significantly increase the gradient for pedestrians (max gradient must be 8.0%).

8.11.6 The minimum gradients for all roads, footways, footpaths and cycle ways shall be 1% to ensure adequate drainage. This may be reduced to 0.66% with the use of forced (tilted) channels in very flat areas.

8.11.7 Where gradients meet it is necessary to introduce a vertical curve; the design will depend on the actual gradients, visibility and comfort requirements and these are related to the design speed and category of the road. The visibility over the crest of the curve should be 600mm to ensure a clear view of children.

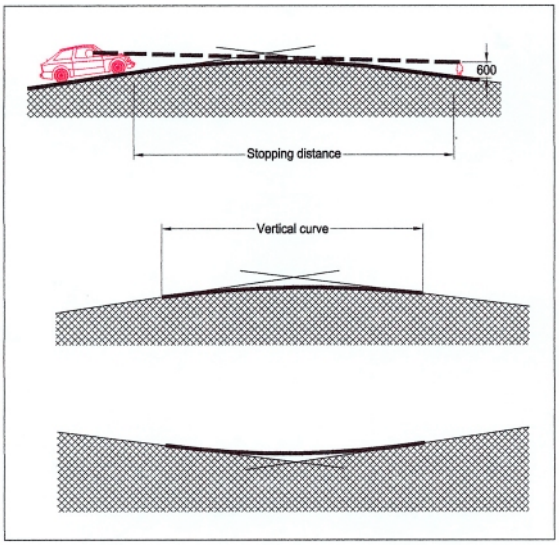


Figure 9

The length of a curve is calculated using the formula L=KA

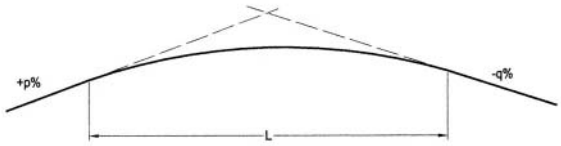


Figure 10 Length of curve

Where L is the length of the curve in metres, A is the algebraic difference in gradients [p-(-q)] and K is taken from the following table :-

Road Type K value

	Design Speeds mph	**Min K Value**	**Minimum Curve metres**
Local Distributor	30	6.5	30
Access roads	20	2.5	25
Slowed surfaces	<20	1.0	20

Different vertical curve types are indicated in Appendix 9.

8.11.8 On higher category roads it is important that the horizontal and vertical alignment are co-ordinated, both for aesthetic reasons and to improve drivers perceptions of the road alignment.

8.12 Turning Heads

8.12.1 A cul-de-sac will normally require a turning head of sufficient dimensions to enable a service vehicle to turn and leave the road in forward gear. The layouts indicated in Appendix 10 are interchangeable and may be varied to suit differing circumstances. In certain instances the Highway Authority may be prepared to relax the requirements for a turning head on an individual basis where:-

- the length of the cul-de-sac does not exceed 25 metres,
- the status of the road from which the cul-de-sac is accessed is no greater than a Minor Access Road;
- a 6 metre entry radius is available;
- the side road has good visibility ('X' dimension is 4.5 metres);and
- it is not required by refuse vehicles for a local pick up.

8.12.2 The visual layout of the turning heads must provide at least the minimum space to accommodate the lengths, widths and radii illustrated. Whilst for some shorter development roads these minimum dimensions may seem large, but standard refuse/delivery/service vehicles will still need to turn in order to minimise long reversing manoeuvres which are undesirable in terms of highway safety and convenience.

8.12.3 The turning heads illustrated in the Appendices are of a formal nature but they may be informal to suit site conditions. In these circumstances the developer must be able to demonstrate that the shape proposed encapsulates the standard dimensions shown and offers an adequate turning area by the use of vehicle swept path track plots. Where there are no footways or service strips around the perimeters of turning heads, any boundary, fence or hedge shall be set back at least 1.0 metre from the carriageway to avoid damage resulting from the overhang of manoeuvring vehicles. These distances should be increased to 2.0 metres at the ends. The space between the kerb and boundary must be paved and maintained either as public highway or by the adjacent occupier.

8.12.4 A major problem in turning heads is parked vehicles. Designs which include dwellings clustered around turning heads may therefore have to include additional off street parking for visitors, and/or the number of dwellings limited to reduce the likelihood of on street parking occurring.

8.13 Highway Structures

8.13.1 It is not uncommon in urban and rural areas for a development to include some form of highway structure, whether it is to support the highway or the ground which lies above it. If a watercourse runs through a site, a bridge or culvert may be required to carry highway loading. Elsewhere there may be proposals to construct buildings over the highway to provide a sense of enclosure or maintain an unbroken frontage yet allowing access to the rear.

8.13.2 Where a development includes one or more structures with potential highway implications, the developer is advised to consult with the Highway Authority as early as possible, regardless of the type of structure. The structure must be designed to the current standards and the developer must satisfy the Authority of

the structural integrity, and supported by plans, sections, specifications and calculations.

8.13.3 The developers attention is drawn to the publication *'Technical Approval Procedures for Developers Structures'* produced by the Directorate of Environment and Development Services, for advice and guidance on the procedures necessary for approval.

8.14 Vertical Clearance

8.14.1 Any structure of whatever type over a publicly adopted highway must have a minimum vertical clearance of 5.3 metres.

8.14.2 An archway of sufficient height for all vehicles will normally be out of scale with its surroundings, and visually unacceptable. Low archways with 2.4 metres minimum clear headroom will be acceptable as the principal car access to a housing development serving no more than 10 dwellings, provided that alternative access is available for emergency services and maintenance vehicles, and acceptable refuse carrying distances can be achieved. A carriageway width of 2.7 metres is required with 0.5 metres hardened verges either side. Archways of these dimensions will be acceptable as the sole access to a parking or garage court but not over adoptable public highways.

8.14.3 However, where the above requirements cannot be met other accesses, which would not become maintained as a public highway, require a minimum clearance relevant to their intended use:

Pedestrian/motor cars	2.4m
Small Service Vehicles	5m
Cycleways	2.7m
Touring Caravans	2.8m
Motor Caravans	3.3m
Fire appliances and large service vehicles.	4.1m

8.15 Works in the public highway

8.15.1 No developer shall undertake any works whatsoever in the public highway without the written consent of the Highway Authority. The Authority will need to be satisfied that work can be carried out in a safe and expeditious manner without danger to the public, and carried out with as little disruption and inconvenience as possible.

8.15.2 The developer must ascertain the positions and depth of Public Utilities equipment, sewers, drains, and cable TV networks and agree with their many procedures and protection necessary before any excavation is carried out in the public highway.

8.15.3 All works must have regard for the requirements of the Highways Act and must be signed and supervised in accordance with Chapter 8 of the Traffic Signs Regulations and General Directives in the Code of Practice – *'Safety at Street Works and Road Works'* February 2002.

9. Traffic Calming and Homezones

9.1 Traffic Calming

The speed of vehicles is a major factor in improving road safety and minimising future potential accidents. There is a significant lowering in the severity of accidents involving pedestrians when the speed of the vehicles involved is less than 20mph. The City of York Council is determined to ensure speeds in residential areas are managed at a level consistent with road safety. There is sufficient evidence now available, based on years of study, to show that the use of speed restraint and traffic calming measures can be an effective tool in controlling the speed of vehicles.

The design of residential areas should incorporate the speed reducing features to ensure that vehicle speeds are moderated on all categories of road. With new development, the grouping and alignment of buildings, boundary treatment and landscaping should emphasis and complement any speed restraint measure. Any measures introduced should not be viewed as 'bolt on' features which can simply be added to the design, but rather they should form an integral part of the design itself, so that they fit comfortably in the overall environment. In historic areas, extra care must be taken as speed tables and particularly road humps can look out of place.

Short culs-de-sac, frequent junctions and sudden changes in direction will often be sufficient to achieve the desired vehicle speed; horizontal features are likely to be more acceptable to all road users, thus making the widespread use of road humps unnecessary. However, circumstances will arise where 'vertical shift' measures are either more flexible or desirable, for example at pedestrian crossing points or raised junctions.

A prerequisite of any design is to identify the potential points of conflict between pedestrians and vehicles. Speed restraint measures at these points can then be introduced to provide the focal point for a scheme of traffic restraint. There is a need to identify locations where pedestrians cross the road and particular attention needs to be given to areas near shops and public houses, community facilities and bus stops, playing fields and recreation areas. Where pedestrian and cycle networks form part of a development it is imperative that speed restraint measures are provided wherever they are intersected by roads.

Where a new development is likely to significantly increase the speed and volume of traffic past the entrance to a school, intercept, a “safe route to school” or a route frequently used by children and cyclists the Authority will require measures to be taken by the developer to protect these areas.

The spacing of speed control features should be related to the target speed and the guidance on the maximum distance between features for a given target speed, is:

Target Speed	Unrestrained Length of Road
up 30mph	80-120m
20mph	60m
below 20mph	40m

The measures that are available include;

Horizontal

- Gateways
- Speed Control Bends
- Road narrowing
- Chicanes
- Traffic islands
- False roundabouts
- Overrun areas

Vertical

- Round topped road humps
- Speed cushions
- Speed tables
- Raised junctions

Details of the above measures are indicated in Appendices 11 to 17.

The use of these speed control measures can give the designer an added degree of flexibility, promoting greater variety in layouts and encouraging

innovation. In the design of the appropriate measures the following guidelines need to be borne in mind.
Measures must be an integral part of the layout design and not appear as an afterthought, or as a means of making the unacceptable acceptable.

The selection of speed restraint measures for different roads in the road hierarchy on larger developments, can, with landscaping, be employed to emphasis the different junctions and roads, and appropriate safe speeds for each.

Landscaping and trees can often be used to complement and emphasise physical speed restraint measures at the road layout.

Rumble strips/areas can cause noise nuisance and are therefore not suitable close to housing, or other sensitive areas;

If speed restraint cannot be achieved by horizontal measures then road humps are an alternative, although not always welcomed by residents. Possible use by buses and the needs of emergency services and delivery vehicles must be given full consideration in the design of any speed restraint measures, speed cushions are more acceptable in these situations. (see the paragraph following) Speed control bends are only suitable on minor access roads or less, within developments;

Figure 22 – Traffic calming

The impact on the local community should be considered in terms of noise, vibration and air quality. If it is likely that there will be a significant adverse impact due to any of the above, a formal technical assessments are likely to be required.

Carefully planned layouts which 'naturally' indicate appropriate driver behaviour are the best measures of all. Speed cushions can be effective in reducing passenger discomfort on bus routes and emergency vehicle routes, however they are not effective in deterring the speed of motorcycles, large delivery vehicles or cars with a wide wheelbase so should be complemented with other features where possible.
All speed restraint measures must be constructed in accordance with the Department of Environment Transport and Regions, Regulations and Advice, and be correctly signed and carry the appropriate road markings.

9.2 Homezones

A Homezone is a residential street or a number of such streets in which the living environment clearly predominates over the provision of traffic. Spaces between homes and the carriageway are shared to provide more facilities such as areas for children to play, larger gardens, planting and seats etc, to engender a community feel. Traffic and car parking are not excluded but designed so that vehicles only travel a little faster than walking pace and parked cars are not intrusive. A typical layout for a homezone is shown in Appendix 18.

The objectives of a home zone are:

- a feeling of safety, because traffic is going slower and there are more people about;
- promote greater use of public space, diversity of activities and benefit children, the elderly and the less mobile;
- streets become visually more attractive with more space for landscaping and trees;
- because fast moving traffic is removed they should encourage other modes of travel;
- encourage greater care of the street by residents;
- and improve the quality of the environment and increase the attractiveness of urban living.
-

Allocating less space for roads should provide more space for social areas; not additional housing.

These objectives can be achieved by including:

- attractive ‘gateway’ treatment to advise all road users of a change in the environment;
- traffic calming such as, road narrowing, chicanes etc. to slow down traffic, and provide areas for cycle and car parking;
- provide attractive landscaping and tree planting;
- provide seating areas and meeting spots not necessarily confined to the highway.
-

Homezones appear to work well in culs-de-sac not exceeding 350 metres in length and be a destination for traffic. Additional benefits can be achieved if they form part of a pedestrian/cycle network, a safe route to schools, or part of a 20mph zone. In themselves they cannot be a solution to traffic problems, or unruly driver behaviour, particularly by the young, but coupled with other features of traffic calming they can create a greater level of safety, be more efficient in the use of space and provide a more attractive and diverse streetscene.

10. Designing for Priority Road Users

10.1 General

Walking and cycling form the basis of the Council's strategy for the movement of people as part of its Local Transport Plan. The Developer must therefore, at an early stage, consider how they can shape their development to ensure that travel by non-car users is maximised.

10.2 Pedestrian Routes

Within the city there is a Pedestrian Route Network established in 1992 which comprises a network of pedestrian routes that are of functional value. Safe and convenient provision for pedestrian access and movement within a residential estate is therefore one of the fundamental elements of estate design. The design should ensure satisfactory access for all pedestrians, including those with a mobility handicap and parents pushing prams.

Pedestrian routes are either:

- footways – these are adjacent to the carriageway;
- or footpaths – which are not related to the carriageway but may lead to dwellings, other part of the estate, public rights of way or the pedestrian network.

The requirement to provide footways adjacent to carriageways of various importance is covered in section 8 ' Hierarchy of Roads', but in addition the following must be borne in mind:

- On estate roads, a reduction in width may be permitted over short lengths to accommodate a particular feature i.e. Listed building, tree etc;
- An additional width of 800mm will be required adjacent to parking areas where vehicles parking at right angles will overhang the footway;
- if this is not practical then measures to prevent vehicle overhang must be taken i.e. bollards, landscaping etc., not fencing as this is easily damaged;
- At entrances to private driveways, a minimum width of 800mm carried through at footway level should be provided to enable pedestrians, and

wheelchair users to avoid ramps and dropped kerbs (see Appendix 19a)

Local public transport operators should be consulted on their requirements for footway widths at bus stops where shelters are to be provided, in any event a width of 3.5m minimum will be required.

In order to accommodate the true desire lines of pedestrians to other parts of the estate, but stops, community facilities and the pedestrian network, it may be necessary to create footpaths away from the main carriageway. In creating footpaths the following must be borne in mind:

- routes must be safe, convenient and well lit;
- they should be short and direct, unless as a specific design feature, with each end intervisible;
- overlooked by buildings or passing traffic;
- landscaping and layout should not create blind spots or hiding places;
- have easy gradients and provide adequate and suitable access, based on IHT Guidelines, and crossing points for wheelchair users and people pushing prams;
- be designed to minimise nuisance to nearby residents;
- if possible provide maximum exposure to favourable environmental conditions (such as sunshine and views) and minimise exposure to inclement weather (such as wind and rain).

It must be remembered that people prefer to walk along routes where they can be seen by drivers, residents and other pedestrians. Pedestrian footpaths must therefore be attractive and serve a purpose or a desire line. Poorly used routes provide easy access for criminals, a congregating place for vandals, and create untold nuisance for local residents.

In designing a new development consideration must be given to needs of people with mobility difficulties. Whilst the general principles adopted for able bodied pedestrians apply, specific attention should be paid to the following which may prevent obstacles:

- steps and steep gradients
- narrow passageways or footways
- badly positioned street furniture; and
- poor attention to construction details i.e. gully grates that can trap wheelchairs.

Where footpaths rejoin the main road network consideration should be given to the provision of staggered barriers, or landscaped verges to prevent


pedestrians, particularly children running on to the road. Staggered barriers can also reduce irresponsible cycle behaviour, and prevent access by motorcyclists.

10.3 Footway and Footpath Requirements

- Normal minimum width 2.0 metres; this may be reduced to 1.35m (1.20metres absolute minimum over a distance of 6m) to preserve a particular feature.
- At junctions the back line of the footway should follow the back line of the visibility splay.
- 4.5 metres at points where pedestrians congregate (e.g. outside schools, shops and community buildings).
- Where an emergency access/link is provided i.e. 3.7m wide a footpath to a minimum width of 2.0m must be included; 3.0m in the 3.7 width where a joint footpath/cyclepath is required;
- The desirable maximum gradient is 5% with an absolute maximum of 8%
- a headroom of 2.3 metres is required for length of up to 23 metres.
- a guide to the layout of pedestrian barriers is given in Appendix 19
- where footpaths are the only main means of access to property they will need to meet the requirements of the fire service
- the use of steps will not normally be sanctioned but where they are, they must conform to current regulations and a ramped alternative must be provided for prams and wheelchairs.
- The surface material must conform to the Council's Paving Policy

10.4 Public Rights of Way

Public Rights of Way are Public Highways, the majority of which are highways maintainable at public expense. It is essential that, at an early stage in the planning process, a prospective developer ascertains whether any public rights of way would be affected. Failure to do so could result in serious

problems, delays and possibly even court proceedings. It is recommended that developers consult the Council's Public Rights of Way Officer' and a search on the Definitive Map be undertaken at the earliest opportunity, as public rights may exist that are not obvious on the ground. Prospective developers are also advised that the public rights of way questions on a local land charge search are optional, and will only have been answered if their legal representatives asked for them.

Rights of way that cross new development sites must not be obstructed, but should provide direct, secure and visually attractive routes. Opportunities should be taken to extend the current network by the provision and/or improvement of links to the estate or the wider public rights of way network, with a specific emphasis on the provision of multi-user routes (pedestrians, cyclists and horse riders where appropriate).

If a public right of way is identified on a proposed development site the developer should endeavour to preserve it along its existing route, and preferable retain it as a route segregated from vehicular traffic (i.e. not form into the carriageway layout of the development). If this is impractical then the developer may elect instead to apply for it to be diverted, or in exceptional circumstances extinguished. This is done by an order under the Town and Country Planning Act 1990 or the Highways Act 1980. Developers are however, advised that such orders are open to public challenge, possibly leading to public inquiries, therefore the Council cannot guarantee the success of any application or subsequent Order. Legal Order proceedings may result in substantial delays to developments because until such a time as Orders are confirmed the original path must remain fully open, available and undisturbed. Failure to do so may result in criminal proceedings and/or development works being substantially delayed or even stopped.

The Councils' Public Rights of Way Officers will be pleased to offer help and advice.

10.5 Pedestrian Crossing Points

Provision should be made at all road junctions and access points for pedestrians to continue along major roads with the minimum of inconvenience. Where the junction layout provides a pedestrian refuge, dropped kerbs must align with the refuge. At all other junctions the crossing point should normally be located at the desire line for pedestrian movement, but at wide junctions the crossing point should be located at the tangent point to the radius, ensuring a 'See/See' situation exists for all road users.

Flush dropped kerbs must be provided at all junctions and crossing points. Tactile paving must be installed for the safety of the visually impaired; where the crossing point is across a grass verge and thus difficult to discern, tactile tails must be provided. See Appendix 20 for a typical layout.

10.6 Cycling

Promoting and encouraging cycling as a mode of travel is one of the main aims of the City's Local Transport Plan, and to this end has established a 'Cycle Network'. The developer can do much to support this strategy by providing good secure and covered cycle storage (behind a locked door) at home, and safe and direct routes both within the development and to link with the existing cycle network.

Cycle routes are either:

- **Cycleways -** These are adjacent to the carriageway.
- **Cyclepaths -** These are not related to the carriageway and may lead to other parts of the housing area, public rights of way or the cycle network.

Estate road layouts must therefore be designed to encourage cycling and this can be achieved in a number of ways;

- low vehicle speeds on estate roads;
- cycle friendly traffic calming;
- dedicated cycle routes;
- joint use of pedestrian and cycle ways;
- low vehicle speeds on estate roads;
- and the prevention through design of indiscriminate on-street parking.

There also needs to be an awareness in the overall design of the estate, that children play on bicycles adjacent to their homes, and visit friends, shops, schools and community facilities, and are not therefore as alert to the dangers, as responsible road users. It is imperative therefore that estate roads are designed to create a low speed environment, and routes are safe, direct and secure. The provision of Safer Routes to Schools should be addressed early in the design process, and contact with the Council is strongly recommended. The recommendations for pedestrians as outlined in paragraph 10.2 equally apply to cycle routes.

10.6.1 Cycleway and Cycle Path Requirements

- Cycle lanes on the carriageway of a proposed adopted road should be 1.2m wide (1.0m width minimum);
- Cycle paths away from the main carriageway should be 3.0m wide, with a radius on links to a minimum of 6.0m (2.0m where cyclists are expected to give way);
- A desirable maximum gradient of 3% is recommended, but gradient up to 5% will be permitted for lengths up to 100 metres, and 6-7% for short lengths of up to 30 metres.
- A headroom of 2.4 m is required for up to 23 metres, and 2.7m for lengths over 23 metres.
- Restricted headways may be provided up to a line 0.5 metres from the edge of the carriageway;
- Where subways are to be provided, their design for joint use is likely to be appropriate.
- All dropped kerbs used by cyclists should be flush;
- Gulley grates must not have slots parallel with the direction of movement;
- The forward visibility for cycles should be a minimum of 20 metres on gradient up to 2%, and 26 metres for gradients over 2%;
- Where cycle paths intersect other routes the following visibility splays will be required:

	Pedestrian Route (metres)	**Cycleway (Metres)**
Pedestrian Route	2.0 x 2.0	2.0 x 2.0
Cycle Route	2.0 x 2.0	2.0 x 15.0 (min)
Vehicular	2.0 x 2.0*	2.0 x 30.0 (min)**

* Barriers may be required, or a landscaped verge
** On Local Distributor and Major Access Roads, special crossing facilities may be required.

The provision of short lengths of cycle ways and cyclepaths in the vicinity of schools, shops and neighbourhood centres should also be considered. The Councils 'Cycle Officer' should be consulted on the provision of all separate cycle routes.

10.6.2 Cycle parking

Cycle parking needs to be provided for both long and short stay use, and more conveniently located than car parking spaces (except disabled). See Appendix 22 for minimum provision.

Where individual properties are concerned then the cycle parking should be secure in a locked covered storage area. If permanent structures are not provided, then the internal minimum dimensions of garages (integral or separate) should be 750mm wider or 1.0m longer.

In larger developments such as flats and apartments, then undercover and secure storage must be provided in units of 10 cycle parking places, preferably 'Sheffield' type racks. If these can be overlooked, it will ensure an element of neighbour policing, but the unit must not be allowed to dominating the space.

Outside development blocks, casual cycle parking shall be placed close to the entrance door, by the use of 'Sheffield' type racks, and undercover where practical.
The recommended and minimum dimensions for layouts using 'Sheffield' type racks is given in Appendix 21.

10.6.3 Shared facilities

Where a cycle route follows the line of a formal highway, the developer will be expected to make proper provision for this on the carriageway, where the vehicle flow exceeds X vehicles per hour a separate with-flow cycle lane will be required. Shared facilities on the footway will not be accepted as a substitute.

Wherever footpaths or cyclepaths are provided away from the main carriageway it is almost certain that the routes will form a dual purpose, and this should be acknowledged from the beginning. To reduce future antagonism between the users it is recommended that these routes should be designed as shared facilities. The shared use of footpaths by pedestrian and cyclists is feasible up to a combined pedestrian/cycle flow of around 200 persons per hour. Above this figure or where the path will form part of a wider network of cycle routes a separate or segregated cycle facility should be provided. See Appendix 22a for typical layouts.

Recommended width and requirements:

- 3.0m for unsegregated shared use with pedestrians;
- 3.5m for segregate use with pedestrians and as part of a pedestrian or cycle network (2.0m for cyclists and 1.5m minimum for pedestrians) A minimum of 3.0 metres must be provided for shared use (1.8m for cyclist and 1.2m for pedestrians delineated by a solid white line, 150mm wide);
- where minimum widths are used the routes should not be obstructed by posts, poles lamp columns, cabinets etc;
- any new pedestrian/cycle bridge should have a minimum width of 4.0 metres;
- where routes are bordered by walls an addition 0.5 metre strips will be required on both sides. These should be hard landscaped to avoid future maintenance;
- Shared facilities should have a central delineator strip 150mm wide (colour white)

10.7 Designing for Emergency Services Access

It is essential that emergency vehicles can gain rapid access to any incident occurring within a housing development for obvious reasons.

To facilitate this at least two points of access are required to residential roads serving more than 100 houses. The use of the loop roads often provides the best solution.

Where culs-de-sac serve between 50 and 100 dwellings a separate access for emergency use should be provided.

All routes used for emergency access must be a minimum of 3.7 metres wide and any bends should have a minimum radius of 9.0 metres. They should include footpaths and cyclepaths in the 3.7m width. Minimum headroom should be 4.5 metres. The construction of an emergency link must be sufficient to carry a fully ladened fire tender, this may be achieved by providing an adequate foundation below a grassed surface.

Some of the fundamental requirements to ensure rapid unobstructed access to all locations are as follows :-

- street names and numbering must be uncomplicated and clearly marked so that properties can be quickly identified;


- the layout should be designed to enable emergency vehicles to get reasonably close to all properties, and should be adequate in every way to ensure that satisfactory access is possible;
- Fire Service pumping appliances should be able to get within 45 metres of the entrance to all one and two storey premises and to within 35 metres of the entrance to three and four storey flats and maisonettes. Any building in excess of these heights should be the subject of special discussions with the County Fire Officer.

Fire Prevention Note 1/70, CP3 Chapter 4 Part 1 and *'Traffic Management Policy'* and *'Respark Formula'* published by the North Yorkshire Fire and Rescue Services should be referred to for a fuller description of fire service requirements. The Developer must ensure that their proposals are fully in accordance with the County Fire Officers requirements.
Emergency links can be a source of nuisance and a maintenance liability and should be avoided if possible or only used in exceptional circumstances, since the housing layout should be designed to allow easy access for emergency vehicles. The use of lockable bollards to deter unauthorised use can be a hindrance to the rapid response and create an ongoing maintenance liability.

10.8 Public Transport

Promoting the use of public transport is an important element in the Council's Local Transport Plan, and is particularly important for destinations outside the local area. With the introduction of 'Easylink' services, better penetration of residential areas is now possible, and should be encouraged; the increased use of public transport is a fundamental aspect of sustainable development.

Figure 22 – Public Transport

When planning new development, requirements for bus services must form an essential part of the initial design considerations. Consultation with local operators and the Public Transport Officer of the City Council will help to identify what provision needs to be made within a residential area for bus services. New developments should have easy access to a bus network and the service should, ideally, be operational when the first residents move in. Early establishment of bus routes is often difficult due to the time scales of final road construction, nevertheless there are ways in which a developer can have a strong influence:

- by the provision of well designed through routes or loop roads, rather than culs de sac;
- by providing adequate road width 6.0 metres minimum and (where appropriate) turning space for buses;
- provide temporary turning facilities when estates are developed in phases;
- endeavour to ensure that all houses are within 400 metres of a bus stop on an existing or proposed bus route (using footpath links where required);
- identify suitable locations for bus stops and shelters.

Bus stops should be located where :-

- it is safe for buses to stop with minimum disruption to traffic flow and where movement of buses to and from the stop is not likely to be hindered by parking;

- passenger access is convenient and safe;
- away from residential and other sensitive frontages;
- they are overlooked by residential property but not over intrusive;
- of necessity bus stops will often be close to junctions, and therefore care needs to be exercised to ensure that they do not interfere with vehicle movement and be on the down side of the junction. Bus termini must not be adjacent to junctions unless special provision is made.

The spacing of bus stops must be balanced to take into account maximum walking distances on the one hand and the need to avoid unnecessary delays to buses on the other. On average bus stops should be sited at between 0.3km and 0.5km spacing.

Where footpaths are located away from carriageways they should be focussed towards bus stops. Bus stops on opposite sides of a two lane carriageway should be located so that buses stop tail to tail and move away from each other. Staggered bus stops should be 45m apart. Care must be taken in siting bus stops so as to avoid nuisance and loss of privacy to residents. Further guidance on accommodating buses is given in Roads and Traffic in Urban Areas.

Residents find bus stops convenient and safe to use if they are coupled with telephone kiosks and post boxes, with shelter provided from wind and rain, litter bins and good street lighting. At bus stops the kerb height should be raised. This allows buses to stop within a few millimetres of the kerb without damage to tyres, and provides a convenient height for passengers boarding and alighting from buses.

Bus lay-bys may be required on distributor roads but not generally on estate roads unless to overcome potential problems of safety or hindrance to traffic flow at particular locations. The policy of the Council to use raised 'easy access' kerbs at all bus stops makes it difficult for buses to approach the kerb edge in a layby and therefore discussion with the Highway Authority over the provision and design is very important. A typical 'half' bus layby is shown in Appendix 22.

The developer should consult the Local Planning Authority the Highway Authority and bus operators on the design and siting of any bus shelters. The Local District Council and Parish Council should be consulted regarding the future maintenance of these facilities. A paved area is required for boarding and alighting and there should be street lighting close by.

More detailed guidance on designing for buses is described in *'Keeping Buses Moving, Local Transport Note 1/91'*, Department of Transport 1991.

Bus facilities should therefore contribute to the overall attractiveness of any residential environment by the selection of good quality street furniture and appropriate landscaping.

11. Parking

11.1 General

The objectives of the Local Transport Plan are to discourage journeys by private car and encourage the use of other modes. Nevertheless it is accepted that the majority of residents still wish to own a car and use it for those journeys and visits for which other modes are not convenient or available. It is imperative therefore that proper and adequate provision is made for the parking of vehicles, up to a maximum of 1.5 cars per residential unit, in the built up area, in accordance with the guidelines set down in *PPG 3 – Housing*.

Parking arrangements need to cater for residents' vehicles, visitors and service vehicles, and on a long and short-term basis. If adequate provision is not made, then this results in indiscriminate parking on the highway with the resulting problems of obstruction, danger to other road users, particularly children, and damage i.e. footways, landscaping and boundary treatment.

Proper provision for parking must form an integral part of the design process, and it is not merely sufficient to meet the parking requirements by allocating 'left over' areas of land for this purpose. It is a shame that attractive property in a well thought out estate can be lost through unsightly parked vehicles on the highway through lack of forethought.

Experience has shown that drivers tend to park as close as possible to the entrances to the houses which they visit, and if provision is not made, vehicles will still be left at the most convenient place for the driver with the obvious problems to other road users. Safe and convenient parking must therefore be provided in the following manner:

- garages and hardstanding within the dwelling curtilage;
- grouped garages or hardstanding areas immediately outside the houses or flats they intend to serve, and be over looked;
- visitor and service vehicle parking areas on the highway in close proximity to the properties they are intended to serve. Where a road serves more than 300 dwellings visitor parking should be provided clear of the carriageway.

The on site parking requirements for different dwelling types and size are given in Appendix 23.

11.2 Off Street Parking

Parking or garaging within the private curtilage of a dwelling has the advantage of being accessible, secure and easy to supervise, but can have the disadvantage of being visually very dominant, and detrimental to the street scene. Care must therefore be taken in the siting of drives, hardstanding and garages, but they can be assimilated by careful design. The minimum dimensions for drives/hardstandings and garages and are given in Appendices 23 and 24. However, if there is no separate pedestrian access to the property the width should be 3.2 metres.

The Design Guide recommends a move away from conventional layouts with the traditional 'building line' to one of an informal nature where structures, buildings and landscape add interest and variety. However, it is important to ensure that drivers emerging from a single dwelling drive do so in a safe see/see situation, thus safeguarding pedestrians and other road users. Appendix 25 provides recommended visibility splays for vehicles emerging onto a footway or carriageway, and makes allowance for the fact that the majority of drivers reverse onto the highway.
The layout of grouped parking areas must ensure that parking spaces are more convenient for the properties they are intended to serve than the adjacent public highway and are secure and attractive; see typical layouts in Appendix 26. Hence the design of parking areas should:

- Provide spaces immediately outside or within 20 metres of the property, and be overlooked by the dwellings they are intended to serve;
- Provide for landscaping and trees to reduce the visual impact of large parking areas;
- Use surfacing materials that add variety and interest.

Several suggested garage layouts are given in Appendix 27 but the use of such arrangements should be viewed with caution, as they can be intimidating for some and a source of vandalism and antisocial behaviour. In fact such garaging is only used for long stay trips; indiscriminate parking often results, causing damage and an unattractive street scene. The developer will need to demonstrate that such garaging arrangements are safe, secure and convenient to use, with well-lit and direct footpath connections to the properties they serve, and be overlooked. In view of their unsuitably for short term use the Highway Authority may insist in a higher provision for visitor parking.

11.3 On Street Parking

The off street parking standards are intended to ensure that sufficient spaces are provided to accommodate residents' parking and longer-stay visitor parking. In most circumstances, however, causal callers, service and delivery vehicles will park on-street along with short-duration parking by residents and visitors.

The requirement for a minimum carriageway width of 5.5 metres on access roads is intended to ensure that casual and short-stay parking can take place outside properties. Locations where further consideration will need to be given to the effect of parking on-street are:

- at turning areas at the ends of culs-de-sac;
- close to junctions or where visibility may be obstructed;
- on shared-surface roads.

Parking within turning areas is regularly observed in existing developments, preventing the area being fully used for turning. Where a turning head is likely to be used for parking or where more convenient casual parking for properties accessed from a turning head is not provided, then space for parking clear of the basic turning area should be provided. This parking space should be delineated from the turning area by distinctive surfacing. The location of accesses to drives can be used to control where parking takes place.

Where a shared vehicle/pedestrian surface is provided it is vital to design to minimise indiscriminate parking, because such parking can seriously hinder or inconvenience pedestrian movement. Parking areas for casual parking must therefore be provided clear but contiguous with, the highway and be clearly delineated from it.

One space per four properties should be provided for casual parking. On 5.5 metre wide access roads this may be provided within the minimum width. On shared surfaces and access roads with less than 5.5 metre minimum width, casual parking spaces may be contiguous with or away from the highway. However:

- A space should be available within 20 metres of all properties; and
- Where casual parking is provided away from the highway, casual parking must be more convenient for the properties served than parking on the highway.

Where parking areas are at right angles to the carriageway, and contiguous with it, the parking bays must be 2.4 metres wide and 4.8 metres long. There must be 6.0 metres in front of the bay to allow access and, where such

parking areas are bordered by a footway, then measures will be needed to protect it from the overhang of vehicles, or the footway widened by 800mm.

Where parking is parallel to the carriageway, then bays need to be 6.0 metres long and 2.0 metres wide, against a kerb, if they are adjacent to a wall then the bays must be 2.4 metres wide. Parking spaces allocated for disabled persons use must be 3.6 metres wide.

Car parking at right angles to the kerb must not exceed ‘banks’ of more than 5 spaces without intermediate landscaping i.e. trees and shrubs; and where parallel to the kerb they must not exceed 3 spaces.

Parking spaces must be delineated by stone setts or brick paviours dependent upon the type of base materials used. Painted or thermoplastic white lining will not be accepted.

Appendix 28 illustrates some of the means available to provide for casual parking.

Parking spaces located contiguous with the highway and constructed in accordance with the Highway Authority’s requirements will be adopted by the Highway Authority.

12. Services - Location, Paved Margins and Verges

12.1 General

As well as making provision for pedestrians and vehicles, most residential roads and footways provide routes for statutory and other services underground. These services are an essential and integral part of the layout and their efficiency and safety in use are vital.

When considering service provision for housing estates the following principles should be followed:

- a balance should be struck between housing, planning, highway and utility interests;
- all parties involved should work together to ensure services become an integral part of the initial design process;
- Residents' requirements for statutory services should be met efficiently and economically;
- the risk of damage to utility plant, apparatus and underground should be minimised.

12.2 Public Utilities

Public utility apparatus on residential estates should be provided in the most economic manner consistent with consumer convenience, ease of maintenance and good appearance. The developer must consult with the statutory undertakers and co-ordinate the location of mains and services during the initial design process. The developers should obtain copies of the National Joint Utilities Group publications:

- NJUG Publication No.7 (Dec.1986) *'Recommended Positioning of Utilities, Mains and Plant for new works*'.
- NJUG Publication No 10 (April 1995) *'The Planning, Installation and Maintenance of Utility Services in Proximity to Trees'*.

12.3 Location of statutory undertakers' services

The statutory undertakers prefer to establish routes for their apparatus within areas adoptable as public highway or in land to be maintained by local authorities. To minimise installation and maintenance costs and to avoid future disruption, apparatus will normally be laid in footways adjacent to the carriageway. The standard positions for services are shown in Appendix 29. Electricity and telephone cables must be laid underground for aesthetic reasons.

Figure 24 – Service margin

Trunk mains laid to large radius bends or requiring special protection should be accommodated within the local/distributor network, and should only be located within the residential areas if alternative routes are unavailable. Installations such as sub-stations and gas governor houses requiring heavy vehicle access should be located on local distributor or major access roads outside the limits of the public highway. They should be provided with sufficient parking to accommodate service vehicles clear of the highway. Some utility apparatus functions more efficiently if looped circuits can be installed, where culs-de-sac heads are linked this may provide suitable routing opportunities.

The siting of water valve boxes, hydrants, post office mail boxes and telephone boxes requires special attention and must be co-ordinated with the Statutory Undertakers and the emergency services. For aesthetic reasons all

surface boxes must be laid parallel to the line of footways/footpaths, and paved margins.

Developers should take account that services are usually laid on the side of the road fronting the most properties, and that it will be their responsibility to provide cross-carriageway ducts at agreed locations and to establish means of readily locating the duct ends.

In the event of the routes available in the adoptable highway being unsuitable, the developer must provide other land as necessary and arrange for satisfactory easements. Neither the Highway Authority nor the Local Authorities have the resources to maintain land that is required solely, for public utilities.

Where services are laid in land outside the control of the Highway Authority or Local Authority, any covenant required should be negotiated between the developer and the undertaker.

12.4 Verges and Paved Margins

On Local Distributors and Major Access Roads where verges are provided, the Public Utility companies will be discouraged from using them, so as to provide an area for tree planting and landscaping. This is to prevent large vehicular corridors being visually sterile.

If for some reason it is inevitable that some services need to be placed in verges, then the verge should be widened to accommodate them, if this is not practical then additional protection may be required to prevent root penetration of ducts etc.

Where services are to be laid in highway service verges which are contiguous with open plan gardens, the Statutory Undertakers may wish to draw specific attention to the status of the verge as a highway and to take additional measures to protect their apparatus. They may request a covenant in the conveyance to each purchaser drawing attention to the presence of their services. A recommended form of covenant is given in section 17. Any proposed changes to the form of the covenant should be agreed with the Highway Authority. As a further safety precaution, Statutory Undertakers may wish to attach a notice to each meter board warning against digging or planting in the verge and indicating the position of services.

Where paved margins (clearance strips 0.5 metres wide) are provided they must not be used for mains and cables; the exception being for household services and the provision of street lighting.

12.5 Cable Television apparatus

The developer should ascertain if a Cable Television Franchise has been entered into for the area. Should a franchise exist then the developer should ensure that all necessary ducts are accommodated.

12.6 Co-ordination

The estate layout design must reconcile the, sometimes conflicting, requirements of highway authority, public utilities and local authority, always bearing in mind that the main objective of these standards is to create a better housing environment.

Certain species of trees and shrubs in close proximity to public utilities should be avoided since their roots will cause damage, and the plants themselves will be damaged by excess excavation. Services planned near existing trees or proposed planting areas should be protected by root barrier materials or have sealed joints to prevent future root penetration.

Where possible the layout of several services should be co-ordinated and combined to reduce space, excavation and disruption. However, care must be taken to ensure the services do not conflict.

Developers must provide the public utilities with their proposals at the earliest possible stage, and the designers must consider services as a basic design element.

Each Statutory Undertaker will need copies of plans, sections, drainage and sewerage details including particulars of any underground structures or apparatus. These plans should show “start” and “finish” dates of construction phases. Street names and house numbers are needed as soon as possible. Other matters on which agreement between the developers and the undertakers should be reached are:

- programming cut-offs from any existing premises to be demolished;
- undeveloped land protection and diversion of existing service;
- providing services when routes from supply points cross;
- termination points in dwellings, entry details and meter reading facilities.

12.7 Public Sewers and Drains

The location of Public sewers and drains must be agreed with the appropriate Water Authority or the City Council who will normally require adoptable sewers to be laid within highway limits. In the case of drains catering solely

for the discharge of surface water from prospectively adoptable highways, the highway authority should be consulted.

Where practical, particularly on bends, manholes should be provided in roadside verges; this will provide a safer environment for those who need to use them, and be less disruptive for users of the carriageway.

12.8 Shared Private Drives

Developers are reminded that these will not be adopted but, dependent upon the position of the properties they serve, the statutory undertakers may require to lay main and cables, with their associated access boxes, within them. Proper and adequate protection will be required and they may also acquire a covenant in the conveyance to advise purchasers of their presence and need for access for future maintenance.

13. Security

13.1 General

Crime and the fear of crime are major social problems that affect all areas, and many studies suggest that housing layout design can play a part in minimising risks. Whilst there are many advantages in providing more vehicular access to an estate, and making it more permeable for pedestrians and cyclists, it does however, provide offenders with escape routes and a level of anonymity as they become indistinguishable from legitimate users.

The security of property, private areas, vehicles, and personal movement is now a major issue for residents and must be a primary concern in layout design. Security will be enhanced by:

Figure 25 - Natural surveillance

- Designing to provide 'natural' surveillance of roads, footpaths/cyclepaths play areas and parking areas from adjacent properties

- Providing adequate levels of estate lighting;

- Avoiding enclosed spaces, blind spots' or high-risk areas of shade in the layout;

- Using appropriate landscaping; e.g. thorny/prickly species against walls and fences to deter intruders;

- Include features, at the entrance to estate roads, such as changes in colour, texture, width and materials to create a symbolic barrier giving the area beyond an impression of a neighbourhood environment;

- Designing footpath links that are short and as open as possible with no hidden corners;

- Designing groups of houses as identifiable elements where local access predominates and extraneous movement by vehicle and on foot is minimised or precluded.

The last principle above complements other relating to vehicle flows and speeds. However, it can sometimes conflict with the principle of providing convenient and direct access for vehicles, pedestrians and cyclists with residential areas.

One common instance of this conflict relates to the practice of connecting cul-de-sac heads with pedestrian/cycle routes. These links can be beneficial to pedestrian and cyclists where the routes along the road network would be indirect and inconvenient. They can also provide for emergency access where appropriate. Such links are sometimes perceived by residents and police as reducing security by providing ‘escape routes’ and in many areas residents ask for such links to be closed, however where dwellings are orientated to overlook the links these problems can be reduced or eliminated.

Wherever possible car parking should be provided within the curtilages of dwellings, but where this is not practical, they should be close to the owners property and overlooked.

Where communal car parking is provided it must not be remote, unsupervised or out of sight of the building occupiers, otherwise the vehicle owners will not use it. They will choose to park on the access road causing obstruction and probable damage to landscaped areas and verges.

When designing the landscape for communal car parks, care should be taken not to obstruct the natural surveillance from buildings, and public areas.

Early consultation with crime prevention officers of the police will identify the crime potential with regard to specific development proposals, and hence the risk associated with this and other layout features. Careful design will be

required to overcome the perceived disbenefits with regard to security and produce safe, convenient and attractive pedestrian and cycle links.

Developers should be aware of the joint ‘Secure by Design’ initiative by the Local Authority and the Police, and the benefits obtained from it. Details and advice can be obtained from the Police Architectural Liaison Officer.

14. Landscaping

14.1 General

Careful attention to hard and soft landscaping at the outset plays a fundamental part in achieving an attractive housing environment. Too often they are an element left out of the design process until other constraints make implementation of a worthwhile scheme impossible. A good landscaping scheme can 'lift' designs by creating a varied, stimulating and satisfying living environment. The opportunity should always be taken to incorporate existing mature soft landscaping in any new development.

The introduction of a theme of street design or landscaping can give a development or area an individual identity. The theme can be a classical form, reflect local characteristics or be an original creative design. The entrances and main areas of movement will particularly benefit from a strong theme with which residents and visitors can identify.

Developers are reminded that the responsibility of creating an acceptable scheme lies in the first place with them. An attitude of 'you tell us what to do and we will do it' is unacceptable, as time and resources cannot be made available. The employment of professional expertise is likely to pay for itself not least in the saving of valuable time.

A fundamental component of the design of the residential environment is the provision of plants, ranging from simple grass planting to retaining fine trees. For the most part, the landscaping of a development will lie outside the highway and general landscape guidance is outside the scope of this guide. However, there are a wide range of landscaping opportunities within the highway which may be exploited both to enhance the highway and to complement the overall design of the development.

14.2 General Principles

The landscape design should include a brief, setting down the principles and aims of the scheme, this shall encompass the entire site, rather than an attempt a piecemeal approach and must involve an assessment of adjacent development and landform. Where an estate adjoins an older development or open countryside, landscaping should seek to integrate the new works into

the locality by the choice of appropriate plant material and by the creation of new landscape features, taking advantage of existing contours or features.

It is not necessary to design fussy details in order to produce an attractive scheme. A simple design with quality detailing often creates the most pleasing impression. The careful use of planting can be especially helpful in defining and giving character to the space associated with it. Attention to planting and the use of interesting surface materials can make the highway environment pleasant to look at and use.

The particular functions of highway trees and planting are to:

- Give the overall design natural scale and form;
- emphasise the character of the chosen highway layout;
- provide contrast to hard surfaces and visual amenity;
- reinforce enclosure and narrowing;
- direct pedestrian flow;
- complement wider landscape design;
- preserve existing site features; and
- reduce noise, air pollutants and provide natural shade

The preferred planting scheme should comply with the following:

- Planting shall be no higher than 0.5m within 1m of the surfaced area;
- If directly adjacent to a footway/footpath the plants shall not be of a thorny species. Thorny species may be used further back in a planting bed to prevent trespass;
- Ground cover planting up to 1.0m high, combined with advanced nursery stock trees (clear stemmed up to 1.8m), is the preferred approach to planting in an urban situation, in order to maintain sight lines and psychological safety for pedestrians;
- Similarly, medium and large shrubs should be spot planted as specimens. Large areas of shrub cover should be avoided, because these can cause security problems and harbour anti-social behaviour ;
- Planting should require little maintenance. Therefore, unless part of a hedge, shrubs should not be planted in locations that will necessitate regular pruning to keep them away from areas use by the public.

14.3 Pre-development planting

Where a proposed development will dominate a landscape by virtue of its visual prominence, provision for minimising any negative effects will be required, this may involve:

- pre-development ‘infrastructure’ planting; the species should reflect the vegetation of the surrounding environment where appropriate, and the aim should link the new development with its surroundings;
- alterations in topography; this may be a useful means of increasing the effectiveness of planting or in producing a variety of landform. It must not however, be seen merely as a technique to dispose unwanted spoil.

14.4 Services Verges

These should be grassed or planted with approved shrubs.
Shrubs are particularly suitable where grass cannot readily be looked after by residents, for example where a verge joins a screen wall. Adopted service verges must be clearly defined on the ground. Where there is no identifiable boundary between the service verge and a private curtilage (for example, in an “open plan” layout) markers of a design acceptable to the Authority should be used. Measures should be taken to ensure that service boxes can be easily identified in planted verges.

No trees may be planted in service verges within areas which will be adopted highway, nor within 1m of a route for major underground service or sewers. Care must be taken when choosing species of shrubs for planting within service verges to ensure a shallow root system thus avoiding potential danger to services.

14.5 Visibility Splays

These areas should be grassed or planted with approved shrubs and form part of the adoptable highway, any such planting must not exceed a mature height of 600mm above the channel on all residential roads. Where footways are provided these should follow the back of the visibility splay. The planting of trees within a 2.4 metres setback visibility splay will not be permitted. At greater setbacks, trees may be permitted for example to retain mature trees or to continue avenue style planting where the species has a narrow girth and a minimum clear stem of 3m to the crown. In these instances the visibility setback should be extended to compensate for the visibility obscured by the tree.

14.6 Other Areas

Areas of amenity, landscape planting, play areas etc. will not be adopted by the Highway Authority nor will grass verges of less than 900 mm in width will not be adopted, and the Developer must therefore make suitable arrangements for their future maintenance.

However, where planting can be shown to relate to a particular highway feature or function (e.g. traffic calming) it may rank for adoption by the Highway Authority. Landscape planting specifically for highway purposes may be justified on Local Distributor roads where the public pass and re-pass frequently. On these, road verges may be 3 metres wide (excluding footway if provided) in order to accommodate planting. Nevertheless, the general principle of keeping verge widths to a minimum is emphasised.

Angles formed by walls, fencing and hard landscaping can be unappealing and create maintenance problems. However, where planting is used effectively, these 'dead' areas can be transformed, and if the planting is carried through to the highway verge, it can break up to linear appearance of the road.

Tall dense shrubs or particularly thorny planting species are not acceptable immediately adjacent to pedestrian/cycle routes.

14.7 Materials

The quality and variance of hard landscape materials such as surfacing, kerbing, paving, combined with landscaping including trees, shrubs and grass will help create the character of the area. An attractive varied landscape can provide a positive sense of identify. It can reduce the predictability of the design in different areas and in different streets.

14.8 Trees

The species of trees selected should not cause damage to adjacent pavings, buildings or services underground or protection should be provided. Paving design and tree species should be chosen together, with non-slip paving used under trees to reduce slip hazards in autumn. In addition the trees selected should not create droppings that form a slippery surface for pedestrians, or could cause damage to the paintwork of cars parked beneath. Suitable tree species should be selected for their site surroundings taking into account their ultimate crown size and form.

Trees should be planted at least 1 metre back from the carriageway or footway edges within a minimum 3 metre verge to afford clear passage to all highway users without the need for extensive future lopping.

Tree pit construction should ideally have root barrier material or root directors included to help prevent physical lifting of the surrounding surfaces. There design should prevent surface water run-off draining into the tree pit, as in winter de-icing salt water run-off will contaminate the soil and kill the trees.

Trees planted within the highway verge will generally be single specimens planted as standard or extra heavy standard stock. A list of trees that are generally suitable for roadside planting is set out in Appendix 3. The trees are categorised by suitability for narrow verges (over 3.0 metres) and wider verges (over 6.0 metres). The list is not exclusive and Developers are advised to discuss any proposal with Officers of the Council. Other deciduous trees may be considered favourably depending on such factors as bulk in maturity, longevity, period in leaf, and root behaviour.

Some species of tree have many varieties and cultivates, including those having particular characteristics required for trees in confined spaces. These varieties sometimes have the additional advantages of being less vigorous than the original species.

The selection of trees should relate to the wider style of the overall landscaping scheme. While there may be scope for ornamental stock in urban or suburban settings (e.g. Prunus Serrulata – Japanese Cherry), more use of native or well-established forest and hedgerow trees would usually be sought in the rural location (e.g. Prunus Avium – Gean/Wild Cherry).

14.9 Shrubs

Appendix 3 contains a list of shrubs which are suitable for planting in highway verges. Whilst these are low growing there may be opportunity to plant larger shrubs outside visibility splays and service verges where it is desirable to create a sense of enclosure. However, species that will grow above 1.0 metre will not be favoured.

Shrubs should be massed in beds where possible: complex designs create maintenance problems.

14.10Grass

The correct selection of seed is important to ensure that the grass species will suite the type of soil, function and maintenance requirements of the area ‘Flat’ areas must not be flat or dished, unless the design incorporates land drains, but should be domed slightly. For maintenance reasons the maximum gradients of slopes should be 1 in 5 with a 500mm minimum width transition gradient adjacent to level areas and hard surfaces. Grass should not be laid hard up against vertical structures as mowing against them is impracticable.

A mowing strip (minimum width 225mm) should be provided to obviate the need for an additional expensive edging operations. In addition potential obstructions such as fence posts, sign posts and lamp posts should be sited in areas of paving or be surrounded by mowing strips.

Grass strips between footways and carriageways, and small and isolated shrub beds, whilst attractive if well maintained, are often neglected and overrun by vehicles. Where this cannot be avoided additional measures such as high kerbs or bollards set in a paved strip may be a solution. Such measures must take into account the proposed function, configuration and visual character of the road. In some situations it may be better to provide a hard textured surface instead.

The general level of grass areas should always be 10mm higher, (after settlement) than surrounding hard areas, including kerbs to facilitate mowing. Adequate access for mowing machines must be allowed. Where an area is large enough to justify using gang mowers, access of at least 3.0 metres width must be available and curves of not less than 5.0 metres radius provided.

Grass should not be used where heavy wear from pedestrians is likely. In these areas hard surfacing should be provided.

14.11Security

Security is of great concern to all, therefore landscaping should avoid creating high-risk areas of shade and screening. A sense of security is best achieved by limiting the planting palette to ground cover species, clear stemmed trees (upto 1.8 metres) climbers and grass. Co-ordination between the landscape design and street lighting layout, car parking zones and footpath/cycleway alignment is essential.

No trees or shrub species may be planted where at their mature size, they will obstruct street lights or road signs. Care should be taken not to create areas that give cover to those with criminal intent. To this end both hard and soft landscape should be kept below, or above, a height or density that would shield people moving around car parks. Tree planting is acceptable providing suitable species are chosen i.e. clear stems, non-dripping species and no heavy fruiting trees.

14.12Preservation

The Highway Authority recognises the desirability of retaining existing trees and hedgerows and should these be affected in anyway by the development the Local Planning Authority (LPA) must be consulted.

At the initial stage of a scheme an accurate tree and hedgerow survey should be made; the developer has a legal responsibility to check with the LPA before work commences on site for any Tree Preservation Orders, or

hedgerows protected by similar orders. The survey should include details of species, position, height, condition, canopy spread and girth of all trees. Trees and hedges in good condition should be considered for retention with new landscape proposals.

To ensure the survival of existing trees the following conditions should be observed:

- wherever possible, services should be arranged to avoid being under tree canopies or between their root systems, and new roads should be designed with care where they have to be in close proximity to existing trees. Where this cannot be avoided then trench-less-technology should be used to pass under the tree root plates to prevent damage. Particular care should be taken to ensure that the ground levels and drainage patterns adjacent to trees is maintained as existing over the area of their root systems or adjoining the base of their trunks.
- trees should not be subject to alterations in existing ground levels over the area of their root systems or adjoining the base of their trunks;
- all excavations under canopies should be carried out by hand and no roots over 25mm in diameter should be severed or damaged;
- no materials must be stored within the trees protected area (BS 5837)
- where buildings are to be placed close to large trees considerations should be given to the construction of a ground wall. The ground wall should be at an adequate depth in the ground and of sufficient length to safeguard the protected structure. The top of the wall need not be visible above ground level;
- it may be desirable to prune the crown of a tree, with the LPA's consent to make it safe and lift lower branches above vehicle and head height;
- the protection of trees and hedges during site construction is essential. Specific advice on tree protection will be given by the LPA; and
- Arboricultural Consultants should be employed throughout the construction process to ensure compliance with the above and where the health and safety of existing trees is to be safeguarded and monitored.

14.13Future Maintenance

The Highway Authority has strictly limited facilities for the maintenance of soft landscape and will not accept within the highway adoption boundaries planting which requires complex or specialised treatment.

Weed control in landscaped areas is essential for its good establishment, and this should form part of the initial maintenance plan, mulching with bark mulch or mats or geotextile sheet can help cut down the cost of weed control until the areas of landscaping become well established. To reduce the need for

weeding after planting, the planting beds should be fully prepared and treated before cultivation to remove or kill all perennial weed roots prior to planting.

14.14Land drainage

The topography and soil types prevalent in the York area mean that sites are very often difficult to drain, and prone to waterlogging. While these problems may have been addressed satisfactorily for agricultural use by the construction of herringbone pattern drainage systems and field ditches, subsequent development of such sites can often destroy such systems. As a result, problems are experienced by householders with waterlogged gardens for which there is invariably no solution.

Where a potential problem is indicated by the nature of the site, this should be taken into account, particularly in the design of residential developments. Solutions should be considered that would drain the land satisfactorily for its proposed use. This may require a land drainage infrastructure which would not be adoptable so prospective purchasers should be made aware of their liabilities. It should be noted that Yorkshire Water Services will not permit the connection of land drainage into their surface water sewerage systems.

15. Specialist Design Elements

15.1 General

The Highway Design Guide provides the Developers with most of the information required for the planning, design and implementation of roads, footpaths and cycleways. However, there may be elements of the design that effects a particular site and are outside the scope of this guide; the developer should therefore refer to the Bibliography in section 20 for further guidance.

The following three supplements to this guide are provided to assist the Developer in the design of the estates infrastructure concerning the main areas, and amended to suit the policies and requirements for the City:

- Construction and specification
- Street lighting
- Traffic signs and lines.
- Trees

15.2 Construction

The Civil Engineering Industry has produced nationally accepted standards for the construction of highway and drainage works. The Department of Transport's *'Manual of Contract Documents for Highway Works'* particularly Vol 1.

Specification for Highway Works and Design Manual for Roads and Bridges, is particularly relevant to York. Unless amended by the supplement to this guide the national standards will apply.

15.3 Street Lighting

Street lighting systems in accordance with the current British Standard (BS 5489) will be required on all roads, footpaths and cycleway to be adopted, and on any existing roads that may be modified to accommodate the new development. Details of the layout, specification and type of lighting to be used is covered in the supplement to this guide.

In conservation areas the style and fixing of lighting equipment will be specified by the City Council, and this may include decorative columns and lantern. Developers should contact the street lighting engineer for the Authority as soon as possible in the design stage to determine the requirements.
Consideration must be given to street trees and their future growth when positioning street lighting columns near to them to avoid unnecessary regular pruning operations. Tree roots must not be damaged during the installation of street lighting equipment.

It will no longer be appropriate to design lighting systems to 'footway standard'. However there may be exceptions to this in certain sensitive areas and therefore again the advice of the street lighting engineer must be sought.

15.4 Traffic Signs and Lines

Traffic signs and road markings play a very important role in road safety, but the wholesale use of them on minor estate roads lessens their value where there is a real need and leads to an over proliferation of signs and future maintenance liabilities.

The developer will be expected to provide all traffic signs and road markings as approved by the Authority that are consequent upon the development. It should be noted that this may involve signs and marking on the existing highway and occasionally with signing at some distance from the development.

Road markings and traffic signs will need to be in accordance with current edition of the Traffic Signs Regulations and General Directions 1994 and the 'Traffic Signs Manual' issued by the Department of Transport, unless amended by the supplement to this guide. The design, location and mounting of traffic signs should be in accordance with Circular 7/75.

When positioning traffic signs, careful consideration must be given to trees and their future growth to avoid unnecessary regular pruning operations. N.B. placing signs adjacent to certain species of trees that produce annual stem growth or have a weeping habit such as Limes or Weeping Willows will create an unreasonable maintenance issue. Tree roots must not be damaged during installation of signs.

16. Miscellaneous

16.1 General

The items in this section are important and relevant to the design of a new development but don't fit logically with the previous sections.

16.2 Refuse Collection

The City of York Council Directorate of Environmental and Development Services (DEDS) provides a refuse collection service and recycling facilities. The manner in which this service is provided will depend upon the area of the district in which the development is proposed.

Refuse points should be easy to reach for collectors, and adequate access and egress must be provided. If the design principles of this guide are followed the refuse collection vehicle should not have problems nor cause too much inconvenience to residents and other road users.

Where refuse is removed by sacks, then two refuse sacks and one sack of garden waste will be the normal collection rates. Sacks must be at the designated collection point by 7.00am on the day of collection. Properties more than 23 metres away from the edge of the public highway will be required to make special arrangements for the collection of refuse.

Many areas are now provided with 'wheelie' bins which are more convenient and have greater capacity. On collection days the wheelie bin must be placed at the edge of the property adjacent to the public highway or a designated collection point before 7.00am.

The developer should note that in the first instance they must purchase the 'wheelie' bin from the DEDS or provide one to their specification.

16.3 Street Cleaning

Street cleansing will normally be carried out by mechanical means, and the developer should therefore in the design of carriageways and footways avoid sterile areas which cannot be negotiated by mechanical sweepers.

Outside shops, schools and community facilities, bus stops and other areas where people are likely to congregate, the developer may be required to provide litter bins to a specific design. The developer should therefore contact DEDS to determine their requirements.

16.4 Salt Bins

Where roads, footpaths and cycleways with a gradient exceeding 1 in 15, or where severe bends together with gradients may cause localised problems the developer may be required to provide salt bins for public use. Such bins must be positioned so as to be clear of the paved area used by vehicles, pedestrians and cyclists.

Salt bins must never be positioned next to soft landscaping or trees as spilt salt will cause irreparable damage to the soil.
NB. Salt is highly toxic to all vegetation

The Highways Department should be consulted with regard to type, capacity, specification, location and enclosure of the salt bins required.

16.5 Street Furniture

A great deal of time and effort goes into the design of a residential development and some of this can be ruined by the lack of regard to the location of the street nameplates, telephone kiosks, utility service cabinets, litter bins etc.

Wherever possible street nameplates should be fixed to walls, lamp columns or property, where they are less likely to suffer from vandalism and generally makes for less clutter. However, where this is not practical they may be placed on two short poles on either side of the junction. Further advice is given in the *Technical Specification*.

Public Utility cabinets may have to be erected above ground so close liaison with statutory undertakers is required to ensure that they can be placed against walls or landscape areas, so that they do not occupy a prominent position in an open plan estate.

Where people are likely to congregate i.e. at shops, community centres or bus stops etc. these make an ideal opportunity to combine street furniture such as telephone kiosks, post boxes and litter bins in a structured way.

16.6 Street Naming

The Authority for street naming and numbering is the City of York Council (Building Control Section). Developers may offer suggestions for street names and reasons for the choice would be helpful to the Authority in reaching a decision.

Whether or not the developer wishes to suggest names for new roads he should, as soon as possible after receiving Building Regulations Approval, submit to the Authority the following duplicate plans to enable postal numbers to be allocated:

1. All roads and walks that require naming
2. The location of all new and existing properties
3. The front and rear access to all properties
4. The plot/unit numbers
5. The postal numbers or names of any existing properties incorporated within the development and served by new roads.

Developers should provide new street nameplates to the specification of the Local Authority in the positions notified to them when the street is named and before any properties are occupied.

Where a street is a cul-de-sac, this should be indicated appropriately on the street nameplate. Developers should note that a 'no though road' symbol to diagram 816.1 of the Traffic Signs Regulations and General Direction 1994 on a street nameplate is not appropriate for a cul-de-sac. Such symbols must only be used where there is no through road for motor vehicles, but alternative access for pedestrians and cyclists is available from the road.

It is essential that all Statutory Undertakers and Authorities are informed of postal numbers as soon as house construction starts for each phase of the development. This will help ensure that official records of new addresses do not need to refer to Plot/unit numbers with the subsequent confusion when the change to postal numbers takes place.

Developers will be expected to inform each purchaser/occupier of their postal address and to ensure that legible numbers are fixed in conspicuous positions at the entrance to each dwelling.

Developers and naming Authorities should have regard for the contents of The Department of Transport's Circular Roads 3/93 'Street Nameplates and the Numbering of Premises'.

17. Adoption of Roads and Public Areas

17.1 Adoption Policy

The policy of the City of York Council is that all residential development should be designed and constructed to the standards and specification of the Authority in order that the roads and footpaths may be adopted as publicly maintained highways. Any street serving five or more properties shall be capable of being laid out to a minimum standard and constructed in accordance with the City of York Council – 'Layout and Specification

17.2 Guide for Development Roads.

Apart from highway drainage, any other sewer under the highway must be subject to an Adoption Agreement with the Yorkshire Water Authority; a road cannot be adopted until the sewers have been vested.

This applies to all categories of access except those remaining as shared or private drives, and includes all signs, street furniture, street lighting, highway drainage, emergency links and road markings.

To assist Developers the City of York Council have produced a series of Highway Development Information Leaflets, and No's 2, 3 & 5 are particularly relevant to the adoption process;

No 2 – Outline of third party roadworks.
No 3 - Drawing requirements.
No 5 – Sec 62 & Sec 278 Agreements

17.3 Areas for Adoption

It is essential that land, structures and apparatus to be adopted are identified during the design stage in order to avoid misunderstandings and consequent delay. All land must be conveyed to individual occupiers, local authorities, statutory bodies or some other responsible authority. The future maintenance responsibility relating to trees, shrubs, verges and other planted areas should be established prior to a detailed planning submission.

17.4 Highways

The highway authority will adopt as highways maintainable at the public expense those roads and footpaths which are necessary for public access or passage subject to their being constructed entirely in accordance with the relevant specifications and built to the satisfaction of the Highway Authority. Such highways include carriageways, footways, cycleways and emergency links which are constructed in accordance with these standards and which are of real use to the general public.

Footpaths and cyclepaths that link the development to the pedestrian and cycle network and likely to be used by the public will also be adopted. The highway authority may also adopt areas of land which are necessary to ensure the stability of the highway, and other highway drainage features i.e. balancing ponds etc.

Highway verges, whether between the footway and the carriageway or adjacent to private gardens, will be adopted as part of the highway, although this does not mean that every highway needs a verge. Generally, highway verges should not be more extensive than indicated in Section 8, although adoptable verges on local distributor roads will be encouraged and considered sympathetically, to enable tree planting and landscaping to take place.

Planting of trees, shrubs and ground cover within adoptable highway areas must be agreed with the highway authority in respect of type and location prior to the approval of a detailed planning submission. Any trees to be adopted must be thriving and structurally sound and will be subject to a satisfactory Arboricultural report.

Planting/rockeries in service verges by house owners will not be permitted, and the developer should ensure that this is covered in the house conveyancing documents.

Where road humps and speed restraint measures are to be provided as part of a traffic calming scheme these must be in place before dwellings are occupied. In some instances this may involve the provision of temporary humps at base course level.

If Traffic Regulation Orders are required to ensure the adopted highway functions properly, or to prevent the migration of parked vehicles to adjoining highways or other areas, the developer will be expected to meet all costs of consultation, legal processes, and introduction (signs/lines/illumination etc.) of the necessary orders, before the properties are occupied.

17.5 Public Open Space

Proposals for the long term maintenance of amenity areas, play space and landscaped areas should be agreed with the Highway Authority before approval of the site layout; this can be done by the provision of a contribution under section 106, Planning Agreement. All planting must be guaranteed for an agreed set maintenance period to cover future maintenance and replacement of failed stock.

Areas of soft landscaping, other than highway verges and other areas relating to the Highways e.g. visibility splays, are not acceptable for adoption by the Highway Authority and should be in private ownership unless some other responsible authority agrees to adopt and maintain them.

17.6 Parking Places

Private parking provision must be located off the public highway. Parking spaces provided in lieu of garages or private drives for the regular parking of residents' cars will not be adopted by the highway authority. Such parking spaces must be either in private ownership, or in the case of group parking of garage courts, adopted by a responsible Authority as amenity space or controlled by a residents' association. Provision for private drainage shall be incorporated into the development; surface water will not be permitted to. discharge onto the highway.

In access areas, communal short term visitors' parking spaces which are contiguous with the highway, and which are clearly not for the regular short term use of any specific dwelling, will be adopted by the highway authority by agreement.

Short term waiting bays in Access Areas which are merely widened sections of the carriageway will be acceptable for adoption if they are not too extensive. Lay-bys adjacent to shops or community buildings will be accepted for adoption providing proper provision is made for traffic flow and safety. Bus lay-bys will be encouraged if agreement on their location can be reached at the design stage, and they may require Traffic Regulation Orders to ensure their proper use.

17.7 Adoption Procedures

It is expected that developers will make an agreement with the City of York Council under Sections 38, 62 & 278 of the Highways Act 1980. With this agreement, roads and footpaths are, on satisfactory completion following a formal maintenance period, automatically adopted as highway maintainable at the public expense.

Immediately a development receives Building Regulation approval, the Highway Authority requires a statutory guarantee that funds are available to complete the roads and footpaths to the satisfaction of that Authority. Therefore a Notice of Assessment in accordance with the Advance Payments Code, Section 219/220 of the Highways Act 1980, will be served in this respect.

Before construction begins the developer must either:-

- complete payment of the estimated cost of highway works in accordance with the Notice served under the Advance Payments Code; or
- enter into a Section 38/62/278 Agreements which provides a bond for due completion of the roads, and may require a 'one off' maintenance payment under sections 62/278 for new road features to existing highways if affected by the development

In either respect the developer must provide eight complete copies of the drawings and details of the proposed highway layout as follows:

i. a location plan to a scale not less than 1/2500.

ii. a layout plan to a scale not less than 1/500.

iii. longitudinal sections of all roads to a scale 1/500 horizontal and 1/100 (or larger) vertical. Levels on gradients to be at 10m intervals and on short vertical curves at 5m intervals (or as site conditions dictate). Road sections to include longitudinal sections of surface water and foul water sewers – invert levels, pipe gradients and bedding to be given.

iv. a typical cross section of the highway showing details of constructions, and all other associated details i.e. manholes, sewer trenches, pipe surrounds and backfill, in accordance with the typical detail drawings given in this guide.

v. cross-sections of the highway will be required at 30 metre intervals, to a scale of 1/50 where the adjoining site levels vary + or – 0.5 metres from the finished carriageway levels. The cross section must show details 3 metres beyond the proposed highway boundaries.

vi. All levels shall relate to Ordnance Datum (Newlyn) and the benchmark used shall be shown on the location plan with its value.

vii. All drawings submitted for approval must carry the following note; the design and specification shall in all respects comply with the current City of York Council – Layout and Specification Guide for Development Roads.

An example of the quality of drawings required are illustrated in Appendices 30 and 31 (typical road and drainage details, typical cross sections and block paving details, and the extent of the adoptable highway in an Access Court). A general section detail is also illustrated in Appendix 32.

If a developer wishes to construct an estate in distinct phases, the phasing should be clearly shown on his submission for approval.

If an early start to building is essential, developers must make an Advance Payment prior to commencing building work, which includes payment of the supervision fee. This can be replaced as soon as possible with a Section 38 Agreement. In this case, the Advance Payment is refunded with interest once the Section 38 Agreement is in place.

Developers are required to notify the highway authority seven days before of the commencement of any work on prospectively adoptable highways so that inspection and approval can be arranged. This applies to work under both Advanced Payment Code and Section 38 Agreements. Works not so inspected will not be adopted until proven satisfactory at the developer's expense. A composite plan indicating public utility apparatus to be laid or erected within the adoptable highway will be required. A supervision fee, to cover the Highway Authority's inspection of works on site is charged and must be paid prior to completion of the agreement.

The City of York Council has a standard form of Section 38/62/278 Agreement. The Plans, as referred to above, accompanying the agreement shows the road and footpaths to be adopted as public highway. The plan may be modified by mutual consent during construction but it will be necessary to substitute the revised plan into the Agreement prior to the adoption of the roads.

Public rights of way crossing land are protected by statute. They may not be obstructed by development until a formal diversion has been obtained. Development affecting such rights may be prejudiced if formal procedures under the provision of Section 257 of the Town and Country Planning Act 1990 are not instigated at an early state where diversions are required.

17.8 Verges on the edge of highways

A verge which is contiguous with private gardens and which the highway authority agrees to adopt will require special attention to ensure that the rights of the highway authority and statutory undertakers and the public at large are fully understood by the purchaser of the adjacent property. Much can be done including careful landscaping to indicate that such a verge is part of the highway. Sett or cobble patches should be provided to contain stop taps,

hydrants etc. The back of the verge (extent of the public highway) must be demarcated by a pcc footpath edging set flush with the verge.

Figure 26 – Highway verge

Where amenity verges are provided between the back of the footway and the highway boundary, these will be adopted, but the Statutory Undertakers and householders must be made aware of their rights and limitations in respect of access and maintenance of these verges.

One objective of open plan estates where service verges may occur is that householders will be encouraged to maintain the service verge. Therefore, whatever measures are taken to define the verges must not hinder maintenance by householders. However, purchasers must be made aware of the prohibition of building walls or fences and planting in the service verge of any hedges, trees or shrubs other than those included in the approved planting scheme and that the statutory undertakers may excavate their services within the service verge at any time.

Service verges must be shown on layout plans submitted for planning permission and any approved planting must be fully established before adoption.

While it is recognised that it is a matter for agreement between the developer and the purchaser it is strongly recommended that a suitable covenant be inserted in the conveyance to each purchaser. The following wording is recommended:-

“The Purchaser hereby covenants with the Vendor that he the Purchaser and his successors in title will not at any time hereafter erect or construct any building wall or fence or plant any tree or shrub on the strip of land shown cross hatched on the plan annexed hereto nor do or suffer to be done therein or thereon any act, matter or thing whereby the cover or soil over or the support of the pipes, wires and/or cables laid or to be laid in the said strip of land shall be altered or which may render access therefore more difficult or expensive and shall understand that the highway authority, the statutory undertakers and the public at large have unencumbered right or access to the said strip of land”.

Service verges shall be clearly indicated on sales plans available to prospective buyers.

17.9 Paved margins, clearance strips and overrun areas.

Paved margins will be adopted only if they are hard paved to the satisfaction of the Highway Authority and they perform a function relative to the highway i.e.

- **Paved margins -** carrying street lighting equipment, highway drainage etc;
- **Clearance strips -** protecting highway structures above, adjacent to or below the highway;
- **Overrun areas -** specifically designed to carry the overrun of large vehicles negotiating highway features; and
- **Paved areas** - used for the storage of specialised paving materials for the use of future maintenance of the highway.

17.10Sewers and Drains

The Highway Authority will adopt and maintain as highway drains, those pipelines provided solely for the disposal of surface water from prospectively maintainable highways under the section 38 agreement, provided that:

(a) where such drains are laid outside the limits of the maintainable highway suitable easements shall be negotiated by the developer, with such rights of easement being transferred to the Highway Authority on adoption of the roads;

(b) Surface water flow calculations are to be submitted for approval by the Highway Authority; and

(c) the outfall at the point of discharge of a drain is of sufficient capacity and free of any legal encumbrances.

The status of all other drains and sewers under the adoptable highway must be the subject of negotiation with the Highway Authority or the Yorkshire Water Authority.

The Highway Authority will not normally accept the laying of private drains and private sewers within the limits of either the existing highway or prospectively maintainable highway. Connections from individual properties to the existing Highway drains will not be permitted. Connections from individual properties to the public sewers are a matter for the Water Authority's Agents.

17.11 Structures supporting the Highway

Structures to which the public have access or which support the Highway, whether to be adopted by the Highway Authority of maintained by another body, shall be designed and constructed in accordance with the procedures laid down in the Council's 'Technical Approval Procedure for Developers Structures'.
Structures supporting the highway but integral with properties will not normally be acceptable.

The Highway Authority will adopt and maintain structures which solely support the highway. Suitable access shall be provided for inspection and maintenance and where easements are required for this purpose these shall be negotiated by the developer and transferred to the Highway Authority on adoption of the structure.

17.12 Structures over the Highway

Any structure above or overhanging the highway i.e. balconies/bridging structures etc. will be permitted, providing all statutory regulations are complied with, and the developer obtains a licence under section 177 of the Highways Act and such licence is linked to the section 38 Agreement.

18. Assessments and Audits

18.1 Transport Assessment

Some new developments are now of a size which will generate a significant amount of extra traffic on the adjoining highway network. This additional traffic may necessitate changes to the highway, e.g. improved junctions, traffic calming, localised widening or additional pedestrians and cycle facilities. A full detailed assessment of how trips to and from the development might affect the highway network will be required. The Transport Assessment (TA) should be an impartial description of the likely impact of the development and should include both positive and negative aspects.

It is not possible to set down a hard set of rules that would apply to all developments, however as a general guide, a TA should normally be produced when one or other of the following criteria are met.

- traffic to and from the development exceeds 10% of the two-way peak hour traffic flow on the adjoining highway.
- traffic to and from the development exceeds 5% of the two way peak hour traffic flow on the adjoining highway, where congestion is know to exist or where there are other sensitive location where development traffic may have an impact.

The TA process is carried out in these stages:

- determining the need for a TA;
- the scope of the TA; and
- the preparation itself.

As a guide, any new development over 200 dwellings or where the combined in/out traffic flow exceeds 100 trips per hour is likely to require a TA.

The study area of the TA should include all links and associated junctions, where the traffic flow will exceed 10% of the existing peak hour flow (or 5% where congestion is know to occur).

Dependent upon the outcome of the TA, an air quality assessment may also be required.

Prior to carrying out a TA, a ‘scoping study’ should be undertaken to consider:

- the data to be collected
- the area of the analysis
- the methodology to be adopted, and
- the years of assessment.

Such a study will provide an early opportunity for the developer to liase with the City Council to ensure that unnecessary work isn’t carried out, and that resources are economically employed.

18.2 Safety Audits

In respect of new developments the scale and complexity of each proposal must be considered. Major developments may well require the advice of Safety Engineering specialists as well as an examination by the Highway Authorities own experts. A road safety audit is a systematic method of checking the safety aspects of a new layout or a change to the existing layout of a highway and the way it is used.

A safety audit should generally follow the guidelines produced by the Institution of Highways and Transportation; “IHT guidelines for the Safety Audit of Highways (1990)”. Included in that document is a description of the procedures and check lists for use at various stages of the proposals for different types of highway works.

The IHT have produced a series of checklists (No 4 – new Developments) as a guide to the areas that should be covered in a safety audit. A copy of checklist No 4 is included as Appendix 4 complements the full safety audit.

Within the new development and where roads intersect the existing highway network there will be various forms of junctions provided to deal with the traffic situation i.e. all road users. The IHT provides recommended procedures for dealing with the various junctions that may arise, and have also produced a further series of checklists as a guide (No 3 – Traffic Management Schemes). These cover ;

i. major/minor junctions
ii. traffic signals
iii. mini roundabouts
iv. pedestrian crossings
v. refuges.

Road Safety Audits comprise of three stages:

- **Stage 1 - preliminary design stage**

This would be undertaken at the planning application stage, and include checks on junction type, pedestrian and cycle crossing facilities;

- **Stage 2 - detailed design stage**

This would accompany Section 38/62/278 drawing submissions, and include such checks as visibility distances, junction design criteria etc; and

- **Stage 3 - Post Construction Stage**

This would be undertaken between the part 2 certificate being issued and the final certificate.

The objective of a road safety audit is to identify potential safety problems, together with recommendations on how to rectify them if this is possible. Any works recommended must be attended to before the Final certificate is issued. A copy of each stage of the safety audit must be deposited with the Highway Authority.

The safety audit must be carried out by a competent person independent of the design team and the Council recommends the use of a different company of suitably qualified consultants. The safety audit team must be approved in writing by the Highway Authority and the City Council reserves the right to include a specialist from the Council or Police if it is felt necessary.

18.3 Security Audit

In view of the increasing concern by residents for the safety of themselves and their property, it is recommended that a security audit be undertaken. This will not only relate to highway issues but also the overall layout of the development and the detailed design of the buildings and open spaces.

Whilst an Audit Check list is not available at this stage it is strongly recommended that the developer liase closely with the Police Architectural Liaison Officer to identify any

- The need for natural surveillance of the streets, cycle routes, footpaths, parking areas, bus stops etc;
- The need for adequate lighting on all routes to avoid pools of darkness and dark areas and to ensure vandal resistance of all installations;
- The need to discourage the need for through movements by strangers within individual development areas;
- Routes should be clear and follow established or identified desire lines to ensure good use and reduce the risk of vandalism;

- Careful consideration be given to the design and positioning of street furniture, fencing, walls, and landscaping ensure robustness and reduce the risk of vandalism.

18.5 Air Quality Assessment (including noise)

Proposals for development in or adjacent to the Air Quality Management Area (AQMA) will be required to assess their impact on the air quality (together with other recent or proposed developments in the AQMA) where;

- There is cumulative impact of traffic generation (an increase of more than 5% traffic flow;
- There is a significant number (300 or more spaces) of additional parking to be provided;
- There is a recognised congestion problem in the area; or
- There is the potential for emissions to air by sources other than traffic.

Proposals for development outside the AQMA that will result in any of the above criteria being met will also be required to provide an assessment of air quality in association Transport Assessments (TA).

Most TA's concentrate on peak hour traffic flows – this is not sufficient for the purposes of air quality impact assessments.

If a TA indicates that the application is likely to have a significant impact on air quality the Developer will be required to model the impact of the development using simple DMRB (Design Manual for Roads and Bridges) method. If this indicates a measurable deterioration in air quality is likely, then further, more detailed modelling and monitoring may be required.

Any planning application that falls within the above criteria should include an air quality statement which will show clearly that the impact on air quality has been considered. This statement should include information on the additional traffic flows and the results of any monitoring and modelling undertaken.

18.5 Noise

The Developer should note that any new road construction may require an assessment of the impact of noise from new roads on local residents in accordance with the guidelines in PPG 24 – Planning and Noise, and CRTN 'Calculation of Road Traffic Noise (DOT 1988), taking account of the TA.

19. References

Residential Roads and Footpaths – Layout Considerations, Design Bulletin 32 (second edition). DTE 1992

Places, Streets and Movement – A companion Guide to Design Bulletin 32, Residential Roads and Footpaths. DETR 1998

Planning Policy Guidance; Transport PPG 13. DTE 1994

Planning Policy Guidance; Planning and the Historic Environment PPG15

Roads and Traffic in Urban Areas. IHT with DOT 1987

TA 20/84, Junctions and Access; The layout of Major/Minor Junctions. DOT

Advice Note TD 45/95 – The layout of Major/ Minor Priority Junctions. DOT

Standard TD 16/93 – The Geometrical Design of Roundabouts. DOT

Disability Unit Circular 1/91 – The Use of Dropped Kerbs and Tactile Surfaces at Pedestrian Crossing Points. DOT

Revised Guidelines for reducing Mobility Handicaps towards a Barrier Free Environment. IHT

Inclusive Mobility – A guide to best practice on Access to Pedestrian and Transport Infrastructure. DOT 2002

Guidelines on the use of Tactile Paving Surfaces. DETR 1997
TD 36/93 – Pedestrian and Cycle Subways. DOT

LT Note 2/86 - Shared Use by Cyclists and Pedestrians. DOT

LT Note 1/89 – Making way for Cyclists. DOT

LT Note 1/91 – Keeping Buses Moving. DOT

The Highways (Road Humps) Regulations 1996. DOT

Circular Roads No 3/90 – Road Humps. DOT

TA 22/81 – Vehicle Speed Measurements on All Purpose Roads. DOT

Traffic Advisory Leaflets : DOT

- 1/87 – Measures to control traffic for the benefit of residents, pedestrians and cyclists.
- 3/90 – Urban Safety Management Guidelines from IHT.
- 2/93 – 20 mph Speed Limit Zones.
- 7/93 – Traffic Calming Regulations.
- 13/93 – Gateways.
- 2/94 - Entry Treatments
- 3/94 – Emergency Services & Traffic Calming: A Code of Practice.
- 4/94 – Speed Cushions
- 9/94 – Horizontal Deflections
- 3/95 – Cycle Routes
- 7/95 – Traffic Islands for Speed Control.
- 2/96 – 75mm High Road Humps.
- 6/96 – Traffic Calming: Traffic and Vehicle Noise.
- 7/96 – Highways (Road Hump) Regulations 1996.
- 10/96 – Traffic Calming Bibliography.
- 10/01 – Home Zones – Planning and Design.
- 3/02 – Cycling Bibliography

Guidelines for; The Safety Audit of Highways. IHT (Volvo Road Safety Award) 1987

DOE Circular 5/94 – Planning Out Crime.

Traffic Management Policy – NYCC Fire and Rescue Service

Respark Formula – NYCC Fire and Rescue Service

Circular Roads 3/93 – Street Nameplates and the Numbering of Premises. DOT

Traffic Signs Regulations and General Directions 1994. DOT

Traffic Signs Manual. DOT

Circular Roads 7/75 – Size, Design and Mounting of Traffic Signs. DOT

BS 3998 : 1989 – Recommendation for Tree Works.

BS 5837 : 1991 - Trees in Relation to Construction

Local Authority Advice Note 7/96 – Street trees and Highway Works – Association of District Councils

Recommended Positioning of Utilities' Mains and Plant for New Works, Publication No 7 NJUG Dec 1987.

Guidelines for the Planning, Installation and Maintenance of Utility Services in Relation to Trees, Publication No10 NJUG

Highways Act 1980. HMSO

Technical Approval Proceedures for Developer Structures. DDES – City of York Council.

Highways Department Information Sheets:

- No 1 - Introduction
- No 2 – An outline of road agreements
- No 3 – Drawing Requirements
- No 4 – Road Safety Audits
- No 5 – Maintenance payments
- No7 – Street Lighting

Manual of Contract Documents for Highway Works, particularly Vol 1 – Specification for Highway Works and Design Manual for Roads and Bridges. DOT

20. Bibliography

Local Transport Plan; Policies into Action 2001/2002 – 2005/2006. City of York Council.

Transport in the Urban Environment. IHT 1997

Paving the Way – How to achieve clean, safe and attractive Streets. Cabe, Office of the Deputy Prime Minister.

Urban Safety Project – 1, Design and Implementation of Schemes, TRRL Research Report 153:1988

Making Travel Plans Work – Lessons from UK Case Studies. DfT 2002

Traffic Measures in Historic Towns – A Guide to Good Practice. The Civic Trust/English Heritage Towns Forum

Safer Cities Project – Interim Report. Gloucester

Encouraging Walking – Advice to Local Authorities. DETR

Guidelines for; Providing for Journeys on Foot. IHT

York Access Design Guide; Access to Buildings and the spaces around them for people with disabilities. DDS , City of York Council.

Tactile Paving in York – Draft recommendations for local practices.

New Paving Policy – City of York Council.

Homezones – A planning and design handbook. The Policy Press and the Joseph Rowntree Foundation 2001

The National Cycling Strategy and Appendix. DOT

A method of calculating minimum distances of new properties from existing trees. Greater Yorkshire Tree Officers Group protecting trees in Yorkshire. The Hedgerow Regulations 1997 (SI No 1160)

Protected Trees – a guide to Tree Preservation Orders, DTER.

Driveways Close to Trees – Arboricultural Association, Information Service Practice Note APNI

NHBC Standards – Building near Trees, Oct 1992

The City of York Council greatly appreciates the kind permission granted by the following to allow it to make reference to and use extracts from their Design Guides in the preparation of the Highway Design Guide for York;

- North Yorkshire County and District Councils – Residential Design Guide (Second Edition)
- East Riding of Yorkshire Council – Highway Design Guide – Places to Live.
- Swindon Borough Council – Transport Requirements for Development.
- Cornwall County Council – Cornwall Design Guide.
- Lincolnshire County Council – Lincolnshire Design Guide for Residential Areas.
- Cheshire County Council – Design Aid, Housing, Industrial and Commercial Estae Roads.
- Norfolk County Council – Residential Design Guide.
- Suffolk County and District Councils – Design guide for Residential areas.
- Liecestershire County Council – Highway Requirements for Development.
- Avon County Council – Residential Roads in Avon.
- Durham County Council – Guide to the Layout and Construction of Estate Roads.