Part 3 ▸ Street Design (Residential S38)

3.1 Introduction

It is expected the guidance included in this part of **The Warwickshire Design Guide** will be appropriate for the design for adoption of Secondary Routes (Secondary Distributors) and below. These types of roads might provide a transition between surrounding major roads, form a network of estate roads, or become the more pedestrian dominated link roads, local access roads and minor roads.

Therefore, this part covers the design and technical approval relating to roads which fall into Category 3b, 4a or 4b as defined in Table 1.1 in Part 1 of this guide and described more fully later in this section.

Designers should follow the guidance provided in this section when directed after using the flow chart in Part 1 Figure 1.2 to determine the appropriate design standards for their improvement.

It must be noted that this section is not to present a rigid set of rules that must be followed in the design of residential layouts. Moreover, it seeks to provide a set of standard objectives and principles while indicating minimum standards to be met where necessary.

In addition, developers should be aware that roads serving industrial developments exclusively are unlikely to be adopted. If there is a desire for an industrial estate to be served by buses, developers may need to enter into private agreements with public transport operators to facilitate this.

It is expected most of these roads will be delivered following the completion of a Section 38 Highways Act 1980 Agreement. More information on the Section 38 process and how to enter into this form of Agreement is contained in *Annex 10.1 Highway Works Agreements.*

3.2 Scheme Delivery Outline

Following planning consent, the delivery process typically follows the process outlined below;

- Developer to apply to enter into a Section 38 Agreement with appropriate fee
- Technical review undertaken
- Bond to be calculated
- Technical Approval letter issued
- Section 38 agreement to be signed and completed including provision of Bond
- Scheme inspection fees paid
- Scheme constructed by developer's contractor and inspected by WCC
- Appropriate percentage of bond reduced at certain trigger points as defined in the Section 38 Agreement
- Issue of the Provisional Certificate will be subject to the developer providing evidence of issue of the Certificate for the Section 104 (drainage) Agreement Provision Certificate for the associated maintenance period
- Any uncompleted remedial works must be carried out during the maintenance period before adoption can be requested
- Following the satisfactory completion of all clauses within the Section 38 agreement, the Final Certificate of Completion will be issued
- Road adopted and now maintainable at public expense
- Remaining Bond returned to developer

Details of the terms of the Section 38 Agreement, fees and how WCC calculate the value of the bond required is contained in *Annex 10.1* of this guide.

Failure to complete within the timescales within the Section 38 Agreement is likely to result in additional inspection fees and works for example, replacement of streetlight units, etc.

3.3 Technical Review and General Considerations

To enable the Development Management Team (DMT) to provide a robust and efficient response to a planning consultation, the developer must provide within their application the following information:

- An engineering layout, detailing radii, carriageway/footway/verge widths etc.
- A plan detailing ALL visibility splays; inclusive of junction, forward, pedestrian and driveway splays.
- A proposed adoption plan.
- A plan detailing lining and signing as required including proposed locations for street name plates and 20mph zone (TRO required).
- Plans detailing the swept path analysis of the appropriate refuse vehicle and a fire tender. NB: further swept path analysis will be required, such as that of an MPV (Medium Passenger Vehicle) vehicle exiting driveways, if thought necessary.
- Bus stop plan to be included annotating bus cage and waiting/boarding facility. Details of proposed bus stop infrastructure (pole, real time information, shelter, etc).
- Garage details - if these are proposed they should accord with the dimensions as set out in Figure 3.2.
- Construction specification and standard details **(Highway construction details)**
- Longitudinal sections - if they are not in line with the details below, then it is advised long sections are provided at an early stage to ascertain if the horizontal design can be amended to improve the gradient.
- Highway drainage - if this is proposed, including road water run-off, pipe design, surface water treatment hazard index, and flood storage calculations. If a soakaway is proposed, suitable percolation test results must be provided (to BRE365). It is advised to enter discussions at this stage as not all highway drainage will be accepted and may preclude adoption.
- A plan detailing highway street lighting and landscaping.
- Street lighting design.

3.4 Road Hierarchy Further Information

The following information is provided to guide designers towards good design principles which WCC expect to see applied to the appropriate category of road.

3.4.1 Type 3b: Secondary Distributor Roads / Secondary Routes

Secondary Routes provide a transition between surrounding major roads and more pedestrian dominated link roads, local access roads and minor roads.

They should have at least one point of access, plus additional access points determined by the number of dwellings. Although they principally cater for traffic movements, they must still cater for safe pedestrian movement. Therefore, design speeds of 20mph are expected in residential areas.

Speed restraint measures must consider the requirements of buses where serving a bus route and the emergency services. Therefore, design should aim to minimise the use of vertical traffic calming measures wherever possible, and no vertical traffic calming features should be used where a bus service is to be provided.

Type 3b: Secondary Distributor Roads / Secondary Routes	
Road Width	6.7m – Bus route with on street parking 6.1m – Bus route with no on street parking Swept path tracking may require localised widening (see Part 1.6.1)
Dwelling Limits	No defined limit but could be limited based on site specific constraints.
Design Speed	20mph (TRO required), 30mph max if a bus route
Junction Visibility Splays	20mph – 2.4m x 25m (vehicles), 1.5m x 25m (at pedestrian crossing points) 30mph – 2.4m x 43m (vehicles), 1.5m x 43m (at pedestrian crossing points)
Footway/Cycleway widths	As per LTN (Local Transport Note) 1/20 but in areas of high activity provision will be required on both sides of road). Visibility splays should be provided in accordance with LTN 1/20.
Verge/Service Margin Width	2m to 4m – subject to agreement in respect of landscaping requirements
Crossfall	1:40
Longitudinal Gradients	1: 125 minimum (1:80 minimum in blockwork) 1: 20 maximum subject to a review of the length of the gradient in accordance with DfTs **Inclusive Mobility document** 1:50 minimum for a distance of 15m along all approaches to junctions
Vertical Curves	Minimum 'K' value of 6 Minimum length of curve – 25m
Pedestrian Visibility	2.4m x 2.4m (as taken to rear of footway either side of vehicular access)
Horizontal Layout	The centre line radii, along with turning heads, shall be prescribed by the swept path analysis of the relevant refuse vehicle used by the Local Planning Authority.
Speed Restraint Centres	Maximum of 70m
Vertical Heights	Minimum effective height above ground level for any tree canopy within or overhanging a visibility splay - 4m on carriageways to ensure access for fire tenders - 2.3m for any segregated/shared cycle route - Trees/landscaping should not obscure any highway signage.
Direct Vehicular Access	No but will accept private drive crossover to serve six dwellings. Minimum 25m separation from junctions (see Figure 3.1)

3.4.2 Type 4a: Link Road / Tertiary Road (Type 1) and Type 4b: Local Access Roads / Tertiary Road (Type 2)

The purpose of a Tertiary Road is to provide direct frontage access to residential properties and connect with Primary Roads (Type 3a) or Secondary Routes (Type 3b). A feature of their design is that they should facilitate a safe and secure environment which encourages a modal shift towards sustainable methods of travel.

As the number of units being served from a Tertiary Road increases, the level of two-way vehicle movements also increases. Therefore, the increased carriageway widths reflect the unit numbers and potential vehicle movements, Tertiary Roads (Type 2) serving a maximum of 50 units and Tertiary Roads (Type 1) serving up to 200 units, unless multiple points of vehicular access.

Type 4a: Link Road / Tertiary Road (Type 1)	
Road Width	5.5m (swept path tracking may require localised widening - see Part 1.6.1)
Dwelling Limits	No more than cumulatively 150 from a single point of access, up to 200 cumulatively where a separate emergency access is provided from a separate point onto the adoptable highway network, more than 200 should have a minimum of two connected points of vehicular access
Design Speed	20mph (TRO will be required)
Junction Visibility Splays	20mph – 2.4m x 25m (vehicles), 1.5m x 25m (at pedestrian crossing points)
Footway width	Absolute minimum of 2m (on each side of road).
Verge/Service Margin Width	2m minimum
Crossfall	1:40
Longitudinal Gradients	1: 125 minimum (1:80 minimum in blockwork) 1: 20 maximum subject to a review of the length of the gradient in accordance with DfTs Inclusive Mobility document 1:50 minimum for a distance of 15m along all approaches to junctions
Vertical Curves	Minimum 'K' value of 4.5 | Minimum length of curve – 25m
Pedestrian Visibility	2.4m x 2.4m (as taken to rear of footway either side of vehicular access)
Horizontal Layout	The centre line radii, along with turning heads, shall be prescribed by the swept path analysis of the relevant refuse vehicle used by the Local Planning Authority passing an MPV (see Part 1.6.1).
Speed Restraint Centres	Maximum of 70m
Vertical Heights	Minimum effective height above ground level for any tree canopy within or overhanging a visibility splay - 4m on carriageways to ensure access for fire tenders - Trees/landscaping should not obscure any highway signage.
Direct Vehicular Access	Yes, where demonstrably safe with turning space within a private drive to allow for a vehicle to re-enter the public highway in a forward gear. Minimum 15m separation from junctions (see Figure 3.1)

Type 4b: Local Access Roads / Tertiary Road (Type 2)	
Road Width	5.0m
Dwelling Limits	Up to 50 (emergency point of access may be necessary for cul-de-sac)
Design Speed	20mph (TRO will be required)
Junction Visibility Splays	20mph – 2.4m x 25m (vehicles), 1.5m x 25m (at pedestrian crossing points)
Footway width	Absolute minimum of 2m (on each side of road).
Verge/Service Margin Width	2m minimum
Crossfall	1:40
Longitudinal Gradients	1: 125 minimum (1:80 minimum in blockwork) 1: 20 maximum subject to a review of the length of the gradient in accordance with DfTs Inclusive Mobility document 1:50 minimum for 15m along all approaches to junctions
Vertical Curves	Minimum 'K' value of 4.5 Minimum length of curve – 25m
Pedestrian Visibility	2.4m x 2.4m (as taken to rear of footway either side of vehicle access)
Horizontal Layout	The centre line radii, along with turning heads, shall be prescribed by the swept path analysis of the relevant refuse vehicle used by the Local Planning Authority passing an MPV (see Part 1.6.1).
Speed Restraint Centres	Maximum of 70m
Vertical Heights	Minimum effective height above ground level for any tree canopy within or overhanging a visibility splay - 4m on carriageways to ensure access for fire tenders - Trees/landscaping should not obscure any highway signage.
Direct Vehicular Access	Yes, where demonstrably safe with turning space within a private drive to allow for a vehicle to re-enter the public highway in a forward gear. Minimum 15m separation from junctions (see Figure 3.1)

3.4.3 Minor Road / Private Driveways (Unadopted)

Minor Road / Private Driveways (Unadopted)	
Road Width	5m for a setback of 7.5m from channel line (assumes 5.5m vehicle length plus 2m footway/service margin, greater distance may be required); reducing to minimum of 4.5m (subject to WFRS comments). A width of 5.5m will be required for an access bound on one or both sides, i.e., an undercroft access.
Dwelling Limits	6 maximum
Design Speed	< 20mph
Junction Visibility	2.4m x 'y' (vehicles), 'y' speed dependent on 85th percentile speed/design speed
Pedestrian Visibility	2.4m x 2.4m (as taken to rear of footway either side of vehicle access)
Access / turning	Access with suitable turning provision for delivery vehicles e.g., Online shopping / supermarket delivery

WCC encourage that all housing developments are designed to adoptable standards whether or not they are expected to be adopted in the future. WCC will not adopt any development of 6 dwellings or less.

The details within the table above set out the requirements for where the adoptable and private boundaries will connect.

Where developments are to remain unadopted, developers must be aware that the Highway Authority will not be liable for future maintenance, street cleansing, lighting, parking enforcement, drainage or other public liabilities, as they will have no powers under the Highways Act. Private driveways will not be adopted as public highway.

Where developments are proposed to remain unadopted, WCC encourage developers to enter into discussions early in the design stage to satisfy any specific highway requirements that may be present on a case-by-case basis.

The connection from a private driveway to the public highway shall be laid out as a dropped crossing in accordance with Section 184 of The Highways Act 1980, set out at 90 degrees to road where possible. Connections not at 90 degrees may be considered unacceptable for reasons of highway safety and would be assessed on a case-by-case basis.

The practical requirements for servicing by a refuse vehicle and/or a fire tender in case of emergency must be incorporated into the design of all developments whether they are proposed for adoption or not. Where driveways exceed a maximum length of 45 metres from the highway boundary, a minimum width of 3.7 metres should be provided to enable access by emergency vehicles (fire appliance). Turning provision will also be necessary where such driveways exceed 20.0 metres for emergency access (fire appliance). Also see 3.12 and 3.13 below.

To prevent extraneous material being deposited within the limits of the Public Highway, private driveways must be surfaced with a suitable bound material for the first 5 metres from the back of the public highway footway/service margin.

Gradients should not lead to kerbing of vehicles at the transition points, and a desirable crossfall of 2.5% (1:40) should be achieved to ensure that pedestrians and those with mobility aids are not compromised by adverse camber (see Part 1.6.1).

Positive drainage measures must be incorporated into design to ensure that driveways do not discharge surface water onto the public highway.

Parking associated with unadopted developments must not have a

negative impact on the adopted public highway. Unadopted developments must therefore allow for adequate visitor parking provision in addition to private curtilage parking.

Any gates should be set at least 5.5 metres back from the back of the public highway footway. Any gates to residential properties should only open inwards to the private land and should not block any part of the public highway when opened.

Any private driveway from which more than 6 units will be served, this should be from a bellmouth access.

Turning areas for private drives must be provided where deemed necessary by the Highway Authority. Factors to be considered include volumes of traffic on the main road from which the dwelling(s) is served and highway safety implications.

Each access onto the public highway is considered a potential point of conflict. The Highway Authority, therefore, will not allow for more than a single point of access to new private dwelling or additional accesses to be added to existing dwellings, unless it can be demonstrated that the provision of additional access points is absolutely necessary and/or will not compromise public highway safety.

3.4.4 Single/Double Vehicle Access Crossings (from existing public highways)

Vehicular access crossovers should have a width of 3.0 metres (where unbounded) or 3.5 metres (where bounded) where serving one dwelling, and where serving two dwellings a width of 5.0 metres. This must extend into the site for a minimum distance of 7.5 metres as measured from the near edge of the public highway carriageway or a minimum distance of 5.5 metres from the near edge of the public highway boundary, whichever is the greater distance from the carriageway. In the case of a double vehicle access crossing this enables two opposing vehicles to pass each other at the point of access without obstructing the visibility splay required from the access. This also ensures that a vehicle entering a site does not stop or reserve back within the highway to allow an emerging vehicle out.

Other design criteria should reflect the details specified above for Private Driveways (see Part 3.4.3).

3.5 Types of Junctions

Priority controlled junctions (simple T-junctions) would generally be used to serve most residential developments. There may be the need for other junction forms i.e., ghost right turn lane t-junctions, compact/ small roundabouts or traffic signals to either avoid layouts that would otherwise result in a crossroads junction, or to provide sufficient capacity. The design for these junctions will need to be in accordance with the relevant standards i.e., DMRB. Any departures or relaxations should be identified at an early stage.

3.6 Junction Spacing

For junctions and/or vehicular accesses onto the major road, a minimum clearance of 25 metres is recommended to/from the nearside of the minor road, or Byway, (that is the side road) junction. These clearances ensure that when vehicles are indicating to turn into an access or a junction their intentions are clear to other highway users. In addition, such clearances ensure that vehicular visibility is maintained (see Figure 3.1).

Junctions on the same side of the road should be spaced so that a vehicle waiting to enter the main arm does not interfere with the visibility of a vehicle waiting at another minor arm.

Staggered junctions should be a minimum of 25 metres (centreline to centreline) however a greater separation may be required dependant on lane width and radii of the junctions.

Designers should avoid priority-controlled ('Give way') crossroads. When a crossroads cannot be avoided, WCC would normally expect the designer to provide an appropriate form of control such as a roundabout. Mini roundabouts will not be acceptable to provide access to a development.

A minimum clearance of 15 metres should be provided between the nearest side of a vehicular access on the major road, (including Byways) (that is the road with the priority), and/or the give way line/channel line at any adjacent junction with the minor road/side road.

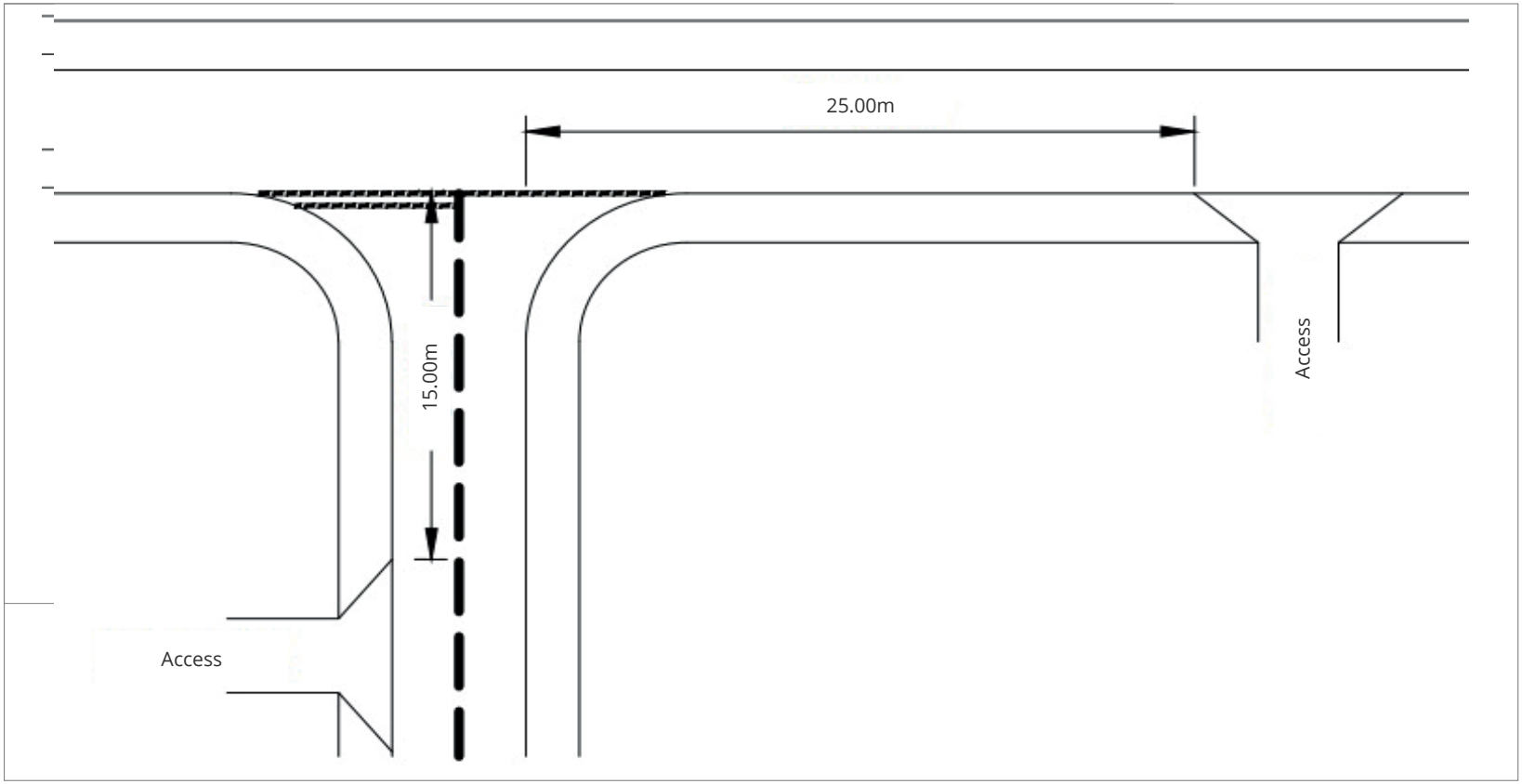

Figure 3.1 - Minimum spacing between side road junction and access

3.7 Visibility Splays

3.7.1 Junction and Forward Visibility

Design Speed (mph) (New Development Only)	Measured 85%ile vehicle speed (mph) (Existing Development)	'Y' Distance & Forward Visibility (m)
20mph Tertiary Roads	16-20	25
25-30mph Secondary Roads	21-25	33
	26-30	43
	31-37	59

Table 3.1 - Required visibility splays for 'Streets'

Table 3.1 shows the required junction and forward visibility splays, for new 'street' design. The visibility splays ('Y' distances) for new highway should be based on the proposed design speed, and the visibility splays where the connection is to an existing highway should be based on the measured 85th percentile vehicle approach speeds.

In accordance with Manual for Street recommendations, Warwickshire County Council will accept an 'X' distance of 2.4m in most built up situations (as this offers a good representation of the maximum distance between the front of the car and the driver's eye in driving position, see Part 3.5).

Visibility splays on approach to and on exit from private drives/ developments must be provided in accordance with the requirements as set out in Table 3.1. Visibility Splays must not pass over third-party land.

Where 85th percentile speeds are greater than 37mph/60kph, then the visibility splay should be based on the surrounding environment (see Figure 1.2).

Visibility splays from private accesses/driveways onto shared or segregated cycleways should be provided, and for these an 'X' distance of 2.4m should be taken from the rear of the highway (usually the footway) and a minimum 'Y' distance of 25m.

Visibility splays for pedestrians at crossing points (junctions or in-line) also need to be provided, and for these an 'X' distance of 1 metre should be used and the 'Y' distances set out in Table 3.1.

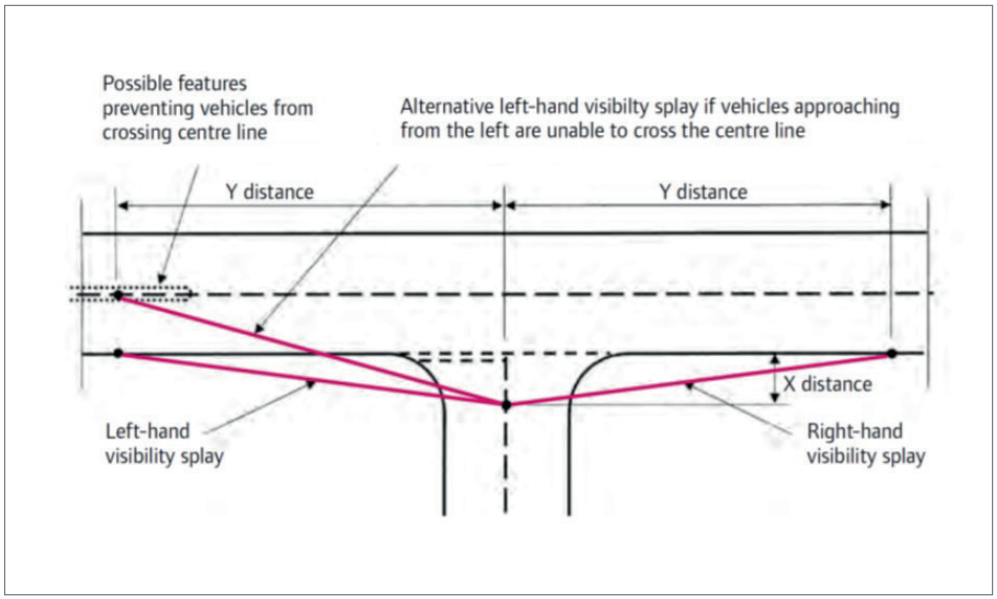

Figure 3.2 - Straight Road Visibility Splays
(Source: Manual for Streets, DfT, 2007)

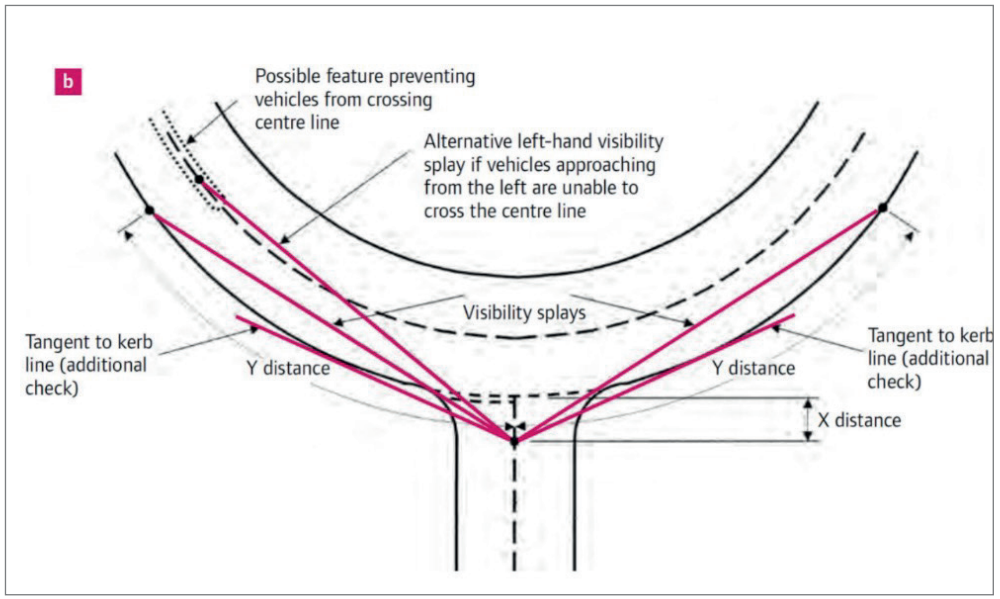

Figure 3.3 - Visibility Splay on Bend
(Source: Manual for Streets, DfT, 2007)

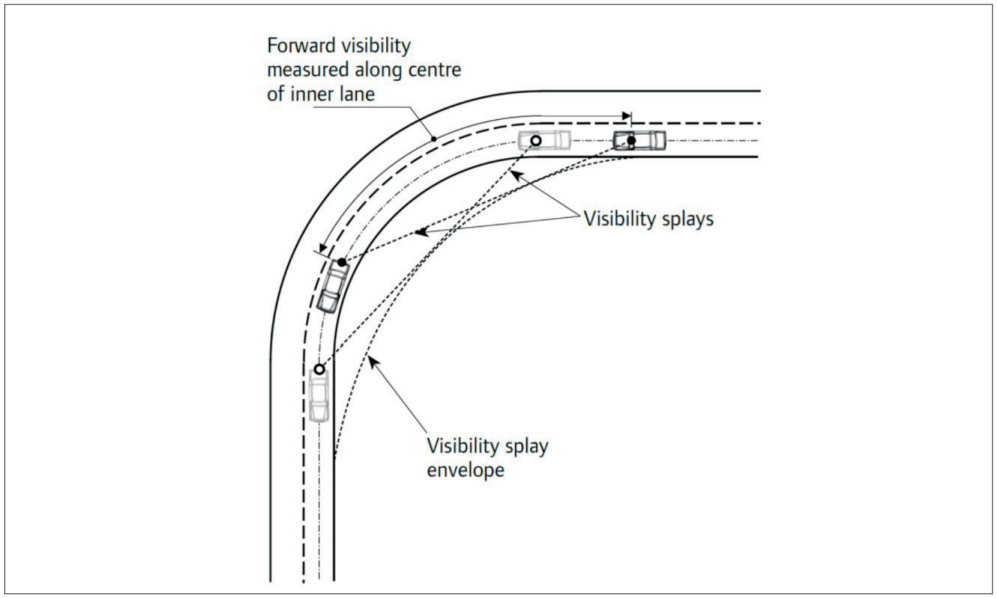

Figure 3.4 - Measurement of Forward Visibility
(Source: Manual for Streets, DfT, 2007)

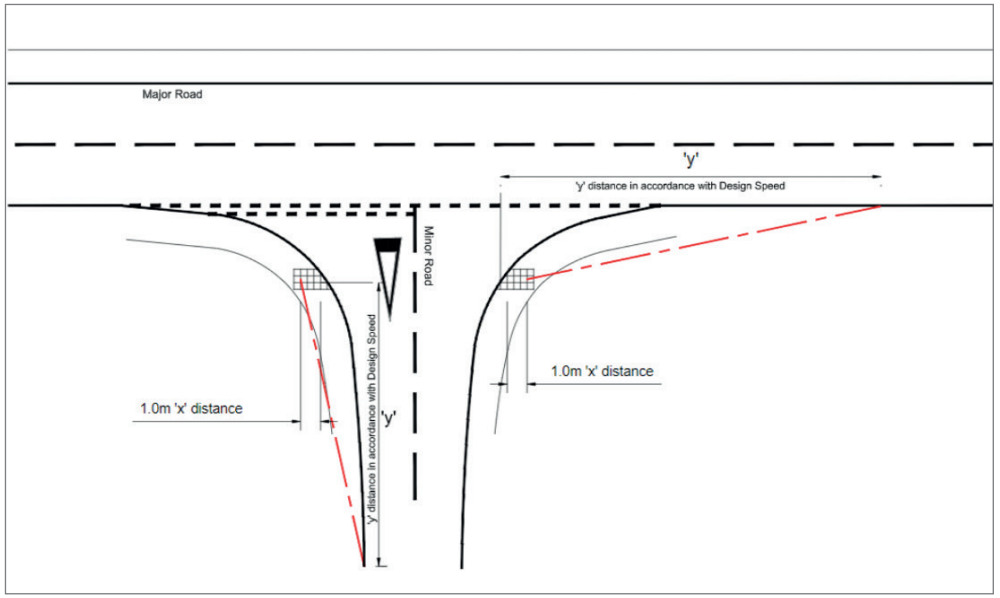

Figure 3.5 - Pedestrian Visibility Splays at Junctions

3.7.2 Vertical Visibility

When assessing vertical visibility, both driver and pedestrian lines of vision need to be considered in both vertical and horizontal planes. Adequate forward visibility must be provided to allow drivers to see a hazard and react in an appropriate and controlled manner before reaching it.

The height of 600mm should be taken as the point above which unobstructed visibility should be provided wherever there is potential for conflict between motorists and children.

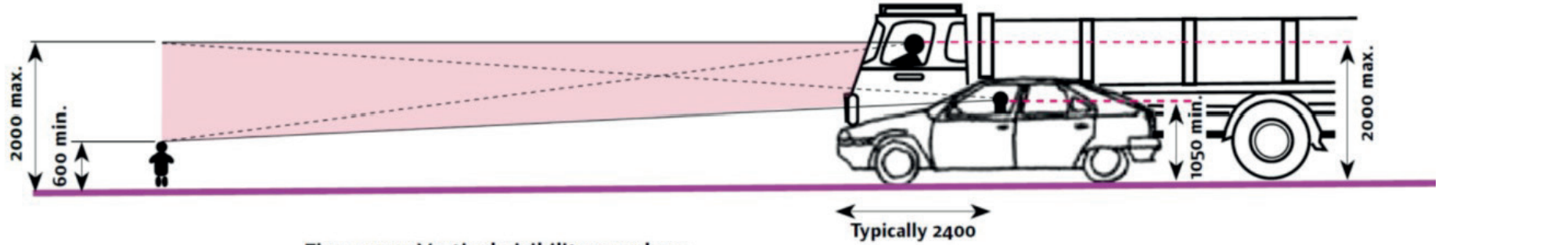

Figure 7.17 Vertical visibility envelope.

Figure 3.6 - Vertical Visibility Splay (Source: Manual for Streets, DfT, 2007)

3.8 Car Parking

Each of the five Local Planning Authorities in Warwickshire provide advice/policy with respect to the parking standards sought for respective development(s). Off-street parking provision for new developments should therefore comply with the relevant parking standards and policies. Parking policies should be regularly reviewed and updated to reflect the latest trends in car ownership and household composition.

On-street parking within a highway cannot be allocated or assigned to any individual person or property, and therefore its availability to accommodate a development's parking requirements cannot be assumed or relied upon. In some circumstances, on-street parking can be seen as an obstruction of the highway.

Private residential car parking spaces should measure a minimum of 2.5 metres x 5.5 metres. Where parking spaces are adjacent to a wall, fence or a boundary, these should be 3.0 metres wide to ensure clear access around the vehicle. Where these spaces are between walls or fences this dimension should be increased to 3.5 metres wide. Table 3.2 summarises parking space dimension requirements.

Single parking space (un-restricted)	Double parking space (un-restricted)	Single parking space (restricted one/both)	Double parking space (restricted)	Single garage (internal at narrowest point)	Double garage (internal at narrowest point)
2.5mx5.5m	5m x 5.5m	3.0/3.5m x 5.5m	6m x 5.5m	3.5m x 6m*	6m x 6m*

Table 3.2 - Required Dimensions for Parking spaces

*additional width/length required for residential storage (cycles, etc) or evidence of separate provision

Streets should be designed in such a way that, where on-street parking is not desired, drivers are deterred without the need for formal parking controls. If the provision of formal parking controls is unavoidable and required in the interest of public highway safety, developers must be aware that WCC will request commuted sums to cover the provision and associated enforcement of any necessary Traffic Regulation Order(s).

Where a proposed development may be of detriment to existing parking provision and/or amenity, developers must undertake and provide parking surveys to allow officers to make a considered assessment.
As parking demands are sensitive to numerous variables, it is important the scope of a parking survey is discussed and agreed with WCC in advance of a survey being undertaken (see Part 1.5.3). Failure to undertake a survey in accordance with the requirements of WCC may result in a requirement for a developer to commission additional surveys.

3.9 Garages

Garages should be set back a minimum distance of 6.0 metres from the highway boundary to ensure a vehicle can be parked clear of the highway and to ensure that the garage door can be opened without hindrance.

A minimum width of 3.5 metres should be applied to the internal dimensions of a single garage or carport, with the overall internal length of 6 metres in a garage and 5.5 metres for a carport (or greater where required by the LPA SPD (Supplementary Planning Documents)). Where no further external storage is to be provided, then an additional width and length will be required to ensure that other elements of storage such as bicycles can be accommodated without impacting on the parking element of the garage. This is particularly important where a garage is to be included in the overall parking provision for a development.

The minimum internal dimensions (not including the storage of bicycles) should be as shown in Figure 3.7.

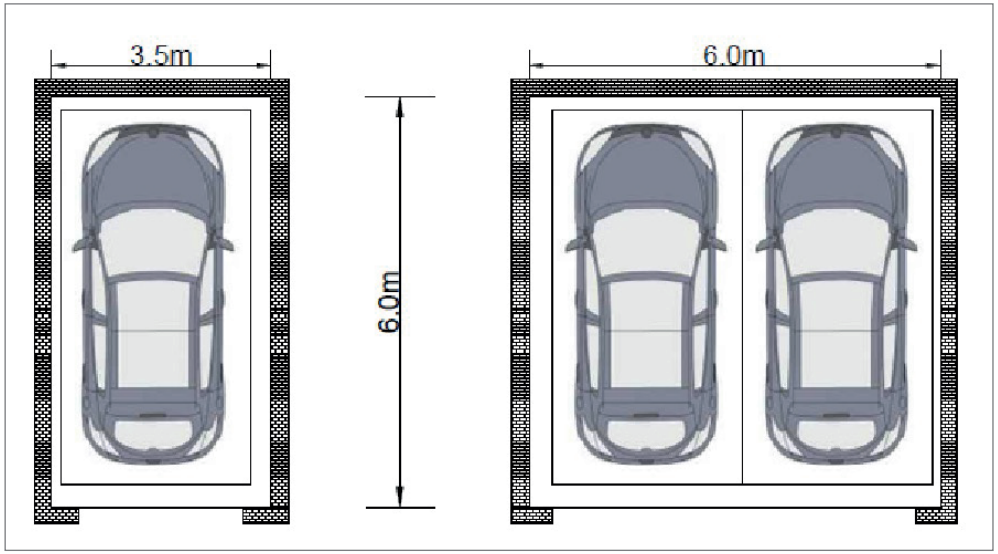

Figure 3.7 - Internal dimension requirements for garages and parking spaces surrounded by walls or solid features

3.10 Cycle Parking

The provision of high-quality cycle parking across the county is integral to any cycle network. Space for cycle parking should be considered at the earliest possible stage of any scheme design, and the County Council will insist on installing Sheffield Stands and/or 'M-profile' stands at locations that have the potential to stimulate new cycle journeys.

Cycle parking should be provided at the following locations:

- Places of residence
- Interchanges with other modes of transport
- Short-stay destinations such as shops and cafés
- Long-stay destinations such as employment and education establishments

Cycle parking types and dimensions should be agreed with WCC's Transport Planning Unit (tpu@warwickshire.gov.uk) at an early stage.

Where cycle parking for residential units is to be accommodated within the garage, the details as shown within Figure 3.7 will be required to be increased to make appropriate provision.

3.11 Provisions for Pedestrians and the Mobility Impaired

Pedestrian routes should be barrier free except at the junctions of footpaths/cyclepaths with carriageways when barriers may be required at some locations. A barrier, if needed, must be of the type which does not impair driver visibility, especially of children who may be standing, walking or running behind them. Further guidance can be found in the Department for Transport document 'Inclusive Mobility- A Guide to Best Practice on Access to Pedestrian and Transport Infrastructure'.

An adequate space for pedestrians to wait and for others to pass should be provided, together with an appropriate level of visibility (see 3.7.1 above), wherever a pedestrian route crosses a carriageway or cycleway.

At busier road junctions and along busy roads, or where crossing widths exceed 11m (LTN 02/95), the provision of island refuges within the carriageway should always be considered to assist pedestrians to cross.

At road junctions and other road crossings, dropped and flush kerb crossings with tactile surfacing should be provided in accordance with current national advice **(Guidance on the use of Tactile Paving Surfaces)**.

At junctions, footways should be constructed parallel to the back of visibility splays.

3.12 Waste Collections and Recycling

The design of new developments should not require domestic waste/recycling bins to be left within the footway as they reduce its effective width. Domestic waste/recycling bins left within the footway pose a hazard for visually impaired and may act as an obstruction for wheelchair/mobility scooters and pushchair users.

The operation of domestic waste collection services should be an integral part of street design and achieved in ways that do not compromise quality of place. Waste disposal and collection authorities and their contractors should consider the geometry of streets across their area and the importance of securing quality of place when designing collection systems and deciding which vehicles are applicable. While it is always possible to design new streets to take the largest vehicle that could be manufactured, this would conflict with the desire to create quality places. It is neither necessary nor desirable to design new streets to accommodate larger waste collection vehicles than can be used within existing streets in the area.

Reversing causes a disproportionately large number of moving vehicle accidents in the waste/recycling industry. Injuries to collection workers or members of the public by moving collection vehicles are invariably severe or fatal. BS 5906: 2005 recommends a maximum reversing distance of 12 metres. Longer distances can be considered, but any reversing routes should be straight and free from obstacles or visual obstructions, with the potential requirement of street lighting in some instances. Such situations should be discussed with the Local Planning Authority.

Where bin stores are provided at private developments, they must be located outside of the public highway and in accordance with either the latest British Standard document or as agreed with the Local Planning Authority.

Residents should not be required to carry waste more than 30 metres (excluding any vertical distance) to the storage point.

Waste collection vehicles should be able to get to within 25 metres of the storage point (Note: BS 5906: 200518 recommends shorter distances) and the gradient between the two should not exceed 1:12 or as agreed with the Local Planning Authority.

3.13 Emergency Vehicles

The requirements for emergency vehicles are generally dictated by the fire service requirements. Providing access for large fire appliances (including the need to be able to work around them where appropriate) will cater for police vehicles and ambulances.

The Building Regulation requirement BS (2000)10 concerns 'Access and Facilities for the Fire Service'. Section 17, 'Vehicle Access', includes the following advice on access from the highway:

- There should be a minimum carriageway width of 3.7 metres between kerbs for operating space at the scene of a fire;
- There should be vehicle access for a pump appliance within 45 metres of single-family houses, furthest habitable room;
- There should be vehicle access for a pump appliance within 45 metres of every dwelling entrance for flats/maisonettes;
- A vehicle access route may be a road or other route; and
- Fire service vehicles should not have to reverse more than 20 metres.

To reach a fire, the access route should be no less than 3.1 metres in width and capable of withstanding the load of a fire appliance. The pump appliance is required to get within 45 metres of all points inside the residential properties measured along the route of the hose. For commercial, education and other properties, early engagement with WFRS should be made.

Where access for fire appliances will need to be taken from private driveways, consideration should be given as to the likelihood of parked vehicles causing an obstruction or preventing vehicles manoeuvring. In such circumstances discussion with WFRS is recommended.

3.14 Surface Finishes

For further information regarding standard details for the expected highway surface finishes within a residential development, refer to the **Highway Construction Details webpage** on the WCC website. Surfacing contrary to that contained within the Warwickshire Surfacing Strategy is undesirable and developers must be aware that surfacing other than specified in the WCC documents noted above will attract a commuted sum. The use of block paving within the turning heads for areas where significant vehicle manoeuvring will take place will not be accepted due to the resulting increased amount of maintenance compared to tarmac.

3.15 Highway Green Infrastructure (HGI)

For any proposed HGI within the adopted highway, consideration will need to be given to matters such as visibility splays, street lighting, signage, street name plates and safety for all users. For further details, refer to Part 6.