Nottinghamshire County Council

General Geometry of Residential Streets

Part 3.1

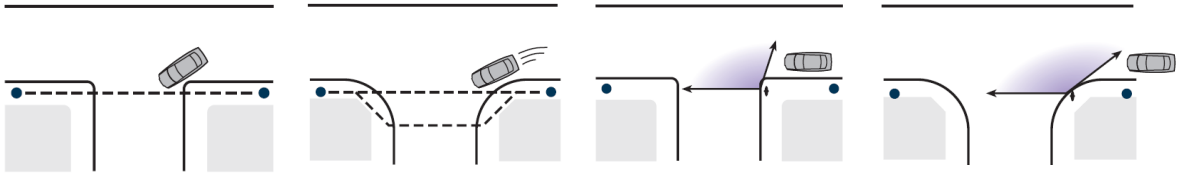
3.1.1 The guidance contained in this part is intended to help you design street layouts within a development where people wish to live, work, play, and feel safe doing so. You should select and assemble the design elements in table 3.1.1 that provide for the safe and free movement of all street users, including pedestrians, cyclists, bus passengers, and motorists, and which meet their movement requirements. Vehicle dominance should be restrained with the aim of creating an environment that is safe for everyone and that encourages people to walk, cycle, and use public transport. The design and construction of works on classified roads and other roads (existing or proposed) not covered by this design guide must normally comply with the 'Design Manual for Roads and Bridges' published by Her Majesty's Stationary Office.

Table 3.1.1

Street Type	Main Street	Residential Street	Residential Access Way(s)	Shared Private Drive	Single Private Drive
Function **(Consult the highway authority with respect higher category roads)**	Provides access from higher category roads or other Main Streets with at least two points of access to and from routes suitable for buses, forms the primary arterial access through a development, provides for the main conveyance of traffic within the development including commercial areas, designed to accommodate a bus route (Enviro 300 12.2m body on a SCANIA 'KUB' chassis), includes segregated provisions for cyclists.	Can connect to Main Streets or higher category roads and adjacent residential neighbourhoods with multiple points of access, provides links to the integrated public transport system, forms part of a block structure when within large developments.	Connect to streets with a design speed of up to 20mph only provide access to homes fronting the street with no wider motorised movement function, forms part of a block structure where practicable, not normally a cul-de-sac, does not provide access to land with the potential for further development outside of a walkable neighbourhood.	Private access, no wider movement function.	

<table>
<tr><th>Street Type</th><th>Main Street</th><th>Residential Street</th><th>Residential Access Way(s)</th><th>Shared Private Drive</th><th>Single Private Drive</th></tr>
<tr><td>Number of dwellings</td><td>No limit subject to Transport Assessment where applicable and integrated multiple points of access to the existing highway network.</td><td>No limit provided part of a Walkable Neighbourhood subject to Transport Statement / Assessment where applicable and integrated multiple points of access to the existing highway network.</td><td>Typically, no more than 200 dwellings / 800m in total from local services, employment, and or 400m from bus stop(s). Forms part of a Walkable Neighbourhood.</td><td>Maximum 5 dwellings.</td><td>Normally a single dwelling but may serve two dwellings if the street is unlikely to be used as a through route.</td></tr>
<tr><td rowspan="3">Minimum carriageway width</td><td>6.2m subject to vehicle tracking increasing to 6.5m passing schools, shops, and other areas of increased activity with an additional width of 2.5m for car parking or 2.75m for loading if on street parking is likely to occur (CIHT ‘Buses in Urban Developments’ 2018).</td><td>Minimum of 5.5m unless also serving schools, shops, other areas of increased activity or on a bus route then refer to ‘Main Street’ dimensions.</td><td rowspan="2">Minimum of 5.0m or 5.5m if accessed from a Main Street or higher category road with a design speed more than 20mph.</td><td rowspan="3">4.8m width within 8.0m of the highway plus 0.5m clearance on both sides, additional width for bin storage.</td><td rowspan="3">Minimum 3.0m (3.6m if bound by walls) plus additional width for bin storage if serving two dwellings.</td></tr>
<tr><td colspan="2">A 9.0m minimum carriageway width will be required on bus routes where only a single point of access is available usually into a brownfield site (two points of access should be provided on a greenfield site) from higher category roads. The internal layout should form a loop(s) at which point the carriageway may reduce as above.</td></tr>
<tr><td colspan="3">Note: Where a street is to be narrowed, for example to help control vehicle speed, the minimum carriageway width (kerb to kerb) is 3.7m. The minimum lane width at a restriction, such as a pedestrian refuge in the middle of the road is 3.2m (see Crossings below).</td></tr>
<tr><td>Quality Audit</td><td colspan="2">If a departure from guidance.</td><td>If a departure from guidance or shared surface (See Part 3.6 Shared Surfaces).</td><td colspan="2">If a departure from guidance.</td></tr>
</table>

<table>
<tr><th>Street Type</th><th>Main Street</th><th>Residential Street</th><th>Residential Access Way(s)</th><th>Shared Private Drive</th><th>Single Private Drive</th></tr>
<tr><td>Access to schools</td><td>Yes via a ‘Residential Street’. No direct frontage access.</td><td>Yes, but not in a cul-de-sac.</td><td colspan="3">No.</td></tr>
<tr><td>Target speed</td><td>Up to 30mph (20mph near schools, within residential areas, parks and other areas of above average pedestrian activity particularly children).</td><td>Up to 20mph</td><td>Up to 15mph</td><td colspan="2">N/A</td></tr>
<tr><td>Turning Heads</td><td colspan="2">Should not be necessary in a well-connected network.</td><td>Required for cul-de-sacs in excess of 20m in length (see examples below) and always when accessed from a ‘Main Street’.</td><td>Required.</td><td>Likely to be required on ‘A’ and ‘B’ class roads, high frequency bus routes, and other busy streets.</td></tr>
<tr><td>Carriageway centre-line radius</td><td colspan="3">Residential streets serving more than 25 dwellings that curve through more than 10 degrees.
<table>
<tr><td>Radius (m)</td><td>20</td><td>30</td><td>40</td><td>50</td><td>60</td><td>80</td></tr>
<tr><td>Min. widening (m)</td><td>0.6</td><td>0.4</td><td>0.35</td><td>0.25</td><td>0.2</td><td>0.15</td></tr>
</table>
Widening should be on both sides of the curve, or on the inside for the length of the curve. Otherwise to be defined by tracking.</td><td colspan="2">N/A</td></tr>
</table>

<table>
<tr><th>Street Type</th><th>Main Street</th><th>Residential Street</th><th>Residential Access Way(s)</th><th>Shared Private Drive</th><th>Single Private Drive</th></tr>
<tr><td>Junction radii/dropped kerbs</td><td>Usually 10m to be confirmed by vehicle tracking.</td><td>Usually 6.0m increasing to 10m on a bus route to be defined by tracking.</td><td>Usually 6.0m.</td><td>Dropped kerb the width of the access plus 2 kerbs 1:14 max gradient (7%).</td><td>Dropped kerb the width of the access or plus 2 kerbs if on a classified road or bus route 1:14 max gradient (7%).</td></tr>
<tr><td></td><td></td><td></td><td></td><td colspan="2">Where width allows, a 900mm level surface should be provided at the back of the footway to aid mobility.</td></tr>
<tr><td>Tight junction radii</td><td colspan="4">Tight radii are acceptable in most circumstances subject to vehicle tracking. Goods vehicles and buses will normally be expected to be able to access and egress the side street without entering the opposing lane at busy junctions.
 
Pedestrian desire line (--) is maintained
Vehicles turn slowly (10-15 mph)
Pedestrian desire line deflected
Detour required to minimise crossing distance
Vehicles turn faster (20-30 mph)
Pedestrian does not have to look far behind to check for turning vehicles
Pedestrian can easily establish priority because vehicles turn slowly
Pedestrian must look further behind to check for fast turning vehicles
Pedestrian cannot normally establish priority against fast turning vehicles</td><td colspan="2">N/A</td></tr>
</table>

Street Type	Main Street	Residential Street	Residential Access Way(s)	Shared Private Drive	Single Private Drive
Junction spacing and driveway position	To be addressed by way of Transport Assessment.	Not normally within the visibility splay of an adjacent junction/access or within the visibility splay distance of a T-junction when in regular use. A crossroads would usually only be considered in a lightly trafficked area and will be treated as a special feature within a layout, opposite side roads should normally be staggered by at least 15m centres, and right/left staggers are preferable to left/right so as to reduce conflicting movements in areas of higher vehicle movement.		Not normally within twice the length of the junction radii on a Main Street or otherwise on radii (corners), at bus stops or lay-bys, close to refuges, close to traffic calming features, pedestrian crossings, or close to street furniture.	
Junction approach	Normally 90 degrees to priority road for at least twice the kerb radius length along the street centreline.			Normally 90 degrees to priority road.	
			Never connects to a street of less than 5.5m width.		
Carriageway crossfall	1:40 (2.5%)			N/A	
Carriageway longitudinal gradient	Flexible surfacing: minimum 1:100 (1%) maximum 1:20 (5%). Never to exceed 1:25 (4%) for the first 10m of a junction.		Flexible surfacing: minimum 1:100 (1%). Block surfacing: minimum 1:80 (1.25%). Maximum 1:20 (5%). Never to exceed 1:25 (4%) for the first 10m of a junction.	Preferably ≤ 1:20 (5%) Maximum 1:12 (8%) up to 5 dwellings else see Residential Access way.	
	Prior approval will be required to vary these gradient parameters where it can be demonstrated that they are not feasible on particularly challenging sites. A relaxation may be acceptable where an alternative pedestrian route is available.				
Carriageway vertical curves	See: Vertical Curves			N/A	

Street Type	Main Street	Residential Street	Residential Access Way(s)	Shared Private Drive	Single Private Drive
Visibility splays at junctions, 'Y' distance also applicable on bends and vertical crests	Minimum 2.4m (X) x 47m (Y) or 2.4m (X) x 27m (Y)	Minimum 2.4m (X) x 25m (Y) or 27m (Y) if on a bus route.	Minimum 2.4m (X) x 17m (Y).	See road type.	
	Visibility splays to be kept clear within an envelope between a height of 0.6m and 2.0m above carriageway level. For existing streets and roads (see: Visibility Splays). Forward visibility splays are usually only required on bus routes and on higher category roads.				
Service strips	2.0m usually combined with footway (see verges).		2.0m in footway.	N/A	
Carriageway margins	Only acceptable where there is no frontage development, no pedestrian desire line and/or a route required for utility services. Minimum 0.6m increasing to 0.75m if containing street lighting.			N/A	
Verges	To be assigned to dwellings. Not normally on flank frontages. To be located to the rear of foot or cycle ways. Minimum 1.0m wide minimum 10sq.m otherwise hard paved. Minimum of 2.0m if containing services.			N/A	
Footway width	Usually 2.0m minimum width on both sides of the carriageway. Minimum 3.0m outside schools and bus stops (0.5m minimum clearance between bus shelters and carriageways). Minimum 4.0m in shopping areas.		Usually 2.0m minimum width on both sides of the carriageway.	N/A	

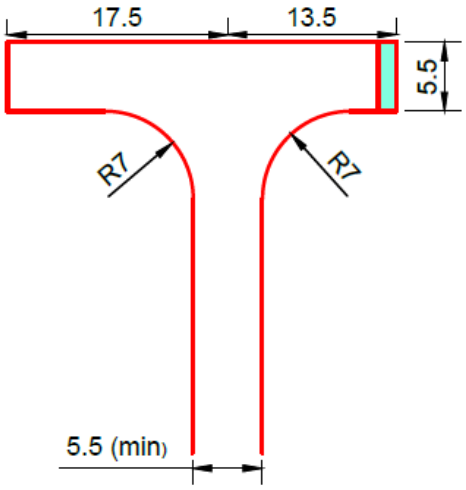
Street Type	Main Street	Residential Street	Residential Access Way(s)	Shared Private Drive	Single Private Drive
Footway gradients	Longitudinal Gradient Minimum 1:100 (1%). Longitudinal Gradient Maximum 1:20 (5%). Maximum cross-fall 1:35 (2.85%), Maximum 1:14 (7%) at driveways with a 25mm kerb upstand. Where the width allows vehicular crossings should include 900mm of footway with a maximum 1:35 (2.85%) cross-fall.			N/A	
	Prior approval will be required to vary these gradient parameters where it can be demonstrated that they are not feasible on particularly challenging sites. A relaxation may be acceptable where an alternative pedestrian route is available.				
Walkable neighbourhoods	Appropriate pedestrian provision to local services, and areas of employment with a typical catchment of around 800m, or a 10 minutes walk (CIHT 'Planning for Walking' 2015).				
Pedestrian visibility splays at accesses see: **Visibility Splays – Part 3.3**	Minimum 2.0m x 2.0m adjacent footways where the footways are ≤ 3.0m or within 50m of schools, shops, areas of high pedestrian activity.	Minimum 2.0m x 2.0m when within 50m of schools, shops, areas of high pedestrian activity, and from shared private drives where the footways are ≤ 3.0m else not required.	Not required.	As per road type.	
	Pedestrian visibility splays may be required where footways are absent.				
Crossings	The normal basic requirement is to provide dropped kerbs with buff coloured tactile paving. Where a refuge in the middle of the road is required, this must be 2.0m wide for pedestrian only use or 2.5m wide where it will be used by cyclists. The refuge must allow 4.0m of carriageway clearance on both sides to allow vehicles to pass cyclists or 3.2m where this is not considered necessary. In large developments it may be necessary to consider some form of light-controlled crossing such as a Zebra, PELICAN or TOUCAN.			N/A	
Bus service	Required subject to Transport Assessment.	May be a bus route.	Not suitable for buses.	N/A	N/A

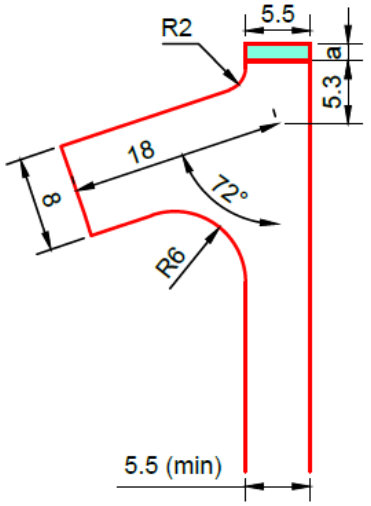
Street Type	Main Street	Residential Street	Residential Access Way(s)	Shared Private Drive	Single Private Drive
Bus access	Bus stop locations between 250m and 400m maximum walking distance with 300m to 400m intervals between stops.	80% of dwellings to be within 250m to 400m maximum walking distance of a bus stop location where there is an existing or to be secured route (See Part 2.0 Hierarchy).		N/A	N/A
	In rural areas the walking distance should not be more than 800m				
	Single points of access should be avoided when bus access is required. Where this is not possible and the development is otherwise deemed acceptable, a minimum carriageway width of 9.0m is required to maintain access during essential maintenance.				
Bus Stops	To include real time bus stop poles & displays including associated electrical connections, shelters, lighting and timetable cases and bus stop clearways. 180mm raised kerbing height for 4m min. 3m min. footway width. Lay-bys only where many people will want to board. To be suitably located to minimise the effect of any vertical deflection traffic calming on passenger entering/leaving a bus to/from a seated position.		N/A	N/A	
Bus Frequency	Target every 30 minutes minimum day time services, evenings and weekends minimum hourly. The service frequency and days/times of operation will depend upon the local network including the demand for travel, the commercial status of the service, and the potential for the service to become financially sustainable.			N/A	
Cycleway	Yes	Yes if part of wider internal network.	No but may require pedestrian / cycle links.	No	
	Must comply with Department for Transport LTN1/20 ‘Cycle Infrastructure Design’.				

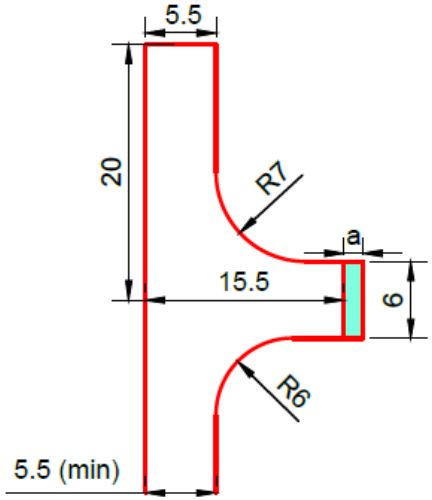
3.1.2 Turning Heads

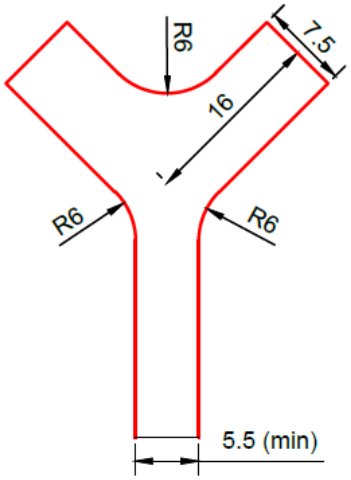
Where cul-de-sacs are unavoidable, entrances to premises or private drives should be located at the ends of turning heads to discourage parking. The size of the turning head should be determined by the expected type of vehicles. In a residential area, this would usually be sufficient to accommodate a full-sized dust cart 11.5m – 12m long (see figure below). The turning head may be contained within a street junction when not a Main Street. The blue shaded areas in the below diagrams are required for vehicle overhang and must be included as part of the highway. These can form all or part of a footway. Where larger vehicles are likely to be frequent, it may be necessary to incorporate a larger turning head. It is not necessary to construct the turning head in the precise shape shown in these diagrams, or even to distinguish it by means of surface demarcation. It is simply necessary to demonstrate that the space provided is appropriately laid out to accommodate the size of vehicle consistent with the type of development by way of vehicle tracking. Turning heads can be 'disguised' to avoid them becoming a dominant presence in a street.

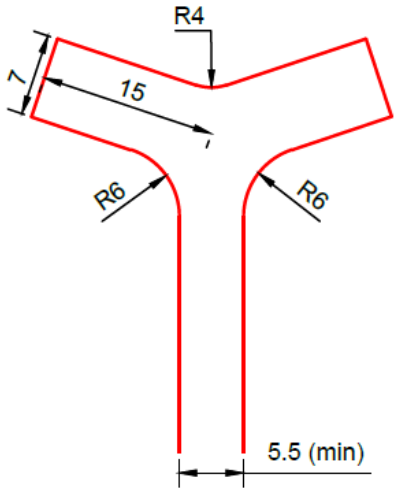
Residential Turning Heads











Area of possible vehicle overhang where ‘a’ = 1.5m

[End]