Leicestershire County Council

Leicestershire Highway Design Guide

Design Layouts

Introduction to Design Layouts

The Design Layouts section of the LHDG is intended to help developers to design safe and accessible layouts for all highway users. Highway layouts should:

- meet travel the needs of all users including the prioritisation of active travel modes of transport and the promotion of public transport;
- be designed with consideration for road safety and personal safety of all users; and
- help create high quality, durable developments in which to live, work and play.

The council's approach, coupled with the flexibility that the LHDG guidance allows, reflects many of the key themes of the National Design Guide, Manual for Streets (MfS) and Local Transport Note 1/20. The council recognises that roads as part of residential development layouts have a wider role to play in creating a sense of place and community as opposed to simply moving people from A to B.

Where this cannot be achieved by layouts that are explicitly covered in this section, the council will assess proposals that meet LHDG policies and principles on a case-by case basis.

Where approaches described in the LHDG are not presented as absolute policy, for example where the word should or normally are used, the developer/owner applicant may be requested to submit a request in writing (email acceptable) to the relevant officer for approval.

On receipt of the written request, consideration will be given to the query in full and within a reasonable timeframe. After consideration the applicant will be provided with a decision. At the heart of the decision will be the LHA's duty to be mindful of highway safety and public interest.

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Road Types

This section sets out the council's design guidance for adoptable roads. Guidance on passenger transport and providing for pedestrians, cyclists and horse riders can be found in the Active and Sustainable Travel section of the LHDG.

DEFINITION OF A STREET

Manual for Streets introduced the concept of a street and the distinct characteristics and design approach that applied for this type of road. Manual for Streets defines a street as "*highway that has important public realm functions beyond the movement of traffic*" and states that "*streets should have a sense of place, which is mainly realised through local distinctiveness and sensitivity in design*. Streets usually provide direct access to the buildings and the spaces that line them.

The council's definition of a street is a road that:

- has a speed limit of 40 mph or less and with 85th percentile speed of traffic generally below 40 mph;
- is mainly built up on both sides with residential or a mix of residential and local facilities, shops and so on;
- has a high place function e.g. direct frontage access, on street parking etc.

Commuted sums will be sought for areas and assets within a layout that are not required for the safe functioning of the highway and/or the use of bespoke materials identified (but not limited to) those listed in the Commuted Sums Schedule and Enhanced Materials Palette documents on the main consultation page.

The local context should be considered and influence the final design. In accordance with National Model Design Code guidance, junctions and crossings must be "safe, convenient and attractive" and encourage active travel. Proposals must also comply with the LHDG section "Junction Design."

The council encourages developers to create road layouts that are intended for adoption and built to the guidance and standards detailed in the LHDG. Where significant constraints mean that a developer cannot conform to these standards, then this should be highlighted with the council at the earliest opportunity. The council reserves the right to refuse adoption of roads that do not meet assessment criteria relating to safety and functionality of highway.

For employment and commercial developments, the council will expect road layouts serving developments of more than one building and with more than one occupier to meet the council's adoptable design policy and guidance and be offered for adoption. However, developers are encouraged to contact the council to discuss adoption requirements for specific proposals. (Developments Served by Private Drives)

Advice on how roads can be adopted can be found under Section 38 of the Highways Act and in the Approvals and Adoption Parts of the LHDG on the main consultation page.

External Roads and Other Off-site Highway Works

These are roads that have a strong movement function, such as a distributor or spine roads, which provide a more strategic link into the highway network. Unless they fall outside the definition of a road (street) (see above), developers should design external roads in line with MfS and the council's Specification and standard drawings or DMRB as appropriate. Road safety audits will be required in all cases. The council may accept direct frontage access from properties to such roads providing that they are subject to a 40mph speed limit and 85th percentile speeds are 40mph or less.

Site Access to External Roads

Roads that meet the council's definition of a street should be designed in line with the LHDG, MfS and the council's specification and standard drawings.

Mini-roundabouts are not acceptable for providing access to a development unless they form part of a more comprehensive traffic-calming scheme that is either required to reduce the development's impacts or that has previously been identified.

A mini- roundabout will not be acceptable where it is proposed simply because the necessary visibility for a priority junction cannot be achieved. The council may be prepared to consider permitting direct frontage access from properties to the external road providing that they are subject to a 40mph speed limit and 85th percentile speeds are 40mph or less.

Selection of junction types will depend on site-specific requirements and conditions including:

- location;
- safety considerations;
- traffic, pedestrian and cycle flows including mobility scooters/wheelchairs; and
- passenger transport requirements.
- Recorded 85th percentile speeds

When designing layout proposals, the demographics of any neighbouring communities should be considered to ensure that access requirements are fully understood.

Developers should establish and agree the council's requirements in the early stages of preparing the development proposals. In all cases Road Safety Audits will be required for external roads. Please see LHDG Road Safety Audit Policy on the main consultation page.

Internal Development Roads

For the purposes of the LHDG the five main internal road typologies commonly used within development in Leicestershire are:

- Major Residential Access Road (Primary Streets) (Figure 3)
- Residential Access Road (Secondary & Local Streets) (Figure 4)
- Shared Surface Residential Accesses (Tertiary Streets) (Figure 5)
- Major industrial access road
- Minor industrial access road

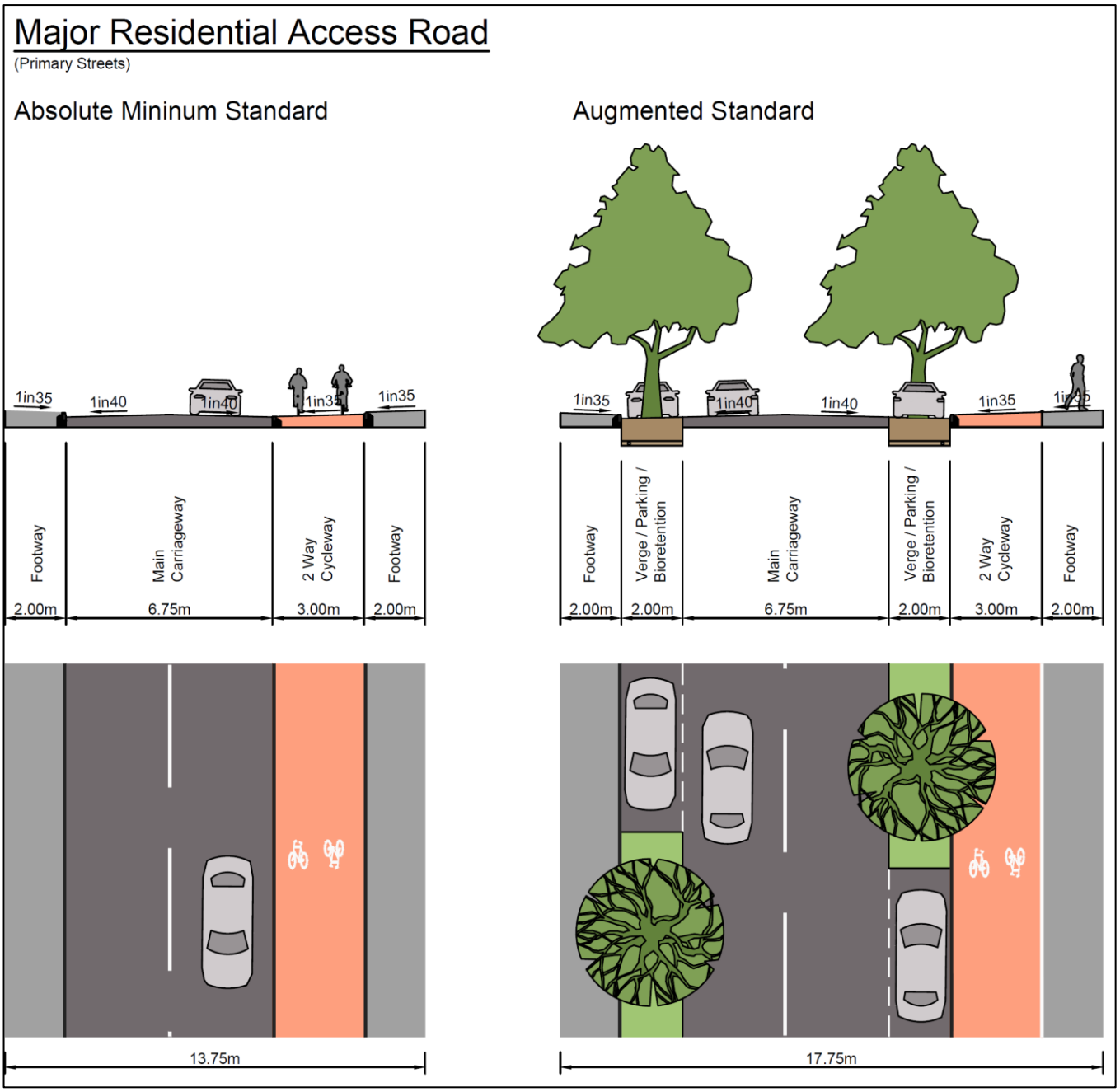

Figure 3: Major Residential Access Road (Primary Streets)

Typically provide a primarily movement function.

Road between strategic routes or linking urban centres.

Primarily segregated active travel routes.

Bus access is likely

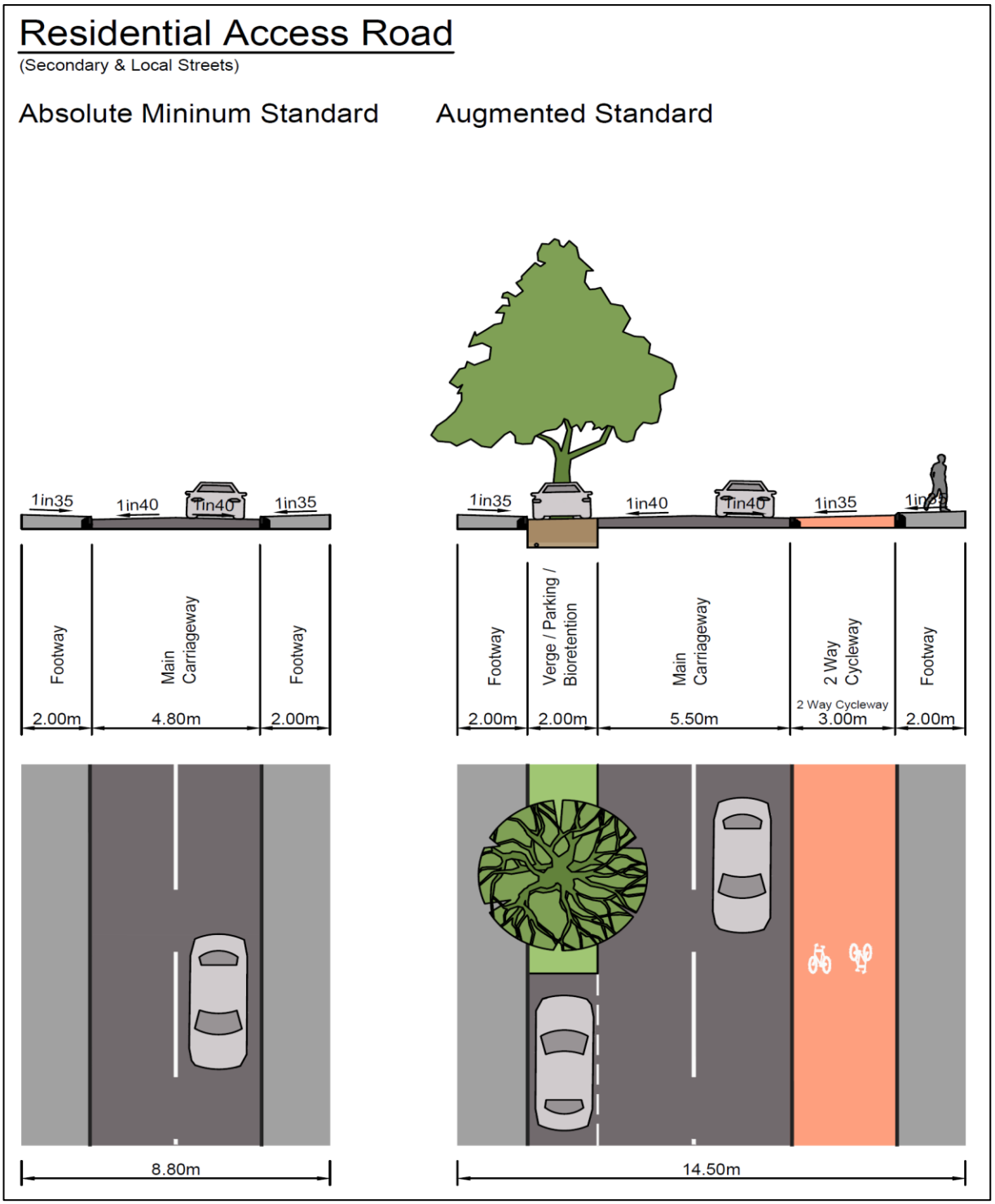

Figure 4: Residential Access Road (Secondary & Local Streets)

Both movement and place function.

Multi-modal corridor with pedestrian, cycle, bus and other motor vehicle activity.

Active travel interventions will depend on traffic flows and speeds.

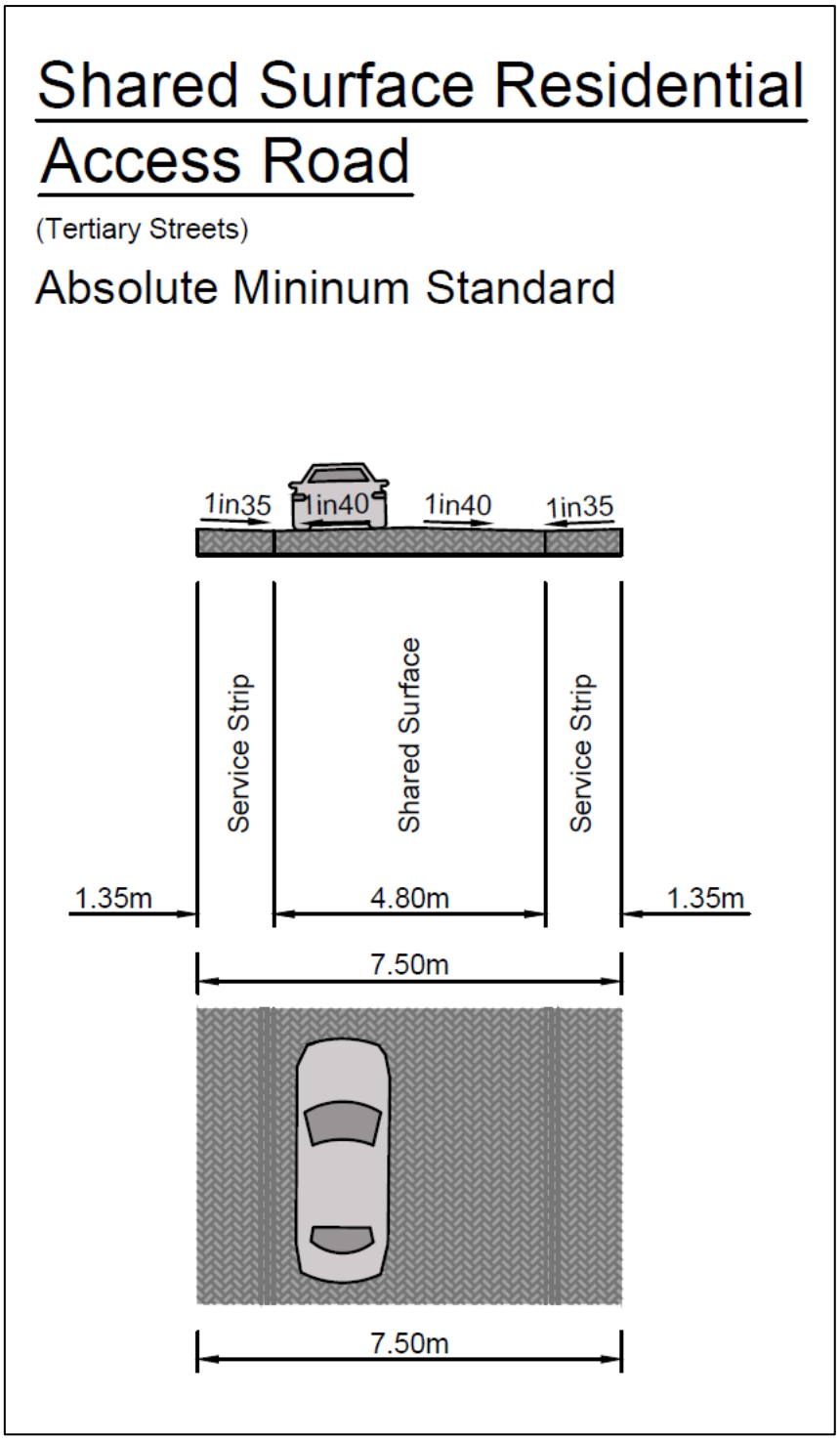

Figure 5: Shared Surface Residential Access (Tertiary Street)

Strong place function.

Emphasis on pedestrian and cyclist use.

Not acceptable for use as a bus route

These roads have a stronger place identity, but Major Residential Access Roads in particular serve a significant movement function. The drawings provided through the links above are not intended to be prescriptive but illustrate the council's general expectations regarding layout principles.

Internal roads for residential development of more than 1000 dwellings and employment and commercial developments should be designed to comply with the sections below, and the council's specification and standard drawings. The council will consider the design of development roads for sites of more than 1000 dwellings, or which are otherwise not covered by the following guidance, on a site-by-site basis.

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General Layout and Geometry

Table 3 provides information on the general geometry and usage for internal residential roads. Residential access roads are generally conventional cross-section roads with separate provision for motor vehicles and active travel users. On a Shared Surface Residential Access all users navigate a common surface.

Table 3: General geometry of residential roads (internal)

	Major Residential Access Road (Primary Streets)	Residential Access Road (Secondary & Local Streets)	Shared Surface Residential Access (Tertiary Street)
Type of use Also refer to Active Travel Design Layouts	Typically provide a primarily movement function. Road between strategic routes or linking urban centres. Primarily segregated active travel routes. Bus access is likely	Both movement and place function. Multi-modal corridor with pedestrian, cycle, bus and other motor vehicle activity. Active travel interventions will depend on traffic flows and speeds.	Strong place function. Emphasis on pedestrian and cyclist use. Not acceptable for use as a bus route
Single point of access dwelling limits	1000 Normally no more than 400 from a single point of access. This threshold can only be exceeded based on a robust evidenced justification to be agreed with the LHA.	400 Normally no more than 150 from a single point of access. This threshold can only be exceeded based on a robust evidenced justification to be agreed with the LHA.	50 Normally no more than 25 from a single point of access. This threshold can only be exceeded based on a robust evidenced justification to be agreed with the LHA.
Access to schools	Yes	Yes, but not as a cul-de-sac.	No
85th percentile design speed	20mph	20 mph	15mph
Shared surface	No	No	Yes
Widths for two-way traffic.	Carriageway width 6.75m	Carriageway width 4.8m up to 50 dwellings and 5.5m for 50 to 400 dwellings	Overall highway corridor width required to accommodate all road users, green infrastructure and utility equipment. 7.5m

	Major Residential Access Road (Primary Streets)	Residential Access Road (Secondary & Local Streets)	Shared Surface Residential Access (Tertiary Street)
		Except on a bus route where the carriageway should be a minimum of 6m wide (subject to tracking assessment) or on a road serving a school where the carriageway should be 6.75m wide in all cases.	
Where a road is to be narrowed, to help control vehicle speeds, for example, the minimum *carriageway* width (kerb to kerb) = 3.7m. Minimum lane width at a restriction, such as pedestrian refuge in the middle of the road = 3.2m.			
Centre-line radius	Defined by tracking	Defined by tracking	Defined by tracking
Crossfall	1:40	1:40	1:40
Longitudinal gradient	Flexible surfacing minimum: 1:100 Block surfacing minimum: 1:80 In all cases maximum: 1:20 In all cases, at junctions: not to exceed 1:30 for first 10m of the side road	Flexible surfacing minimum: 1:100 Block surfacing minimum: 1:80 In all cases maximum: 1:20 In all cases, at junctions: not to exceed 1:30 for first 10m of the side road	Flexible surfacing minimum: 1:100 Block surfacing minimum: 1:80 In all cases maximum: 1:20 In all cases, at junctions: not to exceed 1:30 for first 10m of the side road
Vertical curves	See vertical curves section	See vertical curves section	See vertical curves section
Visibility distance at junctions, bends and vertical crests See visibility splays below	25m	25m	17m
Footways and cycleways	Please refer to tables in the Active Travel Section of LHDG on the main consultation page		
Verges	Grassed verges minimum 1m wide, minimum area 10sqm. Hard paving otherwise. Minimum 2m width to accommodate sufficient space for tree planting.		
Steps	Not normally acceptable in areas to be adopted as public highway unless a		

	Major Residential Access Road (Primary Streets)	Residential Access Road (Secondary & Local Streets)	Shared Surface Residential Access (Tertiary Street)
	suitable alternative ramp is provided for those unable to climb steps.		

Designing roads layouts that serve schools

Parking in the vicinity of schools, as children are dropped-off or collected, is a safety hazard and can cause traffic congestion.

For new residential developments, the need for a new school on the site and its planned location must be established at the master planning stage in consultation with the council and the LPA, see the Highway Development Management section on the main consultation page. This will avoid future issues related to road safety and traffic congestion and ensure that the adoptable carriageway width standard of 6.75m is adhered to on school access roads.

The design of highways adjacent to new and existing school sites must:

Encourage active travel options;

provide 'safe routes to school'; and

minimise the risk of on-street parking problems.

These measures will need to be considered as part of the transport assessment for the development, alongside the requirement for a school travel plan. The same requirements also apply to proposals for the expansion of an existing school and provision of new highway close to an existing school site.

Whilst the LHA will seek to ensure that sustainable transport opportunities are taken up through the planning process, it is recognised that there will still be a demand for drop-off and pick-up to school by car. Accordingly, the LHA will seek to ensure that safe off-street drop-off / pick-up provision is provided for at school sites.

Shared Surfaces

MfS suggests that shared surfaces work well in short lengths (doesn't require motor vehicle dominant features) or where they form cul-de-sacs, where traffic is less than 100 vehicles per hour, and where parking is controlled. Care must be taken in the design of shared-surface layouts to ensure that the development's whole design, including building type and layout and use of street furniture conveys to users the nature of the area. Motor vehicles should not dominate, and the layout should not simply appear to be a road without footways.

It is also important that any shared surface is designed for safe use by people with visual impairments and that they include an alternative means for visually impaired people to

navigate by. In accordance with MfS, developers must consult with relevant representative groups and access officers in designing proposals. Guidance in RNIB's *Key Principles of Inclusive Street Design*, produced by the Royal National Institute of Blind People (RNIB), helps designers make positive decisions about provision for people with sight related problems and other disabilities.

The type of surfacing materials will normally be a secondary feature in defining the nature of the area. It is not normally acceptable to simply use a different material to convey the nature of an area to users. The council will assess the proposed surfacing material for any shared-surface area in terms of safety and effectiveness of design, including proposed housing layouts.

Highway Layouts

The council may accept a narrower, single *carriageway* width of 3.7m between kerbs over short lengths as a speed-control feature. The minimum *lane* width of 3.2m is only acceptable in limited scenarios, for example, where a refuge is provided in the middle of the road.

In addition to accommodating the needs of all road users, green infrastructure and utility equipment, where buildings front directly onto the highway outward-opening windows, drainage downpipes and other adjacent facilities, should be set back at least 0.5m behind the proposed highway boundary.

Inclusive Highway

Principle 6 "Supporting Inclusive Highway" sets out the council's values regarding expectations for the delivery of accessible highway. This principle applies to all road types including those serving employment and commercial properties. Developers must ensure that they are meeting the statutory duty under the Equality Act 2010 through the design of highway layouts. It is strongly recommended that during the design process reference is made the Department for Transport's "Inclusive Mobility" document and RNIB's *Key Principles of Inclusive Street Design*.

In exceptional circumstances the council may consider a relaxation of the 1:20 longitudinal gradient standard on sites with particularly difficult topography. However, relaxations must be a last resort for longitudinal design. The impacts of the development on disabled or more vulnerable users must be fully assessed by the developer where this is being proposed. The financial cost of cut/fill is not a material consideration when assessing the ability to achieve gradients to aid active travel options.

Table 4 gives the general geometry for internal employment and commercial roads. Generally, both major industrial access roads and minor industrial roads are conventional cross-section roads with separated provision for vehicles and pedestrians, but their designs vary depending on likely levels of heavy-goods vehicles (HGVs).

Table 4: General geometry of employment and commercial roads		
	Type of internal development road	
	Major industrial access road	Minor industrial access road
Planning use class	B2 and B8	E(g)(i), E(g)(ii), E(g)(iii)
Single- access development limit	Normally no more than 8 hectares	
85th percentile design speed	30mph	25mph
Shared surface	No	
Widths for two-way traffic	Carriageway width: 7.3m	Carriageway width: 6m for E(g)(i) [offices] ; 6.75m for E(g)(ii) and E(g)(iii)
Centre-line radius	55m minimum	Defined by tracking(e)
Crossfall	1:40	
Longitudinal gradient	Minimum: 1:100 Maximum: 1:20(f) At junctions: not to exceed 1:30 for first 10m of the side road	
Vertical curves	See paragraph 3.28	
Visibility distance at junctions, bends and vertical crests	70m	45m
Footways and cycleways	Please refer to tables in the Active Travel Section of LHDG	
Verges	Grassed verges minimum 1m wide, minimum area 10sqm. Hard paving otherwise.	
Steps	Not normally acceptable in areas to be adopted as public highway unless a suitable alternative ramp is provided for those unable to climb steps	

Planning Use Class

Other use classes, for example shopping and leisure, will be considered on a site-by-site basis and assessment will be dependent on the likely numbers of HGVs.

The council may recommend planning conditions to restrict change of use from E, B2 and B8 developments unless the roads – including construction specification –are designed to the major industrial road standard or the development layout provides for their future improvement at the developer's expense.

Where a B1 development is large enough to generate significant numbers of HGVs, a major industrial road may be required. However, provision of a minor industrial access road may be acceptable for B2/B8 developments, such as business starter units, where they only generate a small number of HGVs traffic.

Well Connected Street Networks

Well-connected street networks have significant advantages regarding:

- shorter user routing options across a given area;
- the avoidance of reversing manoeuvers;
- minimisation of land-take by avoiding the need for wasteful turning areas at the ends of cul-de-sacs;
- encouraging active travel to local destinations, improving a community's health while reducing motor traffic, energy use and pollution;
- improved personal security and road safety from greater active travel use. Research shows that the presence of pedestrians on streets causes drivers to travel more slowly;
- the provision of services and alternative service routes for utility companies;
- highway and utility maintenance operations. Traffic can be routed around a point of closure if it is necessary to excavate the carriageway for maintenance.

New residential streets should be designed to form part of a well-connected street network. The tables above provide guidance on limits to development from single points of access for both residential and commercial sites. Developments exceeding these limits will be assessed on a site-by-site basis.

Developments will typically require at least two access points to the highway network. The number of external connections that a development provides depends on the nature of its surroundings. These access points should be to adoptable standards and available for public use.

Under limited circumstances cul-de-sacs may provide the best solution for developing difficult sites that, for example are, linear in nature or have difficult topography.

Emergency Accesses

Due to issues relating to misuse and safety, emergency accesses should only be a design option of last resort and a case for their use must be agreed by the council. Additionally, the developer must demonstrate that:

- highway safety is not compromised and the access is not likely be a source of crime or anti-social behaviour;
- there are appropriate means of controlling its use;

- the emergency services have been consulted and the proposals are deemed acceptable. Consultation with the police must include officers that deal with both traffic management and antisocial behaviour;
- the access is designed to safely accommodate all vehicles likely to use it; and
- long-term maintenance responsibilities are clearly defined and secured.

Failure to provide suitable access arrangements may jeopardise the success of the planning application and result in the council declining the adoption of the road.

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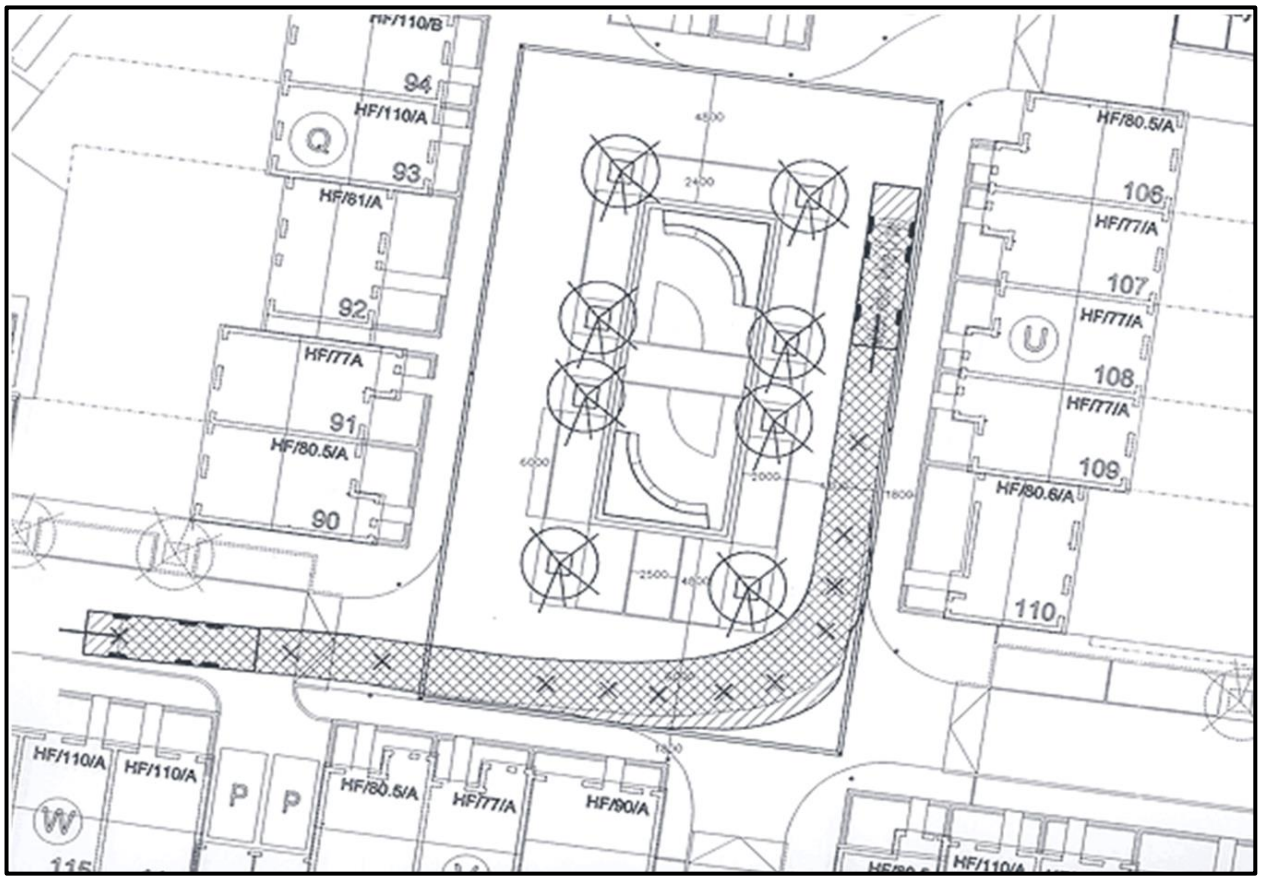
Swept Path Analysis

Swept path analysis assesses the required width for vehicle movement within the overall width of the road. It can also be used to establish appropriate bend radii. This means that the arrangement of the buildings and the boundaries of the development can be considered first, rather than taking the highway engineering requirements as the starting point for layout design. Building layouts can suit a particular form, with kerblines helping to define and emphasise spaces. The width between kerbs can vary. Further information on how to use swept path analysis is available in the MfS.

Where tracking of large vehicles results in the use of the whole width of the carriageway to manoeuvre on narrow roads, it is important to ensure that forward visibility to bends, including at junctions, is provided in accordance with Table 6: Visibility splays to enable this to be achieved safely. There should be no recourse to reducing the width of roads that result in cars needing to make use of the whole width of the carriageway to make similar manoeuvres.

Figure 6: An example of swept path analysis tracking a refuse vehicle (Reproduced with kind permission of Jelson Ltd and Boreham Consulting Engineers).



Following swept path analysis, the widths and bend radii must be checked to ensure that the vehicles expected to use the road layout can manoeuvre safely and effectively, without overrunning of kerbs. The vehicle types might typically include a refuse lorry, fire tender and pantechnicon (such as a removal lorry) and a bus if the development will be served by public transport.

A minimum modelling speed of 15 mph going forwards and 2.5 mph going backwards is to be used when analysing swept paths. At turning heads and for reversing movements in service yards, the slower, default swept path vehicle speed is acceptable.

Swept path analysis details are required for 11.2m long refuse vehicles at turning heads (unless the borough or district already uses a larger vehicle, in which case that vehicle should be used) to ensure they can be satisfactorily navigated.

Swept path assessments need to take account of any planned or likely on-street parking (See "Parking and EVC" section).

The council should be given the opportunity to assess and agree the proposed layout before a planning application is submitted. The layout will also need to satisfy other relevant design guidance for the road type to achieve the design speed and to create a safe environment for all road users, including pedestrians and cyclists.

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Vertical Curves

Vertical curves will be required where changes in gradient occur at sags and crests. Except where indicated in the note to Table 5, curve lengths should be either:

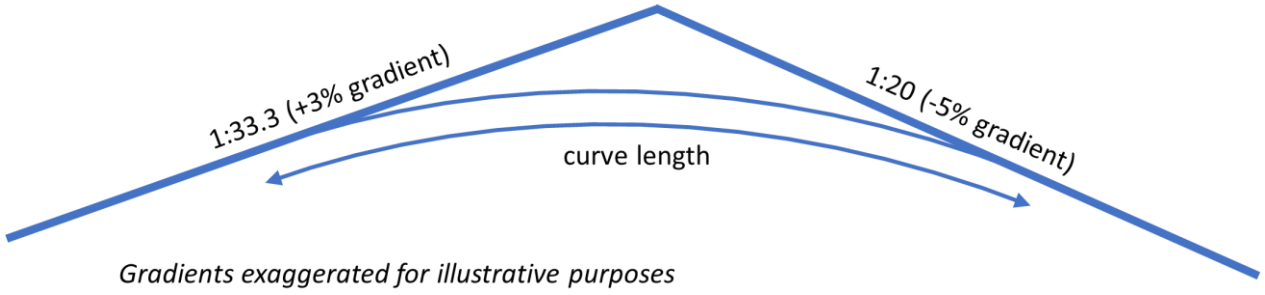
- the sum 'K' x 'A', where 'K' is given in Table 5 and 'A' is the algebraic difference of the gradients expressed as a percentage; or
- the 'minimum length for appearance' given in Table 5 whichever is higher.

Figure 7: Example calculation of length of vertical curve

For 20mph design speed k = 3

Algebraic difference of gradients = +3.0 - (-5.0) expressed as a percentage = 8.0

Curve length = 3 x 8 = 24 m (minimum length for appearance = 20m)



Shorter curve lengths may be acceptable where there are exceptional difficulties in achieving the length normally required.

Table 5: Vertical curves for all internal roads

85th percentile design speed (mph)	Minimum length of vertical curve	
	K	Minimum length for appearance (metres)
30[(a)]	6.5	30
25[(a)]	4	25
20	3	20
15	2	20

[(a)] Design speeds on new residential development roads should be restricted to 20mph or less. Please refer to DMRB for speeds above 30mph.

To avoid stretches of road where water gathers, do not apply the minimum length where "A" is less than five on any sag curve that results in a low point on the road.

Early discussions should be held with the council regarding large, flat sites to ensure that the vertical alignment is acceptable. It may be necessary to provide combined kerb and drainage units to ensure both an acceptable alignment and drainage of the highway.

For crests it may be necessary to increase the length of vertical curve derived to achieve the visibility distance as set out in Table 5 above.

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Visibility Splays

For proposed internal development roads, the visibility splay should be based on an assessment of likely 85th percentile vehicle speeds. For existing roads, it should be based on measured 85th percentile vehicle speeds. Where information does not exist, the council requires the developer to conduct surveys in line with the "Data Collection" section.

MfS provides guidance on the use of calculated values for Stopping Sight Distances (SSD), for which clause 10.1.3 of MfS2 states are suitable for streets where the 85th percentile vehicle speeds are up to 60kph (37mph).

The council therefore allows for calculated SSDs to be used for 85th percentile vehicle speeds up to and including 60kph (37mph), and for vehicle speeds above this the Design Manual for Roads and Bridges (DMRB) is to be used.

While considering the design speeds in Tables 3 and 4, the council will assess visibility requirements based on likely vehicle speeds within a proposed development. Where it can be demonstrated that speeds are, in practice, likely to be lower than the design speeds, correspondingly shorter splays may be acceptable. Equally, if speeds are likely to be higher, the splays will need to be correspondingly greater in length.

Table 6: Visibility splays (Use figures for HGV and buses if these vehicles make up more 5% of actual or predicted total traffic flow)

Assessed likely vehicle 85th percentile vehicle speed (mph)	Measured 85th percentile vehicle speed (mph)	Visibility distance at junctions, bends and vertical crests (m) Light vehicles	Visibility distance at junctions, bends and vertical crests (m) HGV
15	11 to 15	17 [(a)]	19 [(a)]
20	16 to 20	25 [(a)]	27 [(a)]
Speeds on new residential development roads should normally be controlled to 20mph or less	21 to 25	33 [(a)]	36 [(a)]
	26 to 30	43 [(a)]	47 [(a)]
	31 to 35	54 [(a)]	59 [(a)]
	36 to 40	65 [(a)]	73 [(a)]
	41 to 44	120 [(b)]	120 [(b)]
	45 to 53	160 [(b)]	160 [(b)]
	54 to 62	215 [(b)]	215 [(b)]
	63 to 75	295 [(b)]	295 [(b)]

[a] Based on the MfS documents, 'adjusted for bonnet length'

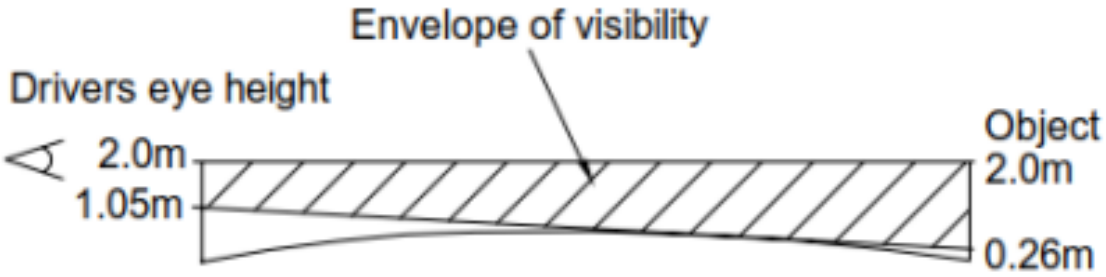
[b] Based on DMRB, desirable minimum criteria for deceleration rate (0.25g) and reaction / perception time (2 seconds). The application of a higher standard value for deceleration rate and a lower standard value for reaction time would need to be based on a robust evidenced justification for the location under consideration to be agreed with the LHA.

Calculated values will be accepted for actual agreed 85th percentile speeds.

Where speed is assessed to be over 20mph, splay provision will normally be based on the appropriate measured 85th percentile vehicle speed distance.

For all road types within a development, visibility (at junctions, bends or crests) in the vertical plane should normally be measured from a driver's eye-height of no less than 1.05m above the road surface to a point no less than 0.6m above the road surface. On roads outside of the development, for example at the site access, the visibility should be measured from an eye-height of not less than 1.05m to a point not less than 0.26m, in line with the DMRB. However, if roads fall within the definition of a road (street) as defined in Road Layouts, visibility can be measured as if the road lies within a development.

Figure 8: Crests in road (brow of hill)

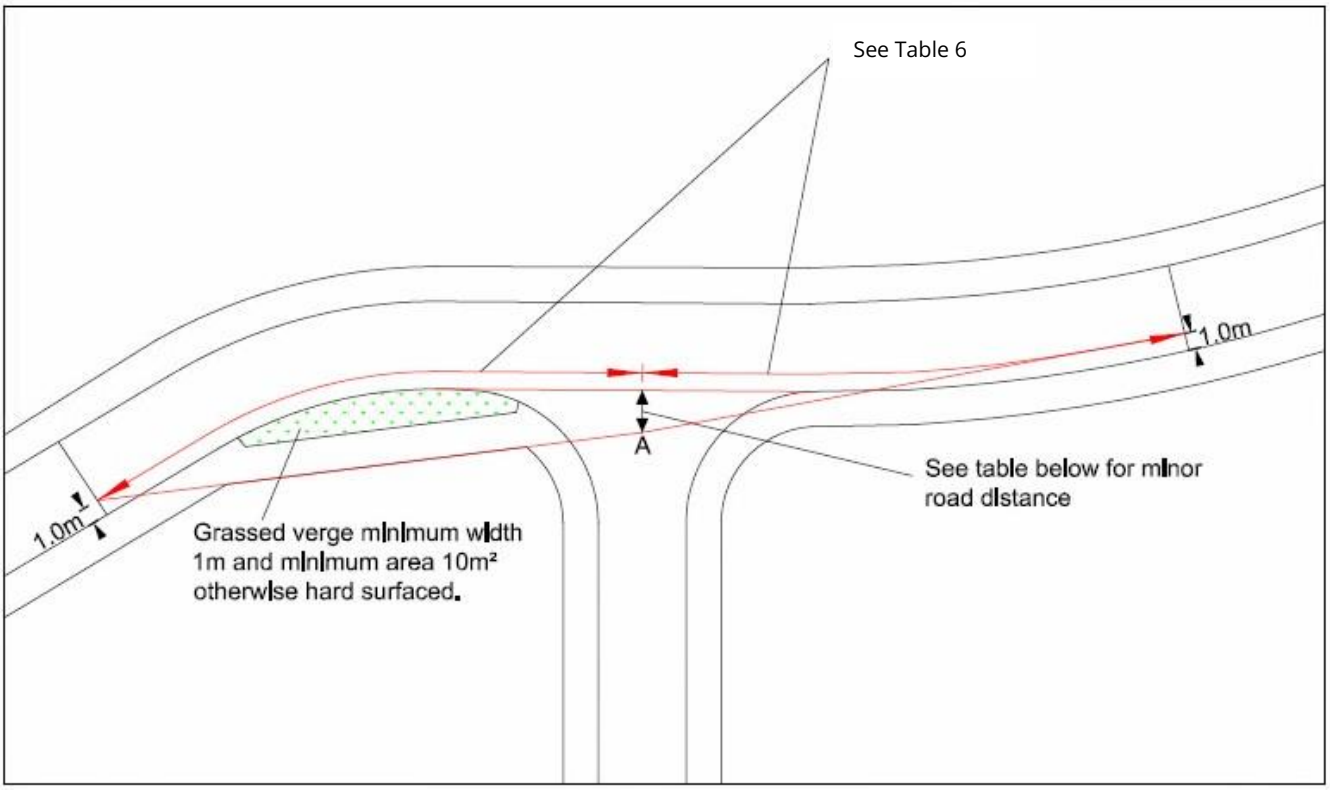


Construction of Visibility Splays

For all horizontal visibility splays, the rear of a footway, cycleway or similar should coincide with (match) the rear edge of the visibility splay. A more accurate assessment of visibility splay is made by measuring to the nearside edge of the vehicle track. The measurement is taken from the point where this line intersects the centreline of the minor arm unless there is a splitter island in the minor arm.

Figure 9 shows an offset visibility splay 1m from the kerbline. Whilst this does not conform to MfS or DMRB requirements (which require no offset), it represents a permitted relaxation under LHDG guidance.

Figure 9: Offset visibility splay at a junction

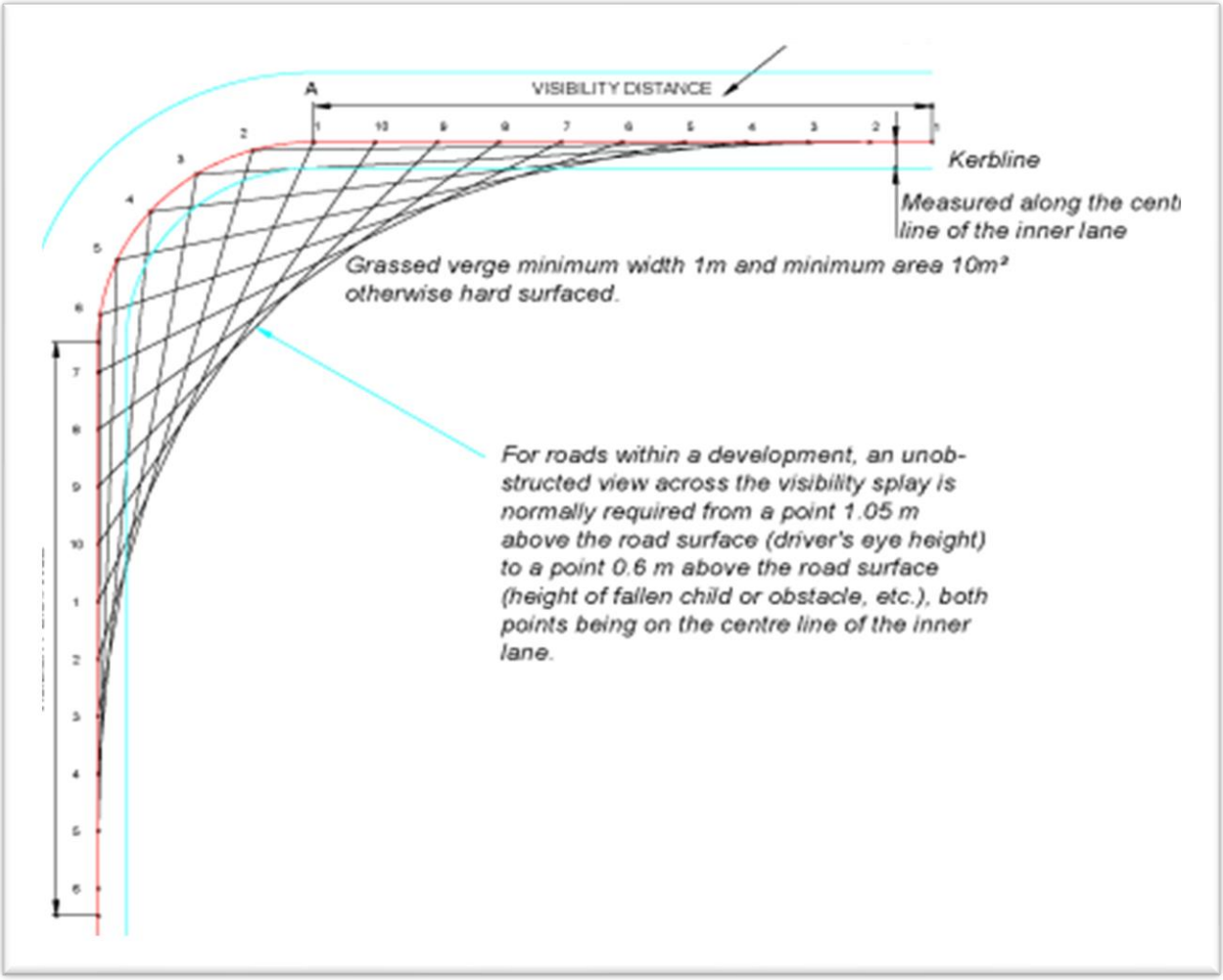


The required set back will depend on scale and nature of proposed development. The LHA will accept a minimum set-back distance of 2.4m (i.e. to point 'A) unless a greater set-back distance is required for junction capacity reasons.

Developers should refer to DMRB CD123 Clause 3.9, where the junction is on the outside of a bend.

Evidence that the correct vertical visibility can be provided for the junction visibility splay will also be required. This should be achieved by producing a long section along the line of the visibility splay.

Figure 10: Designing bends



Widening on bends

On residential roads serving more than 25 dwellings, carriageways should be widened at bends that curve through more than 10 degrees.

Table 7: Residential roads – widening on bends						
Centre-line radius (m)	20	30	40	50	60	80
Minimum widening	0.60	0.40	0.35	0.25	0.20	0.15

Bends should be widened in industrial and commercial developments.

Table 8: Industrial and commercial roads – widening on bends			
Centre line radius (m)	55 to 74	75 to 89	90 to150
Minimum widening	1.2	0.7	0.6

For any proposals not conforming to the figures in the above tables, vehicle swept path analysis must be produced to show that the proposed layout can accommodate appropriate vehicles without danger to other road users, including pedestrians and cyclists. There should be no overrunning of the centreline or kerbline and no overhanging of footways by vehicles.

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Junction Type, Geometry and Spacing

For guidance on active travel crossings at side roads please see the Active Travel Section of the LHDG.

Basic junction forms should be determined at the concept layout (master planning) stage with the more detailed proposals provided as the development proposal evolves.

Whilst Figure 7.9 of MfS identifies a range of possible junction types, The council expects junctions designs to be in the form of:

- a priority T-junction;
- a staggered priority junction at a 90° angle to the main road;
- a mini-roundabout. Mini-roundabouts are acceptable where they form part of a more comprehensive traffic-calming scheme that is either required to reduce the development's impacts or that has previously been identified.

The LHA recognises that for roads with high expected flows and/or speeds, or site accesses that require a high level of operational capacity, a compact / full roundabout or signal controlled junction may be required. Such circumstances will be considered on their own merits and the LHA recommends early discussions in this respect.

Any design that deviates from the council's expected layout above should be accompanied by a designer's risk assessment to ensure the safety of the junction is not compromised. The council reserves the right to refuse to adopt roads where it is considered junction design is inappropriate.

Provision of priority-controlled ('give way') crossroads should be avoided. In circumstances where directly opposing junctions are the only option, a justification for their use must be made to the council. In this context, the provision of a roundabout controlled junction would be the expected form of control.

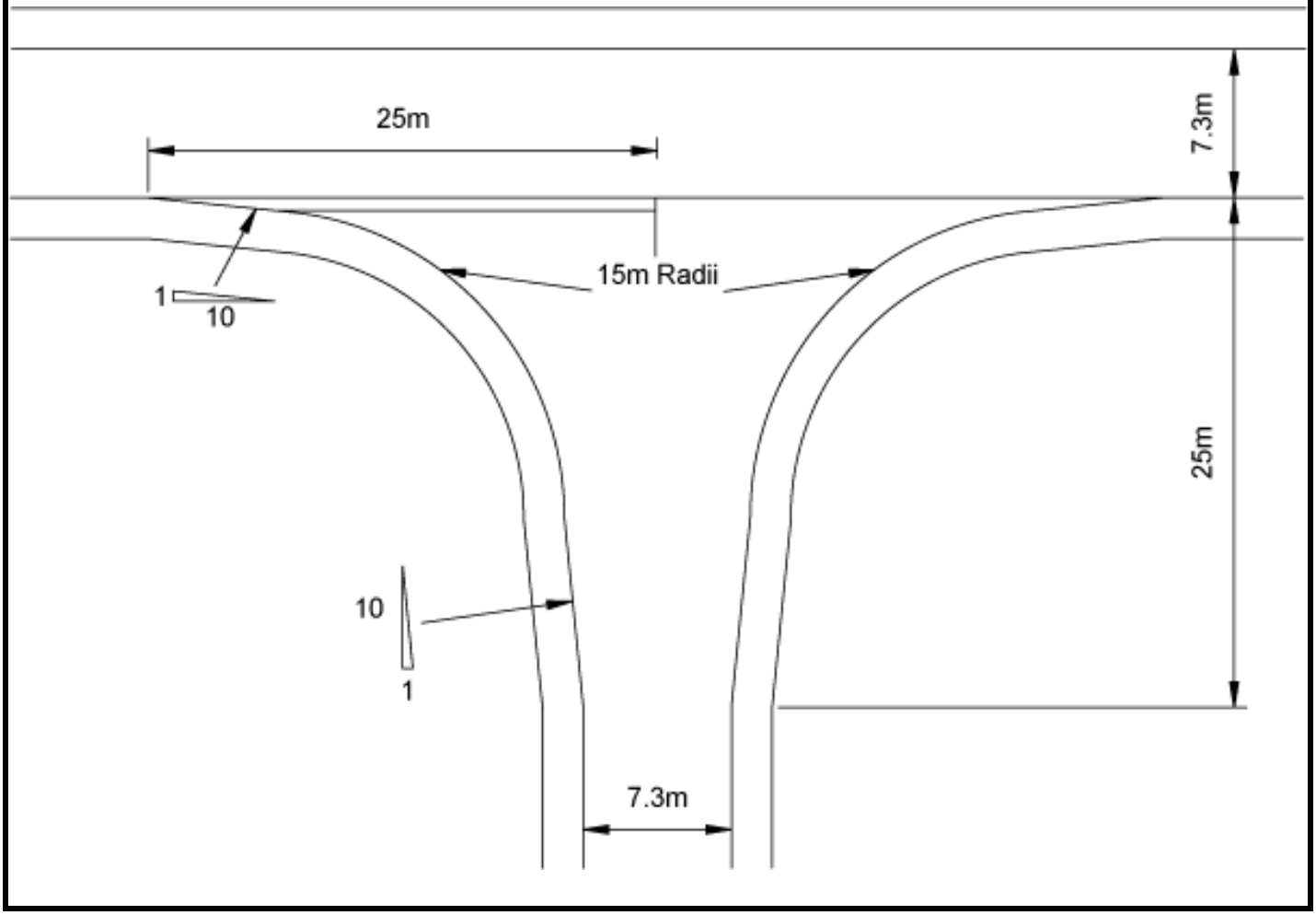
Table 9 below shows the expected geometric requirements for all priority junctions within different development types including external junctions including, subject to circumstances. Please also refer to Road Types and Materials and Construction on the main consultation page.

Please note that, where a corner radius is less than 7.5m, footway strengthening must be provided. Please see Materials and Construction "Road Pavement" on the main consultation page.

Table 9: Priority junction geometric requirements

Development type	Road type	Corner radii (m)
Residential	Entry to a Residential access way or road or junction between access ways and roads	6m
Industrial and commercial Use class B1 offices	Entry to Minor industrial access road or junction between access roads	6m
Industrial and commercial Other B1 uses	Entry to Minor industrial access road or junction between access roads	10m
Industrial and commercial Use classes B2 to B8	Entry to Major industrial access road or junction between access roads	See Figure 11 below

Figure 11: Priority junction geometric requirements



Development types not listed will be considered on a site-by-site basis.

Radii based on road widths set out in Table 3 and 4, where roads meet at an angle of 90 degrees. For other circumstances (including any proposals for tighter radii), tracking assessments will be required of the proposed layout.

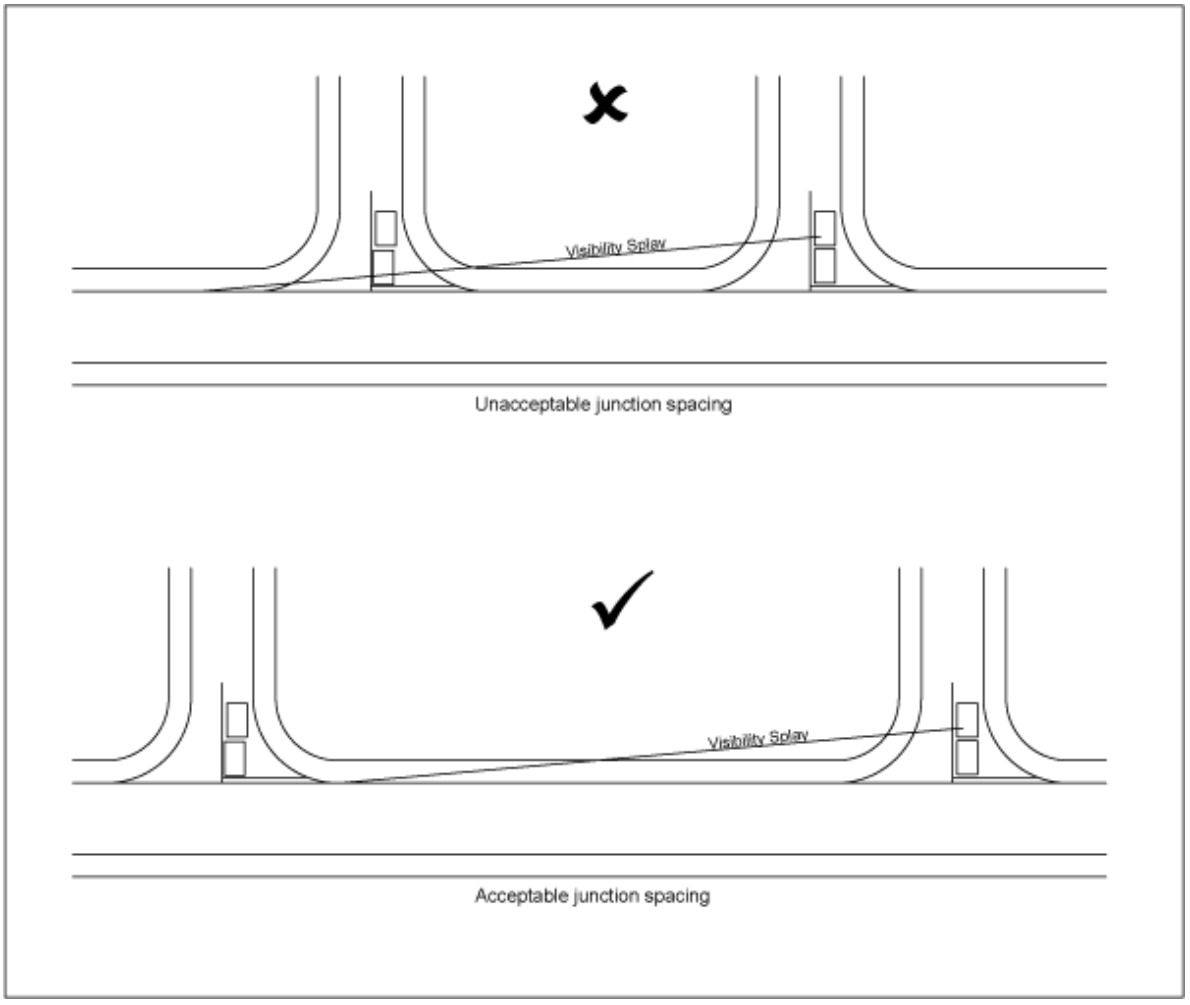
Other factors will be considered in assessment of the junction proposals, including the likelihood of on-street parking problems in the vicinity of the junction and whether the roads are likely to form part of a bus route.

Junction Spacing Within a Development

Road junctions on the same side of a road should be spaced so that a vehicle waiting to enter the main road at one does not interfere with visibility for a vehicle waiting at another.

Opposite side spacing should be half of the forward visibility required for same side junctions.

Figure 12: Junction spacing



Private Access Restrictions

Vehicle access should not be provided:

- within the vicinity of the junction, with consideration of the status of the major road (in terms of class, daily volume, 85th percentile etc.);
- on to the corners (radii) of the junction;
- at bus stops or lay-bys;
- close to a pedestrian or cycle refuge;

- close to a traffic-calming feature (accesses should not be sited on the ramp of a road hump or speed table due to the risk of a vehicle grounding as it manoeuvres into or out of the access); and
- close to street furniture (see Materials and Construction "Street Furniture and Art" on the main consultation page).
- Where vehicle movement is the primary function of highway (distributor road or similar).

Accesses will normally be acceptable where they comply with LHDG policy in relation to safety and functioning of the highway network and the National Planning Policy Framework. Junctions must also comply with the guidance on the design of private accesses.

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Turning Heads

A turning head should be provided at the end of all cul-de-sacs or wherever vehicles would otherwise have to reverse over 20m or more. Turning heads should also be provided where turning vehicles might damage adjacent verges or footways. Figures 13-15 show the minimum turning dimensions and areas. Tracking details are required for turning heads to ensure that a 11.2m long waste/recycling vehicle can satisfactorily negotiate a turning area.

Careful consideration must be given to the design of the development surrounding the turning head to ensure that its use is not reduced by on–street parking. Where on-street parking is likely to cause problems, measures must be taken to control it (see "Parking Provision").

The use of a residential square or similar as an alternative to a turning head may be acceptable where it can be shown that it is unlikely to be impacted by on-street parking. Clear details will be required of who is responsible for maintenance. Where it is intended that the council adopts any extra areas, a commuted sum for future maintenance will be required.

Figure 13: Example of a turning head within a 'square'

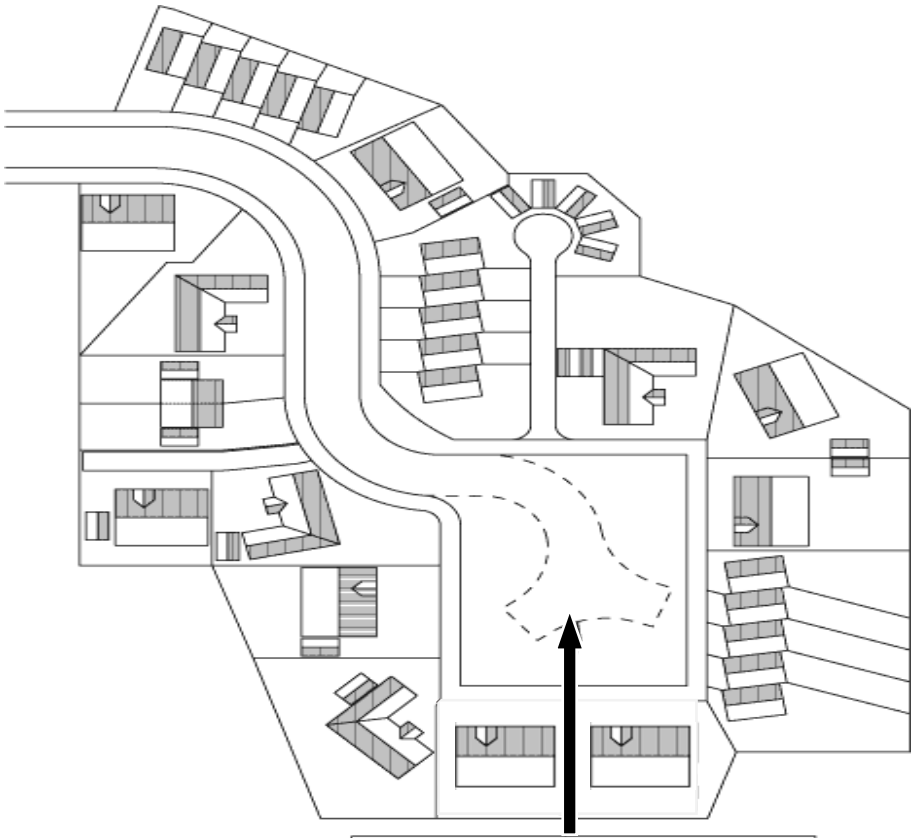
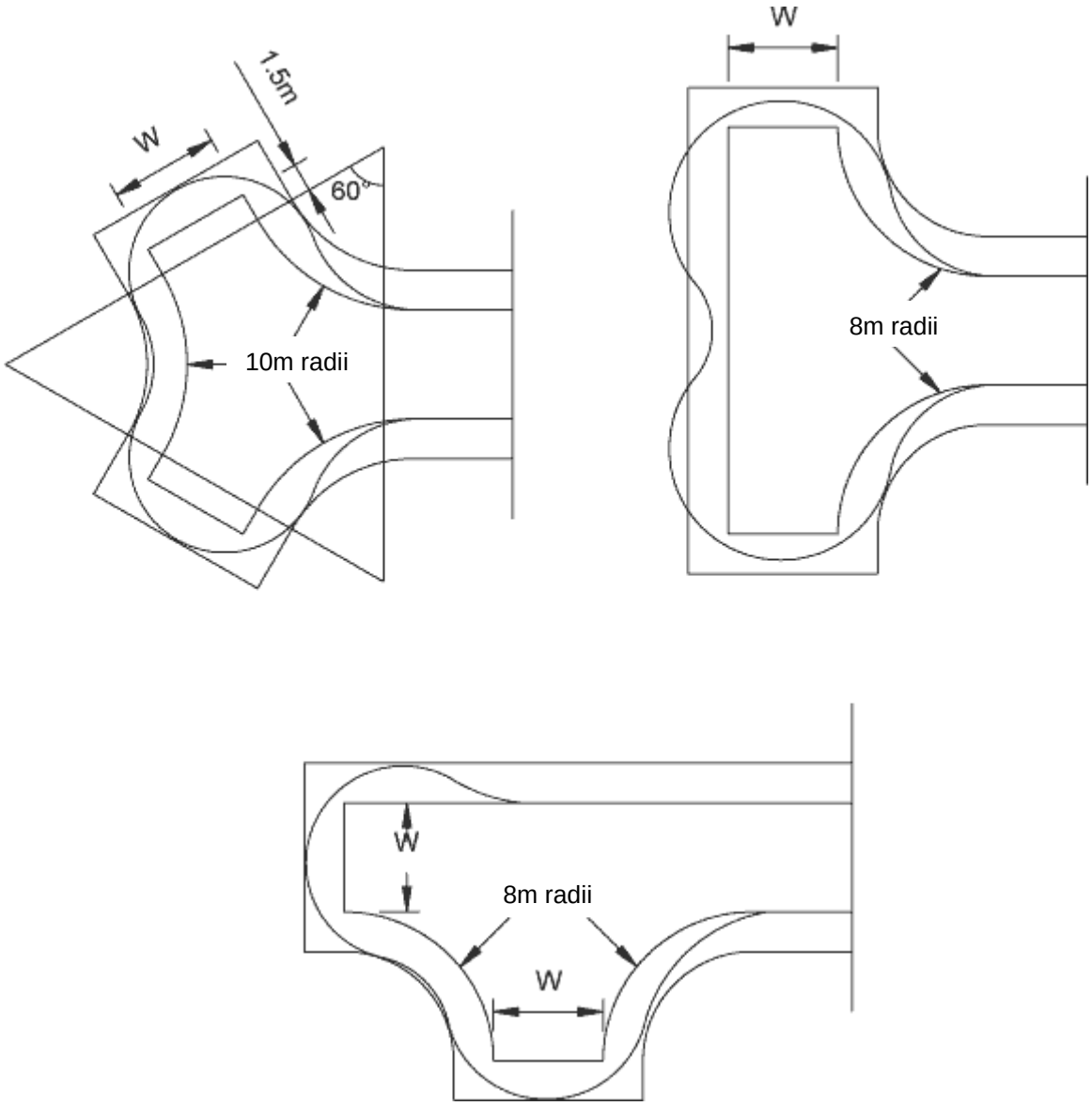


Figure 14: Turning heads for use on residential access roads and minor industrial access roads serving offices.

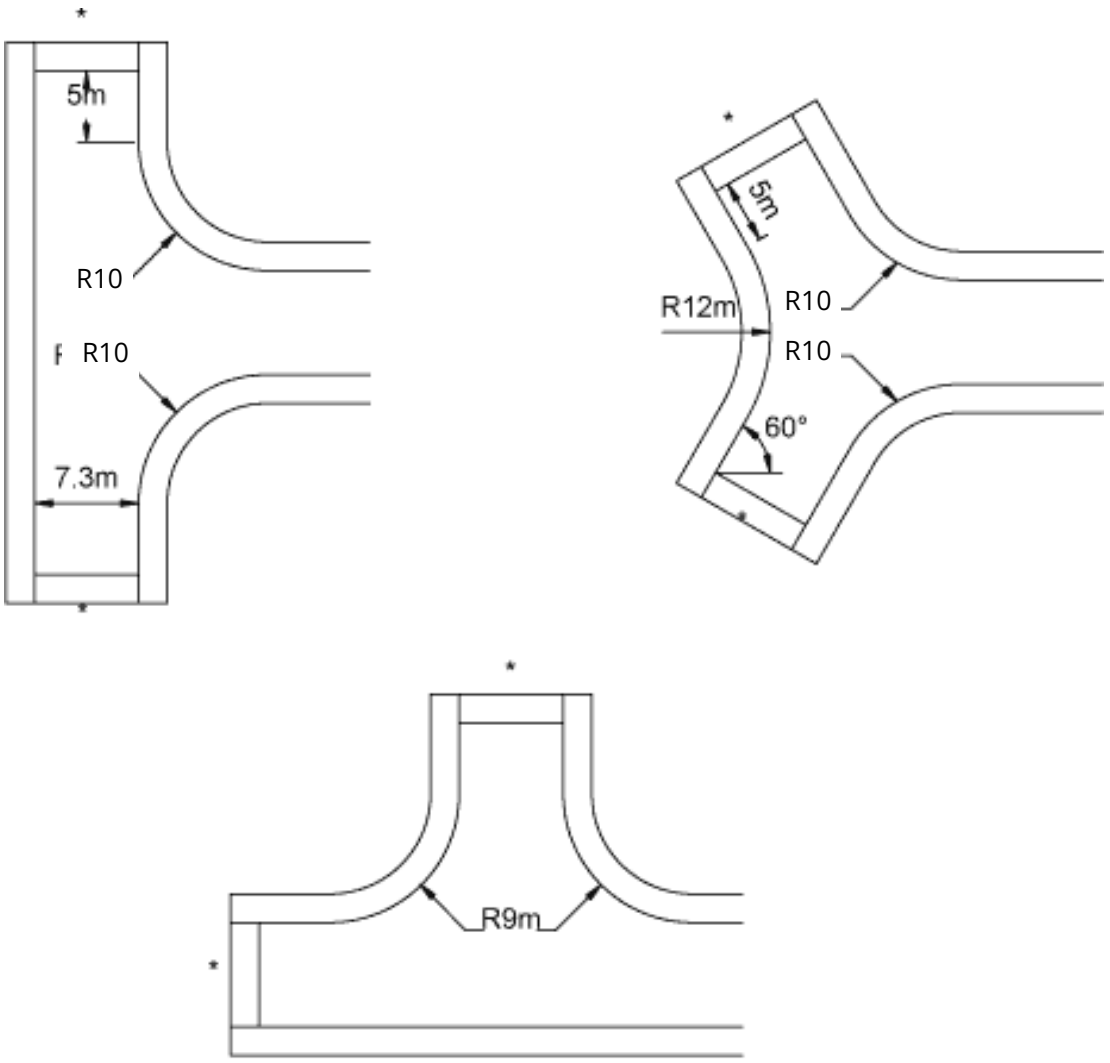


W = 4.8m up to 50 dwellings

W = 5.5m from 50 - 400 dwellings

W = 6m for E use class office developments

Figure 15: Turning heads for use on industrial/commercial estate roads



* Depending upon the type of vehicles likely to use the road, a footway may be required around the end of the turning head.

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Mixed-use Developments

In the interests of road safety and to reduce environmental impacts, commercial and employment developments that generate larger goods vehicles should be segregated from residential areas. Layouts should be designed so that commercial and employment traffic does not need to use residential roads.

To support sustainability, the council may accept mixed-use developments that include small commercial premises that generate limited goods vehicles, such as offices or a shop, particularly in or close to town centres.

The materials and construction methods used for a road must be based on the largest vehicle expected to use it.

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Developments Served by Private Drives and Areas

This section provides design guidance on private drives and areas. For guidance on the Advance Payments Code (APC), please refer to the sections on Adoptions and Approvals on the main consultation page. A private or unadopted road is owned, maintained and controlled by a private person, persons or corporation rather than the Local Highway Authority. Private roads are not usually open to the public.

Principles

The council will encourage developers to create 'road' layouts that are to an adoptable standard and that will be offered for adoption where they directly serve/front:

- at least 6 residential dwellings;
- employment sites with more than one building;
- one commercial building with multiple-occupancy employment; and
- commercial developments (occupied by more than one company).

Where highway remains private, issues for both the developer and house purchasers can involve:

- liabilities for future maintenance;
- public liabilities;
- street cleansing responsibilities;
- lack of specific pedestrian facilities;
- no guarantee of the suitable standard of lighting or drainage being provided;
- Limitations to statutory powers for both the Local Highway Authority and the police.

Should highway within private areas become poorly maintained, this can detract from the quality, appearance and future value of a development.

Private developments are typically in the form of a cul-de-sac. Private 'through' routes must not be provided as they are more likely to be used by the general public, possibly adding to the liabilities and future problems for residents.

For private roads, the council will normally serve a notice on developers with an assessment of the cost of the proposed roadworks under the Advance Payments Code (APC), to protect frontagers' interests. This does not apply to exempted employment and commercial development.

If it is clearly indicated that development roads are to be private, the developer will be required to:

- deposit a map with the council under Section 31 (6) of the Highways Act 1980 identifying the roads which are to remain private (and any to be adopted, as appropriate);
- At the developer's expense, erect and maintain road signs indicating that the roads are unadopted;
- evidence that potential future residents have been informed of the unadopted status of the road and what this would mean to them in practice;
- evidence that future maintenance of the roads is secured;
- Indemnify the council against future petitioning by residents to adopt a road under Section 37 of the Highways Act 1980; and
- clearly mark the boundary between private and publicly maintained highway by a concrete edging, boundary posts or similar.

General Geometry for Site Access to the External Road Network

In all cases, highway access proposals must be acceptable to the LHA regarding the safety of highway users, functionality of the network and location (see figures below). Under certain circumstances, such as an access to high-speed carriageway, a design to a higher standard such as DMRB will be required.

Office developments (use class E(g)(i)) up to 3000m^2 gross floor area (GFA) may be served by a dropped-kerb access arrangement as shown in Figure 18. However, if this option is chosen, the council will recommend imposing planning conditions that restrict any change of use to general employment (use class B2 to B8). Depending on the scale of the development, the council's specific approval will be required for the construction details of the access.

Depending on the scale of the development, a site access point should accord with either Figure 16, 17 or 18.

Figure 16: Unadopted residential drive serving up to 25 dwellings

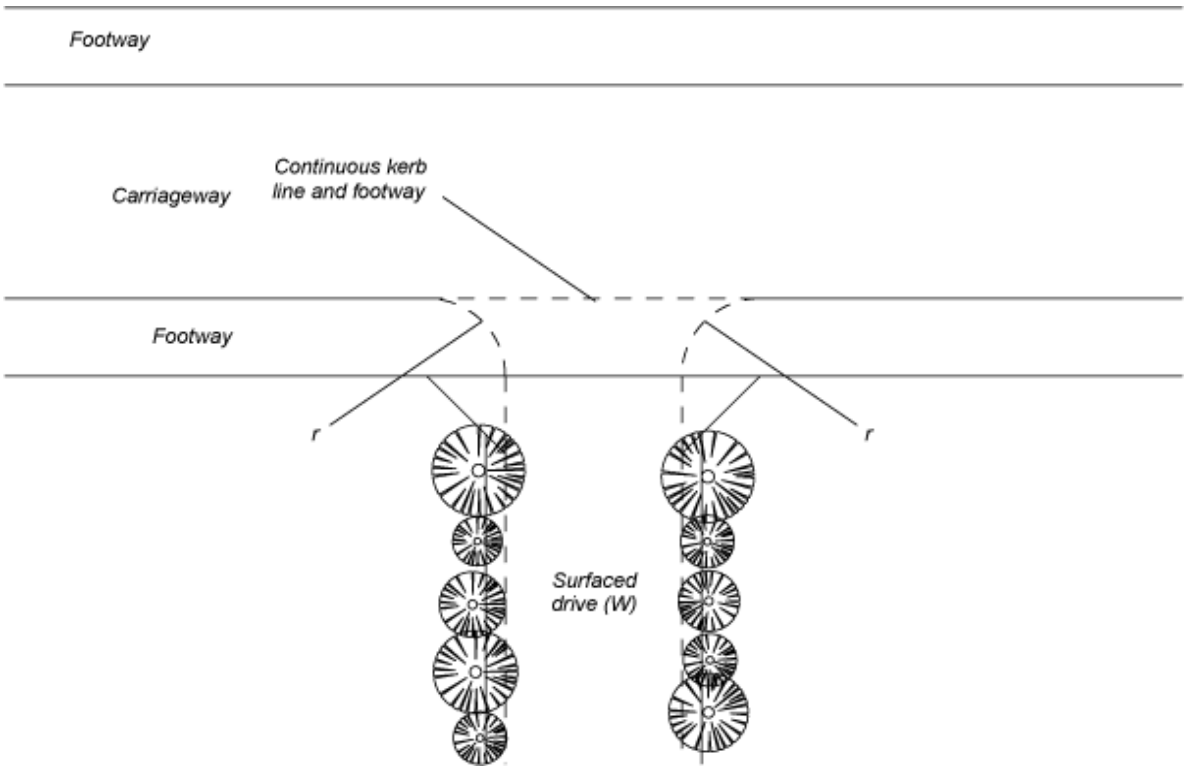


Table 13: Unadopted residential drive serving up to 25 dwellings

Minimum effective width	Single dwelling = 2.75m Two to five dwellings = 4.25m for a minimum distance of 5m behind the highway boundary. Six to 25 dwellings = 4.8m for a minimum distance of 5m behind the highway boundary If the driveway length is more than 25m, its minimum width should be 5m (plus any widening, where bounded by walls) to enable access by refuse vehicles (In all cases add 0.5m if bounded by a wall, fence, hedge, line of trees or other similar obstruction on one side, 1m if bounded on both sides. See also paragraph 3.193 about access for refuse collection and 3.194 about access for emergency vehicles.) Add 0.5m if bounded by a wall on one side, 1m if bounded on both sides. See also paragraph 3.193 about access for refuse collection and 3.194 about access for emergency vehicles	
Minimum drop crossing	For lightly trafficked residential streets [(a)].	For classified or highly trafficked streets [(b)].
Single dwelling	4 dropped kerbs (3.7m)	7 dropped kerbs (6.4m)

2 to 5 dwellings 6 to 25 dwellings	6 dropped kerbs (5.5m) 8 dropped kerbs (7.3m)	8 dropped kerbs (7.3m) 10 dropped kerbs (9.2m)
In certain circumstances, such as when parked vehicles restrict access, it will be necessary for a longer drop crossing to be provided. Demonstration that an access is suitable may be required by providing an appropriate vehicle swept path assessment.		
Vehicle visibility splays	As in Table 6, measured from a setback of 2.4m	
Pedestrian visibility splays	Normally 1m x 1m both sides (no planting permitted) unless there are local circumstances which apply e.g. a significant pedestrian traffic generator is located in the vicinity (such as a school, playground or playing fields etc.) in which case 2m x 2m is required	
Gradient	Preferably not greater than 1:20 for first 5m from behind the highway boundary, (for 6-25 dwellings not greater than 1:30 for the first 10m), and should never exceed 1:12m (assuming the gradient in the highway is in accordance with the standard drawing)	
Surfacing	Bound material, for example, bituminous or concrete, or block paving for at least the first 5m from behind the highway boundary (assuming the gradient in the highway is in accordance with the standard drawing)	
Gates and gradient	Preferably not greater than 1:20 for the first 5m (6m where they open outwards) from behind the highway and should never exceed 1:12.	

[a] Typically, this includes streets which primarily serve a place function and have 85th percentile speeds of 30mph or less and where encroachment on the opposite traffic lane when exiting the site is not considered to create a safety hazard.

[b] Typically, this includes streets which primarily serve a movement function and have 85th percentile speeds of 40 mph or less and where encroachment on the opposite traffic lane when exiting the site should be minimised.

Figure 17: Unadopted shared residential drive serving more than 25 dwellings

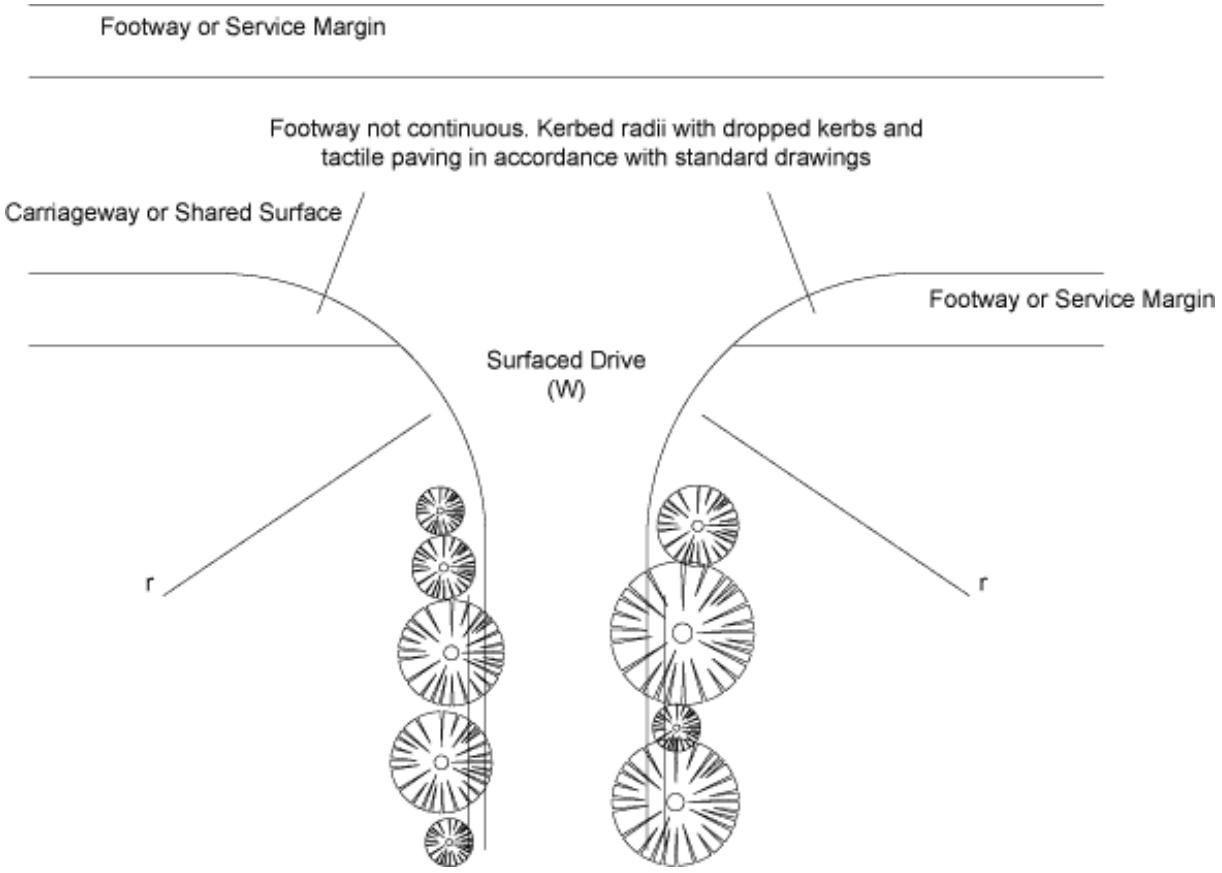


Table 14: Unadopted shared residential drive serving more than 25 dwellings

	Access to residential drive serving more than 25 dwellings
Minimum effective width (w)	5.5m
	Add 0.5m if bounded by wall on one side, 1m if bounded on both sides. See also paragraph 3.193 about access for refuse collection and 3.194 about emergency vehicles.
Minimum kerbed radii (r)	6m
Vehicle visibility splays	As in Table 6, measured from a setback of 2.4m
Pedestrian visibility splays	Normally 1m x 1m both sides (no planting permitted) unless there are local circumstances which apply e.g. a significant pedestrian traffic generator is located in the vicinity (such as a school, playground or playing fields etc.) in which case 2m x 2m is required
Gradient	Preferably not greater than 1:20 for the first 5m from behind the highway and should never exceed 1:12
Surfacing	Bound material, for example, bituminous or concrete, or block paving for at least the first 5m from behind the highway.
Gates and gradients	Preferably not greater than 1:20 for the first 5m (6m where they open outwards) from behind the highway and should never exceed 1:12.

In relation to all private residential accesses, any gates should be set back at least 5m from the highway boundary and should open inwards only.

Figure 18: Unadopted access serving up to 3000m² GFA of offices

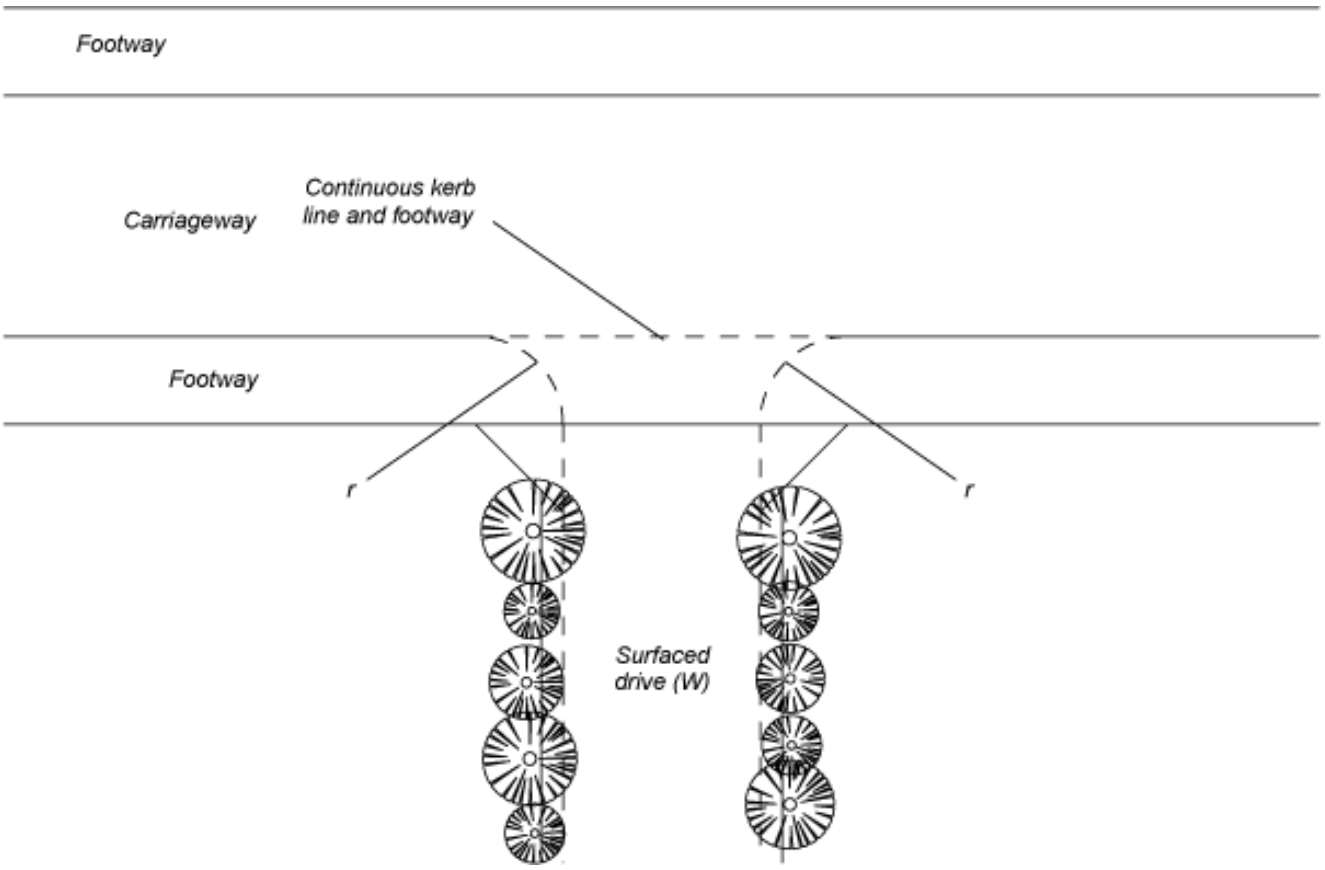


Table 15: Unadopted access serving up to 3000m² GFA of offices

Minimum effective width (w)	6m (Add 0.5m if bounded by a wall on one side, 1m if bounded on both sides.)
Minimum kerbed radii (r)	6m
Vehicle visibility splays	As in Table 6 and Fig 9, measured from a setback of 2.4m
Pedestrian visibility splays	Normally 1m x 1m both sides (no planting permitted) unless there are local circumstances which apply e.g. a significant pedestrian traffic generator is located in the vicinity (such as a school, playground or playing fields etc.) in which case 2m x 2m is required. No planting permitted
Gradient	Preferably not greater than 1:20 for first 15m behind the highway, and should never exceed 1:12
Surfacing	Bound material, for example, bituminous or concrete, or block paving for at least the first 15m behind the highway

Ensuring shallow gradients for accesses ensures that vehicles can enter and leave the highway in a slow and controlled manner.

Appropriate drainage reduces the risk of surface water from a site running into the highway causing dangers for road users. Water draining onto roads can also be a safety hazard where it freezes in the winter months.

Loose stone should not be used on drives as it can result in it being deposited in the highway by repeated movement of traffic. Small stones can create a hazard for highway users by creating a slip hazard on footways and being propelled at high speed by vehicles.

Regardless of the access type, separate footways or pedestrian routes should be provided within the site to minimise the safety risks to pedestrians from HGVs. This could be in the form of footways or routes marked on the ground and segregated by bollards or railings.

Where gates are provided, they should open inwards and be set back a distance appropriate to the type of vehicle likely to require access to the development. The gate setback distance enables a vehicle to stand clear of the highway so users will not be endangered or inconvenienced by the vehicle blocking the road, verge or footway.

If layouts to Figure 16 and 17 cannot be achieved, the council may advise refusal where there are highway safety concerns.

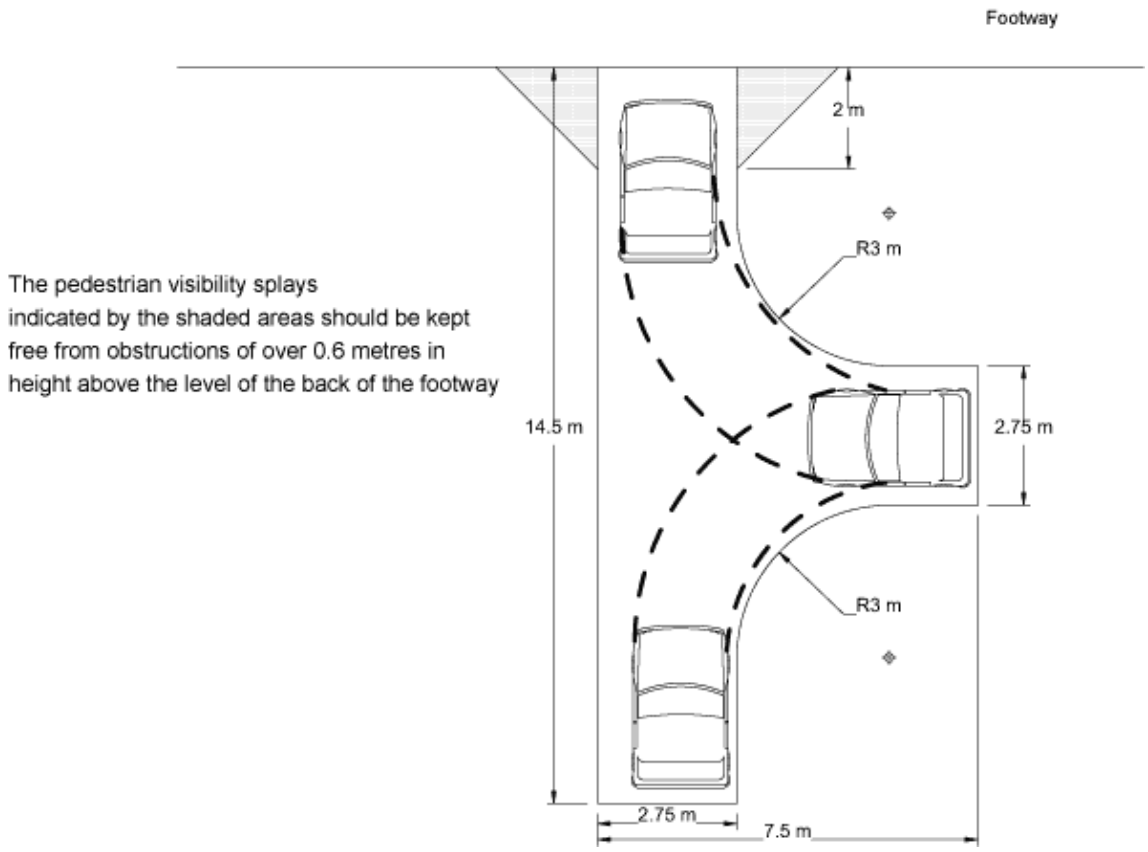
General Layout of a Private Development

Even if a road is not to be adopted, it should be ensured that:

- layouts are safe (both in terms of road safety and personal safety);
- the design is accessible to all likely users, including those with mobility impairments; and
- turning facilities are provided where a proposed development takes access from a road with a speed limit above 40 mph, or for roads subject to speed limits less than 40 mph on any road carrying 300 vehicles per hour at its peak. Elsewhere, turning facilities will not normally be required unless road safety would be compromised.

Provision of turning facilities will ensure as far as possible that vehicles can use an access without having to reverse onto or off the road. In any location, vehicles reversing can present dangers for others, including pedestrians.

Figure 19: Private drive turning facilities – typical example



For long drives and accesses, Building Regulations Approved Document B, Fire Safety 2006, must be considered regarding access for refuse collection and emergency vehicles. The regulations set out a maximum carry distances of 25m for residential refuse collection. Where this distance is exceeded, the British Standard recommends:

- a minimum drive width of 5m;
- providing turning heads within the site; and
- constructing the drive so it can carry a refuse vehicle.

The layout of the development should include measures to ensure that parked vehicles do not prevent the use of turning heads. The provision of a communal collection point for wheelie bins, close to the highway, should be provided within the site.

Where a development is situated more than 45m from the highway, emergency vehicles must be catered for by constructing the drive and any turning areas so they can accommodate commercial or service vehicles. The minimum width for access should be at least 3.7m (between kerbs) and fire vehicles should not have to reverse more than 20m. Development must be in line with British Standard BS5906, 2005 and Building Regulations Approved Document B, Fire Safety 2006.

Construction Standards for Private Drives

The construction standards for residential drives serving 5 dwellings or fewer should be in accordance with that for footway vehicular and field accesses, as shown in standard drawing SD/11/5D. In other cases, they should be in line with Table 16. Contact the council for permeable pavement design.

Table 16: Private road construction depths

		Road less than 25m long serving 6 to 25 dwellings	Road more than 25m long serving 6 to 25 dwellings	Road serving more than 25 dwellings
Bituminous	Surface course CGM	30mm	30mm	40mm
	Binder course DBM	85mm	60mm	60mm
	Base DBM	-	110	150
	Sub-base & Capping	270mm Type 1 GSB[(a)]	See Table 36	
Block Paving	Blockwork	60mm	80mm	80mm
	Bedding sand (compacted)	30mm	30mm	30mm
	Base DBM	90mm	110	150mm
	Sub-base & Capping	270mm Type 1 GSB[(a)]	See Table 36	

Key

CGM = Close graded macadam DBM = Dense bitumen macadam

[(a)]The sub-base is to be increased to 365mm for CBR's of 2% or less.

Garages and Gated Accesses

"On plot" garages to individual properties should be located so that:

- cars can park in front of the garage doors; and
- garage doors can be opened while the car is on the drive (see Table 17) without the obstructing any part of the highway.

Setting back garage doors enables a vehicle to stand clear of the highway while garage doors are opened or closed so as not to block footways and endanger pedestrians.

Where an access is to be gated, the gates should be set back 5m where they open inward and 6m where they open outwards. This is to ensure that the public highway (particularly areas used by pedestrians) is not obstructed if a vehicle is parked on the access in front of the gates.

Table 17: Garage set-back distances	
Garage door type	Minimum distance from highway boundary
Roller-shutter, sliding or inward opening	5.5m
'Up-and-over'	6.1m
Hinged, outward opening	6.5m

Garages should have the following minimum internal dimensions.

- Standard single = 6m x 3m, with minimum door width of 2.3m.
- Use by disabled = 6m x 3.3m with minimum door width of 2.8m.
- Double = 6m x 6m, with minimum door width of 4.2m.

If a dwelling has no separate parking for cycles, it may affect whether a garage should be counted towards parking provision.

During the planning process the developer should assess the requirements for provision of garages to the disability standard.

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Active Travel

Active Travel is about making journeys in physically active ways, including on foot or via the various human powered wheeled transport options (bicycles, recumbents and wheelchairs etc.). Particularly when supported by well-designed green infrastructure, it can offer real alternatives to car journeys and provide benefits for health and wellbeing, the environment and the effectiveness of the road network.

Nationally there is a drive to ensure delivery of high-quality active travel infrastructure within new development. The National Planning Policy Framework states that “Planning policies and decisions should aim to achieve healthy, inclusive and safe places", including enabling and supporting healthy lifestyles through the provision of layouts that support walking and cycling. It also acknowledges that opportunities for active travel supports ambitions for environmental sustainability. Additionally, Local Transport Note 1/20 “Cycle Infrastructure Design” (LTN 1/20) provides guidance for local authorities on designing high quality, safe cycle infrastructure.

The council’s Cycling and Walking Strategy (CaWS) sets out the vision for “Leicestershire to become a county where walking and cycling are safe, accessible and obvious choices for short journeys and a natural part of longer journeys”. The corresponding CaWS Action Plan, which is updated on an annual basis, sets out the key actions to enable THE COUNCIL to deliver this vision.

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Active Travel Design Layouts

General Layout Principles

This guidance has been prepared so that layouts for proposed active travel infrastructure in Leicestershire:

- accord with the principles of LTN 1/20 and MfS ;
- meet the council's adoptable standard; and
- consider the context and constraints posed by different development locations in the county.

In designing active travel provision, developers should apply LTN 1/20's Cycling Level of Service Tool (Appendix A) and Junction Assessment Tool (Appendix B).

Additionally, developers are asked to refer to the council's CaWS and contact officers regarding proposals at an early point in the design process. Importantly, CaWS emphasises the council's requirement for Non-Motorised User (NMU) Audits to be undertaken on all highway schemes. NMU Audits consider how new or modified junctions or highway schemes affect pedestrians, cyclists, equestrians and disabled users and are expected for all developments.

Complex, large-scale schemes such as distributor roads or spine roads may require additional consideration through a Walking, Cycling & Horse-Riding Assessment & Review (WCHAR), which provides an evidence-based assessment of the potential needs of non-motorised users. WHCAR's are used as a supporting document within planning applications alongside Transport Assessments, Travel Plans and Road Safety Audits.

New active travel proposals should enhance existing provision, reflecting Active Travel England's position regarding provision; the council will consider adoption of active travel facilities (including those independent from the road network) that:

- Offer high quality design that accords with the council's guidance and that fully considers the local context including the existing local network and nearby services such as transport hubs, health centres/doctors' surgeries, schools and other care establishments;
- Deliver significant additional, strategic community benefit to that which already exists; and
- Considers ease and affordability of maintenance.

Where it is necessary to break a road link to discourage problems relating to through-traffic, it is important that active travel links and facilities are retained, including provision of appropriate parking as detailed in LHDG 'Parking and Cycling'.

Where cul-de-sacs to road traffic are unavoidable, connectivity for active travel must be provided/maintained wherever practicable.

The Active Travel Matrix (Matrix) below (Table 18) presents the council's expectations regarding active travel provision that complies with LTN 1/20 (Figure 20 from LTN below) requirements within various common scenarios and road typologies in Leicestershire.

Figure 20: LTN 1/20 Chapter 4 Figure 4.1: Appropriate protection from motor traffic on highways

The Matrix is intended as guidance regarding the council's expectations and is not necessarily prescriptive. In addition to the proposed road typology, the design of provisions should consider the physical environment (including the character of an area), the proximity of existing active travel assets and vital services such as doctor's surgeries and transport hubs and any other opportunities and constraints. Please refer to the latest guidance relating to inclusive mobility to ensure regard is given to provision for those with disabilities.

In considering the protection for users of active travel facilities, MfS and LTN describe how designers should consider the context of the road in terms of its function so that the character of a location is not negatively impacted.

Designers must refer to the LTN's key principles when developing proposals to assess whether active travel connectivity is:

- Coherent
- Direct

- Safe
- Comfortable
- Attractive

The development in its entirety, including services provided and its geographical context must be considered during the design phase in relation to the suitability of provision of active travel infrastructure. The location of important community facilities (schools, health centres etc.) within development may influence decisions regarding the suitability of different road types for active travel movements. Active travel routes to these services that follow minor roads, where they offer more direct and safe opportunities, may be preferable to using higher speed routes. These routes could be encouraged through appropriate signage.

Developers are encouraged to speak to the council during the early stages of scheme design to discuss their intentions for active travel provision. However, it should be noted that for schemes within Local Cycling and Walking Infrastructure Plan (LCWIP) areas, large Sustainable Urban Extension type developments or multi-modal investment plan locations, the expectation will be for the highest standard of provision possible.

Multi Modal Area Investment Plans is proposed to be developed as part of the emergingLTP4 and will focus on the local level, setting out strategies and investment plans for integrated transport solutions to meet the needs and requirements of communities. Active travel designs for LCWIP areas can be viewed on the council website.

Table 18: Active Travel Matrix

External roads					
Location	Road Type	Existing facilities/other considerations [1]	Road Speed (mph)/Traffic Flows	Minimum lane provision (None, Mixed or Segregated)	
Rural	Existing external link road (distributor road) (s.278)	No adjacent significant facilities or Active Travel infrastructure	Speed <30 and/or Flows <=3000	Shared	Mixed traffic
			Speed >=30 and/or Flows >3000	Segregated	Cycle lane (on carriageway)
Urban/Peri-urban	Major Residential Access (spine road) or External link road (distributor road)	With opportunities to link into the urban network Significant HGVs use	Speed <30 and/or Flows <=3000	Segregated	Fully kerbed cycle track
			Speed >=30 and/or Flows >3000	Segregated	Fully kerbed cycle track
All locations	Major Commercial Access	Significant HGVs use	Speed <30 and/or Flows <=3000	Segregated	Stepped cycle track
			Speed >=30 and/or Flows >3000	Segregated	Fully kerbed cycle track
All locations	Existing Major Access Roads that are external to the development site (s.278 type scheme)	Should meet the above standards where practicable.			
All locations	Existing Minor Access Roads that are external to the development site (s.278 type scheme)	Should meet the above standards where practicable.			

Development Internal Roads					
Location	Road Type	Existing infrastructure [1]	Road Speed/Traffic Flows	Lane provision (minimum) None, Shared or Segregated	
Rural	Minor residential	No existing links /facilities	Speed <30 and/or Flows <=3000	None	Mixed Traffic
			Speed >=30 and/or Flows >3000	Segregated	Stepped cycle track

Development Internal Roads					
Location	Road Type	Existing infrastructure [1]	Road Speed/Traffic Flows	Lane provision (minimum) None, Shared or Segregated	
Rural	Minor residential	Sustrans or major network infrastructure link (vulnerable resident – schools, health facilities) – future proofing	Speed <30 and/or Flows <=3000	Segregated	Cycle lane (on carriageway)
			Speed >=30 and/or Flows >3000	Segregated	Stepped Cycle Track
Rural	Residential Shared surface	No existing links /facilities	Speed <=20 and/or Flows <=3000	None	Mixed Traffic
Urban	Minor residential	Urban – small development, no existing connectivity	Speed <30 and/or Flows >3000	None	Mixed Traffic
			Speed >=30 and/or Flows >3000	Segregated	Cycle lane (on carriageway)
Urban	Minor residential	Urban – SUE / new settlement or larger development of typically more than 500 dwellings /LCWIP	Speed <30 and/or Flows <=3000	Segregated	Stepped cycle track
			Speed >=30 and/or Flows >3000	Segregated	Fully kerbed cycle track
Urban	Minor residential	Small development urban location good adjacent connectivity that could be upgraded or access to key facilities (schools, health centres etc....) – vulnerable residents	Speed <30 / and/or Flows <=3000	None	Mixed Traffic
			Speed >=30 and/or Flows >3000	Segregated	Stepped cycle track
Urban	Residential Shared surface		Speed <=20 and/or Flows <=3000	None	Mixed Traffic

Development Internal Roads					
Location	Road Type	Existing infrastructure [1]	Road Speed/Traffic Flows	Lane provision (minimum) None, Shared or Segregated	
All locations	Minor Commercial	HGV use	Speed <30 and/or Flows <=3000	Segregated	Cycle Lane (on carriageway)
			Speed >=30 and/or Flows >3000	Segregated	Stepped cycle track

[1] Opportunity to connect to existing active travel facilities, transport hubs, health centres/doctor's surgeries, schools and other care establishments.

The council recognises that providing infrastructure on the existing road network under a Section 278 agreement may present physical constraints that limit the ability to provide facilities to the expected preferred standard set out within LTN 1/20 and the LHDG. However, developers should look to innovate to enable connectivity of facilities.

General Geometry

Table 19 sets out general geometry for pedestrian-only routes, including footways and footpaths. Routes for cyclist only or mixed pedestrian and cyclist use are covered in Table 20. Surfaces used by pedestrians should be free from trip hazards.

Table 19: Pedestrian only routes

Location	Width	Minimum width at fixed objects[(a)]	Longitudinal gradient	Crossfall
Normal residential, commercial and industrial sites	2m	1.2m. 2m where pedestrian flows are high, (500+ per hour) Maximum length of an obstacle: 6m	Minimum: 1:100 Maximum: 1:20[(b)(c)]	1:35
Shopping areas	4m			
Bus stops	3m			
Outside educational facilities (high pedestrian flows and increased mix of vulnerable users)	3m			

[a] Bollards, sign posts, guard railing, lamp columns and utility equipment (for example gas, water, cable TV). Achieving this for equipment installed while the development is being built will require coordination with utility providers. Please see Utilities for more guidance on locating utility equipment.

[b] Whilst the needs of people with impaired mobility must be considered, on sites with exceptionally difficult topography a relaxation to 1:12 may be accepted.

[c] Crossovers to private drives and parking should be carefully designed so as not to create inconvenient cross-falls for pedestrians. Please see standard detail.

Table 20: Cycle Only and Mixed Use

Type	Minimum Lane Width	Additional width at vertical fixed objects (mm)		Centre-line radius	Forward visibility	Crossfall	Longitudinal gradient
Cycle 1-way	2.5m	Object height 61 - 150 151- 600 Above 600	Increased width 200 250 500	In accordance with Table 5-7 LTN 1/20	In accordance with Table 5-5 LTN 1/20	1:35 (No adverse camber)	Min: 1:100 Max: 1:20
Cycle 2-way	3.0m minimum						
On carriageway cycle lane	2m						
Mixed traffic	N/A						

The following design layout expectations also apply:

- Fixed objects should not feature within cycle routes;
- At points of potential conflict between visually impaired pedestrians and cyclists, warning surfaces should be provided to the council's standard drawings;
- A 50mm white line should be provided, offset 500mm from the kerb and parallel to it. Crossovers to private drives and parking areas should be carefully designed so as not to create inconvenient cross-falls for pedestrians; and
- Where a route is bounded, for example by a wall, fence or bridge parapet, 0.25m of width should be added for each boundary of up to 1.2m in height, and an additional 0.5m for each boundary of over 1.2m in height.

Porch roofs, awnings, garage doors or other building features should not oversail footways at a height less than 2.6m; the headroom over routes used by cyclists should be 2.7m with an absolute minimum of 2.4m where constraints exist. If any part of a building projects over highway intended for adoption, a licence from the council will be required under Section 177/178 of the Highways Act.

Where a route runs alongside a road, its rear edge should coincide with the rear of visibility splays at junctions and at bends so that the splay is clear and pedestrians and cyclists do not impede visibility. This should be achieved by widening the footway or providing a verge. For grassed verge guidance see the Green Infrastructure sections of the LHDG.

Active travel routes independent from roads will normally meet the following criteria. For Public Rights of Way requirements refer to 'Rights of Way Layouts'.

- Routes should be as direct as is possible but not at the expense of providing accessibility for all users (e.g. where gradients might result in negative impacts for those with mobility issues);
- Routes should consider connectivity to the wider community outside of the immediate development;
- They should be in the open wherever possible. Where this is not possible, buildings should be designed with windows overlooking the route. The use of high walls or close-board fencing should be avoided;
- Routes should be well lit and any planting, particularly trees, should not reduce illumination from the lighting;
- Hedgerows should be set back at least 1.0m from the path and maintained in such a way that they do not overhang, encroach across, or drop thorns on the path (new plants adjacent to cycle tracks should be non-thorn varieties) At bends, the distance should be increased to 2m to maintain satisfactory visibility.

Routes must be designed to minimise opportunities for crime. The council will work with the relevant police force's Designing Out Crime Officers (DOCO) to promote personal safety, and the developer should seek early advice from the DOCO on proposals for specific sites.

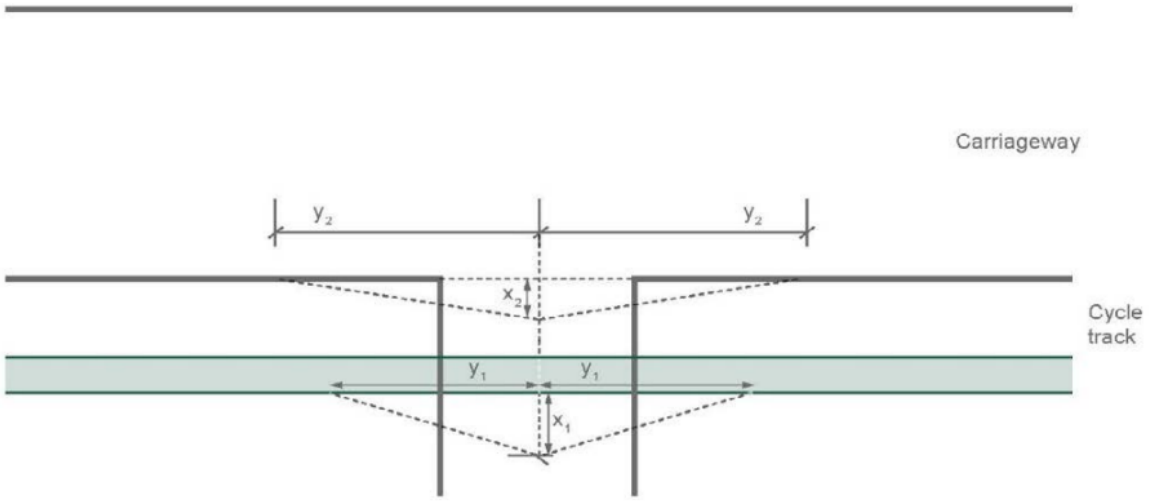
Figure 21: Active Travel Links	
	Poor pedestrian link Unwelcoming, enclosed space, not overlooked making it potentially unsecure.
	Good pedestrian link Open character, well overlooked with addition of green infrastructure, providing amenity and shade when trees mature. Shrub planting would need to be further setback to prevent encroachment.
	Good mixed provision link Providing facilities with an open aspect, attractive setting and appropriate planting.

Junctions between cycle or pedestrian only routes and adopted highway, are expected to:

- be constructed from hardbound material, for example, bituminous, concrete, or block paving for at least the first 5m behind the highway boundary;
- join at 90 degrees to the traffic flow;
- include safety guard rails according to the council's standard drawings; and

- ensure visibility splays for cycle routes are sufficient so that cycles emerging from the route can see and be seen. Visibility should normally be provided as indicated in Figure 22 below.

Figure 22: Visibility x and y distance for a cycle track as the minor arm - taken from LTN



Road Crossings

The developer should agree crossing requirements for sites that accord with LTN 1/20 and LHDG with the council at the early stages of preparing development proposals. Early engagement with relevant interested parties is also important, including those representing disabled people, and pedestrians and cyclists generally. Points of conflict between highway users should be avoided through consideration of layout design.

All road crossings should be designed to LTN's core design principles (Safety, Directness, Coherence, Comfort and Attractiveness) with consideration given to the aspects raised in Table 10-1 specifically relating to junctions and crossings. It is preferable to provide an active travel route that avoids the need to cross a difficult road altogether, and this should be considered at the initial design stages.

Crossings should be designed with consideration for safety, given anticipated motor vehicle flows and speeds assessed through traffic modelling (Refer to LHDG Highway Development Management 'Traffic Modelling' on the main consultation page.

At a local scale, typically the higher the speed and flows of expected motor vehicle traffic in new development the greater the control needed. LTN 1/20, Table 10-2 provides guidance on the types of provision expected under different traffic flows and speeds. However, the council might also consider it necessary to install controlled crossings near to current or future amenity "destinations" that could attract high levels of active travel use and this should be considered at the early stages of the design process.

Figure 23: LTN 1/20 Chapter 10 Table 10-2: Crossing Suitability

Speed Limit	Total traffic flow to be crossed (pcu)	Maximum number of lanes to be crossed in one movement	Uncontrolled	Cycle Priority	Parallel	Signal	Grade separated
⩾ 60mph	Any	Any					
40 mph and 50mph	> 10000	Any					
	6000 to 10000	2 or more					
	0-6000	2					
	0-10000	1					
≤ 30mph	> 8000	> 2					
	>8000	2					
	4000 8000	2					
	0-4000	2					
	0-4000	1					

Provision suitable for most people.

Provision not suitable for all people and will exclude some potential users and/or have safety concerns.

Provision suitable for few people and will exclude most potential users and/or have safety concerns.

Notes:
1. If the actual 85th percentile speed is more than 10% above the speed limit the next highest speed limit should be applied.

2. The recommended provision assumes that the peak hour motor traffic flow is no more than 10% of the 24-hour flow.

LTN 1/20 Chapter 10 Table 10-2: Crossing Design Suitability

Dependent on impacts identified through Non-Motorised User Audits, cyclists may need to be kept separate from pedestrians through junctions with high flows and speeds.

Where a refuge in the middle of the road is required, this should be designed to the council's standard drawings and should be a minimum of 2m in width (in the direction of active travel use). Where significant cycle use is expected then 3m in width may be required, particularly where an independent cycle route is required to cross the carriageway.

Refuges should be sufficiently wide (in the direction of the carriageway) to accommodate the expected usage and be designed with 3.2m of clearance (lane width) to the edge of the carriageway on either side.

Where particularly high usage is expected and motor traffic flows and speeds are high, a parallel crossing may be considered; this could be with or without a central refuge.

Acceptable crossing types include:

- Uncontrolled crossings (≤ 30mph speed and low flows)
    - With or without refuges.
- Controlled crossings
    - Cycle priority crossing using give-way markings (≤ 30mph and low

flows);

- Parallel crossings (≤ 30mph speed and low to medium flows);
- Signal controlled – Toucan and Signal Crossings (≤50mph and high flows);
- Grade separated (≥ 60mph).

Pedestrian visibility at crossing points should accord with the guidance in LHDG "Swept Path" Section.

Provision of blister surface paving should accord with DfT's 'Guidance on the Use of Tactile Paving Surfaces'. Provision is usually buff at uncontrolled crossings and red at controlled crossings.

In all cases, guard rails should be high-visibility and must accord with the council's standard drawings.

Raised tables should be used where assessment indicates it would improve safety. These may be particularly required where the independent active travel network is required to cross the carriageway.

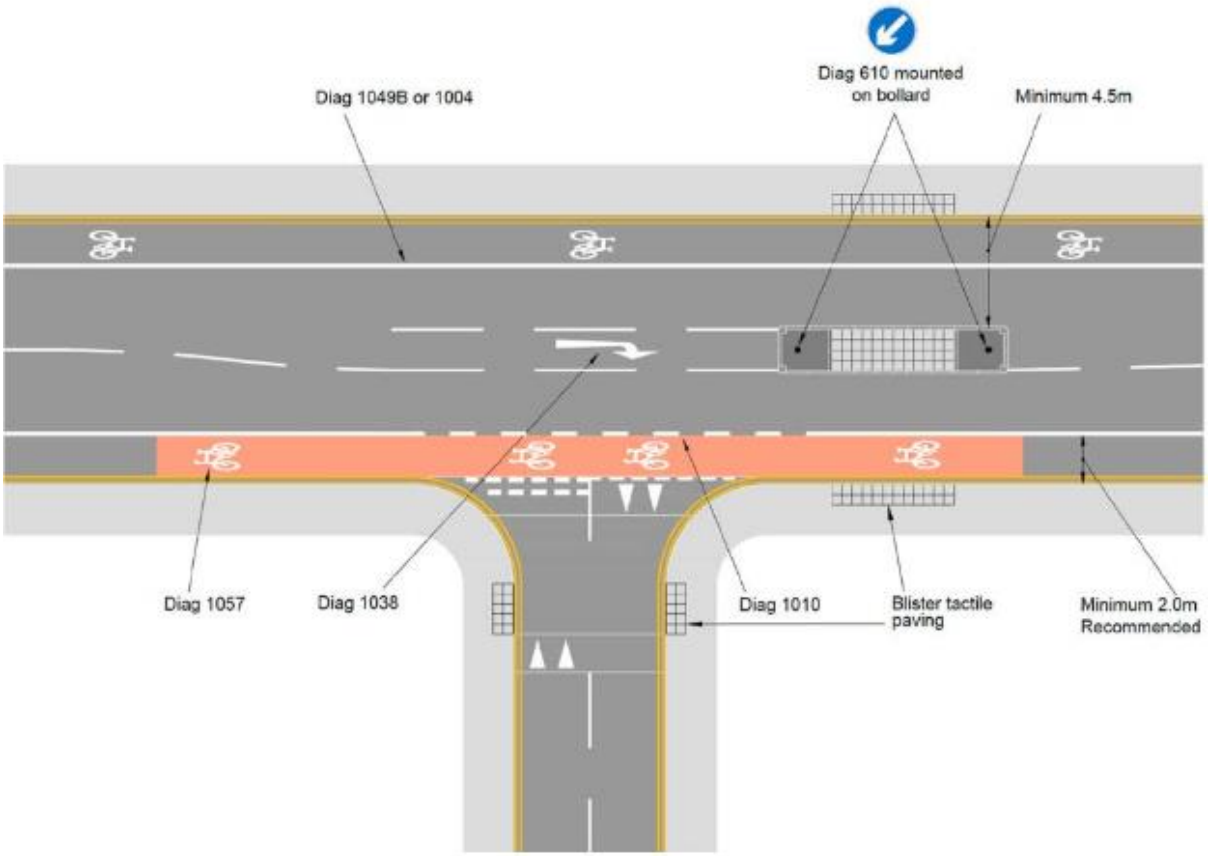
Crossing at Junctions

(Please also refer to "Junction Type, Geometry and Spacing")

Any site-specific requirements should be identified and agreed with the council in the early stages of preparing development proposals. LTN 1/20 provides a Junction Assessment Tool to aid designers, which should be utilised alongside reference to LHDG guidance. Developers should also refer to the Traffic Signs Regulations and General Directions 2016.

Particularly where motor traffic speeds and volumes are high, the safety of cyclists manoeuvering in mixed traffic either into or out of the minor arm is a key consideration in the design process. Design principles, for instance in relation to lane widths, corner radii and use of refuges can be employed to mitigate risk at these junctions.

Figure 24: Right turn refuge, cycle lanes, cycle symbols and side road entry at a priority junction (LTN 1/20)

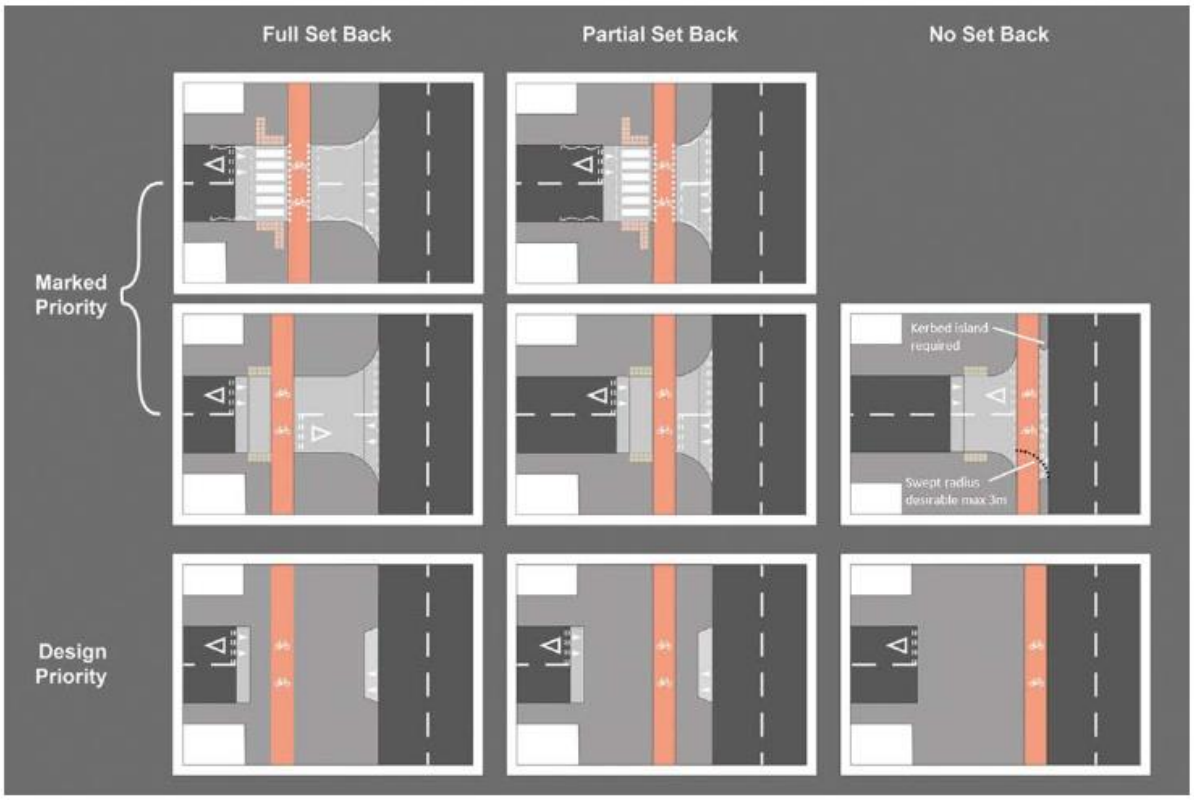


The use of red surfacing is only necessary at potential points of conflict between different highway users. Please see Table 41 in Materials and Construction and Materials Palettes on the main consultation page for further guidance relating to the use of coloured surfacing.

Where protected space separate from the carriageway is provided for cycling, priority junctions should be designed so that wherever possible cyclists can cross the minor arms of junctions in a safe manner without losing priority.

In new developments, priority crossing proposals should be set back 5m from the major road kerbline; where constraints mean that this cannot be provided no set back should be provided. (See Figure 25 below, taken from LTN 1/20)

Figure 25: Priority crossings of cycle tracks at side roads* (from LTN 1/20)



* Yellow globes at parallel crossings omitted for clarity

Signalised Junctions

LTN 1/20 identifies the following signalised junction types in order of protection for cyclists:

- Cycle bypasses;
- Separate cycle phases;
- Cycle and pedestrian-only stage;
- Hold the left;
- Two stage right turns (including cyclops junctions);
- Cycle gate;
- Early release; and
- Advanced stop lines.

The needs of all users, including pedestrians, will need to be considered when introducing signalised junctions, and segregated provision will typically only be expected where protection is required at busy junctions. Decisions regarding which junction type to employ will depend on the outcomes of the Road Safety Audit and Transport Assessment.

Signing for Routes

Direction signing can help to highlight and promote the use of a route, although care should be taken to minimise clutter and visual disruption. Signing should consider continuity outside of the immediate development. Any signing and lining provided should be designed in line with the guidance in LHDG 'Materials and Construction and standard drawings on the main consultation page.

Roundabouts

'Roundabouts account for around 20% of all reported cyclist killed or seriously injured (KSI) casualties' (Pedal Cycling Road Safety Factsheet, DfT, March 2018) and their design should be given careful consideration for the safety of all users.

Typically, roundabouts proposed within new development in Leicestershire will be compact or mini-roundabouts and have corresponding low traffic volumes. In instances where lane widths are narrow and the speeds low due to suitably designed geometry, cyclists can more safely share all parts of the roundabout in the primary position.

Where traffic volumes and speeds are expected to be high at a new roundabout, provision of protected space for cycling off the main carriageway is expected, with cycle priority or signal-controlled crossings of the roundabout entries and exits.

The Existing and Planned Cycle Route Network

The council works with organisations such as Sustrans and other highway authorities to provide a safe and convenient cycle network across the region. Where a site is close to this network or to an LCWIP provision, it will be expected that links will be provided to it as part of proposals. The developer will also be expected to contribute towards its completion.

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Horse-Riding

Horse riders are entitled to use bridleways and carriageways, all-purpose roads and byways open to all traffic and they must be considered in the design and safety audit of all developments which either:

- affect an existing or future bridleway; or
- affect an existing or future carriageway that carries horse riders.

The guidance in this section relates generally to lower-speed single carriageways. For facilities for horse riders in other circumstances, please refer to DMRB CD 127, "Cross-sections and headroom”.

Bridleways can be used by horse riders, cyclists and pedestrians, and the needs of these groups should be taken into account.

Where a new junction is formed between a bridleway and a road and an NMU audit indicates the likelihood of a high level of horse rider usage, a pegasus crossing and appropriate associated signage should be provided.

New roads likely to carry significant horse traffic (more than 100 passages a week) need to be designed with that traffic in mind. In some instances, the designer should consider providing a separate horse trackway utilising the verge.

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Public Rights of Way

Introduction

National Planning Policy Framework states that "Planning policies and decisions should protect and enhance Public Rights of Way and access, including taking opportunities to provide better facilities for users, for example by adding links to existing rights of way networks…". The council will expect that where Public Rights of Way are impacted by development that consideration is given not just to replacement or reinstatement but enhancement of the provision. Additionally, the effect a development has on a Public Right of Way is a material consideration in the determination of planning applications.

On sites that are subject to Public Rights of Way the following should be considered when designing the layout of a development.

Key Documents Relating to Planning and Public Rights of Way.

- Definitive Map of Public Rights of Way
- Planning Inspectorate Public Rights of Way section Advice Note No.9
- Rights of Way Circular (1/09) Guidance for Local Authorities
- National Planning Policy Framework
- Guidance on information requirements and validation, Dept for Communities and Local Government
- Leicestershire County Council's Planning Obligations Policy (July 2019)
- LCC Rights of Way Improvement Plan

Public Rights of Way Design Principles

Designers and developers should consult the Definitive Map of Public Rights of Way to establish their legal obligations and the exact location of any Public Rights of Way crossing the development site or running alongside it. Be aware, the legal line of the Highway recorded on the Definitive Map of Public Rights of Way, may not always accord with the route used on the ground.

Obstruction or diversion an existing right of way is not permitted without obtaining the consent from the local highway authority (even if planning permission has been granted). Designers should work to the principle of accommodating a right of way within a scheme on its existing legal alignment. This can be checked against the Definitive Map and Statement for Leicestershire by contacting the ROW Team.

Details of how all existing and proposed Public Rights of Way will be treated should be provided within the planning application. Details should include provision for their management during construction, boundary treatments, surfacing, width, structures, signage and landscaping.

Consideration should be given as to who will use the Public Rights of Way and why, to maximise non-motorised travel. Consideration should be given to users of all abilities at the outset by careful consideration of surfacing, path widths and gradients and in accordance with the requirements of the Equality Act 2010.

Where the council agrees they are to be necessary, the design of access barriers should be given substantial consideration to ensure the continued maintenance of access by legitimate Public Rights of Way users, whilst impeding the unlawful entry of vehicles such as motorcycles.

Paths should be routed through Public Open Spaces where appropriate and ideally away from estate roads. If the use of footways or cycleways is unavoidable, the route should be as direct as possible. Parallel paths and footways should be avoided.

The council will strongly resist the provision of routes that take the form of narrow passageways bounded by walls, hedges or close-boarded fencing.

Grass verges of 1m width should be provided to either side of the route. The planting of fast growing, invasive species (including suckering species such as Blackthorn) near to Public Rights of Way must be avoided. If a route is curved or has corners, the distances between planting and the path should be increased to maintain satisfactory visibility.

Lighting is not normally a requirement for Public Rights of Way. Where it has been agreed by the council, care should be taken to ensure that any planting would not reduce illumination from the lighting.

Developments may have a significant effect on the level of use of the surrounding network of Public Rights of Way, particularly where they may become important routes to neighbouring areas, shops, schools, services and places of employment. Requests may be made for improvements to the local path network beyond the development boundary.

Diverting or Stopping-up a Right of Way

The Highway Authority's approval must be sought for proposals to extinguish highway rights before a planning application is submitted. If the local highway authority agrees in principle to a diversion, the developer will need to apply for a diversion order. The planning authority that grants planning permission usually processes applications to divert Public Rights of Way using powers under the Town and Country Planning Act 1990. A diversion order can be considered concurrently with a planning permission.

An application for a stopping up or diversion order under section 257 of the TCPA 1990 cannot be made or confirmed once the relevant development is "substantially complete".

A stopping up or diversion order can take a minimum of three months to be confirmed (if all objections have been resolved and it is therefore unopposed). If there are unresolved objections, the stopping up or diversion order must be submitted to the Secretary of State for confirmation and a local inquiry may need to be held. This can delay the decision for at least 12 months. The developer needs to consider this possible delay when working out a project timetable.

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Passenger Transport

Policy and Principles

The National Planning Policy Framework places an emphasis on the delivery of sustainable development. Policy states that new development should facilitate "*access to high quality public transport, with layouts that maximise the catchment area for bus or other public transport services, and appropriate facilities that encourage public transport use*".

The council's revised Passenger Transport Policy and Strategy (PTPS) was approved by Cabinet in December 2023. It reflects that Leicestershire's bus network is predominantly operated on a commercial basis, with the council considering the travel needs of residents where those needs are not otherwise met by the commercial sector. The PTPS also outlines how the council intends to support commercial operators, including the provision of infrastructure and other related schemes delivered through the Leicestershire Enhanced Partnership. This also extends to exploring opportunities to secure developer funding for passenger transport services or infrastructure.

If new development requires any form of transport assessment (see Highway Development Management 'Preparing Development Proposals' on the main consultation page), early advice from the council and bus operators should be sought on:

- How new services might reflect and complement existing bus services in the area, and any proposals to upgrade services or facilities, for example, introducing Real Time Passenger Information System (RTPI) (A system which provides waiting passengers with details of when the upcoming departures from that stop and the route number and the route number);
- how best to serve the proposed development, for example, how appropriate would it be to:
    - operate a bus service through the development; or
    - enhance existing services adjacent to the development and provide improved footway links to the bus stops;
- where a service is to operate through the development, how best to plan a route and where best to locate bus stops and any lay-bys to encourage maximum use of the service.

Measures that might improve passenger transport provision, for example, more frequent services or improvements to existing bus stops should be considered. These issues should be discussed and general approaches agreed as soon as possible as the outcomes are likely to have a bearing on:

- the development's layout;
- the transport assessment;

- any travel plan;
- any likely highway mitigation works; and
- parking provision.

Additionally, where a development requires a concept proposal (see Highway Development Management 'Preparing Development Proposals' on the main consultation page), any agreed passenger transport facilities and routes should be clearly identified.

Bus Services

Where passenger transport is proposed as a sustainable alternative to using cars, the service must be capable of delivering a shift away from the car. To achieve any significant shift, it is likely that the service will have to be more frequent than once an hour during the day, Monday to Saturday, with an evening and Sunday service for larger developments.

Developments will be considered on a site-by-site basis. Any estimates for likely levels of passenger transport use included in any transport assessments or draft travel plans will be evaluated against existing or proposed bus routes, vehicle capacities and timetables. To be successful in the future, a passenger transport service must be assessed as being commercially viable and capable of achieving the expected level of use.

Phasing in of services, particularly for larger developments, will be considered on a site-by-site basis. Issues that will need to be discussed and agreed include:

- the initial service provision to a development site, for example, taxibuses and demand-responsive transport (services that operate in response to specific requests from residents) to serve the first occupiers of new residential developments;
- at what stage the growing numbers of houses, employees and shoppers will trigger an increase in the capacity and frequency of services;
- the need for priming initial services by using subsidised or free bus passes, residents' travel packs and so on; and
- if and when a new service might become self-funding.

Through the planning process the council will normally recommend to planning authorities that developers fund passenger transport services through a Section 106 agreement which, among other things, specifies the level of support which must be provided to the service and over what period. The council will work with developers to reach a suitable agreement but will consider advising refusal of any planning application development proposals that do not meet the policies and objectives set out in this document, (see Highway Development Management 'Preparing Development Proposals' on the main consultation page).

Pedestrian Access to Bus Routes

Walking distances to bus stops in urban areas should be a maximum of 400m and preferably no more than 250m. In rural areas the walking distance should not be more than 800m.

Pedestrian routes to bus stops should be designed to be as direct, convenient and safe as possible to encourage use of passenger transport. Please see the Active Travel layout section.

Bus stops in employment or commercial areas should be located near building entrances and avoid locations where passing traffic speeds are high. In rural areas there should always be at least a footway from any proposed development to the nearest bus stop.

Where there is a footway on the opposite side of the road, a crossing point should be provided next to a bus stop and designed in line with the appropriate standard drawing. Crossing points should be located as close as possible to the stop, bearing in mind safety considerations.

Bus Stop Location and Design

The proposed layout of the development must be carefully considered in the immediate vicinity of a bus stop to:

- Ensure bus drivers and passengers waiting at the stop have ample time to see each other.
- Ensure vehicles overtaking a stationary bus have satisfactory forward visibility;
- Ensure bus stop pairs are staggered and not sited directly opposite each other;
- prevent parked vehicles blocking bus stops;
- avoid safety conflicts with road junctions, pedestrian or cycle crossings and so on;
- Ideally avoid interference with accesses to properties;
- make sure there is satisfactory drainage where raised kerbing is installed;
- minimise risks to personal safety and opportunities for crime; and
- protect bus stops from obstruction.

When humps are used on bus routes, it may not be appropriate to locate them close to bus stops, as buses going over the humps could jolt standing passengers sufficiently to cause them to fall. Speed cushions are an alternative form of vertical deflection device that are intended to cause less interference than road humps to larger vehicles and should be considered.

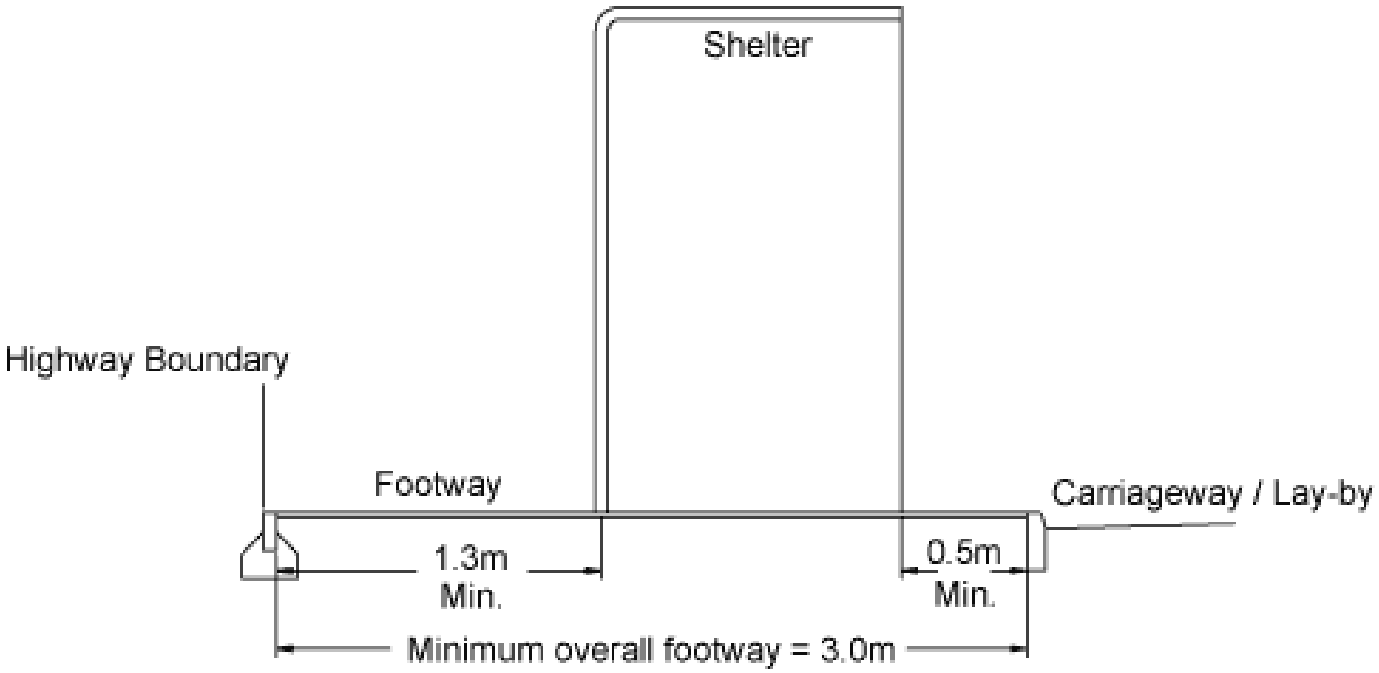
Should the developer be required to erect a new bus stop or relocate an existing bus stop on an existing passenger highway, agreement must be sought from:

- the local highway authority;
- the police;
- the local parish council (if appropriate) / local ward councillors; and
- bus operators.

Adjacent residents should be notified of any changes.

The minimum footway width at a bus stop should be 3m. Where a shelter is to be provided, there should be at least 0.5m clearance between any part of the shelter and the edge of the carriageway. There should be a clear footway of at least 1.3m between the shelter and the rear edge of the footway (both for cantilever-style shelters where the roof extends beyond the support and enclosed shelters). Where this cannot be achieved, but there are no alternative locations to site the shelter, then site-specific shelter designs will be assessed on a case-by-case basis.

Figure 26: Bus shelter siting



Accessible raised kerbing to a height of 180mm will be required at all stops. The length of raised kerbing should normally be 6m in length (plus 1m transition kerbs at either end), with a minimum run of 3m width (plus transition kerbs). The stop should be located and laid out so a bus can stop parallel to and close to the raised kerbing.

At sites with difficult gradients, access kerbs with an upstand of 160 mm will be considered.

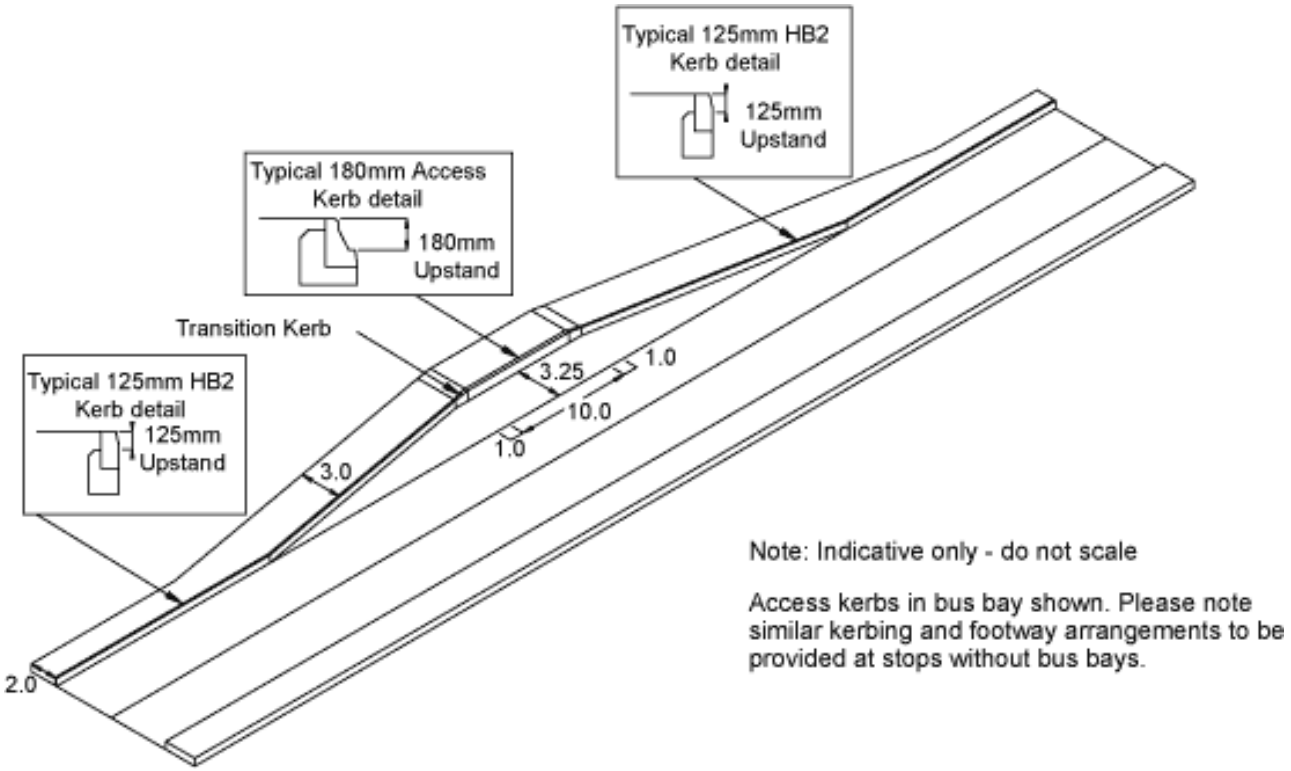


Figure 27: Raised kerbing at bus stops

Shelters will usually be required at key access points where there are likely to be higher passenger flows, for example near:

- high-density housing;
- business parks;
- local shops, schools, hospitals or other significant community facilities; or
- in rural areas where passenger transport services are infrequent and people may have to wait some time for a bus.

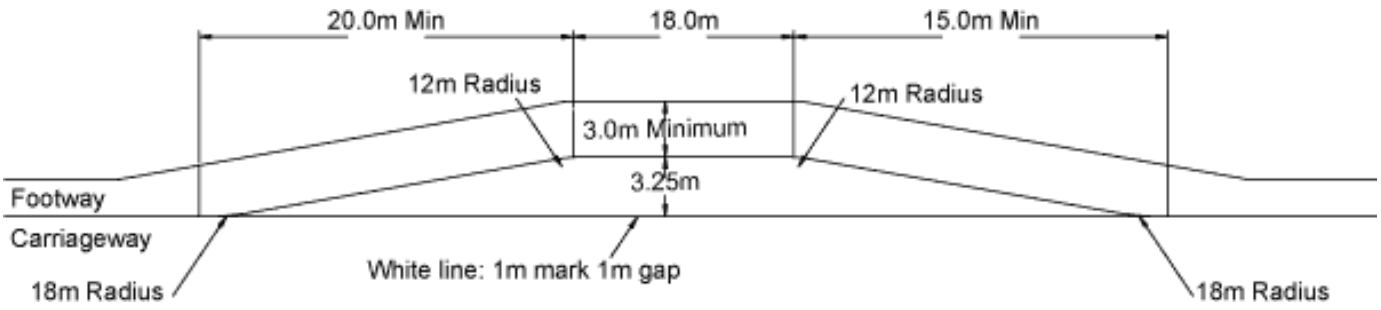
Where the council does not own the bus shelter, a licence from the council will be required to erect it. Where shelters will display advertising, planning permission will also be required from the planning authority. The council will also need to be satisfied that appropriate arrangements are in place for the shelter's future maintenance.

The council will consider how bus service information will be provided at bus stops on a site-by-site basis. Depending on the nature and size of the development, the information should be provided in a suitable casing or via real-time electronic displays. It is the developer's responsibility to provide timetable information.

Lay-bys and Bus Stop Clearways

Where lay-bys are to be provided, they should be designed to accommodate 15m long buses. Typical bus lay-by design is shown in Figure 28 below.

Figure 28: Bus lay-by



A bus stop clearway is carriageway where motorists are not permitted to stop at any time. Where carriageway is designated as a bus stop clearway, the white line as shown in the above Figure is replace with a yellow dashed line along with bus stop or stand text and a thicker 300mm line at the back of the layby as per TSRGD 2016. There is also a requirement for an upright bus stop clearway sign detailing the time the restriction applies. Requirements for lay-bys should be discussed with the council at an early stage in the design process.

The council will require a commuted sum payment to cover future maintenance of bus stop facilities that are to be maintained.

Designing Passenger Transport Routes

Roads that are intended to function as bus routes within new development should be at least 6m wide (subject to tracking assessment) and be reasonably straight. A more generous swept path is also likely to be required to take account of where vehicles might park on-street, for example. See the Road Types Section for further information.

Horizontal speed-control features, including 90-degree bends and horizontal traffic calming measures such as chicanes, should be designed to accommodate the swept path of the largest rigid bus size permitted. Design details should be agreed jointly with the council and the bus operators. Tracking assessments of vehicle swept paths must demonstrate that proposals will work in practice.

Where vertical speed control features are required on a bus route the following measures should be employed:

- use round-top humps, 5m long with a sinusoidal profile as described in TRL information note 417 (and possibly 377);
- build any tables to a minimum length of 9m with 1:13 maximum ramp slopes;
- keep humps or tables no higher than 75mm. Bus companies prefer lower heights and the council will consider these on a site-by-site basis, as long as any reduction in height does not significantly affect speed control in the development; and

Note: Please see the council's standard drawings for junction tables, speed cushions and road humps.

Passenger Transport Interchanges

A passenger transport interchange with comprehensive facilities may be appropriate for particularly large developments that generate high passenger numbers. Development proposals and maintenance responsibilities will be considered on a site-by-site basis.

Developers should consider active travel connectivity to transport interchanges in accordance with LHDG and LTN 1/20 guidance.

Examples of developments and locations might include:

- major retail parks;
- hospitals;
- business parks;
- significant new housing estates;
- extensions to an existing major development where it will help to encourage greater use of passenger transport;

developments at locations where bus routes intersect; and

where major orbital and radial roads intersect.

Examples of facilities might include:

- a waiting room or minibus station;
- comprehensive timetable and route information, including real-time bus information;
- secure facilities for leaving luggage;
- toilets;
- refreshment facilities; and
- secure cycle parking.

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Speed Control Design

Internal Roads

MfS states that "*For residential streets, a maximum design speed of 20 mph should normally be an objective*". Vehicle speeds within new developments should be controlled through the design and layout of the roads and the locations of buildings and not by using traffic-calming features (particularly vertical features such as road humps). Options such as road geometry and dimensions, changes in priority at junctions and design of road markings should be considered before proposing the introduction of vertical speed control features.

Where there are valid reasons why vehicle speeds cannot be controlled through site layout, and traffic calming measures are required, horizontal measures should be considered first and vertical measures used only as a last resort. Traffic calming measures should be in accordance with advice contained in the Department for Transport's Local Transport Note 1/07 "Traffic Calming", which also lists in Appendix A the relevant Traffic Advisory Leaflets.

Care should be taken over choosing traffic-calming measures for proposed bus routes, or where routes are likely to be used by the emergency services. (see Passenger Transport section).

While certain types of traffic calming (particularly vertical measures such as road humps) can have potential road safety benefits, they can also adversely affect the response times of emergency vehicles.

Table 21: Maximum distances between speed control features[(a)]

85th percentile design speed (mph)	Maximum distance[(b)] (metres)
30	150
25	100
20	70
15	40

[(a)] This is the maximum distance between junctions (where the flow of the road being designed must give way), 90-degree bends or other speed control feature

[(b)] Distance between curves is measured between the tangent points.

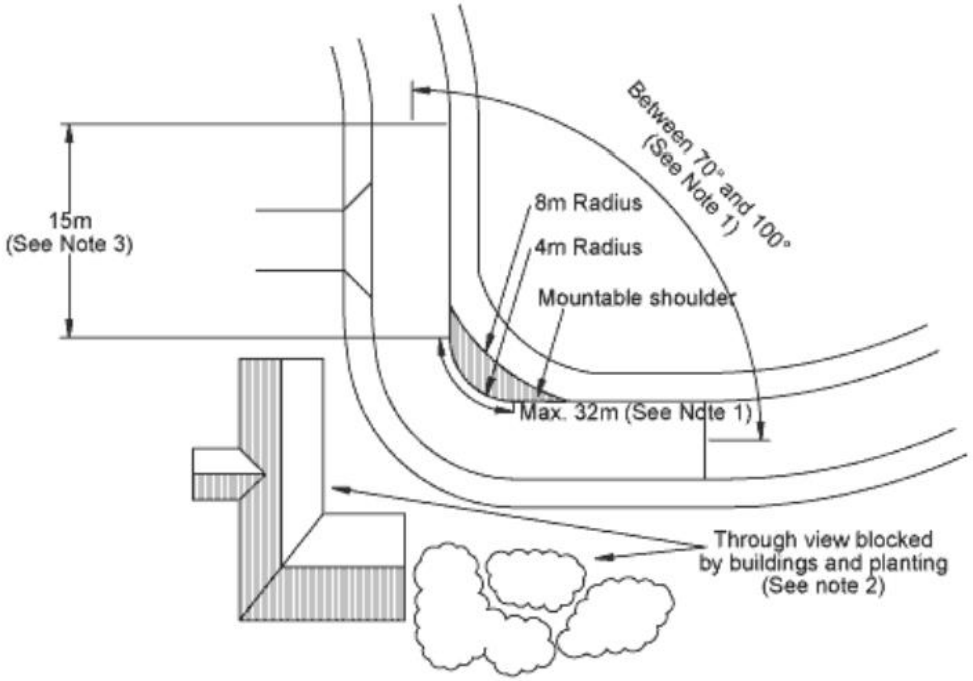
Vertical calming features should not be sited within 25m of the edge of a structure, for example, a bridge or culvert. Such features should also be sited clear of private accesses and driveways to avoid problems of vehicles 'grounding' as they turn into or out of the accesses or drives.

The council will consider other methods of vehicle speed control in the light of practical experience of their effectiveness and any further research. However, because of problems with noise and vibration, 'rumble strips' will not be accepted within development.

Speed cushions are normally preferred for residential distributor roads. However, if road humps are the only solution, these should be a maximum of 65mm in height (possibly 75mm subject to agreement) and a minimum of 7m in length. All traffic calming installed on the existing road network as part of a s278 agreement should include a speed reduction feature prior to any vertical feature where the 85th percentile approach speed is greater that 30mph.

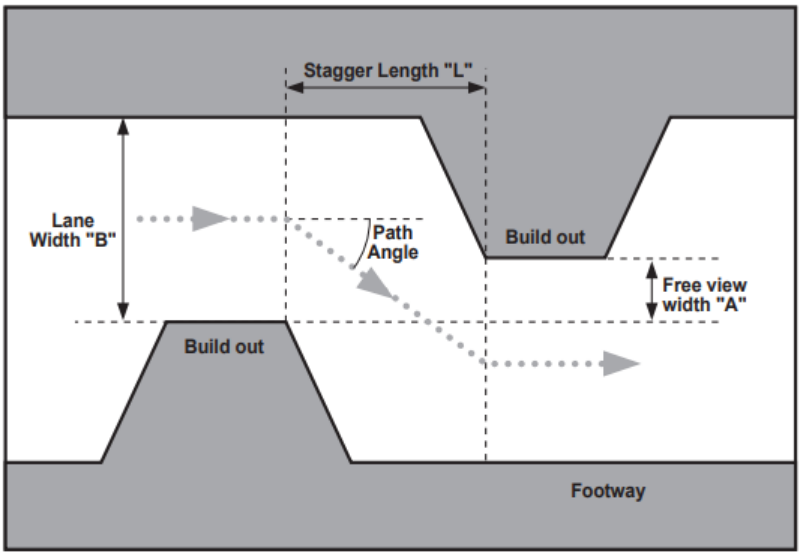
Examples of Speed Control Features

Figure 29: Speed control bend



Notes:
1. Change in direction to be between 70° and 100° over a maximum distance of 32m measured along the inside kerb.
2. The through view beyond the bend on to the approach should be blocked by buildings, walls or dense planting etc.
3. A 15m separating straight is required after the speed control bend if the road curves in a reverse direction
4. There should be no vehicular accesses over the length of the forward visibility curve

Figure 30: Chicane and associated tables (From the Department for Transport's Local Transport Note) 1/07 "Traffic Calming")



Free view width (A) – the width of the central gap between build-outs on opposite sides.

Lane width (B) – the average width between the build-out and the opposite kerb.

Stagger length (L) – the length between the start of the stagger on the offside and the end of the stagger on the nearside.

Path angle – the angle through which the traffic lane is displaced.

Table 22: Stagger length and car speeds

Lane width 'B' (metres)	Free view width 'A' (metres)	Stagger length 'L' to achieve required vehicle speed in chicane (metres)		
		15 mph	20 mph	25 mph
3.0	+1.0	6	9	14
	0.0	9	13	18
	–1.0	12	16	-
3.5	+1.0	-	-	11
	0.0	9	12	15
	–1.0	11	15	19
4.0	+1.0	-	7	9
	0.0	-	9	12
	–1.0	-	11	15

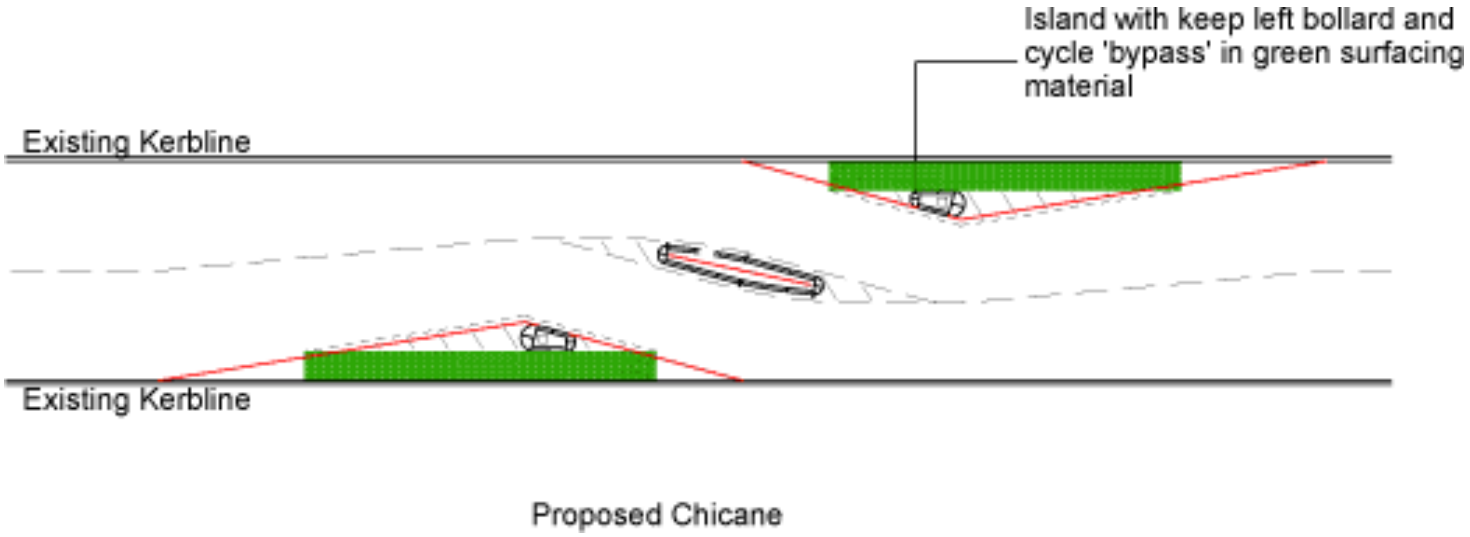
Table 23: Minimum dimensions of stagger length for larger vehicles at very low speeds

Lane width 'B' (metres)	Stagger length 'L' needed for a free view width of 0.0 metre (metres)		
	Articulated lorry	Rigid lorry	Single deck bus
3.0	20	12	13
3.5	15	9	11
4.0	11	7	9

Table 24: Dimensions of large vehicles used in track trial

Vehicle type	Vehicle dimensions (metres)		
	Width	Length	Wheelbase
Articulated lorry	2.5	16.1	-
Rigid lorry	2.5	9.2	5.8
Single-deck bus	2.5	11.8	5.5

Figure 31: Example of chicane including cycle 'bypass' [TO BE UPDATED]



LTN 1/20 encourages the use of cycle bypasses alongside horizontal measures such as chicanes or narrowings. The gap should be at least 1.5m wide and be designed to allow access by standard sweeping machinery. The bypass arrangement should minimise conflict with motor vehicles when cycles re-enter the carriageway. The length of cycle lane must be agreed with the council.

Figure 32: Junction table

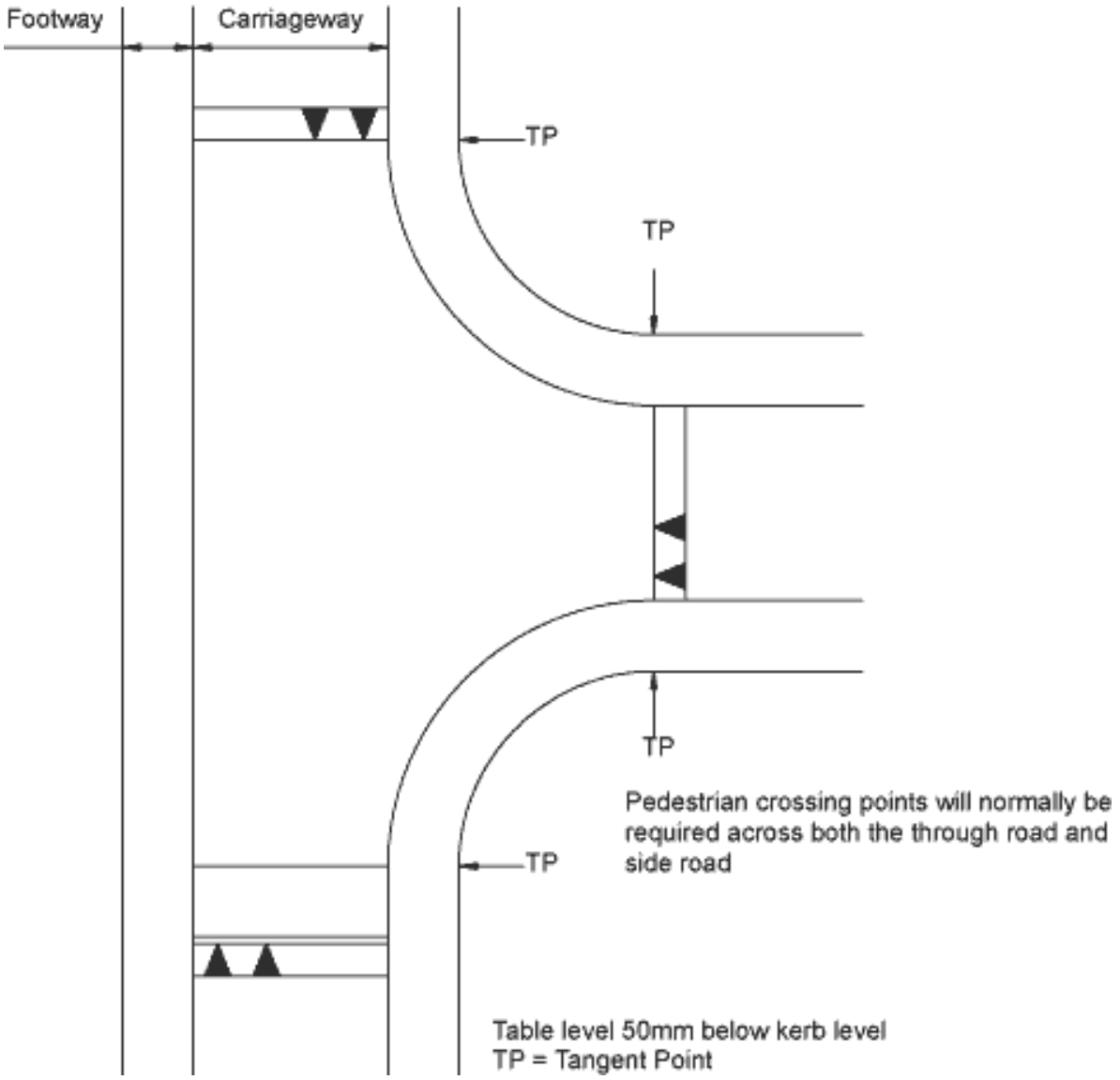


Figure 33: Cross section of speed tables (alterations for steep roads shown in lower diagram) [TO BE UPDATED]

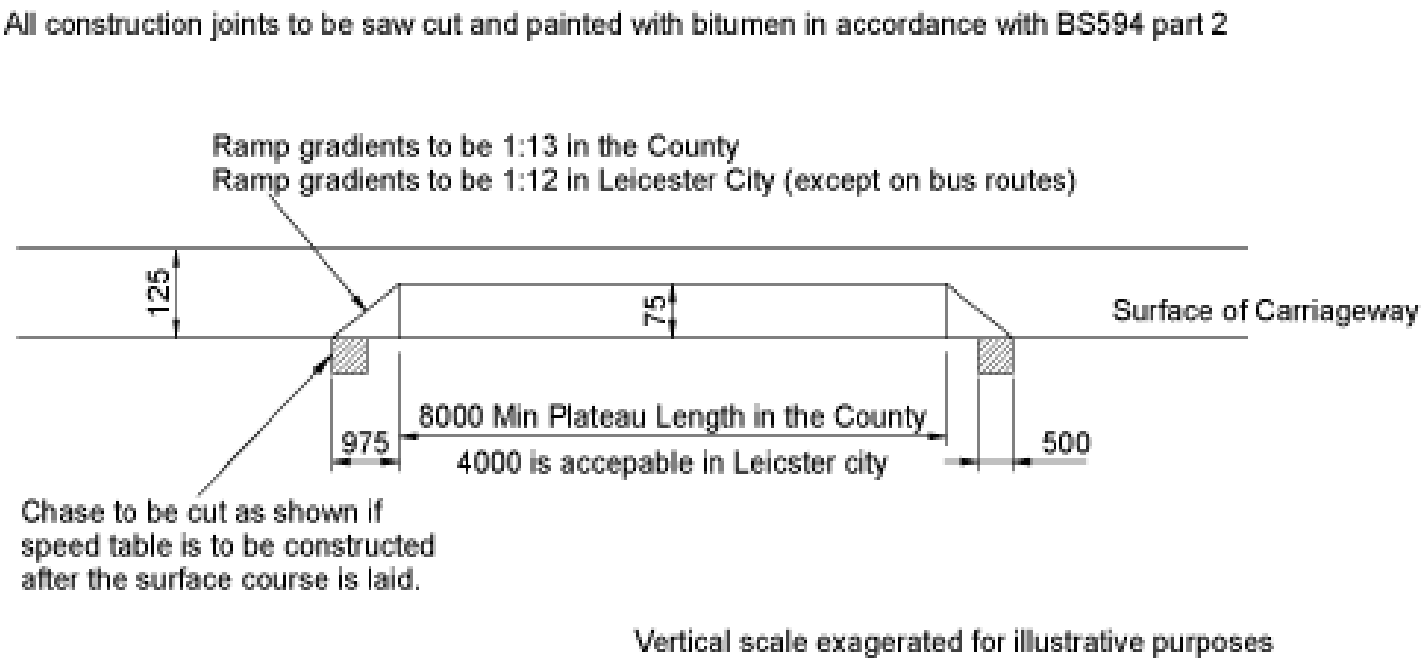


Figure 34: Cross section of speed tables for steep roads

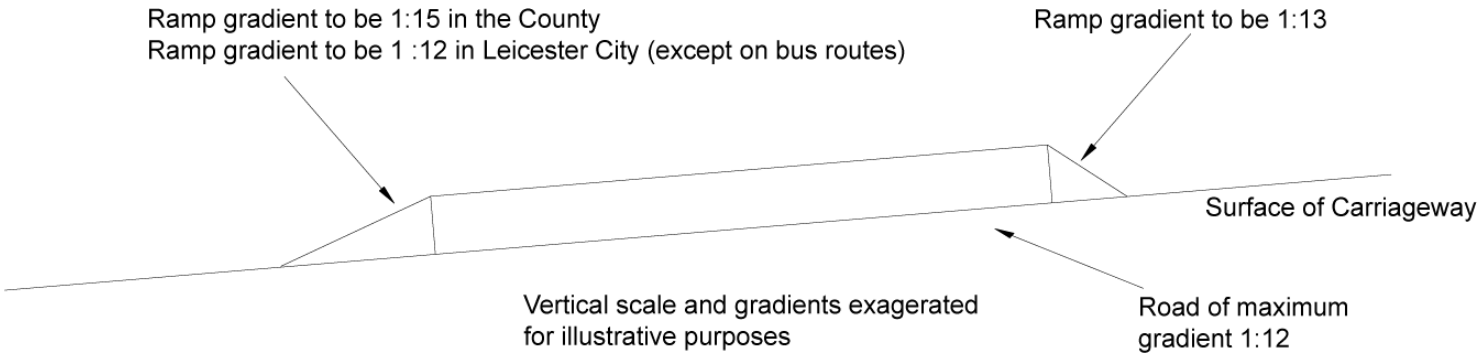
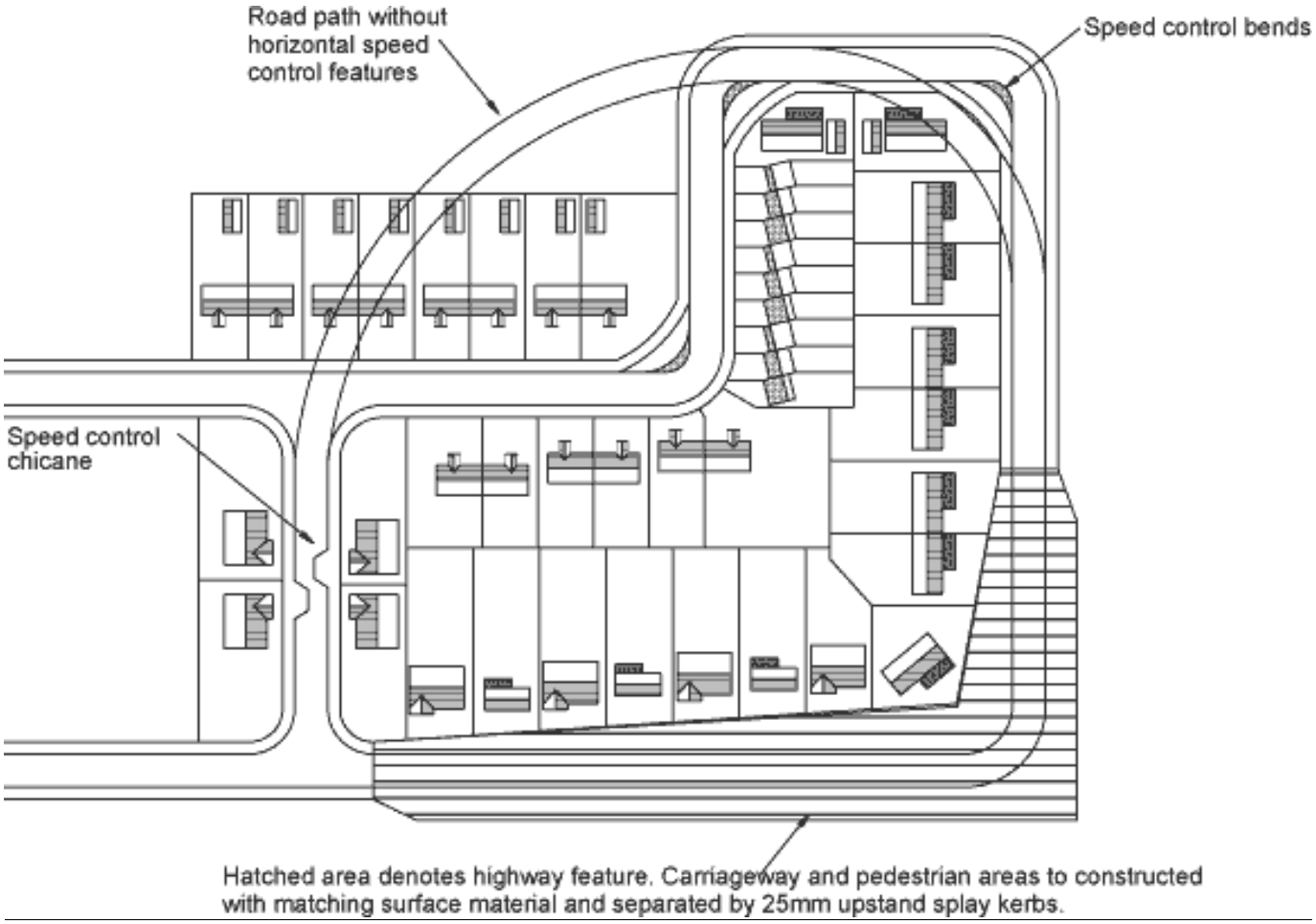


Figure 35: Example of vehicle speed control by development layout



Note: Please see the council's standard drawings for junction tables, speed cushions and road humps.

Interventions on the Existing Road Network

Where speed-control measures are required on the existing highway network, for example, to help minimise development impacts or to achieve safe site access, there must be additional public consultation (even where the development has received planning permission) distinct from the planning process. The consultation should include the advertising of control features and where appropriate a where speed limit changes are proposed.

The consultation process can often be lengthy, particularly where statutory procedures such as Traffic Regulation Orders are involved. The developer is expected to fund all costs associated with these consultations.

Early advice should be sought on the likely timescale and procedures involved for proposals. This information should be considered when programming development and during any negotiations that may be held with the landowner of the development site.

The council will normally seek to secure the speed-control measures and the funding of any associated costs through an appropriate legal agreement. Back to top

Street Lighting Design

The council requires a suitable system of street lighting on all adoptable roads. The Street Lighting team provides the following services:

- A lighting design for all adoptable roads following technical approval of the highway works. The cost of this lighting design is included within the S38/S278 administration and inspection fee. This design will be requested on the developer's behalf at the appropriate stage and the street lighting team will not need to be contacted directly.
- A pre-technical approval lighting design for all adoptable roads. This earlier design service is subject to an additional separate charge. Note: this is an optional service; there is no reduction in the administration and inspection fee. This is an optional service and the street lighting team will need to be contacted directly. The street lighting design should then be submitted as part of any S38/S278 submission.

Generally, these services help to ensure compliance with the council's requirements and minimises the risk of delay to the adoption process. The council will also accept third party designs, but they need to be submitted, reviewed and approved as part of the technical appraisal process.

Whether designed by the council or not, all street lighting layouts must comply with BS 5489 Code of Practice for road lighting and obtain technical approval from the council. This is important for both road safety and to help promote personal safety and minimise crime opportunities.

It is important that the lighting layout is considered at the same time as the street layout. To encourage pedestrians to use a route and to feel safe, it is important that lighting levels are maintained at the same standard along a route, whether a route is adopted or not. When preparing development proposals, the purpose of the lighting, its scale and the proposed width of the street and height of any buildings should be considered.

Erecting Signs and Other Attachments to Lighting Columns

If erection of any apparatus over, along or across the highway is being considered, an application for a licence under Section 178 of the Highways Act 1980 will be required.

Any proposals to attach temporary or permanent signage to highway lighting columns must follow the council's "Guidance notes for the erection of permanent or temporary attachments to highway lighting columns" and application process. Applications must be received by the council at least 8 weeks in advance of proposed works.

Applications should be for a single, temporary sign per column that are designed to withstand wind loads.

Lining and Signing Design

The developer is responsible for providing all road markings and traffic signs both on the internal development roads and on the surrounding road network where necessary. Occasionally, this may involve signing at some distance from the development, for example, for routing HGVs.

At the developments' site access, lining and signing should be provided in accordance with TSRGD.

For priority junctions within developments, junction lining and signing:

a) will not normally be required in residential developments;

b) will not normally be required in B1 use class office developments; but

c) will be required in all other employment and commercial developments, provided in accordance with TSRGD.

The requirements stated above also apply to carriageway centre-line markings.

Other types of development will be considered on a site-by-site basis.

Signing and lining, in accordance with TSRGD, should also be provided at all road humps/tables, at any entry ramps to side roads and at any other traffic calming features. Where parking bays are not clearly defined, markings will be required to segregate them from the carriageway.

Illumination of Signs

Wherever signing and road markings are required, they should be provided in accordance with the requirements set out in "Signing and Lining – Materials and Construction", including the need for illumination. Which signs will require illumination should be established at an early stage to make sure that appropriate electrical supplies are installed during construction work.

Traffic Regulation Orders

Where a development requires changes to an existing Traffic Regulation Order (TRO) or a new order is required, the developer is required to pay all costs, including all consultation and legal costs. TROs are subject to statutory procedures and consultations. This can be a very lengthy process and a successful outcome is not guaranteed. Advice should be sought on the likely timescale and this should be considered when programming proposals.

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Utility Equipment

The location and installation of utility equipment both above and below ground should be considered at the earliest opportunity, particularly where surface areas are shared.

Typically, private equipment should not be located in the highway, but utility company's equipment should be. Where houses are located very close to the highway boundary this can be difficult to achieve and may lead to the council refusing to adopt highway.

Utility equipment should be installed in accordance with National Joint Utilities Group, (NJUG), volumes 1 and 2. Where a shared-surface layout is proposed without a separate service margin or where a development layout is not explicitly covered by this guidance, early discussions should be held with utility providers and details provided to the council of proposed locations for utility equipment. Separate services margin should be at least 2m wide.

Above ground utility equipment must not:

- present a danger to the public or to staff working on it;
- obstruct a drivers' view, for example, by being sited in visibility splays;
- obstruct highway users, including pedestrians, wheelchairs and pushchairs. At least 1.2m clearance must be provided, increased to 2m in areas of high pedestrian flows (500 or more pedestrians an hour);
- be located within a cycleway;
- be located within 5m of any other street furniture that would create multiple obstructions to pedestrians. Any items within 5m of another utility must be in line;
- provide a means of illegal access to adjacent premises or property. For example, siting alongside a high wall where equipment could be used to enable access should be avoided;
- negatively impact on visual amenity by obstructing the view from the window of a house, intruding into areas of open-plan front gardens or disrupting the line of low boundary walls;
- negatively affect a Grade I or Grade II listed building. Licence requirements, including any wayleaves, must be agreed for listed buildings and conservation areas. Additional consideration must be given to cabinet design to be located in conservation areas.
- create unnecessary clutter.

To ensure the ease of maintenance all apparatus above the ground should:

- be positioned so that maintenance and cleaning operations are not disrupted;
- not be located within tactile paving (in the case of surface covers). Where there is no alternative, this should be integrated within the design with a suitable recessed cover;

- allow space for associated jointing chambers;
- take account of known future highway alterations;
- allow for future surfacing work, for example, by using raised plinths and allowing for spare cable if the boxes are raised in future.

Equipment should be located within the verge where possible. At least 1m spacing should be provided between the cabinet and the edge of the carriageway in rural areas and 1.5m in urban areas. Access doors should always open to the footway. The impacts caused by the gradient of adjacent land on future operations and maintenance within the vicinity of above ground equipment should be considered.

If there is no verge, designs must:

- position equipment at the back of footway;
- provide a minimum distance of 1.2m between the edge of an open access door and the edge of the carriageway where pedestrian flows are low; or
- provide a minimum distance of 2m between the edge of an open access door and the edge of the carriageway where pedestrian flows are heavy (500 pedestrians or more per hour at any time).

If equipment is placed on private land, then an easement may be required to allow utility equipment providers access for maintenance purposes.

Equipment located below ground should accord with NJUG volume 7. Access chambers should be located so that they:

- minimise disruption to pedestrians and provide adequate access for installing and maintaining equipment, and recovery operations;
- avoid the use of expensive or bespoke pavings that may not be easily replaced following essential maintenance;
- avoid other utility providers' equipment;
- allow for using mechanical equipment during construction and installation, maintenance and recovery operations at the site;
- consider any known future highway activities and alterations. Contact the Network Management team or visit the One Network site;
- make sure the type and construction of underground boxes allows the council to raise covers and frames when the council carries out resurfacing work; and

Placing equipment within areas where pre-construction surveys have identified archaeological features, including foundations to listed buildings, must be avoided or appropriate mitigation put in place in accordance with any planning conditions.

Confirmation that statutory undertakers are not affected by the works should be provided. This should be either a web search plan showing that they have no assets in the area of works, or if they do have assets in the area a formal New Roads and Street Works Act (NRSWA) C3 response from the Statutory Undertaker stating that they are unaffected. If Statutory Undertaker's assets are affected then the response letter, estimate of works and plan of the works should also be submitted to the council.

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Highway Drainage Systems - Layouts and Consents

National planning policy and guidance sets a clear expectation for developers to provide sustainable drainage systems (SuDS) that include benefits for water quantity, water quality, biodiversity and amenity. Although the council is legally under no obligation, SuDS may be adopted for highway drainage purposes where they meet standards and guidance set out in the LHDG.

The council as Lead Local Flood Authority (LLFA) has, amongst other matters, a duty to:

- ensure that developments include satisfactory arrangements for draining the adoptable highway;
- consider requests for the granting of consent for works to ordinary watercourses.

The Environment Agency (EA) is responsible is responsible for flood and erosion risk management activities on main rivers.

Discharges to a watercourse are likely to require discharge consent/approval from either the council as LLFA (ordinary watercourse) or EA (main river). Written evidence that approval/consents have been received from the appropriate bodies must be provided to the council.

Adoption of Drainage

All highway drains should be located within land proposed for adoption by the water company or the council. Any adoptable highway drain outside the limits of the adoptable highway must be covered by an easement and accompanying legal agreement. This should be in place before, or be a condition of, the Section 38 or 278 agreement (Highways Act 1980).

The council will usually adopt a drainage system that accepts highway runoff only. Highway drains are not designed to accept any private drainage (from individual properties, business, and developments) or discharges from private treatment plants/septic tanks and land drainage, and any such requests to connect into a highway drain would be refused.

Typically, water companies will adopt systems where they accept water from sources that include non-highway drainage from the general development. Where this drainage runs within the curtilage of adopted highway, evidence of signed agreement under the Water Industry Act 1991must be provided before the council will agree to sign a Section 38 agreement and adopt a road (Highways Act 1980). The council will not adopt the roads until the water company has issued a provisional certificate of adoption for the drainage system.

The council's responsibility for highway drainage finishes at the point at which it discharges into a watercourse (including ditches) and beyond that point it becomes the liability of the landowner.

Drainage Systems

Highway drainage on new developments should be connected to a drainage system via one or a combination of the following:

- drained by a piped highway-drainage system (minimum pipe size 225mm) running to an out-fall adopted by a water company or an out-fall to a ditch or watercourse agreed by the LLFA or EA.
- infiltration into the ground in a safe and environmentally sustainable manner.

SuDS Suitability Checklist

The following should be considered when determining which SuDS technique is suitable for a site. There are site conditions and constraints which may prohibit or restrict the use of certain SuDS features for the purposes of adoptable highway drainage, including:

- Flood plain
- Groundwater;
- Soils and geology;
- Contaminated land;
- Space constraints;
- Maintenance.

These constraints must be considered at the design stage.

As the use of SuDS features to drain the highway is relatively new in Leicestershire, there will be a bedding in period and not all features are currently accepted for adoption. Developers should discuss proposed SuDS features during pre-application discussions where they will be updated on the current position on both acceptability and adoption of different SuDS features.

The ground conditions throughout the County are unsuitable to enable efficient drainage by natural percolation and soakaways are often unsuitable for public highway drainage. There may be areas where infiltration is possible, and if a soakaway is proposed, suitable percolation test results must be provided (to BRE365).

SuDS must be designed to accepted industry standards. The council is keen to work with developers and the wider industry in developing its own design standards and specification as experience of the use of SuDS increases.

Table 25 below sets out the adoptability of SuDS interventions and where a commuted sum will be required. The council will not adopt systems that accept non-highway run off.

Table 25: Acceptability of highway SuDS interventions

	SuDS Intervention	Adoptable	Early consultation?[1]	Commuted sum required?
CIRIA	Chamber soakaway	Y	N	N
	Infiltration basin	Y	Y	Y
	Soakaways trench	Y	Y	N
	Crate / tank soakaway	Y	Y	N
	Proprietary treatment systems (e.g. oil interceptor)	Y	Y	Y
	Filter strips (contaminated waste)	N	-	-
	Filter drains/trenches	Y	N	N
	Swales, channels and rills	Y	Y	Y
	Bioretention systems	Y	Y	Y
	Trees/shrubs	Y	Y	Y
	Permeable / Pervious block pavements (option for areas where positive drainage not available and ground conditions allow)	Y (private drives and shared surfaces with low traffic flows)	Y	Y
	Other permeable/pervious surfacing (asphalt or concrete for example)	N	-	-
	Attenuation Storage Tanks (crate system preferred, speak to LCC)	Y	N	N
	Rain Gardens	Y	Y	Y
	Detention Basins	Y	Y	Y
	Source control (e.g. Green & Blue Roofs, rainwater harvesting)	N	-	-
	Inlets, outlets & control structures	Y	N	N
	Ponds & Wetlands	N	-	-
Other	Landscaped area	Y	Y	Y
	Ditches /Watercourses	Y	Y	Y
	Drainage Grips	Y	N	N

[1]Infrastructure Planning and Maintenance Operations. Any interventions that include tree planting must be discussed with the Forestry team.

A SuDS scheme will only be adopted when the council is satisfied that the scheme is performing satisfactorily and has been built in accordance with the agreed design and specification and is in accordance with the council's adoption requirements.

Drainage systems should be designed in line with the water company's specifications and requirements (which should be treated as complementary to this document) and should be adopted by them.

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Green Infrastructure and the Natural Environment

Introduction

This section covers what should be considered in relation to designing green infrastructure and other environmental aspects within the highway at the early phases of development proposals; this includes the legal responsibilities, the council's core principles and producing designing layouts.

The Government has updated the National Planning Policy Framework (NPPF) to include the requirement that "new streets are tree-lined". In consideration of this requirement, trees and verges might be located:

- Within highway proposed for adoption by the council, for which a commuted sum will be requested for future maintenance;
- Between the highway and other built development (for example, between the footway and residential properties) and maintained by a management company;
- Other areas outside of adoptable highway, such as gardens and commercial landscaping areas, to be maintained by the landowner.

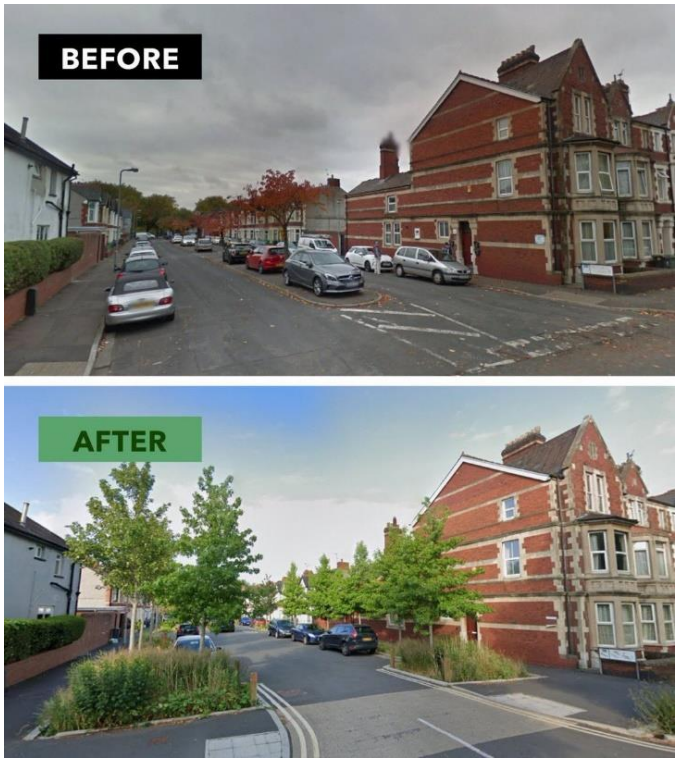
NPPF also states that "Applicants and local planning authorities should work with highways officers and tree officers to ensure that the right trees are planted in the right places, and solutions are found that are compatible with highways standards and the needs of different users." NPPF section 131 states that appropriate measures must be in place to secure the long-term maintenance of newly planted trees, and that existing trees are retained wherever possible.

In designing green infrastructure for a development, it also is important to consider the character and heritage of the area. Green infrastructure within highway areas can be as important in determining the character of the development and integrating it into its surroundings as landscaping elsewhere within the site.

In addition to creating an attractive environment that can increase the value of properties within development green infrastructure also encourages people to participate in active, healthy modes of travel and helps to mitigate the impacts of climate change by:

- absorbing carbon;
- managing flood water;
- reducing air and water pollution;
- cooling the environment by providing shade and moisture to the air providing opportunities for wildlife; and
- Controlling soil erosion.

Figure 36: The difference green infrastructure can make to a street scene



Highway can provide important opportunities to improve the connectivity of sites of value for wildlife through provision of green infrastructure that has biodiversity benefits. Consideration of this during the design process may help the council to support the developing Local Nature Recovery Strategy work and meet its duty under environmental legislation.

Trees and hedgerows may also have landscape and historic value, for example, old hedgerows provide an important element of the setting of heritage assets, or they form an intrinsic part of the wider historic landscape. Please discuss the scheme with the council's planning archaeologists at an early stage.

Heritage assets are of enormous value to communities for their contribution to the character and understanding of a place. The NPPF defines significance as "the value of a heritage asset to this and future generations because of its heritage interest". It defines four types of heritage interest: historic, architectural, artistic and archaeological.

Protecting Wildlife and the Environment

Transport infrastructure can have negative impacts on wildlife populations, either through habitat loss, fragmentation or pollution.

The council has a duty through the Natural Environment and Rural Communities Act 2006 (NERC Act) and the Environment Act (2021) to provide for the enhancement and improvement of biodiversity.

The Environment Act 2021 ("Act") contains provisions for the protection and improvement of the environment, including introducing mandatory biodiversity net gain (BNG). Biodiversity net gain (BNG) is an approach to development, and/or land management, that aims to leave the natural environment in a measurably better state (10%) than it was beforehand.

The council is considering whether and how BNG might apply to highway land proposed for adoption prior to agreeing an approach.

Roads can create barriers to the movement of wildlife, and animals can become trapped in traditional highway assets. Mitigation measures that help prevent habitat fragmentation and enable wildlife to navigate highway are an important part of road design and should be discussed at an early stage with planning ecologists and the council to ensure effective provision of infrastructure and achieve biodiversity net gain. Specialist ecological advice should be sought during the design phase.

The council requires that best practice mitigation measures, such as mammal passes, inset kerbs, tunnels, drains with wildlife exit routes, and arboreal hop-overs are incorporated along known or potential wildlife corridors.

Any mitigation measures, such as badger or amphibian tunnels, must meet the principles of good asset management regarding durability and ease of maintenance, this work should be discussed with the appropriate specialists and the council at an early stage.

Consideration must be given through the design process to the measures required to help reduce these impacts. The requirement for mitigation will be assessed through the production of an Environmental Impact Assessment as part of a planning application. The council will facilitate the inclusion of mitigation measures as part of the highway aspect of new development.

Guidance can be found on environmental design and construction of road schemes in LA 117 of the DMRB. This guidance should be used to help identify areas and issues where environmental factors must be carefully considered. Ciria's "Environmental good practice on site guide" (C741) provides practical advice about managing construction on site to minimise environmental impacts.

Some plants and animals are given special protection under UK and European law, and LA 108, 115 and 118 of DMRB will give detailed information and advice. These documents will provide information on who must be consulted, together with other advice including:

- Annex 1 - Seasonal constraints on animals including birds and fish;
- Annex 2 - List of the relevant conventions and legislation;
- Annex 3 - Species advice;
- Annex 4 - Habitat advice.

There are also British Standards relating to biodiversity:

- BS 42020:2013, Biodiversity. Code of practice for planning and development;

- BS 8683:2021 A process for designing and implementing Biodiversity net gain.

The heritage protection system in England designates legally binding categories of protected heritage: Listed Buildings, Scheduled Monuments, Conservation Areas and Protected Wreck Sites; it is a criminal offence to carry out certain works to them without the necessary consent.

Information on heritage assets can be requested from the council through the Historic Environment Record (HER), the most complete record of archaeological remains and historic buildings in Leicestershire and Rutland.

The council also employs Planning Archaeologists to comment on planning applications where they have the potential to impact on heritage assets.

Any proposed works to take place near to heritage assets requires careful planning and consultation. Maintenance of these assets must be sensitively and sympathetically undertaken and often requires the employment of specialist contractors.

Principles and Layout Guidance

Alongside the adherence to British Standards, early engagement (preferably at the pre planning stage) with the appropriate officers about green infrastructure proposals is critical. The use of professional tools such as the Value of Trees toolkit and Trees and Design Action Group guidance should also be adopted during the design process. Agreement of the design principles at an early stage will help reduce the risk of delay to technical approval and minimise future maintenance issues. The use of the value of trees toolkit will result in a discount to the commuted sum attracted for the future maintenance of trees within highway.

Green Infrastructure Design Principles:

- Planting and associated infrastructure should be designed with an understanding of the local context and constraints, including the character and heritage of an area, adjacent buildings and spaces, the topography and views, vistas/ landmarks within and outside of the development site.
- Existing trees and landscaping should be retained wherever possible and suitably protected during construction activity in accordance with the British Standard 'BS5837:2012 Trees in relation to design, demolition and construction - Recommendations'.
- Trees, shrubs and hedgerows must be planted with sufficient space for them to reach maturity without the requirement for onerous maintenance intervention. Verges must be a minimum of 2m in width where they are to accommodate tree, shrub or hedge planting.

- The focus should be on the quality of design and delivery rather than quantity – one well planted tree is hugely preferable to 100 poorly planned and planted that either die or become a significant maintenance burden.
- Roads can create barriers to the movement of wildlife. Consideration should be given to creating designs that facilitate the navigation of highway. For example, poorly designed lighting can be a barrier removing the permeability of landscape for some species such as bats.
- An appropriate design must be developed and agreed with the council at the earliest design stage. The design must show the planting specification for all planting including hedges, shrubs, trees and herbaceous stock. The information provided will include the source of stock (i.e. from reputable nurseries with appropriate bio-security measures in place), numbers, planting locations, size, species, method of planting, preparation of planting beds and pits and a comprehensive after care program for an approved period of time. This will help to avoid future maintenance issues, particularly regarding the integrity of the adjacent carriageway, footway and neighbouring buildings.
- The design should be considerate of potential existing and future issues relating to underground services.
- Careful consideration must be given to the design of landscaping to ensure that areas are not perceived to be impacting on personal safety or creating spaces for crime to take place. (See Principle 6 – Supporting Inclusive Highway)

The council will usually adopt well-designed and planted landscaping on verges and other highway-related land providing that a commuted sum is paid to cover its long-term maintenance. The council will not adopt hedges that form a boundary with privately owned land.

While trees and other soft landscaping can enhance the street scene, care must be taken when selecting and positioning trees and shrubs to make sure that building frontages and parking areas can still enjoy good natural observation from areas of potential activity such as roads and footways. The effects of soil heave and shrinking on adjacent buildings and walls should not be underestimated; there are guidelines on tree planting in relation to buildings and foundation design in the National House Building Council standards.

More complex proposals relating to green infrastructure (for example rain gardens or other Sustainable Drainage System infrastructure) may be considered on a trial basis. It is vital to speak to the council at an early stage regarding design proposals, which should meet asset management principles regarding maintenance affordability and durability.

The council requires a detailed, costed maintenance plan for all green infrastructure proposals for handover to the council's maintenance team before they can be considered for adoption.

Other public space such as children's play areas and recreation grounds are adopted at the discretion of the public authorities such as district and parish councils. The documents MfS and the National Design Guide advise that at an early stage in the design process, effective landscape design can be integrated into the layout of a new development without compromising the viability of the development site.

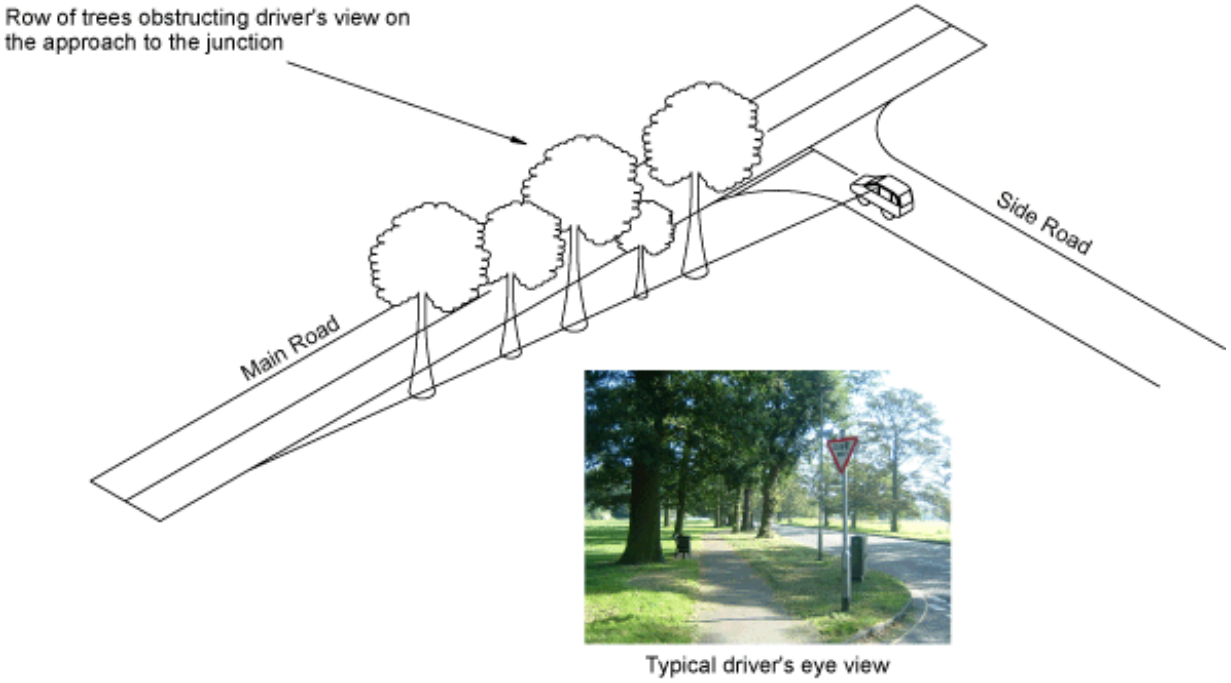
Areas of open space, highway verges, traffic islands and gardens are all potential sites for suitable planting. Large open spaces are ideal for planting groups of trees and larger species (either single species or mixed), whilst grass verges that are a minimum of 2m wide provide an opportunity for planting an avenue of trees or for creating semi-natural grasslands that benefit wildlife.

Less formal areas of open space such as screening bunds provide an opportunity to establish more closely spaced plantations which can develop into effective screens and, eventually, mature woodland edge habitat.

In more restricted spaces, planting small ornamental trees or shrubs should be considered. The design of this type of planting, with assistance of appropriate guidance, should ensure that long-term maintenance costs are kept to a minimum. However, the following design considerations should be considered:

- Classification of roads - dual carriageway, main road, estate road, country lane etc.;
- Visibility - on the inside of bends, from junctions and house driveways;
- Location of existing service runs - overhead cables, streetlights, underground cables and pipes, drains etc;
- Location of service runs required to facilitate the development;
- Aerial space - how close the trees and shrubs are, above ground, to roads, accesses, neighbouring houses etc;
- Risk of damage to footways, boundary walls, kerbs etc.;
- The impact on light levels of nearby properties;
- Screening of undesirable views;
- Provision of seasonal change that can complement artificial environments;
- Defining of routes and views;
- The impact of salt spray on species selection;
- Species suitability when planting adjacent to footpaths and cycleways.

Figure 37: Example of unacceptable tree planting in a visibility splay



Any soft landscaping within visibility splays should not normally be expected to grow to more than 600mm in height above the adjacent carriageway level where the carriageway gradient is level. The council will assess planting in locations where the carriageway is on a slope or there are crests or sags in its vertical alignment, on a site-by-site basis.

Planning authorities are unlikely to favour developments that lack quality design and layout. Landscaping proposals should be prepared at the pre-planning application stage so the council can consider their suitability in good time and so the utility providers (for example, gas, water, cable TV) can be consulted over the proposals.

Green infrastructure will be subject to the same inspection process as any other part of the adopted highway. The council must approve the landscaping proposals within adopted highway whether or not they form part of a landscaping scheme submitted to the planning authority for approval.

In addition to meeting the above principles, areas the council is prepared to adopt as highway should be concentrated into larger areas, to provide economies of scale and to avoid small or remote areas which are difficult to maintain. Small and remote areas can result in the very opposite of what is intended from creating an attractive and well-cared-for environment. To avoid this the council stipulates the following:

- Grassed service strips must be a minimum width of 1m to allow for efficient maintenance;
- Verges that include tree and/or shrub planting should be at least 2m wide to provide adequate space for appropriate planting to grow and thrive, improve security and minimise impacts on adjacent highway;

- The minimum areas created for green infrastructure should be 10m2 for standard grass verges and 6m2 for shrub and groundcover planting;
- Trees must be provided with suitable growing medium and soils that can support both establishment and long-term development. A minimum of 6 to 10 cubic metres of useable soil around each newly planted tree should be achieved. Developers must accommodate requests by the council to inspect trees pits prior to planting.

Conservation Verges

Development layouts that encourage pavement parking should be avoided. Where it is necessary to reinforce verges to prevent erosion by vehicles, including maintenance vehicles, a design must be submitted for approval by the council.

Amenity grass has little ecological benefit; if correctly designed, wildflower mix grasses can be an attractive feature within development and provide valuable habitat for wildlife. Developers are encouraged to consider, the use of grass mixes that include native or wildlife friendly species. However, future maintenance must be taken into consideration when designing this element of a development.

To assist with the efficiency of highway operations, the council will consider the adoption of conservation verges where they are planted within extensive, largely uninterrupted areas such as along spine roads or major bypass schemes. Isolated patches of verge are unhelpful from a maintenance perspective and are unlikely to be adopted. These areas can be maintained by private management companies, or alternatively discussions regarding options for maintenance could be undertaken with the relevant parish or district council.

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Retaining Existing Trees and Other Natural Assets

General Principles

This guidance covers the principles and site practices for the protection of existing trees within new projects. Trees on or next to the highway can be severely damaged by construction and maintenance work to roads and footways. However, damage can be limited and, in many cases, prevented.

Existing trees and other natural features are an important aspect of urban and rural landscapes and make a significant contribution to the character and quality of the county's roads. This guidance primarily concerns the retention of trees when carrying out roadworks and within new developments. However, where the scale of new highway development allows, the retention of other valuable natural features such as wildflower rich grassland should be considered.

Retaining existing trees within the development's layout ensures a mature and established appearance that can enhance the value of properties.

As well as providing important ecosystem services such as reduced flood risk, carbon capture and reduced air pollution, the preservation of natural features can help to retain the connectivity of habitats for wildlife. Specialist ecological advice should be sought on this. Trees are also incredibly valuable for supporting our physical and mental wellbeing.

Wherever possible, the council's policy is to retain, preserve and protect existing healthy trees when carrying out road construction and maintenance work. This includes where new access to development is required. Many trees are lost each year due to development and so it is important that trees with significant value and potential are retained.

Tree protection measures must thorough and should be put in place before the works begin and maintained until the works are finished. Inadequate or inappropriate protection measures are a waste of money and can lead to significant damage, which may only become apparent months or years after the works are completed. A damaged or deteriorating tree due to poor site management can present a significant danger to users of the highway and loss of important local amenity and natural capital.

Where the council has assessed and determined that, for the benefits of highways safety and public interest there is no alternative but to remove an existing high amenity value tree or trees from a development site, the council will seek a sum to mitigate the loss of the public asset from the relevant party.

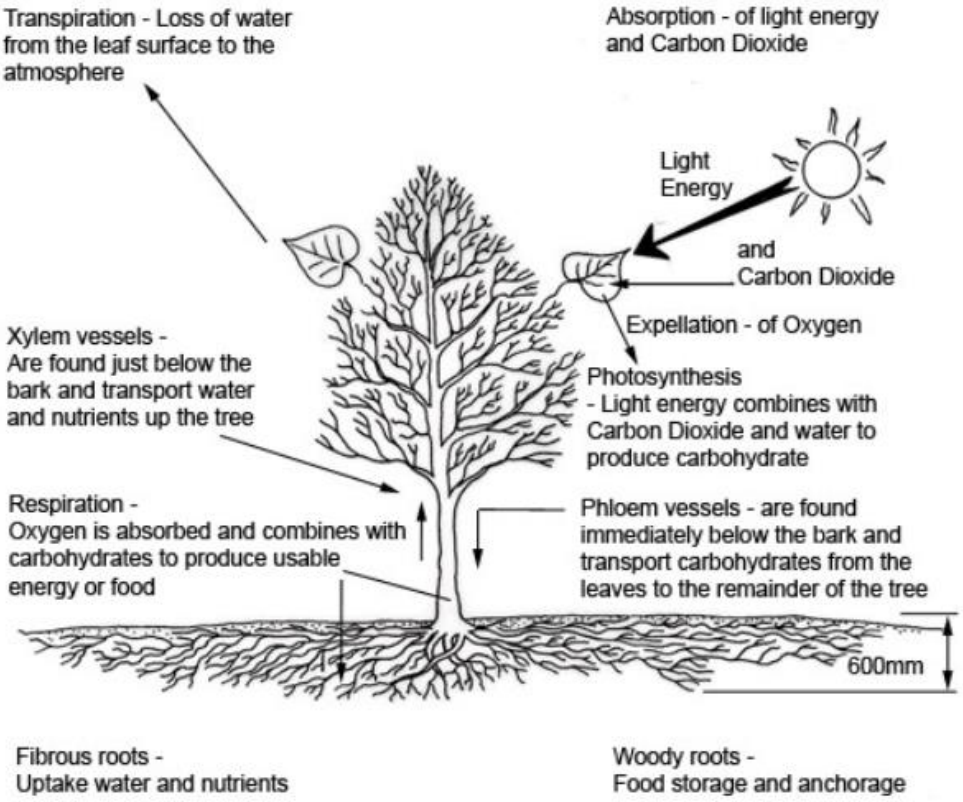
The council will request the mitigated sum by email and the relevant party must pay the full and final mitigation amount within thirty working days of receipt of the invoice, prior to technical approval. Should the relevant party not pay the final mitigation amount withing the thirty working days the final mitigation amount will attract interest at the current Bank of England rate.

Figure 38: Retained mature tree showing signs of stress and damage from construction activity. New buildings have been erected too close to the existing mature tree which is, leading to health and safety problems in the future.

Tree Form and Function

Figure 39 below shows the complexity of trees as living organisms, which can be badly affected by direct or indirect damage caused during construction works. Any damage to part of this system can cause serious issues for the health of a tree, with even minor changes to their living environment affecting growth and condition. A tree's roots and its trunk and crown above ground are interdependent and even minor damage to one can badly affect the other.

Figure 39: Tree form and function



Planning and Design

Highway construction and maintenance design should allow for all healthy existing trees and planting of new trees.

The council's forestry officer and/or the consultant arboriculturalist should be involved at an early stage so that they advise on retaining existing trees and planting new specimens. The potential growth of retained trees, their future compatibility with new and existing highway features and how near new and existing service runs will be all must be considered. An appropriate protection zone must be provided around trees that are to be retained. All necessary tree maintenance work, both before and after construction, must be carried out by trained operatives in consultation with the council's forestry officer.

A tree survey of the construction site must be completed in accordance with British Standard (BS) 5837 'Trees in relation to design, demolition and construction' prior to preparing site designs and layouts. The survey should include details of both the site and individual trees and should provide the following information.

Site survey:

- The location and identification of all trees, shrubs and hedges.
- Other relevant site features such as watercourses, service runs, hard surfaces etc.

- Details of ground levels as a basis for avoiding changes to soil levels around retained trees.
- Locations of trees on adjoining land which might be affected by the works.
- Details of site drainage which may be altered or interrupted by the proposed works and which may, as a result affect retained trees.
- Site features with a nature-conservation value.

Tree survey

- The general health, vigour and condition of each tree including details of structural defects.
- An assessment of life expectancy of each tree.
- The dimensions and form of each tree including accurate details of the position and shape of its crown in relation to the proposed new site layout.
- Details of other site features such as service runs and how close they are to the trees.
- How suitable each tree is for retention within the completed development or works.
- Any tree surgery or other maintenance work required.
- Any existing tree-preservation orders or conservation-area status.
- Root Protection Area of each tree to be retained.
- Other pertinent information e.g. memorial or historic values

Detailed information on the species, health, condition and status of each tree must be collected and assessed by an appropriately qualified and experienced arboriculturalist.

Retaining Existing Trees

Planning policies and decisions should ensure that new streets are tree-lined, that opportunities are taken to incorporate trees elsewhere in developments (such as parks and community orchards), that appropriate measures are in place to secure the long-term maintenance of newly planted trees, and that existing trees are retained wherever possible (NPPF S131).

Trees within the development site must be assessed in accordance with the recommendations included in British Standard (BS) 5837 'Trees in relation to design, demolition and construction'. The assessment covers their condition, significance, and landscape and environmental value. The tree survey should classify each tree into the retention category of the British Standard.

Figure 40: Cascade Chart for Tree Quality Assessment

Table 1 **Cascade chart for tree quality assessment**

Category and definition	Criteria (including subcategories where appropriate)			Identification on plan
Trees unsuitable for retention (see Note)				
Category U Those in such a condition that they cannot realistically be retained as living trees in the context of the current land use for longer than 10 years	• Trees that have a serious, irremediable, structural defect, such that their early loss is expected due to collapse, including those that will become unviable after removal of other category U trees (e.g. where, for whatever reason, the loss of companion shelter cannot be mitigated by pruning) • Trees that are dead or are showing signs of significant, immediate, and irreversible overall decline • Trees infected with pathogens of significance to the health and/or safety of other trees nearby, or very low quality trees suppressing adjacent trees of better quality *NOTE Category U trees can have existing or potential conservation value which it might be desirable to preserve; see 4.5.7.*			See Table 2
	1 Mainly arboricultural qualities	**2 Mainly landscape qualities**	**3 Mainly cultural values, including conservation**	
Trees to be considered for retention				
Category A **Trees of high quality** with an estimated remaining life expectancy of at least 40 years	Trees that are particularly good examples of their species, especially if rare or unusual; or those that are essential components of groups or formal or semi-formal arboricultural features (e.g. the dominant and/or principal trees within an avenue)	Trees, groups or woodlands of particular visual importance as arboricultural and/or landscape features	Trees, groups or woodlands of significant conservation, historical, commemorative or other value (e.g. veteran trees or wood-pasture)	See Table 2
Category B **Trees of moderate quality** with an estimated remaining life expectancy of at least 20 years	Trees that might be included in category A, but are downgraded because of impaired condition (e.g. presence of significant though remediable defects, including unsympathetic past management and storm damage), such that they are unlikely to be suitable for retention for beyond 40 years; or trees lacking the special quality necessary to merit the category A designation	Trees present in numbers, usually growing as groups or woodlands, such that they attract a higher collective rating than they might as individuals; or trees occurring as collectives but situated so as to make little visual contribution to the wider locality	Trees with material conservation or other cultural value	See Table 2
Category C **Trees of low quality** with an estimated remaining life expectancy of at least 10 years, or young trees with a stem diameter below 150 mm	Unremarkable trees of very limited merit or such impaired condition that they do not qualify in higher categories	Trees present in groups or woodlands, but without this conferring on them significantly greater collective landscape value; and/or trees offering low or only temporary/transient landscape benefits	Trees with no material conservation or other cultural value	See Table 2

BRITISH STANDARD

BS 5837:2012

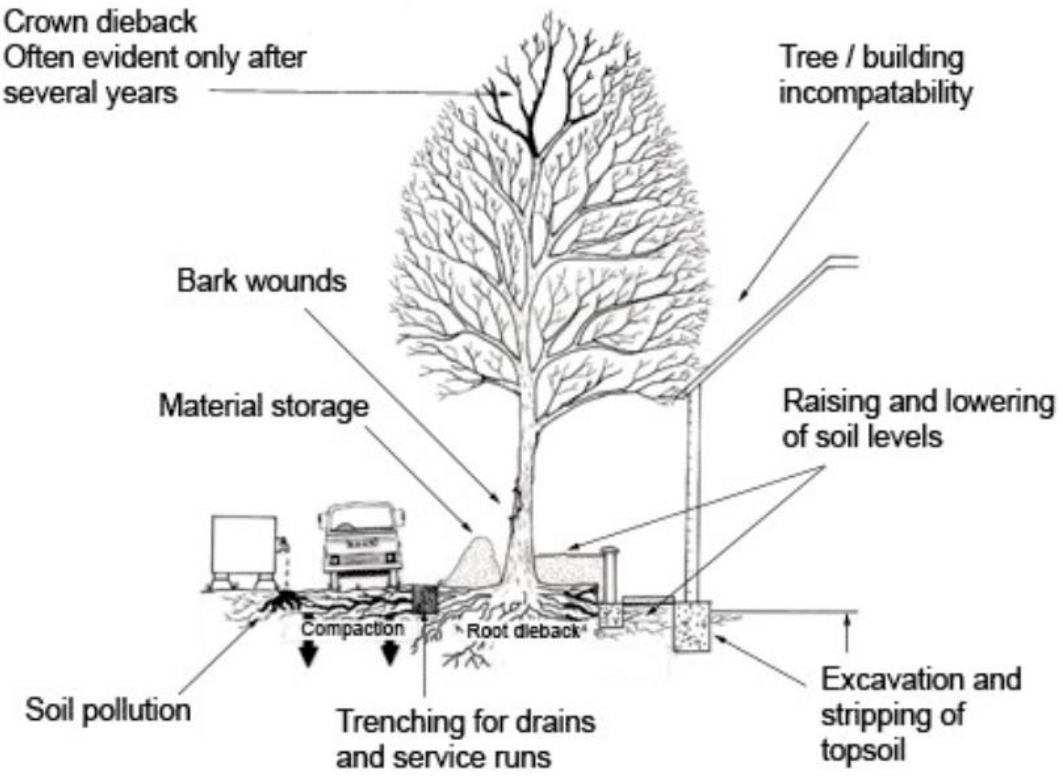
Where there is a conflict between retaining a category A or B tree and ensuring road safety, the first option should be to amend the proposed design to avoid the conflict and retain the tree. The council will consider situations where it is not reasonable or practical to do this on a site-by-site basis.

Avoiding Damage to Trees During Construction Works

Table 26: The following activities are common causes of damage to trees when construction is carried out within the trees' natural rooting area.	
Excavating trenches	To install and maintain services, for foundations, kerbing and so on.
Alterations in soil level	Raising or lowering the soil level.
Installing non-porous surfaces	Affects soil aeration and drainage.
Compacting the surface	By plant, vehicles and storing material.
Soil pollution	Storing toxic materials (for example, diesel oil and road salt).
Physical damage	By plant and machinery to a tree's roots, trunk and branches.

Table 26: The following activities are common causes of damage to trees when construction is carried out within the trees' natural rooting area.	
Changes to soil hydrology	Caused by changes to drainage which accelerates water run-off or compacts the soil which causes waterlogging.
Fires	Burning unwanted material within the tree's root spread can cause considerable damage to the tree's roots, trunk and branches.
Exposure	Damage caused by increased levels of sunlight and wind when neighbouring trees are removed.

Figure 41: Damage to trees during construction works



A tree's root system can extend radially (outwards) to a distance much greater than the tree's height. Ideally the whole of this area should be protected and remain undisturbed during construction work.

If works are necessary within the tree's Root Protection Area (RPA), a construction exclusion zone (CEZ) must be identified from the base of the tree's trunk as per S5837:2012 Trees in relation to design, demolition and construction– Recommendations. The CEZ should be protected with substantial fencing (see below) and be excluded from the construction site. If works are necessary within the CEZ, the council's Forestry team must be contacted at the design and implementation stages to identify specific measures to minimise damage.

The RPA is normally calculated by measuring the trunk diameter at 1.5 metres above ground level, multiplying this distance by 12 and converting the result into a radius centred on the tree or in other words. If the diameter of a tree is 500mm, this amount is multiplied by 12 to give a distance of 6.0 metres (equivalent to 113m2). This 6.0 metres then becomes the radius of the RPA.

Figure 42: Calculating the root protection area

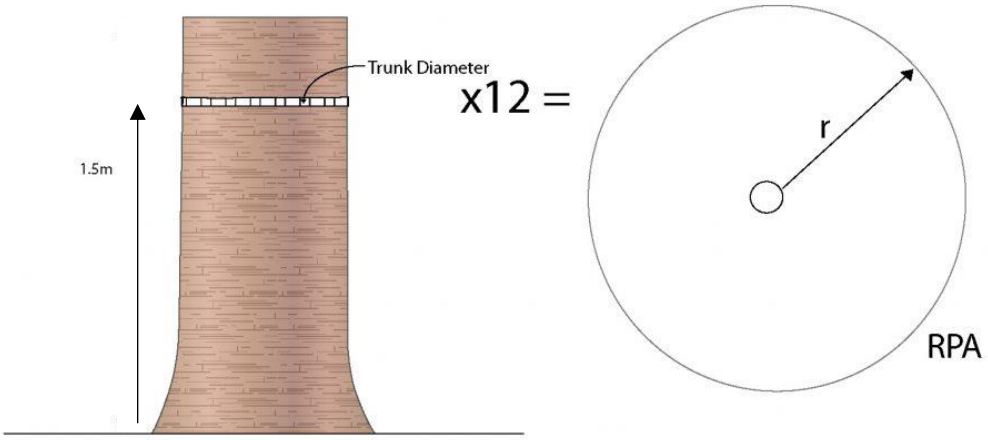
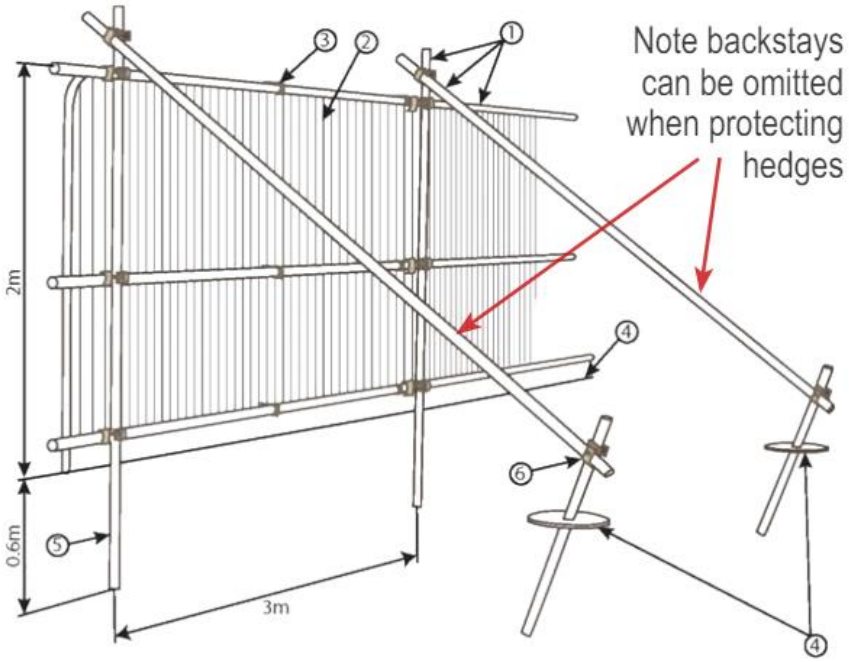


Figure 43: DEFAULT TREE PROTECTION BARRIER BS5837 - This is the standard for all situations unless a justified variation is agreed with the council's Forestry Team.



① Standard scaffold poles
② Heavy gauge 2m tall galvanised tube and welded mesh infill panels
③ Panels secured to uprights and cross-members with wire ties
④ Ground level
⑤ Uprights driven into the ground until secure (minimum depth 0.6m)
⑥ Standard scaffold clamps

All weather notices should be attached to the barrier with words such as: “CONSTRUCTION EXCLUSION ZONE - NO ACCESS”

At this stage the potential effects of the works on privately-owned trees next to the site must be considered.

On larger schemes where trees are to be retained within the site area, protective fencing should be erected, as specified in Figure 43, before any works begin, including ground preparation. The fencing must stay intact for the entirety of the construction process. It is essential that the protection zone is excluded from the construction site and all associated activities including excavations and changes of soil level. Areas where machinery, materials, chemicals and waste material are stored should also be excluded from the protection zone.

Due to the linear nature of many highway maintenance operations (for example, kerbing) and the fact that most highway corridors are narrow, it is not always possible to exclude a tree’s root protection area from the working area. In such cases, please adopt the following specific measures to minimise the effects of the works.

- Refer to National Joint Utilities Group (NJUG) Guidelines for the Planning, Installation and Maintenance of Utility Apparatus in Proximity to Trees.
- Before starting the work, a survey team will identify the protection zone with marker paint or pegs. This will ensure that the construction gang know the precise area where special precautions are required to avoid or minimise damage.
- The trunk of each tree must be protected with substantial hoarding, supported on scaffolding, to a height of at least two metres, to protect its bark from mechanical damage. This protection should be reusable so that as work progresses, it can be transferred from tree to tree.
- If the work needs surfaces to be removed or excavated, this should be carried out as follows:
    - Footways – Slabs or paving should be manually removed and initial layers of concrete or tarmacadam should be removed using a handheld breaker. All sub-base material should then be removed using hand tools only.
    - Carriageways – Tree roots are not likely to penetrate the road base, base course or wearing course and may only be present in the sub-base material below the carriageway. This means the road base, base course and wearing course can be removed by machine. The compacted sub-base material below may initially be broken using a hand-held breaker but all material, once broken, should be excavated carefully using hand tools only.

- All excavations using hand tools need to be carried out with great care to avoid damage to as many roots as possible. There must be close supervision during hand-digging operations and all site staff should understand what is required. All tree roots over 25mm in diameter should ideally be worked round and retained. If, however, it is necessary to remove these roots, a request for advice should be made forestry officer.
- Any root cutting should be done with a sharp handsaw or secateurs and the size of the wound should be kept to a minimum. Individual roots of less than 25mm may be severed, but mats of smaller roots (including fibrous roots) should be retained. Smaller roots can easily desiccate (dry out) and die when exposed, particularly in warm or windy conditions. These should be covered and protected with damp hessian until the excavation is back filled.
- Where kerbs are being installed or refitted through a tree's protection zone and roots with a diameter of more than 25mm obstruct the work, the forestry should be consulted officer before severing the roots. If the root cannot be severed without putting the stability of the tree in danger, the following should be considered:
    - reducing the section of kerb;
    - creating a gap in the kerb to allow for the root;
    - bridging the kerb over the root; or
    - constructing a kerbside build-out.

Care should be taken when backfilling excavations within a root protection area. Tree roots are particularly affected when soil is compacted and they can also be damaged by the mechanical action of tamping down. Backfill material around exposed roots should consist of a fine granular material which provides a high proportion of air space. Builders' sand must not be used as it is toxic to tree roots. The material should be compacted using hand-tamping methods which maintain a degree of aeration and enable tree roots to survive. This method will allow the backfill material to be compacted to the required level for footway construction.

Compacting a road base close to tree roots is more complicated due to the load-bearing requirements of a road. If a road carriageway is to be constructed within a tree's root protection area and tree roots more than 25mm are present, the forestry officer should be contacted to identify special measures to protect tree roots. Non-paved areas must be backfilled using the previously excavated soil, which should be only lightly firmed and left proud to allow for natural settlement.

To survive, tree roots need water and oxygen within the soil. Surface material should also be flexible to allow for soil movement and future root activity. Granular surfacing, such as chippings or other permeable materials, laid on to a geo-textile membrane would be appropriate in this case.

Any service runs or street furniture within a tree's protection area should be installed using hand-digging methods to ensure that all roots with a diameter of more than 25mm are retained. The recommendations contained in Volume 4: Street Works UK Guidelines for the Planning, Installation and Maintenance of Utility Apparatus in Proximity to Trees (NJUG 4) should be adhered to.

Do not include chemical herbicides in construction materials within a tree's protection zone as these may be absorbed by the tree's roots and have a serious toxic effect.

Figure 44: If protection measures are put in place and maintained during the works, important trees can be retained which contribute significantly to the newly developed area.

Tree Surgery and Site Aftercare

In some instances, it may be necessary to carry out tree surgery before work begins to accommodate access to the site and prevent physical damage occurring to nearby trees.

Tree surgery may also be necessary after the work has finished to repair any minor damage which has occurred. Tree surgery must always be carried out in accordance with British Standard (BS) 3998: 2010 'Tree Work – Recommendations". A qualified tree-work contractor must be engaged, who is skilled in modern arboricultural techniques. If damage has occurred to the site during the works, techniques such as soil aeration and surface mulching with an organic material (for example, pulverised bark) may be beneficial to improve the soil and allow the tree to recover from any disturbance. Cultivating the soil, fertilizing, importing topsoil and raising levels are common site reinstatement techniques which are all potentially harmful to retained trees.

Installing Highway Equipment

When designing and planning highway equipment, consider the location of trees, whether they are on the highway or on nearby property. Care should be taken to avoid installing this equipment within a tree's potential rooting area and within its crown or potential growing space. Site equipment such as road signs, street lights etc. should be sited to avoid damage to trees during installation and to avoid the need for regular pruning to maintain visibility.

Carrying out the Works

When carrying out development work or highway improvement works near to trees, it is essential that everyone working on the site adopts all the measures identified to retain trees and minimise damage. It is also essential that all site operatives (site managers, clerks of works, all contractors' operatives including subcontractors etc.) understand what is needed.

A meeting should be arranged before work begins with everyone involved to establish good communication and identify all the requirements for retaining trees. Regular meetings and toolbox talks should then take place while the works are ongoing to identify additional requirements and potential problem areas. It is important that all appropriate practices and protection methods are written into contracts, along with penalty clauses which provide an incentive to adopt good practice.

Adopting Trees

The council will adopt trees that have been successfully retained on verges and other highway-related land provided a commuted sum is paid to cover their long-term maintenance. (Please see Part 4, Section MC18 for further details on commuted sums). The council will not adopt any tree retained within a development if it has been damaged by poor practices during construction and the appropriate protection measures have not been adopted.

The council will not adopt newly planted trees which are dead, dying or not fit for purpose.

Figure 45: Building so close to retained trees leads to problems with shade and leaf litter. This can result in trees being mutilated and high future maintenance costs.

Checklist

- Arrange for an arboriculturalist to carry out a tree survey before the design stage.
- Design the scheme so that high-category and moderate-category trees and, where possible, low-category trees can be retained.
- Exclude the root protection area from the worksite using appropriate protective fencing.
- Do not carry out any excavations or alter soil levels within a tree's protection zone.
- Consult with a forestry officer if works need to take place in a construction exclusion zone before works begin.
- Arrange for an approved arboricultural contractor to carry out recommended tree surgery before work begins.
- Follow all appropriate codes of practice and specific recommendations.
- Carry out appropriate measures after work has finished to reinstate and improve the site (for example, soil aeration and mulching) and avoid practices such as cultivation and fertilizing.
- Do not store any construction materials or toxic substances (including road salt) or light fires within a tree's potential root area.

Do not operate any vehicles or plant within a tree's root protection zone. Avoid building houses close to retained trees, particularly where there is little possibility of them existing together.

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Parking and Making Provision for Service Vehicles

National Policy

This section details off-street (public highway) parking standards and gives guidance on the design of parking in residential, employment and commercial developments. It covers vehicle parking, provision for service vehicles, motorcycle parking and cycle parking.

The National Planning Policy Framework states that parking is integral to the design of schemes. It requires that:

- Secure cycle parking should be provided
- The local context is considered regarding accessibility, car ownership, availability of passenger transport;
- Maximum parking standards for residential and non-residential development should only be set where there is a clear and compelling justification that they are necessary;
- The requirement for lorry parking provision is considered, particularly where there are new facilities proposed that might impact on volumes of HGVs;
- Design reflects the guidance within the National Design Guide.

Where suitable parking arrangements are not provided within a development, the council may refuse to adopt the development roads.

Types of Standards

The parking standards in this document are 'minimum' standards, i.e. the minimum number that should be provided, depending on the parking type and the land use. The Table 27 below shows where the different standards are in this document as well as notes on their application.

Table 27: Parking Standard Types

Type / Use Class of Parking	Type of Standard	Notes
Cycle Parking	Minimum	Any reduction below minimum standards will require robust justification and should be discussed with the LHA pre-application.
Motorcycle Parking	Minimum	Any reduction below minimum standards will require justification and should be discussed with the LHA pre-application.
Residential Dwelling Car Parking Standards	Minimum	Any reduction below minimum standards will require robust justification and should be discussed with the LHA pre-application. Justification could be based on factors including the nature of the proposals (for example, if the housing for the elderly or retired) or the nature of the location. Given the rural nature of Leicestershire, 'car free' developments (i.e. with no car parking spaces) or only very limited parking are unlikely to be acceptable outside of built-up town centres with excellent levels of sustainable accessibility and / or local employment opportunities.

Type / Use Class of Parking	Type of Standard	Notes
Non-Residential Land Use Parking Standards	Minimum	The LHA is likely to accept 95% of the minimum space requirement, but not more than 110%. Exceptions will require justification and should be discussed with the LHA pre-application. Justification could be based on factors including the likely vehicle accumulation of a development or the nature of its location and the local highway and transport network. If such justification is based on specific occupier requirements, the LHA will seek to ensure any planning permission is occupier specific.
Lorry and Operational Parking	Minimum	These spaces are to enable non-residential developments to function and any reduction below minimum standards will require robust justification which should be discussed with the LHA pre-application. If such justification is based on specific occupier requirements, the LHA will seek to ensure any planning permission is occupier specific. *Please note that lorry and operational parking spaces do not form part of general parking provision and are hence to be provided in addition to the minimum parking spaces above.*

Type / Use Class of Parking	Type of Standard	Notes
Accessible Car Parking	Minimum	Any reduction below minimum standards for those with mobility impairments and other disabilities will highly likely be considered unacceptable. *Please note that accessible parking spaces do not form part of general parking provision and are hence to be provided in addition to the minimum parking spaces above.*
Electric Vehicle (EV) Parking	Not applicable	In accordance with Building Regulations.

Parking provision should also be considered in relation to any transport assessment and travel plan associated with a development proposal.

Motor vehicle, motorcycle or cycle parking provision should not be considered in isolation from travel plans. The level and design of on-site parking and any proposed travel plan measures should reflect and complement each other. Guidance on developing travel plans and case study examples can be found at www.choosehowyoumove.co.uk.

For employment developments and other developments where travel plans are required, the council will expect the development to include complementary facilities for motorcyclist and cyclists, for example, secure lockers (for storing clothes, and so on), showers and changing rooms.

Should the required parking standards for any land use not be met and where insufficient justification is provided by the Applicant, the LHA would consider the tests for advising refusal of a planning application set out in paragraph 115 of the NPPF (December 2023).

Parking for cycles

As the MfS and Local Transport Note 1/20 emphasizes, providing well-located, safe and secure cycle parking is a major factor in encouraging people to cycle as an alternative to using the private car. As such, the parking standards in Table 28 below are the normal minimum requirements.

Where it is not possible to provide cycle parking spaces on site, a financial contribution is required from the developer towards providing public facilities where this provision is possible.

Table 28: Minimum Provision for Cycle Parking

Use class	Description of land use	Provision
E(a), E(b), some suis generis uses	Shops, cafes, restaurants, pubs and clubs	One space per 500m^2 up to 4000m^2 gross floor area (GFA) for staff and operational use. Parking to be secure and under cover. One space for every 1000m^2 GFA for customer use to be in the form as shown in Figure 52. Parking to be located in a prominent and convenient location.
E(c), E(g)(i)	Financial and professional services, offices	One space per 400m^2 GFA for staff and operational use. Parking to be secure and under cover. Customer parking to be assessed on a site-by-site basis.
B2, B8, E(g)(ii), E(g)(iii)	General industry, storage and distribution, research and development, industrial processes	One space per 400m^2 GFA. Parking to be secure and under cover.
C3	Dwelling houses If cycle parking is not provided for residential developments, it may affect the way the council considers the use of garages, i.e. whether they should count towards parking provision.	For developments with common facilities, such as flats, one space for every five dwellings. Parking to be under cover and secure. Where spaces are allocated, there should be one space for each dwelling.
C4	Houses of Multiple Occupation (HMO)	One parking space per resident. This also applies to 'suis generis' HMOs with more than six residents.
F1(a)	Education	Staff parking to be assessed on a site-by-site basis. Sufficient cycle racks to accommodate five percent of the maximum number of visitors expected to use the facility at any one time. Racks to be in the form as shown in Figure 52 and to be located in a prominent and convenient location.

Developments or circumstances not covered in the above table will be assessed on a site-by-site basis.

All cycle parking must:

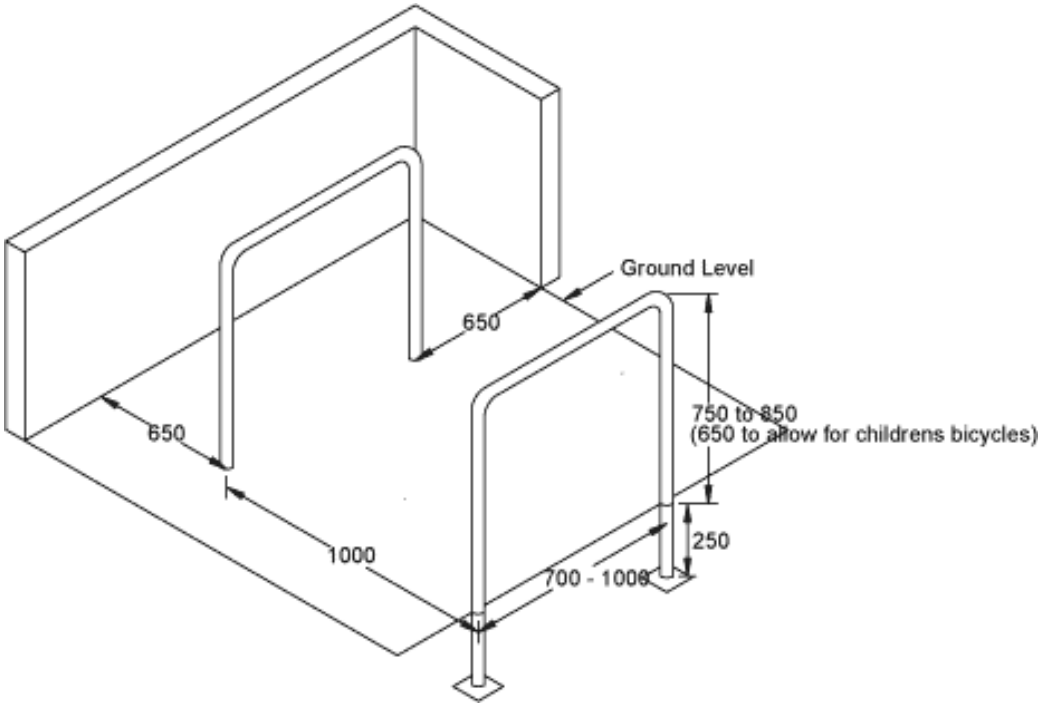
- be secure and normally with weather protection provided at least for long stay parking (e.g. employees);
- be conveniently located at entrances to buildings;
- enjoy good natural observation;
- be well lit; and
- be located so it does not obstruct pedestrian and cycle routes.

Applicants should consider whether cycle parking is short stay (such as customer parking) or long say (such as employee parking). Different standards of provision may be appropriate, in terms of matters such as shelter and access / location.

If cycle parking is provided on upper floors, such as in flats, lifts that can take bikes should be provided.

Normally Sheffield stands should be provided as illustrated in Figure 46 below. Stands that grip only the front wheel do not provide adequate support or security. When placed 1m apart and 0.5m from the wall, Sheffield stands can accommodate two bicycles. Where more than two stands are required, a 'toast rack' facility should be provided.

Figure 46: Sheffield stand - inset 'toast rack' type. Sheffield stands can accommodate two cycles provided that stands are placed 1m apart and at least 500mm from any wall



Parking provision should be considered in relation to any travel plan associated with a development proposal.

Please refer to Traffic Advisory Leaflet 5/02 for further information on cycle parking. Guidance regarding fire safety in relation to charging e-cycles and e-scooters can be found on the Department for Transport webpages.

Parking for Motorcycles

Motorcycles and mopeds can provide an alternative to the private car for certain trips and can also provide environmental benefits over single-occupancy cars.

The minimum parking standard for motorcycles and mopeds at developments with off-street car parks is:

- One space, plus an additional space for every 10 car parking spaces.

Parking spaces should normally be:

- 2.5m x 1.5m with a 1m space between each bike.

The design of the parking area must allow motorcycles and other powered two wheelers to be secured to the ground while parked.

Parking provision should be considered in relation to any travel plan associated with a development proposal.

Off-Street Car Parking Standards – Residential Dwellings

The table below sets out the council's minimum parking standards for developments of residential dwellings.

Table 29: Residential Parking Standards

Use Class	Number of Bedrooms (Class C3) or Number of Residents (HMOs)	Minimum Required Number of Parking Spaces (excluding visitor parking)
C3 (a), (b), (c) dwelling	Up to 3 bedrooms	2 per dwelling
C3 (a), (b), (c) dwelling	4 or more bedrooms	3 per dwelling
C4 - Houses in Multiple Occupation (HMO)	Up to 6 residents	3 per dwelling minimum where planning permission is required, but up to 6 desired.
Suis Generis – HMO with more than six residents	More than 6 residents	1 per resident (E.g. 12 residents require 12 parking spaces)

Visitor parking is required for residential developments of more than 10 dwellings on a basis of 0.25 spaces per dwelling. In housing developments, this should be provided via suitable on-street parking provision. In apartment developments, visitor parking should be provided by additional spaces within the apartment building car park.

Please note that Classes C1 (hotels), C2 (residential institutions), and C2A secure residential institution) are considered in Table 30 below.

This guidance does not apply to a communal parking court allocated to an individual property or allocated parking spaces grouped together to serve several properties, such as rear parking courts. Experience has shown that many residents make little or no use of rear parking courts. This can result in wasteful use of land and increased pressure on on-street parking. Where communal parking courts are proposed, the council will be likely to resist a lower level of parking provision in-curtilage on the site.

The LHA also recommends that tandem parking layouts be avoided where possible, as these can lead to on street parking by residents of dwellings served by these arrangements due to the inherent inconvenience in their use.

Garages will not normally be counted as a parking space for the purpose of calculating parking provision, unless:

- the garage meets the minimum dimensions;
- planning conditions are imposed to control use of the garage; or
- restrictions are placed on converting the garage to a room that can be lived in.

If a dwelling has no separate parking for cycles, it may affect whether the council considers that the garage should be counted towards parking provision.

Table 30: Normal Minimum Car Parking and Operational / Lorry Parking Standards by Land Use (All Land Uses except Residential Dwellings)

Land Use Class	Threshold for applying the standard	Minimum Number of parking Spaces		Minimum Number of Operational / Lorry Spaces
B2 General Industry	Up to 2,500sqm	1/50sqm		One lorry space (articulated vehicle) for every 400sqm
	Above 2,500 sqm	1/130sqm	Urban town centre, edge of town centre	
		1/80sqm	Rest of urban town	
		1/90sqm	Rural town, edge of town centre	
		1/65sqm	Rest of rural town	
		1/55sqm	Out of town	

Land Use Class	Threshold for applying the standard	Minimum Number of parking Spaces		Minimum Number of Operational / Lorry Spaces
B8 Storage and Distribution	Up to 2,500sqm	1/100sqm		One lorry space (articulated vehicle) for every 400sqm
	Above 2,500sqm	1/300sqm	Urban town centre, edge of town centre	
		1/180sqm	Rest of urban town	
		1/200sqm	Rural town, edge of town centre	
		1/150sqm	Rest of rural town	
		1/120sqm	Out of town	

Land Use Class		Threshold for applying the standard	Minimum Number of parking Spaces	Minimum Number of Operational / Lorry Spaces
C2 Residential Institutions	Nursing Homes	No threshold.	1 per three bedrooms plus 1 per staff member	At least 1 ambulance space and 1 mini-bus space. Available space off-highway for servicing / delivery vehicles.
	Residential Homes for Elderly	No threshold.	1 per four bedrooms plus 1 per staff member	As above.
C2A Secure Residential Institution		No threshold	Parking and operational requirements to be developed based on need. Pre-application discussion strongly recommended.	

Land Use Class		Threshold for applying the standard	Minimum Number of parking Spaces	Minimum Number of Operational / Lorry Spaces
Class E – Commercial, Business and Service (CMBS)	E(a) Non-food retail	Up to 1,000qsm	1/16sqm	Any additional operational car parking spaces to be proposed based on need. 300sqm to 3,000sqm: Provision must be made within the site for service and delivery vehicles to be loaded and unloaded clear of the highway. Store between 3000m2 to 5000m2: One goods bay space (articulated vehicle) for every 750sqm. Stores above 5000m2: One goods bay space (articulated vehicle) for every 1000m2
		Above 1,000sqm	1/20sqm	

Land Use Class		Threshold for applying the standard	Minimum Number of parking Spaces	Minimum Number of Operational / Lorry Spaces
Class E – Commercial, Business and Service (CMBS)	E(a) Food retail / Supermarket	Up to 1,000sqm	1/9sqm	Any additional operational car parking spaces to be proposed based on need. 300sqm to 3,000sqm: provision must be made within the site for service and delivery vehicles to be loaded and unloaded clear of the highway. Store between 3000m2 to 5000m2: One goods bay (articulated vehicle) space for every 750sqm. Stores above 5000m2: One goods bay space (articulated vehicle) for every 1000m2
		Above 1,000sqm	1/14sqm	

Land Use Class		Threshold for applying the standard	Minimum Number of parking Spaces	Minimum Number of Operational / Lorry Spaces
Class E – Commercial, Business and Service (CMBS)	E(b) Café / Restaurant	No threshold	1 customer space per 4sqm pubic area plus 1 staff space per 10 tables or per 40sqm.	Available space off-highway for servicing / delivery vehicles.
	E(c)(i) Financial Services	As E(g)(i)		
	E(c)(ii) Professional Services (not health / medical)	As E(g)(i)		

Land Use Class		Threshold for applying the standard	Minimum Number of parking Spaces	Minimum Number of Operational / Lorry Spaces
Class E – Commercial, Business and Service (CMBS)	E(c)(iii) Other appropriate services in CBS locality	As E(g)(i)		
	E(d) Indoor sport, recreation, fitness (not vehicles, firearms, pool, ice rink)	Up to 1,000sqm	1 space per 5sqm	Any additional operational car parking spaces to be proposed based on need. Available space off-highway for servicing / delivery vehicles. Coach parking to be considered on need.
		Above 1.000sqm	1 space per 22sqm	
	E(e) Medical or Heath (not attached to residence)	No threshold	1 space per staff member plus 2 spaces per consulting room or surgery.	At least 1 ambulance space and 1 car drop-off / pick-up space.

Land Use Class		Threshold for applying the standard	Minimum Number of parking Spaces	Minimum Number of Operational / Lorry Spaces
Class E – Commercial, Business and Service (CMBS)	E(f) Creche, day nursery, day centre (non-residential)	No threshold	1 space per staff member plus 1 space for shift changeover.	No requirement.
	E(g) – acceptable in a residential area:			

Land Use Class		Threshold for applying the standard	Minimum Number of parking Spaces		Minimum Number of Operational / Lorry Spaces
Class E – Commercial, Business and Service (CMBS)	E(g)(i) Offices for operational or admin functions	Up to 2,500sqm	1/25sqm		Any additional operational car parking spaces to be proposed based on need. Available space off-highway for servicing / delivery vehicles.
		Above 2,500sqm	1/60sqm	Urban town centre, edge of town centre	
			1/35sqm	Rest of urban town	
			1/40sqm	Rural town, edge of town centre	
			1/30sqm	Rest of rural town	
			1/30sqm	Out of town	

Land Use Class		Threshold for applying the standard	Minimum Number of parking Spaces	Minimum Number of Operational / Lorry Spaces
Class E – Commercial, Business and Service (CMBS)	E(g)(ii) Research and Development	As B2 General Industry. *The LHA will seek to restrict conversion to E(g)(i) via the planning process unless sufficient space is provided within the application boundary to increase parking to minimum E(g)(i) levels.*		One lorry space (articulated vehicle) for every 500m2
	E(g)(iii) Industrial Processes	As B2 General Industry. *The LHA will seek to restrict conversion to E(g)(i) via the planning process unless sufficient space is provided within the application boundary to increase parking to minimum E(g)(i) levels.*		One lorry space (articulated vehicle) for every 500m2

Land Use Class		Threshold for applying the standard	Minimum Number of parking Spaces	Minimum Number of Operational / Lorry Spaces
Class F – Local Community and Learning Also refer to Design Layouts - “General Layout and Geometry”	F1 Learning and non-residential institutions			
	F1(a) Provision of Education: Higher and Further Ed	2,500sqm	1/staff plus 1/15 students	Available space off-highway for servicing / delivery vehicles.
	F1(a) Provision of Education: Primary and Secondary Education	750sqm	1/staff plus 3	Available space off-highway for servicing / delivery vehicles. Additionally, sufficient drop-off / pick-up spaces are required off-street to reasonably mitigate impacts on local streets and residential amenity (see Road Types).

Land Use Class		Threshold for applying the standard	Minimum Number of parking Spaces	Minimum Number of Operational / Lorry Spaces
Class F – Local Community and Learning Also refer to Design Layouts - "General Layout and Geometry" Cont.	F1(b) Display of Art (not sale or hire)	No threshold.	Parking and operational requirements to be developed based on need. Pre-application discussion recommended.	
	F1(c) Museums	No threshold.	Parking and operational requirements to be developed based on need. Pre-application discussion recommended.	
	F1(d) Public libraries or public reading rooms	No threshold.	1/staff plus 1/25sqm	Available space off-highway for servicing / delivery vehicles.
	F1(e) Public Halls or Exhibition Halls	No threshold.	Parking and operational requirements to be developed based on need. Pre-application discussion recommended.	

Land Use Class		Threshold for applying the standard	Minimum Number of parking Spaces	Minimum Number of Operational / Lorry Spaces
Class F – Local Community and Learning refer to Design Layouts - "General Layout and Geometry" Cont.	F1(f) Public worship or religious instruction	No threshold.	1/5sqm	Wedding and funeral vehicle parking to be considered on case-by-case basis. Pre-application discussion recommended.
	F1(g) Law courts	No threshold.	Parking and operational requirements to be developed based on need. Pre-application discussion recommended.	
	F2 Local community			
	F2(a) Shops selling mostly essential goods including food (no more than 280sqm and no other facility within 1,000m)	No threshold.	1/20sqm	Requirements for servicing / delivery vehicles to be considered based on need. Pre-application discussion recommended.

Land Use Class		Threshold for applying the standard	Minimum Number of parking Spaces	Minimum Number of Operational / Lorry Spaces
Class F – Local Community and Learning Also refer to Design Layouts - "General Layout and Geometry" Cont.	F2(b) Halls or meeting places, principally for local community	No threshold.	1/5sqm	Mini-bus or coach parking to be considered on need.
	F2(c) Outdoor sport or recreation areas (not motorized vehicles or firearms)	No threshold.	Sports Grounds and clubs: Spaces required for maximum use of the facility (staff plus customers plus visitors) based on two people per car. Golf courses: Minimum 100 spaces per 18-hole course. Note: Any licensed club facilities will need additional parking in line with the relevant standard later in this table. Parking for any other potential F2(c) land uses should be considered with LCC pre-application.	Some facilities (team sports) will require at least one coach space, more depending on demand. Where necessary, available space off-highway should be provided for servicing / delivery vehicles. This could be undertaken in a coach space depending on the operational nature of the facility. Pre-application discussion recommended.

Land Use Class		Threshold for applying the standard	Minimum Number of parking Spaces	Minimum Number of Operational / Lorry Spaces
Class F – Local Community and Learning Also refer to Design Layouts - “General Layout and Geometry” Cont.	F2(d) Indoor or outdoor swimming pools or skating rinks	No threshold.	Spaces required for maximum use of the facility (staff plus customers plus visitors) based on two people per car.	Some facilities will require at least one coach space, more depending on demand. Where necessary, available space off-highway should be provided for servicing / delivery vehicles. This could be undertaken in a coach space depending on the operational nature of the facility. Pre-application discussion recommended.

Land Use Class		Threshold for applying the standard	Minimum Number of parking Spaces	Minimum Number of Operational / Lorry Spaces
Suis Generis	Cinema and Conference	No threshold	1 per 5 seats.	Some facilities will require at least one coach space, more depending on demand. Where necessary, available space off-highway should be provided for servicing / delivery vehicles. This could be undertaken in a coach space depending on the operational nature of the facility. Pre-application discussion recommended.
Suis Generis	Stadia	No threshold	Pre-application discussion required.	Pre-application discussion required.

Land Use Class		Threshold for applying the standard	Minimum Number of parking Spaces	Minimum Number of Operational / Lorry Spaces
Suis Generis	Public houses, wine bars, licensed clubs, drinking establishments.	No threshold	1 customer space per 3sqm pubic area plus 1 staff space for each residential member of staff plus 1 staff space per 40sqm for non-residential staff. *If extended food provision, then pre-application discussion recommended, as additional parking may be required.*	Available space off-highway for servicing / delivery vehicles. *If extended food provision, then pre-application discussion recommended, as additional facilities may be required.*
Suis Generis	Hot food takeaways	No threshold	1/25sqm	Requirements for servicing / delivery / operational vehicles to be considered based on need. Pre-application discussion recommended.

Land Use Class		Threshold for applying the standard	Minimum Number of parking Spaces	Minimum Number of Operational / Lorry Spaces
Suis Generis	Drive through restaurant or coffee shop	No threshold	1 customer space per 3sqm pubic area plus 1 staff space per 10 tables or per 40sqm.	Available space off-highway for servicing / delivery vehicles. Pre-application discussion recommended.
Suis Generis	Theatres; amusement arcades/centres or funfairs; launderettes; fuel stations; hiring, selling and/or displaying motor vehicles; taxi businesses; scrap yards, or a yard for the storage/distribution of minerals and/or the breaking of motor vehicles; 'Alkali work' (any work registerable under the Alkali, etc. Works Regulation Act 1906 (as amended)); hostels (providing no significant element of care); waste disposal		Pre-application discussion required.	Pre-application discussion required.

Land Use Class		Threshold for applying the standard	Minimum Number of parking Spaces	Minimum Number of Operational / Lorry Spaces
Suis Generis continued.	installations for the incineration, chemical treatment or landfill of hazardous waste; retail warehouse clubs; nightclubs; casinos; betting offices/shops; pay day loan shops; venues for live music performance – newly defined as 'Sui Generis' use from 1 September 2020; concert halls – from 1 September 2020, previously Class D2(b); bingo halls – from 1 September 2020, previously Class D2(c); dance halls – from 1 September 2020, previously Class D2(d)			

Where parking standards are not provided for a particular land use class or scale, provision should be discussed pre-application and should take into account factors such as the needs of the land use, on-street parking controls and local parking conditions, and sustainable accessibility.

Accessible Parking

Accessible parking is exclusively for use by those with impaired mobility or other disabilities.

For all *non-residential dwelling developments*, accessible parking to the *minimum* standards shown in Table 30 should be provided. Accessible parking is provided *in addition* to the minimum general parking supply set out in Table 31.

Accessible parking spaces should be located as close as possible to the main entrance of a building.

Table 31: Minimum Provision for Accessible Parking Spaces

Car park used for	Car park size	
	Up to 200 spaces	Over 200 spaces
Employees and visitors to business premises	Accessible parking can be considered a reasonable adjustment according to the Equality Act. Therefore, wherever feasible, this must be provided for any disabled employee who needs it. A minimum number of individual bays for each disabled employee that drives to work plus 5% of total parking spaces should be provided, whichever is greater. A further 4% should consist of enlarged standard spaces.	Six accessible bays plus 2% of total parking spaces.
Shopping, recreation and leisure land uses	Three accessible bays or 6% of total parking spaces whichever is greater.	Four accessible bays plus 4% of total parking spaces.
Schools and higher and further education. Also refer to Design Layouts – "General Layout and Geometry"	1 accessible bay or 5% of total capacity, whichever is greater.	

The use of accessible bays should be monitored to ensure that they are not abused and that sufficient accessible bays are provided to meet demand.

Routes to and from accessible spaces should be adequately lit.

For developments of individual residential dwellings, it is important when designing parking provision that full consideration is given to the potential needs of disabled residents. This will include, for example, larger space provision in developments targeted at those more likely to require accessible spaces (such as the elderly) or provision of sufficient space alongside driveways to enable widening in a proportion of dwellings at other housing developments. For apartment style developments that are not specifically targeted at those more likely to require accessible spaces, 5% of bays are required to be accessible.

Design Principles for Off-street Parking

Residential

To minimise problems of on-street parking, off-street parking areas should be close to the dwellings that they serve to make sure that they are fully used. Separate parking areas which are remote from some or all the properties that they serve, and which cannot be easily observed, can result in on-street parking problems, crime, anti-social behaviour and maintenance problems which discourage their use and affects the overall quality and appearance of a development.

The council, the planning authority and the relevant police force Designing out Crime Officer should be involved in finding parking solutions. As general guidance to avoid potential problems, remote parking areas should normally:

- be located near to the main entrances to the properties that it serves, with as short and direct a walking route as is possible between the parking court and the property;
- be secure, including enjoying good natural observation from neighbouring buildings and not be obscured by, for example, walls or close-boarded fences.;
- be well lit;
- limit planting to low ground cover only;
- be suitably surfaced and drained, and the developer will be expected to provide clear details of future maintenance responsibilities (the council will not normally adopt off-street parking areas);

- have clearly designated spaces for individual dwellings; and
- have open pedestrian routes to the parking area where possible. Where not, they should be designed in line with the guidance on separate routes at paragraphs 3.88 onwards of this document.

The location and overall design should encourage maximum use of the parking areas to minimise the risk of on-street parking problems.

Industrial and Commercial and Other Large-use Car Parks

The council does not adopt off-street parking. However, parking design should achieve the following.

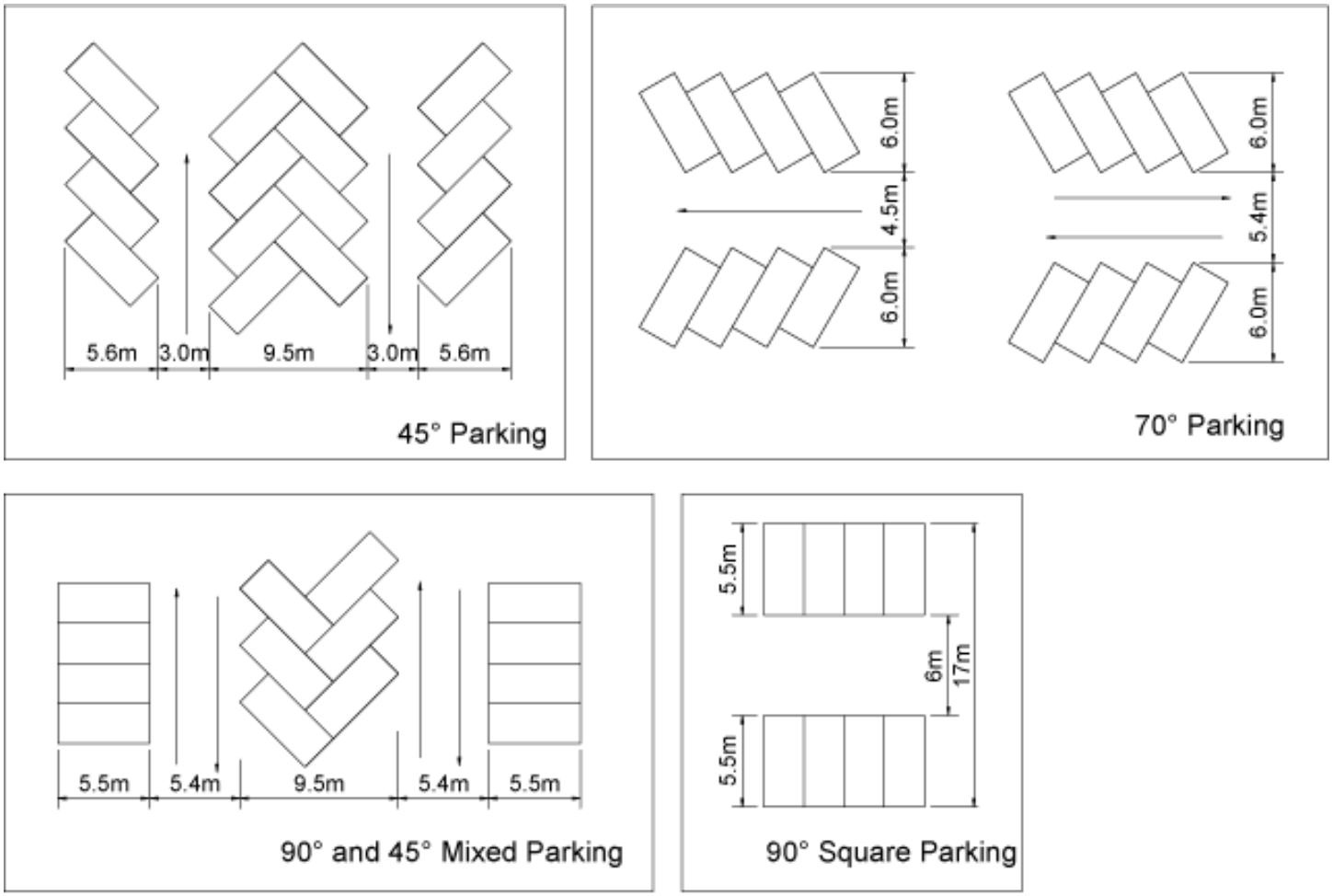
- That there is free flow of traffic entering and leaving the car park to minimise the likelihood of tailbacks causing safety problems and delays on the surrounding road network. This may require one- way systems with control ramps or flaps at entrances and exits and appropriate signing in larger car parks.
- Provide safe pedestrian and cycle routes across the car park to building entrances, following natural paths wherever possible. In larger car parks segregated routes should be considered with raised crossing points on main vehicle routes. Any routes should be in the open wherever possible. Where not, they should be designed in line with LHDG Active Travel guidance.

Such off-street parking areas should:

- minimise the number of entry and exit points to the public highway;
- provide visibility splays appropriate to likely vehicle speeds and 'road' widths, and corner radii appropriate to likely vehicle sizes and manoeuvres;
- be well lit;
- be professionally landscaped, although any planting should be kept to low ground cover only;
- be suitably surfaced and drained;
- take into account and complement relevant measures included in any travel plan associated with the development, for example, car-share spaces located closest to the building entrance; and

Minimum parking space sizes and aisle widths are shown in Figure 47. Minimum parking size 2.4m x 5.5m, add 0.5m if bounded by a wall, fence, hedge, line of trees or other similar obstructions on 1 side, 1m if bounded on both sides. Tandem parking spaces should be provided at 6m in length per space, i.e. 12m length for two spaces.

Figure 47: Size and layout of parking spaces.



Examples of typical parking layouts

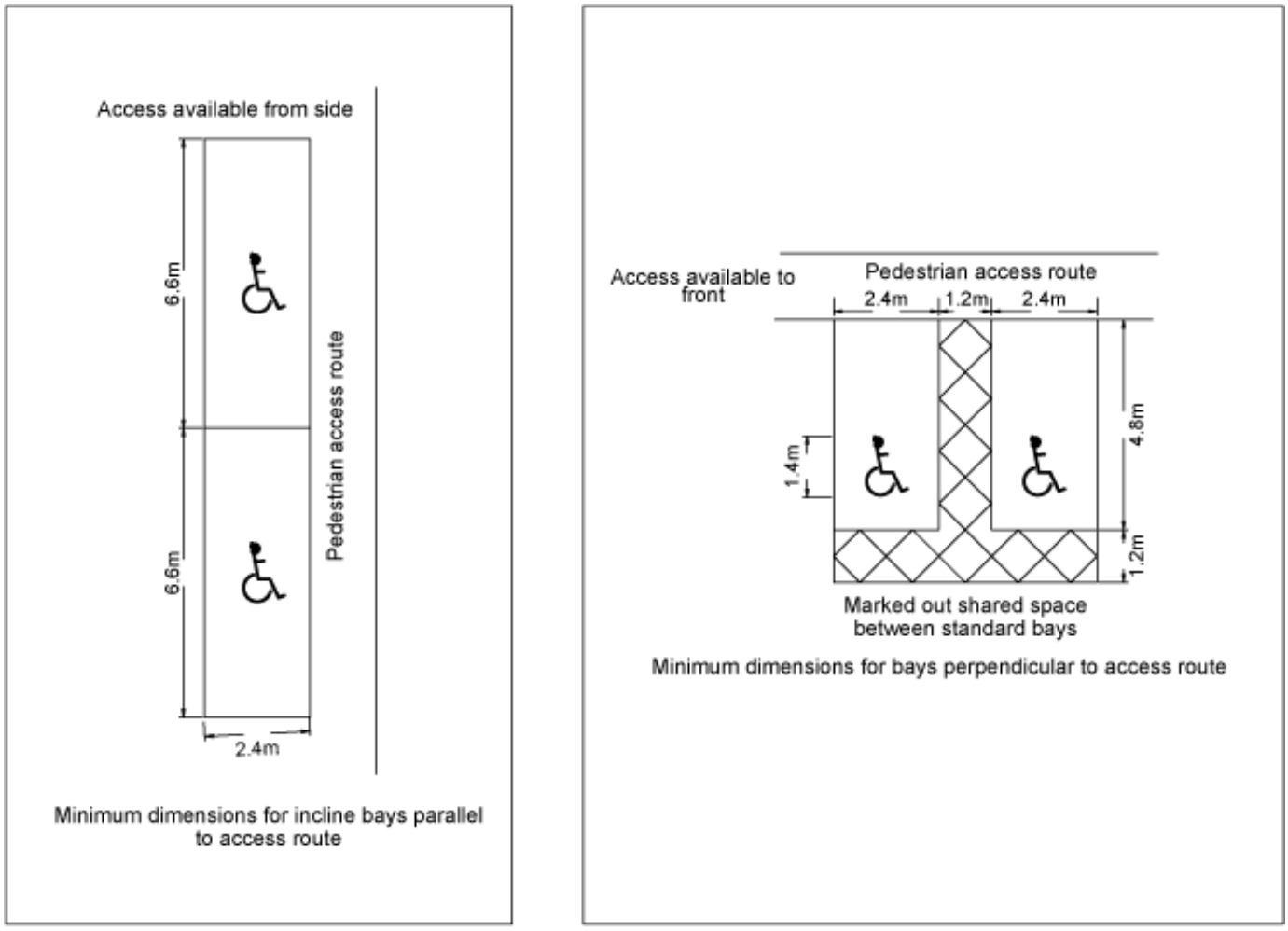
Minimum parking spaces 2.4m x 5.5m add 0.5m if bounded by a wall, fence, hedge, line of trees or other similar obstruction on 1 side, 1m if bounded on both sides.

Disabled Parking Layouts

The needs of people with mobility and visual impairments both must be considered in the layout of the parking area and any routes between it and the associated dwellings.

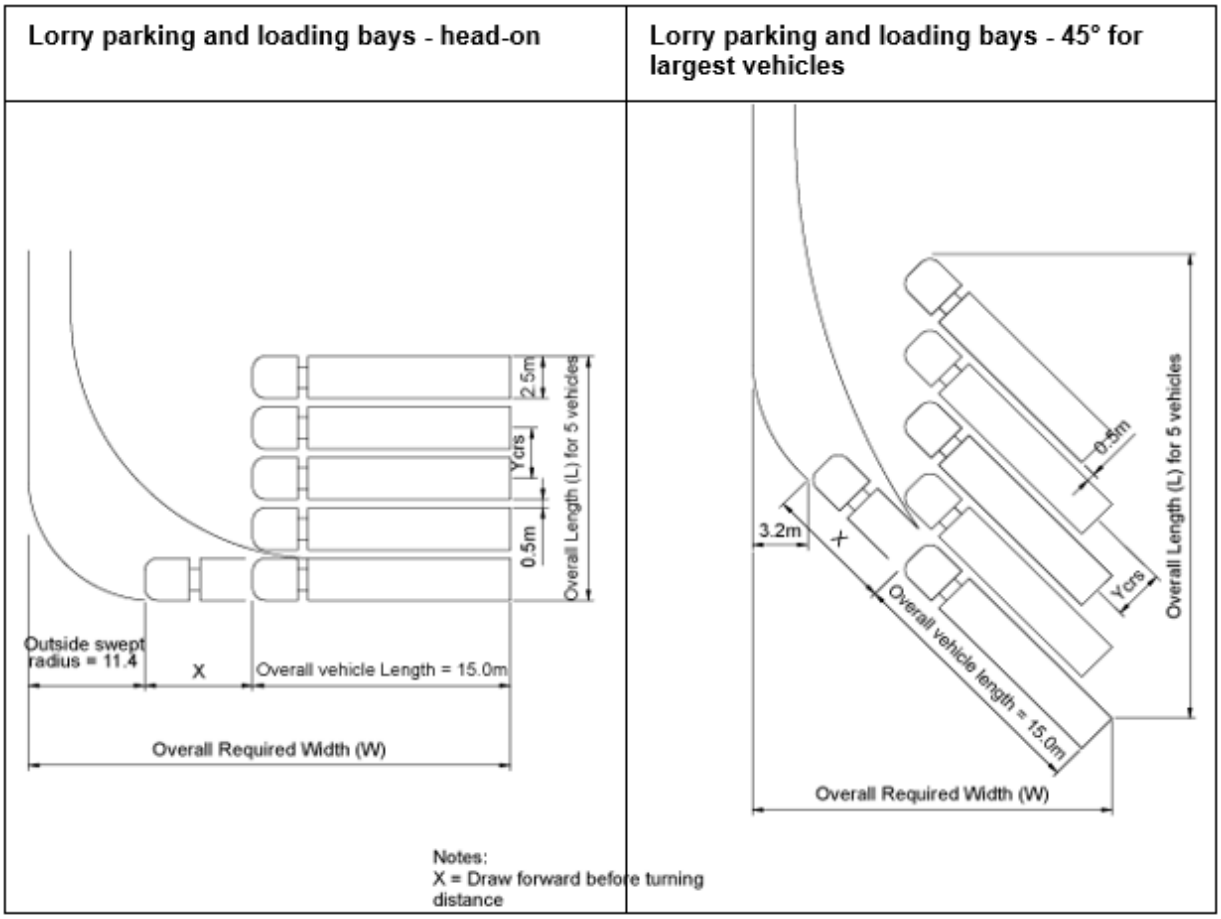
Under the Equality Act 2010, anyone who provides goods or services to the public has a duty not to discriminate and must "take steps to address barriers that impede disabled people". Blue badge parking bays should be within 50m of the entrance to a building and be otherwise appropriately designed to comply with the requirements of the Equality Act.

Figure 48: Disable Parking Spaces Layout



Disabled parking spaces layout

Figure 49: Lorry parking and loading bays - head-on and Lorry parking and loading bays - 45° for largest vehicles [TO BE UPDATED to allow for the increase in length of the max length articulated lorry]



Lorry parking and loading bays - head-on				Lorry parking and loading bays - 45° for largest vehicles			
X draw forward	Y centres	W o/a width	L o/a length for 5	X draw forward	Y centres	W o/a width	L o/a length for 5
1	5.0	27.4	22.5	4	4.8	18.4	39.5
2	4.4	28.4	20.1	5	4.5	19.1	37.8
3	4.0	29.4	18.5	6	4.2	19.8	36.1
4	3.7	30.4	17.3	7	3.9	20.5	34.4
5	3.4	31.4	16.1	8	3.6	21.2	32.7
6	3.0	32.4	14.5	9	3.4	21.9	31.6
				10	3.2	22.6	30.5
				11	3.1	23.4	29.9
				12	3.0	24.1	29.3

For logistics planning applications, the council may advise that overnight lorry parking and welfare facilities be provided dependent on the scale and expected use.

On-street Parking

The council and national research has shown that on-street parking is a major concern for Leicestershire residents. Parking proposals must be designed to avoid:

- unacceptable concerns regarding road safety;
- obstructing access for vehicles, including for service vehicles, the emergency services and buses;
- obstructing footways and be a hazard to cyclists and pedestrians, including those with mobility or visual impairments;
- unnecessary clutter;
- creating opportunities for crime; and
- creating points of friction between adjacent occupiers, for example where private accesses are blocked.

In the interests of the safety of all road users and maintaining efficient flow of traffic, the council will look for developments that include well-designed parking layouts (on-street and off-street) that minimise the likelihood of on-street parking problems.

For parallel parking to a road, each vehicle will normally require an area of about 2m wide x 6m long. For echelon (wedge shaped) parking and perpendicular (end on to the road) parking, individual bays should normally be indicated or marked. Bays should normally be about 2.4m wide and a minimum 5.5m long and they should be arranged so that drivers are encouraged to reverse into them. Figure 52 shows some suggested on-street parking arrangements, and sets- out how to calculate the necessary width needed to access echelon parking.

Where it appears that on-street parking could cause problems, the council will ask for swept path analysis (these are likely to include refuse lorries, pantechnicons, fire tenders and buses if the development is to be served by public transport). Where the assessment demonstrates that it is necessary to provide extra width to accommodate on-street parking, this should be achieved either by:

- providing parking bays as illustrated below (bays should not be designated to particular properties); or

- increasing the overall carriageway width. The council can accept localised width variations - it is not necessary for a road to have a constant width and parallel kerb lines throughout.

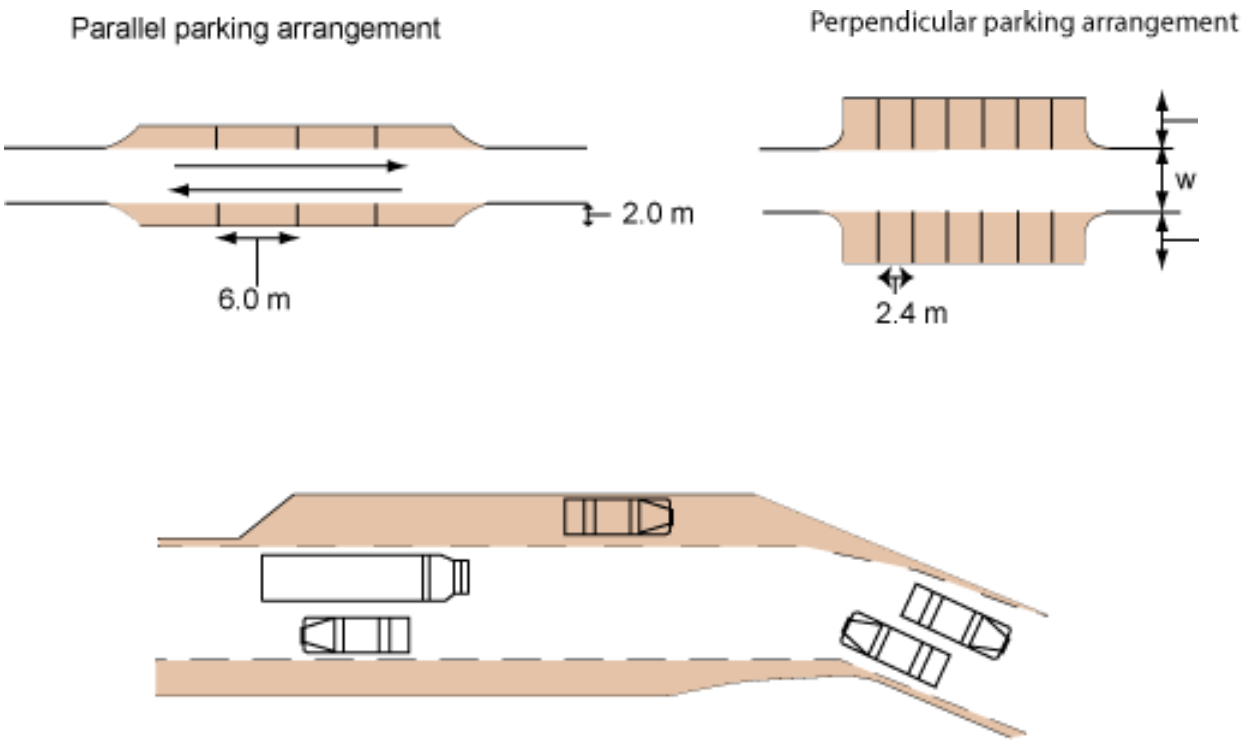
Figure 50: Examples of on-street parking problems

Parking in turning head and obstructing access to private drives	
Parking obstructing a footway creating a hazard for pedestrians	
Parking causing vehicles to cross on to wrong side of the road	
Unsightly parking obstructing a junction	

Access for service vehicle restricted by parking

Figure 51: Good examples of on-street parking bays

Figure 52: Suggested on-street parking bays, parallel and perpendicular parking (top) and widening of carriageway to create on-street spaces (bottom) (Manual for Streets).



Where the council adopts additional areas to accommodate on-street parking, a commuted sums must be paid to cover future maintenance.

Development should be designed following assessment to avoid issues relating to inappropriate parking. As a last resort, bollards, fencing and landscaping might be employed to deter problems.

In certain circumstances, Traffic Regulation Orders (TRO) may be needed to control on-street parking, including waiting restrictions and residents' parking schemes either within the development or on the surrounding highway network. Costs related to TROs must be paid by the developer. (Please also see Section DG8).

School Parking Provision

Parking in the vicinity of schools, as children are dropped-off or collected, is a safety hazard and can cause traffic congestion.

For new residential developments, the need for a new school on the site and its planned location must be established at the master planning stage in consultation with the council and the LPA. This will avoid future issues related to road safety and traffic congestion and ensure that the adoptable carriageway width standard of 6.75m is adhered to on school access roads.

The design of highways adjacent to new and existing school sites must:

- Encourage active travel options;
- provide 'safe routes to school'; and
- minimise the risk of on-street parking problems.

These measures will need to be considered as part of the transport assessment for the development, alongside the requirement for a school travel plan. The same requirements also apply to proposals for the expansion of an existing school and provision of new highway close to an existing school site.

Whilst the LHA will seek to ensure that sustainable transport opportunities are taken up through the planning process, it is recognised that there will still be a demand for drop-off and pick-up to school by car. Accordingly, the LHA will seek to ensure that safe off-street drop-off / pick-up provision is provided for at school sites.

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Electric Vehicle Charging Points (EVCP)

In March 2022 Government published an Electric Vehicle (EV) Strategy to encourage the take up of EVs and support net zero targets. The strategy set out the Government's Office for Zero Emission Vehicles (OZEV) plan for the roll out of an integrated EV chargepoint network to support the transition to net zero. It stated that a minimum of 300,000 public chargers are needed nationally by 2030 to meet the expected demand. Currently there are only around 50,000 (as of Dec 2023).

The County Council is following the progress of the EV market closely and actively seeking opportunities to secure EV funding from Government. Proposals must align with the emerging "Electric Vehicle Charging Strategy".

To help decarbonise transport and contribute to net zero ambitions for the county, the council is keen to support residents in switching to electric vehicles. However, this is a new and challenging area for local authorities, with little consensus nationally on how to provide the necessary charging infrastructure in a coordinated way and manage growing EV demand, particularly for those without access to off-street parking.

Developers must fully engage with the planning process to support existing and future charging needs and will need to liaise closely with the local planning authorities regarding EVCP provision in new developments.

Off-Street Provision

National Legislation

The National Planning Policy Framework (paragraph 107) states that parking standard policies for residential and non-residential development should consider the need to ensure an adequate provision of spaces for charging plug-in and other ultra-low emission vehicles.

Off-street EVCPs (within the curtilage of residential properties) should be the primary consideration for provision within new development and any proposals for on-street charging must not be at the expense of the requirements of building regulations.

All developers required to install off-street provision should in the first instance review the information available on the Planning Portal. In all cases EV infrastructure should be installed in accordance with the latest Building Regulations, "Infrastructure for the charging of electric vehicles".

Trailing cables across pavement or highway to charge vehicles can present a safety hazard and is not currently permitted; appropriate off-street provision of EVCPs reduces the likelihood of this occurring.

Ensuring off-street provision meets the requirements of building regulations is the responsibility of the local planning authority's building control officer.

Building regulations set out the following requirements:

a) Every new home, including those created from a change of use, with associated parking must have an EV chargepoint,

b) Residential buildings undergoing a major renovation which will have more than 10 parking spaces must have at least one EV chargepoint per dwelling with associated parking, along with cable routes in all spaces without chargepoints,

c) All new non-residential buildings with more than 10 parking spaces must have a minimum of one chargepoint and cable routes for one in five (20%) of the total number of spaces,

All non-residential buildings undergoing a major renovation that will have more than 10 parking spaces must have a minimum of one chargepoint, along with cable routes for one in five spaces.

Guidance

Off-street EVCPs should be located within the curtilage of a private property (e.g. garage, driveway or any communal parking areas) and should avoid the need for charging cables to span footways, paths, and vehicle routes.

The council will expect due consideration to be given to the PAS1899:2022 document "Electric vehicles – Accessible charging – Specification", published by the British Standards Institution. This guidance aims to support the building of an inclusive EV Charging infrastructure in the UK.

The council will welcome proposals that incorporate higher levels of provision than that set out in the building regulations.

On-street provision

Until the Strategy has been completed and adopted, the following information forms the council's current position in terms of provision for on-street EVCPs:

- The council are keen to engage with developers regarding on-street charging solutions during the development of the Strategy;

- The council will consider developer proposals for on-street charging solutions within the highway on a case-by-case basis;
- Developers proposing provision of on-street public EVCPs should consider who will own, operate, maintain and repair/replace the provision;
- The council would encourage developers to consider opportunities for future proofing EV infrastructure within new development sites, including new technologies and changes in driving habits;
- As a minimum, proposals must meet national regulations and standards and follow relevant LHDG design guidance, including information regarding installation of utilities.

Useful Links:

Positioning chargepoints and adapting parking policies for electric vehicles document, published by the Energy Savings Trust, August 2019. Covers off-street EV parking bay layouts, placement on on-street chargepoints and signage and Traffic Regulation Orders (TROs) for EV bays.

COMOUK: New developments and shared transport: cutting car dependency document, published by COMOUK, February 2022, takes shared vehicle ownership into account and the need for mobility hubs, utilising developer contributions to boost transport sustainability.

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