

Healthy Streets for Surrey: creating streets which are safe and green, beautiful and resilient

April 2021

This document sets out the key Healthy Streets for Surrey principles and additional chapter headings for an updated Surrey street design guide. The diagrams and images used are suggestions. They include images from *Manual for Streets*, the *National Model Design Code*, the Department for Transport guidance note known as LTN 1/20 and images created for this document by Create Streets. Once chapter headings and diagrams are approved, we can create Surrey-specific bespoke diagrams as necessary though it is probably helpful to be using diagrams from national guidance where possible.

Aim and context

A web-based design guide that allows a range of users, from curious residents to master-planners to highways engineers quickly and easily to access and understand design guidance to help them create healthy streets which are safe, green, beautiful and resilient. Aimed for use in both new build and retrofit situations.

'Surrey's 2050 Place Ambition' and 'Community Vision for Surrey 2030'

To facilitate good growth which;

- Is proportionate and sustainable, focusing on the places where people both live and work;
- Supports overall improvements to the health and well-being of our residents;
- Is supported by the necessary infrastructure investment - including green infrastructure;
- Delivers high quality design in our buildings and public realm;
- Increases resilience and flexibility in the local economy;
- Builds resilience to the impacts of climate change and flooding;
- Is planned and delivered at a local level while recognising that this will inevitably extend at times across administrative boundaries;
- Promotes local economic growth and opportunities;
- Connects communities through improved transport links across the county; and



- Places people at the heart of new development plans and ensures that no one is left behind.

Proposed structure

Foreword – by council leader or deputy leader

Executive summary

Introduction

- Purpose of the guide
- How to use this guide

This guide uses three levels of instruction for design guidance;

- Must: Mandatory design practices that must be abided by;
- Should: Design practices which are strongly encouraged due to the benefit that it will have on the neighbourhood, except in situations where the design practice cannot be applied for specific reasons; and
- Can: Design practices which are recommended but whose absence will not drastically affect the overall quality of the development.
- Context of Surrey's strategic aims:
 - Surrey's 2050 Place Ambition
 - Community vision for Surrey in 2030
 - Surrey Climate Change Strategy
 - Surrey Local Strategic Statement 2016 – 2031
 - These documents are underpinned by national guidance (NPPF, NMDC, LTN 1/20, Manual for Streets 1 & 2)
- Empirical research review of the links between street design and health and wellbeing

Chapter One: Process

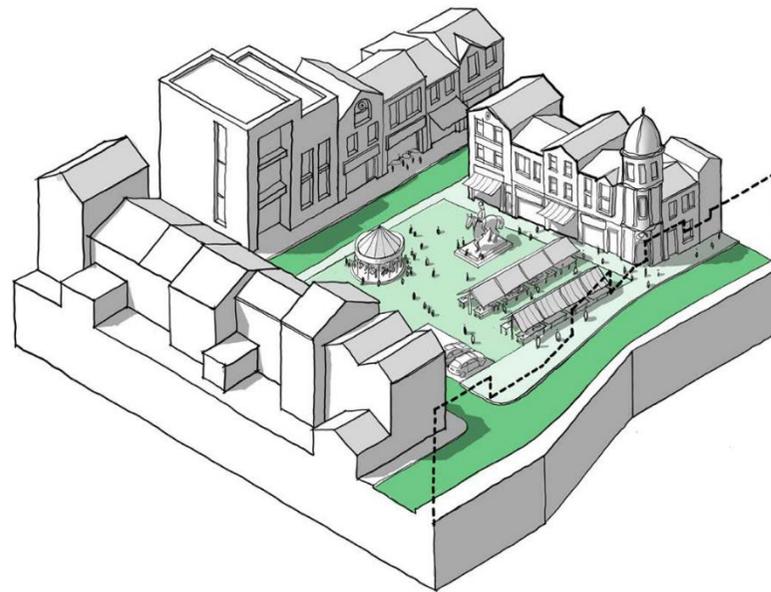
a) Community engagement

- *Community engagement is a crucial part of the planning process.* It is enshrined within the NPPF and Local Plan, as well as in neighbourhood plans on the borough level.
- *Communities can have a range of different views.* The aim of engagement is not to convince people but rather to reach a consensus.
- *The earlier you start the engagement process, the better.* Communities are more likely to positively engage when they are involved early on. Presenting final plans and designs to community groups signals that their feedback on key elements of the design won't be accepted.
- *There are many different community engagement tools,* including walkabouts, info sessions and co-design workshops. The more interactive the tool, the better.

b) Design coding

- *National Model Design Code.* The recent launch of the National Model Design Code has signalled the importance of developing design codes on the local level.
- *Design codes help local authorities and communities.* They are a useful tool to define the developments that are built in their areas and highlight the priority issues for that area.
- *Design codes can cover a wide range of issues,* including new developments, infill sites, conversions and extensions, street design, historic conservation, shopfront design and more.
- *The length and level of detail that goes into a design code depends on the size of the area* and the type of development that is expected to go up. Codes for areas with new large-scale development can focus on street layouts and hierarchy and connectivity, while areas with existing developments can look improving streetscapes.
- *Can, should or must.* Design codes often distinguish between what *must* be done (mandatory design practices), *should* be done (design practices which are strongly encouraged except in situations where the design practice cannot be applied for specific reasons) and *could* be done (design practices which are recommended but whose absence will not drastically affect overall quality).





Much of the new National Model Design Code has informed this guide

c) Highways and planning working as an integrated team

- *Context of Surrey's governance structure.* Surrey County Council is the highways authority on all roads excluding motorways and trunk roads. Most planning, however, falls under the authority of the borough and district councils. Highways and planning are both tightly interconnected when it comes to producing high quality and sustainable places. The integration of workflows from these two levels of governance is crucial in street design. The County Council commits to working in partnership with the Surrey Boroughs and Districts to ensure high quality street design.

d) Existing guidance

- While this document provides context-specific guidance on street design for Surrey, it builds on existing national guidance including *the National Planning Policy Framework (NPPF)*, *the National Model Design Code (NMDC)* and *Manual for Streets 1&2 and the forthcoming update.*

It has also learnt from *Transport for London's (TfL) streetscape guidance* and *London's Healthy Streets manual* and is in line with the principles shaping the work of *Active Travel England*.



Chapter two: Streets for Surrey principles

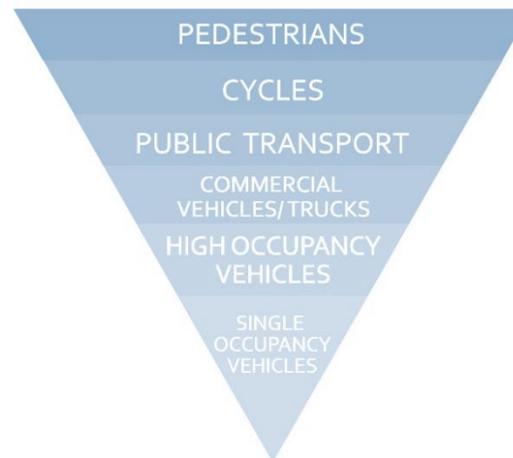
Clear, readily understood principles that would be displayed on an interactive street image on a prominent web page with 'expandable pop-up' information boxes.



Example of interactive image for front of webpage highlighting street design elements. Surrey-specific variant to be created

Surrey street design principles

1. *Streets in which it is easy to move.* Streets should have a clear 'heirarchy of users' designed firstly for pedestrians, cyclists, public transport and then private vehicles.
2. *Streets in which it is safe, enjoyable and easy to walk.* Streets should have direct routes, pleasant pavements and cycle paths, that feel safe to use, not drive-to cul-de-sacs. (N.B. This is not always possible to avoid, for example if one large plot is being infilled within an existing urban area).
3. *Green streets that enrich Surrey's biodiversity.* Streets should have regular trees and green public spaces not deserted lanes of tarmac. Wherever possible, streets should make use of natural environment and water.
4. *Streets that connect seamlessly to existing places allowing natural movement.* Streets should link to existing roads and local services and not turn their back on neighbours.
5. *Streets that are beautiful.* Streets in which people want to spend time, raise their children and grow old, not streets that people avoid.
6. *Streets that support happy, healthy and sustainable lives.* Streets should be 'tight' and finely grained not a series of large winding bends.



Streets should be designed according to a clear hierarchy of users



Why is this important?

Thanks to improving research there is a growing realisation that the street can be an important public space in itself; both an extension of the home and a space for neighbourhoods to come together. The notion that streets are only a means of movement, and that their design should be centred on accommodating vehicle traffic does not maximise human well-being. When we refer to streets, we also refer to dedicated footpaths and cycleways.

Street design has therefore taken on new importance in the design of our villages and towns. Studies increasingly show that street design can have a significant impact on our physical and mental health, both directly and indirectly. Good street design can promote a healthy lifestyle and encourage community cohesion while bad street design has tangible negative impacts on our health and wellbeing.

Streets which are designed primarily for moving motorised traffic are associated with reduced social connectivity and neighbourliness in residential areas. Car-dominated streets have poorer air quality levels which impacts respiratory health, and car-dependent areas also tend to suffer from higher levels of congestion and traffic crashes. Vehicle-oriented streets are more disruptive, less safe, less socially cohesive and more damaging to physical and mental health.

On the other hand, streets which are designed around people tend to have higher levels of community activity, and in town centres this means increased sales in local shops. These are streets with better air quality, and which are safer for people to walk, cycle and play.

Key components of good street design include;

- *Street trees*, which are associated with slower cars, better air quality, moderated energy usages and happier and healthier residents;
- *Slower traffic*, and in particular 20mph limits, well-designed to reduce speed, in residential areas, has been linked to casualty reduction, less congestion in urban centres, reduced pressure on parking and increased levels of walking and cycling;
- *High quality paving materials*, which can contribute to better water drainage, require lower long-term maintenance costs and have a lower carbon footprint than tarmac;
- *Design for active transport*, including walking and cycling for all journey types. Promoting active movement, even if it's just 20 minutes a day, contributes significantly to personal physical and mental health and combats chronic long-term illnesses. This also reduces the number of cars on the street. This requires designing streets in a way that feels safe for pedestrians and cyclists;

- *Streets with multiple uses.* The 2020 COVID-19 pandemic has transformed the way that streets are used, and flexible street design has become an increasingly important factor in public health interventions. Streets that accommodate changes such as pocket parks, outdoor dining areas and community activities are accessible by walking and cycling, are provably more popular and allow people to stay local; and
- *Local identity,* which give streets a distinct sense of place. Streets with a local identity are easier to navigate, foster a sense of community and create a sense of civic pride.



Trees reduce vehicle speeds by 7 – 8 mph and improve air quality



Walking and cycling can save the NHS £1.7b in treatment costs over the next 25 years



Pedestrians can spend up to £147 more than those travelling by car



Reducing traffic can lead to up a 30% fall in carbon monoxide emissions



Reducing traffic can lead to 12.2% increase in non-motorised modes of traffic

What do we want to achieve?

The current vision for Surrey as set out in the *2050 Place Ambition and Community Vision for Surrey 2030* focuses on improving the quality of life for people living in the county and addressing the need for a more sustainable way of living. The design of our streets is intricately linked to this vision. By using the principles set out in this chapter we aim to improve Surrey residents' physical and mental health and reduce their environmental footprint by;

- Encouraging Surrey residents to walk and cycle more often for all types of journeys;
- Creating streets in which children can safely play;
- Improving Surrey's air quality;
- Greening Surrey's streets and public spaces;





- Reducing Surrey residents' transport carbon footprint; and
- Creating beautiful, resilient and popular streets that feel safe to use reducing long-term costs and maintenance.

Chapter three: Streets for Surrey design

Good street design requires several key elements which make up the street at different scales of development. These include:

Section 1: General layout principles

- 1.1 Street vision and strategy. Surrey's streets should be designed in a way that provides connectivity, accessibility and a sense of place to the boroughs and towns of Surrey. Streets should be designed around people, not vehicles, to create not only pathways of movement but also spaces that bring communities together and enhance their quality of life. Streets should be designed with flexibility and sustainability in mind, so that they will last for future generations.
- 1.2 Street typologies. (Using definitions in line with the National Model Design Code)
 - 1.2.1 Primary streets. Designed to take through traffic and public transport.
 - 1.2.2 High streets (with traffic). The main business street of a town, normally with the highest density, shops and businesses on the ground floor with flats or offices above, often with public spaces. Normally has on-street parking and typically wide with two lanes for motor traffic.
 - 1.2.3 High streets (without traffic). The main business street of a town, normally with the highest density, shops on the ground floor with flats above, sometimes with public spaces.
 - 1.2.4 Secondary streets. Normally link to high streets and provide access into neighbourhoods. Secondary streets can accommodate shops and retail space. They can also be good locations for cafés and restaurants as well as community facilities such as schools, health service and community centres.
 - 1.2.5 Local streets. These form most of the streets in the network, which should be attractive places to live, safe and convenient to walk and cycle and accommodate low levels of slow traffic.
 - 1.2.6 Mews/back streets. A narrow road lined by homes, often to the rear of large houses, using a level surface with no pavements.
 - 1.2.7 Rural/village lanes. These have a distinctive character. They may not have separate footpath or street lighting and may have constrained vehicular access, depending on local character.
- 1.3 Permeability versus cul-de sacs.



- 1.3.1 Streets should be planned and laid out so as to encourage connectivity. Streets should be structured around focal points (such as the high street or other places with a concentration of services).
- 1.3.2 Permeability should be greater for active and sustainable modes of travel. People walking and cycling should be able to move freely and safely through an area with greater priority than vehicle traffic, linking to the primary and secondary street network. This *filtered permeability* for active travel can be provided through a variety of traffic management and street design techniques. This also provides an opportunity to enhance public space and provide additional green infrastructure.



Modal filter removes through traffic, allowing walking and cycling and improving public realm

- 1.3.3 Cul-de-sacs reduce the connectivity of an area and usually increase journey distance and times, making walking and cycling less convenient and increasing the use of the private car. They should not be used except in places where the site can't be serviced any other way. If they must be used cul-de-sacs should include well-designed, lit pedestrian and cycle links through to neighbouring areas to maintain connectivity. Where cul-de-sacs already exist, opportunities to improve their connectivity for walking and cycling should be explored.



Left: A well-connected street pattern. Right: A poorly connected street pattern

- 1.3.4 Developments should provide two vehicle access points if there are more than 50 homes.

1.4 Street adoption.

- 1.4.1 Criteria for road adoption in Surrey under S38 Highways Act 1980;

- Are constructed to the council's approved standard;

- Connect to an existing public maintainable highway;
- Pay commuted sums to provide for ongoing maintenance; and
- Serve either six or more residential curtilages or equivalent or otherwise have wider public utility.

1.5 Utilities and services.

1.5.1 Routing of key utilities. All services should be routed underground where possible. Electricity, water, gas, telecommunications and cable TV services should be accommodated in a 2m-wide strip under a pavement/service margin and should not be placed under verges and other land reserved for trees and planting. Substations and other above-ground service infrastructure should be carefully placed so as not to obstruct streets and footpaths.

1.5.2 Maintenance considerations. We include three options for how to group services well.

- Grouping of services under footpaths. This ensures that carriageways are not dug up, which can lead to congestion. However, safe rerouting of pedestrians should be provided.
- Grouping of services under carriageways. This ensures that the footpath is not blocked during maintenance. However continuous cycle thoroughfare should be provided. *[SCC Policy decision]*
- Rear servicing. This ensures disruption to pedestrians, cyclists and vehicles is minimised. However, it will not work for all street typologies.

1.5.3 Refuse collection and servicing.

- While refuse collection is managed by the borough and district authorities, street design should take this service into account. Refuse collection should not dictate the design of a street but should be integrated as part of the servicing plan.
- Waste collection vehicles generally require a minimum street width of 5 metres, however more substantive narrowing for traffic calming purposes will be acceptable over short distances. In lightly trafficked areas, carriageways can be narrowed over short lengths. The minimum width permitted (2.75m) will still allow for a waste collection vehicle to pass.
- Access should be within reasonable walking distance of a collection point. Communal refuse disposal points are strongly encouraged for more efficient collection.

- By restricting cul-de-sacs there should be less need for large reversing distances. Where cul-de-sacs exist improved vehicle visibility and marshalling regulations should allow for reversing of refuse vehicles to reduce need for turning heads at the end of roads.

1.6 Character.

- 1.6.1 Local context. The design of streets should be influenced by existing elements which are valued by the local community. This can include public spaces, terminating vistas towards landmark buildings or varying street widths. Determining these elements may require a character study, site visits, street design documentation and engagement with the local community. However, in time there may also be a design code in place which will provide necessary detail.



Local context influencing design and material choices



1.6.2 Street types overview table. The first three columns of this table have been populated to demonstrate the level of detail that will be included in the final guide.

	Street types						
Street design elements	Primary streets	High streets (without traffic)	High streets (with traffic)	Secondary streets	Local streets	Mews/back streets	Lanes
Carriageway	Depending on the context, this might include multiple lanes, dedicated bus or transit space, turning spaces	A level surface with high quality paving material. Some visual indication of vehicle pathway may be included for servicing	Typically, one lane in either direction with tarmac, but may include different paving materials locally as gateway features and to increase the sense of place	To be filled			
Pavement	Likely to be 3m wide, incorporating a variety of features and uses, such as public transport stops, trees and planting	See above	Likely to be wide, incorporating features and uses, such as public transport stops, trees and planting, and seating, for both public and business use (e.g. outdoor space for cafes and restaurants)				
Traffic calming		Street furniture such as seating, trees and material choices may be used to reduce	Carriageway may be visually narrowed using parking bays and contrasting material				

		speed of service vehicles and cycles	choices, street trees to reduce forward visibility and raised tables at crossings				
Junction geometry	Corner radii appropriate for large vehicles, such as buses	N/A	Corner radii appropriate for large vehicles at low speeds				
Street furniture and trees		Benches, trees and planting might be included, subject to pedestrian density and comfort	Wide variety of street furniture such as trees, seating and planting				
Cycle provisions	Likely to require separated cycle tracks	No specific provision. Cycling should usually be permitted, to ensure access to services, but through route use should be discouraged by providing safe and convenient space elsewhere in network	Separate cycling provision may be required depending on traffic volumes and speeds, and the street's position within the cycling network				
Parking provision	Parking unlikely to be appropriate	Usually none or limited blue badge spaces	Parking likely to be included on street, in dedicated bays, broken up by trees, buildouts and				

The National Model Design Code street types and their associated definitions have been used in this guidance



Section 2: Carriageway and junction design

2.1 Carriageway vision. The design of carriageways should aim to move people safely, happily and healthily and minimise the negative impact of motor vehicles in Surrey. The aim should be to move *people* efficiently, not just vehicles. Carriageway design should seek to reduce carbon emissions and limit air and noise pollution.



Carriageways can be re-imagined as places for people

2.2 Continuous pavements (often called continuous footways, Copenhagen or blended crossings) and raised tables.

2.2.1 Continuous pavements are extensions of the pedestrian space at a point of street intersection. They have numerous benefits, including:

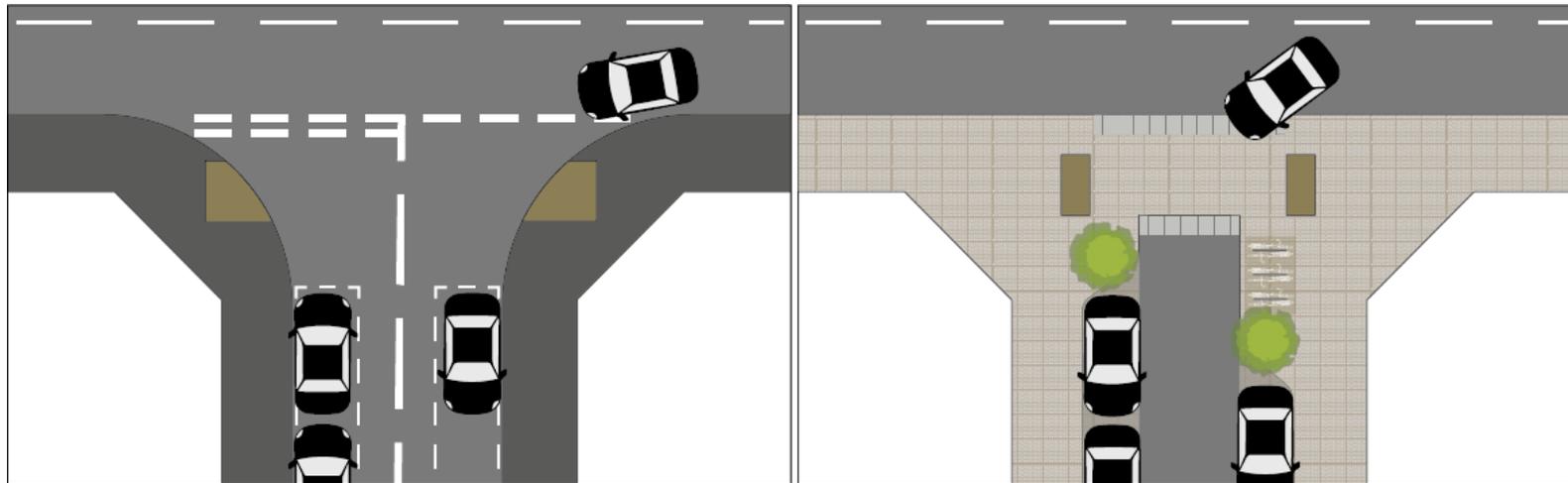
- Providing a clear visual and tactile indication that pedestrians have priority as they cross;
- Reducing vehicle approach and turning speeds; and
- Providing a gateway feature to indicate the transition from a primary or secondary street to a local street, signalling the need for road users to behave differently in the new environment.

2.2.2 Design considerations. These crossings should be at least as wide as the rest of the pavement, but consideration should be given to widening (approximately 5m) at the junction to provide space for vehicles to wait at pavement level as they give way. They should use the same surface material and colour, with any road markings also continuing across the primary street. If the existing pavement comprises tarmac in the same colour as the carriageway, a contrasting pavement material should be used for a short section to provide visual continuity.

2.2.3 The crossing should include a ramp up to the existing level of the pavement, with dedicated kerbs now available in the UK to facilitate this. It might be also appropriate to narrow the carriageway of the local street to further reduce vehicle speeds, and/or include traffic management features to reduce vehicle movements.

2.2.4 Continuous pavements may be used in conjunction with continuous cycle tracks.





Typical existing side road treatment

New side road treatment with continuous footway and enhanced public realm

- 2.2.5 Raised tables are raised crossing points along a street which also serve as a traffic calming measure. They can be used either mid-link or as a raised plateau at junctions. They must be level with the pavement.

Raised table crossings should be used across pedestrian desire lines, such as crossing between shops and services or street intersections. Approach ramps should be sinusoidal as they are more comfortable for cyclists.



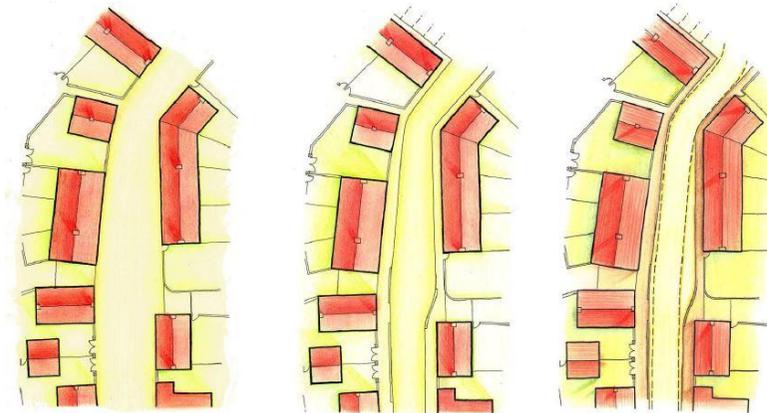
Raised plateau at junction slowing traffic and providing level crossing for pedestrians

Design considerations. As with continuous pavements, raised tables should attempt to match the width and material of the pavement to provide a clear indication that it is an extension of pedestrian space. Approach ramps should be sinusoidal as they are more comfortable for people cycling.

Raised tables should be constructed with kerb extensions, reducing the carriageway width and further helping to reduce speed and crossing distance.

2.3 Carriageway widths and tracking (swept path analysis).

- 2.3.1 Wide carriageways encourage faster speeds and consume large amounts of land and resources. We should create carriageways no wider than is essential. Factors that affect the width of a carriageway include volume of vehicular traffic, informal on-street parking, speed limit, demarcation with pavement and the curvature of the street.
- 2.3.2 Designs should be encouraged to vary carriageway widths in local and tertiary streets, in particular where a rural character is desired. This also allows for less formal opportunity parking and allows the street layout to respond to the nature of the built form.
- 2.3.3 Lightly trafficked two-way streets should have a minimum carriageway width of 4.8m – 5.5m. If on-street parking or loading is provided, this should be included in designated bays adjacent to the carriageway. To provide a clear distinction between parking and the carriageway, whilst reducing visual clutter, parking bays should use a similar material and colour palette to the pavement. In secondary, local and tertiary streets it is acceptable to have larger vehicles taking up more than one lane.
- 2.3.4 Tracking (swept path analysis). Swept path analysis, or tracking, is used to determine the space required for various vehicles and is a key tool for designing carriageways for vehicular movement within the overall layout of the street.
- 2.3.5 Building layout must not be dictated by carriageway alignment. Carriageway alignment must be designed to fit around the building layout.



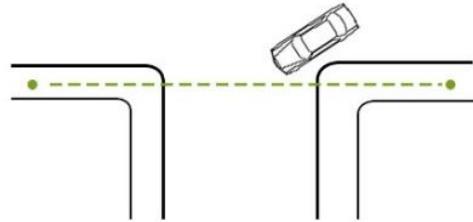
The built form should determine the carriageway design

2.3 Traffic calming.

- 2.3.4 Street design and features such as street trees, variable carriageway widths, reduced forward visibility, squares, greens and on street parking (so called side friction) that by design slow vehicles are preferable to speed humps for new development. Traffic calming interventions should be no more than 70m apart.
 - 2.3.5 Trees should be planted between 8 and 15m apart. Tree branches and leaves should be at least 2.1m above the ground on the pavement; 5.1m above the carriageway and vehicle parking; and 2.3m above cycleways and shared use pavements, or anywhere cycling can be expected.
 - 2.3.6 On street parking can contribute towards reducing vehicle speeds. It can be used on one or both sides of the street.
 - 2.3.7 The position of buildings fronting onto the street can help to encourage slower speeds.
 - 2.3.8 Vertical calming. New developments should use horizontal traffic calming as a first step in designing in slower speeds. Raised tables or raised plateaux at junctions or pedestrian crossings also provides traffic calming. In addition to providing barrier-free, level access and crossing points for people using wheelchairs, pram and mobility aids. Speed humps should only be used where other methods of traffic calming have been unsuccessful and should not be used in new developments. Any ramps should have a 'sinusoidal' profile (in the form of a sine curve) to ensure comfortable use of cycles and mobility aids.
- 2.4 20mph streets. All urban areas, residential streets, town or village centres and places with significant interaction between pedestrians, cycles and motor vehicles (such as schools and markets) must have a limit of 20mph and be designed accordingly. Traffic calming measures should be put in place encourage adherence to the maximum speed, including horizontal deflection, kerb extensions, reduced forward visibility, raised junctions, and trees. The use of level surfaces is also encouraged for local and tertiary streets with low traffic speeds and volumes. Department for Transport local government guidance, Circular 01/2013 places greater encouragement on the introduction of 20mph limits and zones in order to reduce speeds, improve safety and encourage a modal shift to walking and cycling. Surrey County Council's policy document, [Setting Local Speeds Limits](#), provides further information on speed management for 20mph zones.
- 2.5 Junction geometry. Junction radii should be as small as possible to ensure that the pedestrian desire line is maintained and that vehicles turn slowly. Existing large junction radii can be reduced with kerb buildouts which can provide space for designated parking, planting and enhanced public realm. In all but primary streets it is acceptable to have large utility vehicles (bin lorries) taking up both lanes when turning.

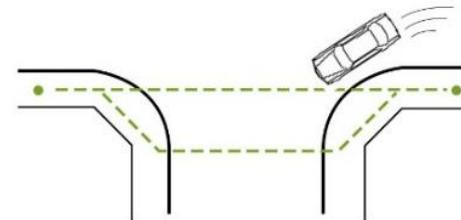


Small radius (eg. 1 metre)

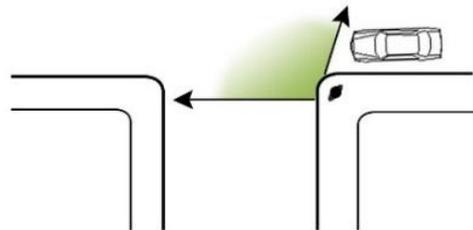


- Pedestrian desire line (---) is maintained.
- Vehicles turn slowly (10 mph - 15 mph)

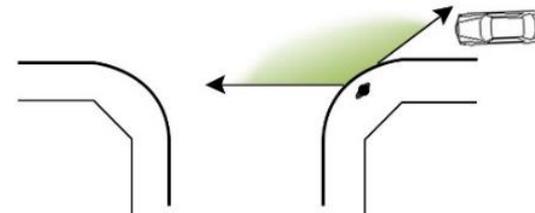
Large radius (eg. 7 metres)



- Pedestrian desire line deflected.
- Detour required to minimise crossing distance.
- Vehicles turn faster (20 mph - 30 mph)



- Pedestrian does not have to look further 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 vehicle.

Reducing junction radii reduces vehicle speeds and improves pedestrian and cycle safety



Reduced kerb radii improves pedestrian crossing and provides additional space for greening. Image credit: @bobfromaccounts (Twitter)

2.6 Materials guidance

2.6.4 Criteria for paving materials

- Easy to maintain;
- Safe for purpose;
- Attractive and appropriate to the local character;

- Durable; and
- Permeable or linked to sustainable drainage.

2.6.5 Recommended paving materials:

- Natural stone, particularly in popular locations and suited for pedestrian areas;
- Concrete slabs and blocks in areas of low pedestrian traffic;
- York stone or similar high-quality stone paving in pedestrianised streets;
- Brick paving, good for pavements and more easily sourced locally; and
- Cobbles or setts, good for parking areas and channels. Setts provide a smoother more even surface and are likely to be more suitable for areas used by pedestrians.

2.6.6 Permeable paving vs. tarmac. While tarmac is one of the cheapest available paving materials, it requires most maintenance and upkeep costs in the long term, making it a less economical option. Moreover, tarmac can exacerbate surface water run-off and have a greater impact on drainage; contributes to heat island effects, artificially raising temperatures in warm weather. Permeable paving such as brick and stone improves drainage and can be more easily removed and replaced to access and maintain utilities reducing their whole-life costs.

2.7 Pedestrian and cycle crossings.

- Zebra crossing. controlled crossing used to provide pedestrians with priority as they cross from one side of the street to the other. Marked with white parallel strips and yellow beacons. These can be used across the full width of the carriageway or in conjunction with refuge islands to enable crossing in two stages with shorter crossing distances.
- Parallel crossing. Zebra crossings that feature separate space for cycles alongside the pedestrian crossing, demarcated with 'elephant's footprints' markings.
- Puffin, Pedex and Pelican crossings. Signal-controlled crossings used to provide dedicated time for pedestrians to cross one side of the street to the other, often on wider streets with faster-moving traffic. This crossing is controlled through the use of traffic lights. On wider roads or at complex junctions, crossings often require two or more stages, which increases crossing times and reduces convenience for pedestrians. Crossings should therefore be as short and direct as possible.

- Toucan crossing, similar to other signal-controlled crossings, but allow for cycles to cross without dismounting, mixing with pedestrians in the same space. [add comment on timed not push button crossings]
 - Signal-controlled cycle crossing, similar to Pedex and puffin crossings, but for cycles, usually to connect cycle tracks across an intersecting road. These can be used as standalone crossings or run parallel to pedestrian crossings.
 - Scramble crossings, usually signal-controlled, located at intersections where pedestrians can cross in any direction, including diagonally.
 - Informal crossings, sometimes known as 'courtesy crossings' are simple, uncontrolled, crossings at which pedestrians can cross when they feel comfortable but have no formal priority. These can be located on raised tables or have ramps to carriageway level and should have tactile paving to aid people with visual impairments.
- 2.8 Road markings. In general, road markings create unnecessary visual clutter on the road and can be intrusive, particularly in rural settings. Where possible, it is preferable to use different materials or horizontal elements to demarcate speed changes, parking zones and other streetscape elements. Centre line markings can be omitted from carriageways of 6.5m wide or less. The use of edge of carriageway markings can also help to create a rural feel, a less vehicle dominated environment, and perceived reduction in road width and thus vehicle speeds.
- 2.9 Accessibility considerations. Street design must comply with the Equality of Opportunity duty under the Equality Act 2010. Consideration must be given to those with mobility and sensory disabilities and those with differing life stage issues, as well as those with conditions such as dementia. This includes the use of accessibility elements such as dropped kerbs and level access at crossing points, etc. When choosing some street design features and that seek to reduce the dominance of motor vehicles, such as shared space, consideration must be given to ensuring this creates a fully inclusive environment. Engagement and co-design with community and stakeholder groups will be essential to ensuring an inclusive approach.
- 2.10 Safety considerations for streets with high vehicle volumes/speeds. Busy roads can lead to traffic incidents when the street design does not adequately take into account the safety of pedestrians, cyclists and even other motorists. These points must be kept in mind:
- Pavements should have an absolute minimum of 3m on primary roads to prevent crowding and overspill onto the carriageway, but this is likely to be wider subject to pedestrian footfall and comfort levels.
 - Buffers such as trees and plantings between the pavement and carriageway are encouraged.
 - Safe and convenient pedestrian crossings with nearby traffic calming are strongly encouraged
 - Cycle provision must be segregated on roads with high speeds and/or volumes.



- Avoid one-way streets where possible.

Section 3: Pedestrian and pavement design

3.1 Pedestrian vision and strategy – Pedestrians are at the top of the hierarchy of movement, and therefore the design of pavements, pedestrian paths and spaces take precedence over other street design elements. Pedestrian paths must be well connected to homes, local services and recreational uses readily accessible to all residents and should be and feel safe and easy to navigate.

3.2 Pavement design

- 3.2.1 Widths. Minimum width of 2m to allow for movement, with wider pavements in places where there is significant pedestrian footfall, such as town centres, and where there is additional street furniture. There is no maximum pavement width.
- 3.2.2 Materials. Strong, durable, permeable and high-quality materials where possible, including stone, granite and brick paving. Tarmac should be avoided.
- 3.2.3 Continuous level surface pavements and streets. There are three main types of level surface streets:
- Pedestrian priority streets with no defined carriageway with pedestrian priority
 - Residential level surface. A defined carriageway without formal pavements in residential streets serving up to 10 homes.
 - Informal streets. A defined carriageway and pavement but with low or flush kerbs



Street improvements that maintain many familiar features, but creates a people first environment

3.2.4 Design considerations – Level surface paving should seek to create:

- Inclusive environments;

- Easy movement;
- Places that are safe and healthy;
- Beautiful and attractive places;
- Flexibility;
- Economic benefit; and
- Sustainable drainage.

Section 4: Trees, sustainable drainage and street furniture

Surrey’s vision for a new tree strategy. “By 2030, Surrey will benefit from 1.2 million new trees, with the right trees planted in the right place, including both urban and rural locations, and supported to grow to maturity.”

4.1 Planting and maintaining street trees and ground planting

4.1.1 The type of street trees selected should be native or appropriate to the area and should contain positive properties such as pollution absorption and shading. Surrey County Council’s Tree Strategy provides further guidance on suitable tree types for different contexts. These include

Small height (5-12m). Requires 10m ³ to grow		
<i>Latin name</i>	<i>Common name</i>	<i>Description</i>
<i>Prunus Royal Burgundy</i>	Royal Burgundy	Purple leaves
<i>Acer campestre var Elegant</i>	Field Maple	Autumn colour
<i>Liqustrum lucidum variegata</i>	Chinese Privet	Evergreen
<i>Corylus Columna</i>	Turkish Haze	Large green leaves or red leaf

:

Medium height (12-7m). Requires 20m ³ and a minimum width of 2m to grow		
<i>Latin name</i>	<i>Common name</i>	<i>Description</i>
<i>Gleditsia tricanthos</i> Variance: <i>Subnurst</i> ; <i>Ruby Lace</i>	Honey locus	Yellow leaves
<i>Koelreuteria paniculara</i>	Pride of India	Flowers
<i>Pyrus calleryana</i> <i>chanticleer</i>	Ornamental pear	Autumn colour

Large height (17m+), Requires 30m ³ and minimum width of 3m to grow		
<i>Latin name</i>	<i>Common name</i>	<i>Description</i>
<i>Fagus sylvatica</i>	Beech	Foliage native
<i>Acer psedoplatanus</i> varieties	Sycamore	Drought tolerant
<i>Ginko biloba</i>	Ginko	Pollution tolerant

4.1.2 Tree planting considerations

- Street trees should be planted 8m – 16m apart and should ideally have root barriers so that they don't affect the foundations of nearby buildings. Adequate space should be given for the tree to grow with a suitably sized tree pit.
- Trees should be planted within kerb extensions or where a 2m wide clear pavement width can be maintained. This can also be used to calm traffic on faster roads.

4.1.3 Tree maintenance



Successful new tree planting relies on an integrated approach to careful design, nursery production and planting site management. Surrey County Council's [Tree Strategy](#) provides information about the Authority's approach to tree maintenance. Additional information on best practice for new tree maintenance can be found at the [Woodland Trust](#)

4.1.4 Shrub and ground cover planting.

Planting within roadside verges and pavements may be achieved where the deep rooting of trees may not be possible. Research from the University of Surrey has shown that planting can also aid air quality by intercepting vehicle particulate emissions.

4.1.5 Planters. These are useful in places where it is difficult to plant a tree, particularly in dense built-up areas with little green space. They should be made out of good quality material that reflects the local character – wood is particularly encouraged – and should be large enough to allow for the growth of the tree or shrub. Planters can also be used as an attractive way to close off a street to traffic, in place of bollards. However, planters also require frequent maintenance and irrigation, and so should be used sparingly.



Planters can be used to trial new highway layouts and as additions to high quality public realm. Image credits. Left: Sustrans. Right: Street-design.com

4.2 Sustainable drainage (SuDS)

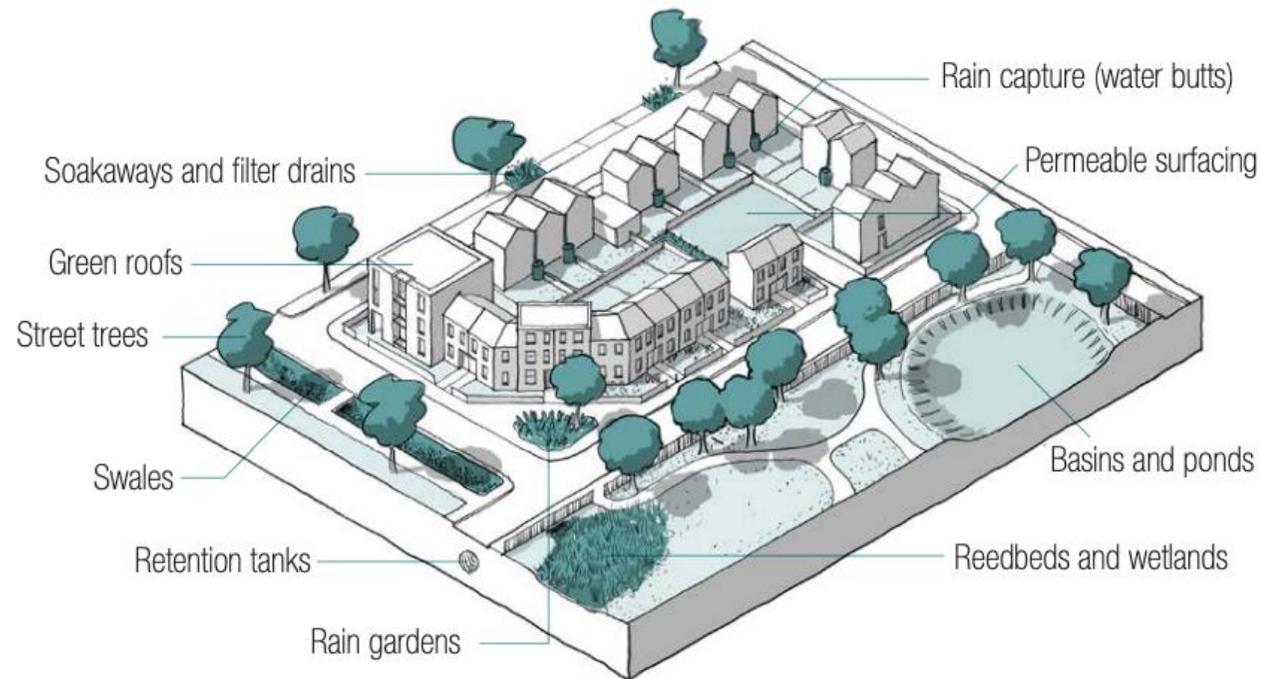
SuDS are more sustainable than conventional drainage methods. The types of sustainable drainage (SuDS) that should be considered are;

- Green surfaces for street furniture (e.g bus stops);
- Permeable paving;
- Rainwater harvesting (rain gardens);
- Swales, ditches and verges;
- Soakaways;
- Ponds; and
- Wetlands.

4.2.1 Location of SuDS. They should be integrated organically and attractively with the, such as in the form of public spaces or linear parks. SuDS should be integral parts of the streetscape, not hidden away on the edges of developments.

4.2.2 Design and adoption considerations. The design of SuDS in a given area must comply with a drainage plan, which should be carried early out in the planning process. The adopting authority of a SuDS should also be established in the planning process or early in the detailed design stages agreeing any maintenance responsibilities and commuted sums.





Some of the variety of forms and features of SuDS (NMDC)

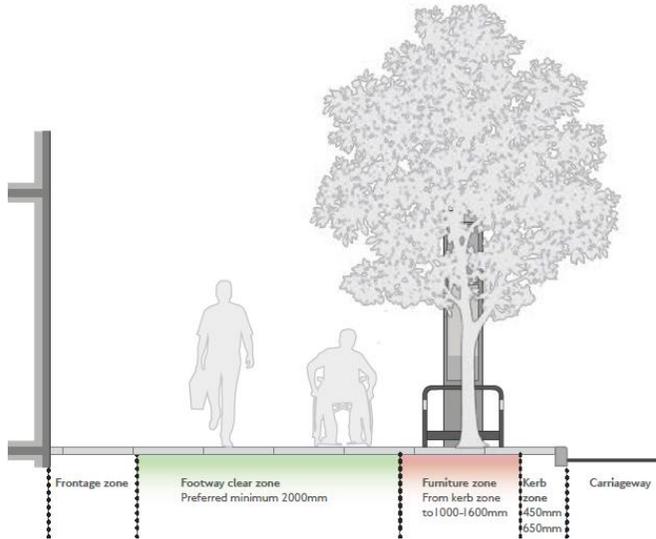
4.2.3 Maintenance. As SuDS are often on or near the surface, their maintenance can often be managed through landscaping plans. This includes grass cutting, inspections of inlets and outlets, silt control and erosion repairs. (Reference to be made to the greater complexities of Permeable Paving, retention tanking etc which is needed in more urban/denser locations without the greenery).

4.3 Street furniture, lighting and signage

4.3.1 Streetlight design considerations:

- Placement. All streets with movement of people should have appropriate street lighting. Street lights should be placed close to buildings and leave a minimum of 2m of pavement clear. In residential streets, streetlights should be fixed onto buildings to prevent street clutter. Pedestrian and cycle only routes must be lit to encourage safe sustainable transport modes at all times of year and reduce crime and the fear of crime.
 - Colour. The colour temperature for lighting should be 3000K or under for high traffic areas and between 2200K – 2700K for low traffic and pedestrian areas. [*SCC policy decision*] Anti-glare shields should be fitted to prevent harsh glare.
 - Ecology: Ecological considerations are required to ensure urban lighting has no adverse impacts on nature and wildlife.
- 4.3.2 Signage – Street signs must only be used when necessary and should be attached to buildings or existing structures to reduce street clutter.
- 4.3.3 Street furniture. Must enhance the public realm without cluttering the street, should be in character with the locally popular qualities of the area and should be durable and easy to clean and maintain. Benches should not be placed with their backs to busy roads and should be placed on the edges of public spaces.





Street furniture should be uncluttered, reflect the character of the area and add to enjoyment of a space

4.3.4 Types of street furniture – Benches and seating, bins, cycle stands, bollards (used sparingly) and post boxes. Consideration should be given to durability, particularly posts and bollards which may be used to deflect or prevent vehicles access.

4.4 Electric Vehicle (EV) charging

4.4.1 There are two main types of charging equipment

4.4.2 EV design considerations and placement. For new housing developments with garages and off-street parking, each dwelling should have a fast chargepoint. For developments with on street parking, 25% of unallocated parking bays should have an active chargepoint. [*SCC policy decision*]

4.4.3 EV charging placement. Chargers should be incorporated into existing street lighting or through kerb buildouts, and must be in accordance with [Electric Vehicle Strategy - Surrey County Council \(surreycc.gov.uk\)](http://surreycc.gov.uk). EV chargers must not reduce pavement width below 2m.

Type of chargepoint	Typical power output	Typical charging time	Typical application
Fast	7-22kW	2-4 hours	Retail, leisure, public
Rapid	>22kW	30-45 minutes	Public, fleet, strategic highway network

Section 5: Parking strategies

5.1 Parking vision and strategy. Developments should not be designed around the car but rather around people. Parking should be integrated in a way where it does not overly dominate the streetscape. Developments should use a mix of different parking types depending on the needs of residents and landscape constraints.

5.2 On street and opportunity parking

5.2.1 Opportunity parking provides space to park vehicles within the carriageway by using varying street widths and taking advantage of leftover space. It is not allocated to individuals or groups but can be used informally by anyone.

5.2.2 Parking space dimensions – 2.5m x 4.8m for curtilage parking (with a 3m width for disabled parking), 2m x 5m for on-street parking (2.7m x 6.6m for disabled parking)

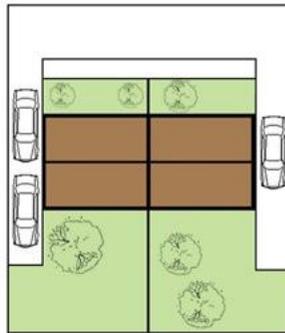


5.2.3 Types of on street or opportunity parking:

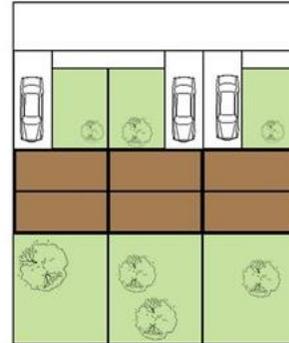
- On-street parking. The most flexible and land-efficient parking strategy that is usually well-overlooked. Parking should be provided in designated bays. It should be broken up into groups of no more than five spaces, separated by kerb build-outs incorporating trees, planting, SuDS, bike parking and pedestrian crossings. Care must be taken to avoid road safety issues and to minimize the visual dominance of the cars (e.g. with street trees). On street parking should be provided parallel to the road to ensure streets are not excessively wide and dominated by vehicles. For areas with high minimum parking standards 30 and 45 degrees spaces can be used.
- Peripheral parking (car barns). Off-street communal parking located at the periphery of a development. This parking is usually a more efficient use of land, leads to lower car use and allows more walkable street patterns and widths to be used in a development. Provision for loading and unloading should be possible in front of individual properties. This method of parking can be particularly useful for second and third parking spaces for individual properties and visitor spaces. It is also recommended for car club storage and EV charging.

5.3 Off-street parking

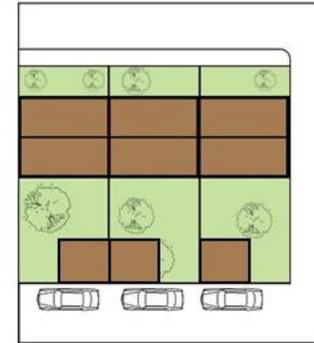
- 5.3.1 Curtilage parking. Located to the side of each house. Curtilage parking should be end to end if 2 spaces are provided to ensure large gaps between buildings do not break up the building line. Curtilage parking placement should seek to ensure the street scene is not visually dominated by vehicles and that vehicles do not end up anywhere near the pavement.
- 5.3.2 Mews (courtyard) parking. This type of parking is ideal when courtyard style parking is being utilised. Courtyard parking is not recommended due to space inefficiency however when used the following rules should be followed. There should be no more than 12 vehicles parked in an individual courtyard. There should be buildings fronting onto the mews/courtyard parking so it becomes a street not a left behind place.
- 5.3.3 Garages. These should not directly face the street and ideally be placed in rear courtyards or mews style parking.
- 5.3.4 Front driveways. Located on the front garden of each house. This parking should be used only if absolutely necessary.
- 5.3.5 All off-street parking, including private garages [*SCC policy decision*], contributes to overall parking provision.



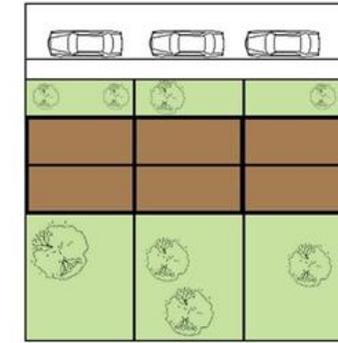
Curtilage parking



Front driveway



Mews parking



On-street parking

Section 6: Cycle facilities (Differentiate between new communities and existing suburbs/towns)

6.1 Cycling vision and strategy – Cyclists follow pedestrians on the hierarchy of user movement, and the integration of cycle infrastructure is a crucial element of street design. Cycleways should be safe and easy to use, and should be well-connected to surrounding services. They should also be linked to both pedestrian paths and public transport to ease the transition from cycling to other forms of transport.

6.2 Principles of good cycle infrastructure:

- Coherent
- Direct
- Safe
- Comfortable
- Attractive

6.3 Cycle infrastructure should be planned and allow people to reach their daily destinations easily along direct routes. Provision of safe attractive and comfortable cycle lanes along main roads are crucial to creating a coherent network.

6.3.1 Type of cycle provision

- Fully kerbed cycle track. Protected from motor traffic by a full-height kerb, preferably with some buffer space between the cycle track and carriageway;
- Motor traffic free cycle path. These include routes on disused railway lines, through parks and public open space, on canal and riverside towpaths, and public rights of way. Where cycle and/or pedestrian volumes are sufficiently high, separation may be required.
- Stepped cycle track. Set below pavement level, typically protected from the carriageway by a lower height kerb and usually directly next to it;
- Light segregation describes the use of intermittent physical features placed along the inside edge of a mandatory cycle lane to provide additional protection from motor traffic. This can give a greater perception of safety, which is important in encouraging people to cycle.
- Cycle lanes are areas of the carriageway reserved for the use of pedal cycles. These are demarcated by solid or dashed white lines.
- Mixed streets make up most of our street network and allow for cycling and motor vehicles to use the same carriageway space. These are mostly residential and should have sufficiently low traffic volumes and speeds.

- Shared space is the integration of all modes onto one street level street. Rather than demarcating space, shared spaces can be used by people walking, cycling and motor vehicles. These should have very low motor traffic levels and speeds and will require engagement with local community and stakeholder groups.



Inclusive cycle infrastructure separated from busy road. Image credit: Will Norman, TfL



6.3.2 When to use different types of cycle provision. The design of Surrey’s streets is crucial to enable people to cycle and walk safely and comfortably. How this influences the design will vary according to the use and function of the street and its position within the street hierarchy.

It is likely that all new primary streets will require protected space for cycling, with some secondary streets requiring some form of cycle provision. Local streets should have sufficiently low traffic volumes and speeds to enable inclusive mixing. These will however depend on the local context and the streets’ function within the wider network.

The following table from LTN 1/20 summarises what cycle infrastructure features are likely to be appropriate for different road conditions.

6.3.3 Design considerations. Cycle routes should be smooth, accessible and direct without extreme level-changes and without the need for cyclists to dismount.

Speed Limit ¹	Motor Traffic Flow (pcu/24 hour) ²	Protected Space for Cycling			Cycle Lane (mandatory/ advisory)	Mixed Traffic
		Fully Kerbed Cycle Track	Stepped Cycle Track	Light Segregation		
20 mph ³	0	Green	Green	Green	Green	Green
	2000	Green	Green	Green	Green	Green
	4000	Green	Green	Green	Yellow	Yellow
	6000+	Green	Green	Green	Yellow	Pink
30 mph	0	Green	Green	Green	Yellow	Yellow
	2000	Green	Green	Green	Yellow	Yellow
	4000	Green	Green	Green	Yellow	Pink
	6000+	Green	Green	Green	Yellow	Pink
40 mph	Any	Green	Yellow	Yellow	Pink	Pink
50+ mph	Any	Green	Pink	Pink	Pink	Pink

- 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

Appropriate cycle infrastructure by traffic speed and volume (LTN 1/20)

Table 5-2: Cycle lane and track widths

Cycle Route Type	Direction	Peak hour cycle flow (either one way or two-way depending on cycle route type)	Desirable minimum width* (m)	Absolute minimum at constraints (m)
Protected space for cycling (including light segregation, stepped cycle track, kerbed cycle track)	1 way	<200	2.0	1.5
		200-800	2.2	2.0
		>800	2.5	2.0
	2 way	<300	3.0	2.0
		>300-1000	3.0	2.5
		>1000	4.0	3.0
Cycle lane	1 way	All – cyclists able to use carriageway to overtake	2.0	1.5

*based on a saturation flow of 1 cyclist per second per metre of space. For user comfort a lower density is generally desirable.

Dimension guidance from LTN1/20

6.4 Cycle storage

6.4.1 Types of cycle storage

- At home cycle parking. Individual parking provisions for homes either within inside storage or shared rooms or as a separate bike shelter. The shelter should be secure and protected from rain



- Shared cycle parking. Communal parking provision. This type of parking is more efficient in terms of space use, and the number of facilities depends on the number of bikes anticipated in a given area. Provision should also be made for visitors. This type of storage must be safe, secure and easily accessible.

6.4.2 Appropriate types of public cycle parking

- Cycle racks
- Cycle garages (often within a building)
- Cycle stands



Public or semi-public cycle parking on the carriageway keeps pavements free for pedestrians

- #### 6.4.3 Design considerations. Shelters should be attractive, and consistent with the building line if street facing.

Section 7: Integrating public transport

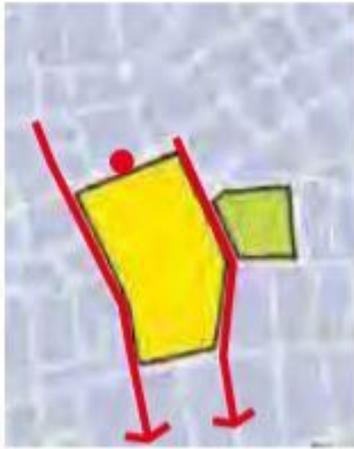
- 7.1 Integrating public transport within developments – Public transport is appropriate for all scales of developments.
- 7.1.1 Bus route design. In urban areas, carriageways with dedicated bus routes should be wide enough to accommodate buses, with a minimum width of 6.5m, or 6.2 where a 20mph speed is applied. It should be noted that lane widths of 3.2-3.9 metres are not suitable for safe sharing with cycles, and therefore separate cycle facilities are likely to be needed. Where possible, buses should be given a dedicated lane and priority access. Full-size buses require a 26m turning circle.
- 7.1.2 Bus stops. In places of high activities, bus stops should provide shelter for people to protect them from the climate and provide seating. They should be safe and comfortable to use, face towards the carriageway and easily accessible.
- 7.1.3 Guidance on linking walking, cycling and transport interchanges. Where possible, public transport should be connected to walking and cycling paths to allow for transitions in different modes of movement.

Section 8: Connectivity (new streets only)

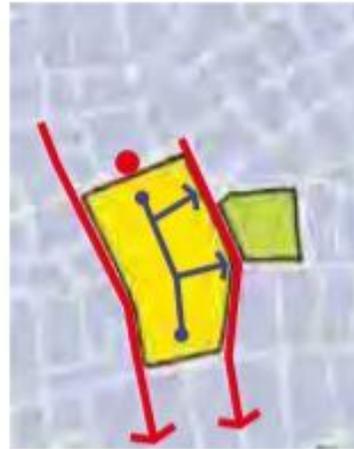
- 8.1 How to successfully integrate new developments with surrounding streets. New developments can be integrated to existing streets by 'plugging in' to the street hierarchy. New developments should have a clear hierarchy of local distributor roads, feeder roads, link roads and access roads. Developments with single entry points should be avoided where possible.
- 8.2 How to create a heart within developments. Town, village or local centres should create a place where people have a reason to visit, gather and come together. There are many ways of doing this, with and without a mixture of uses, depending on the development's size
- 8.2.1 A middle that you design through connections, 'gentle density' with modest and well-enclosed public spaces, squares, and village greens.
- 8.2.2 A middle that also has flexible, non-commercial non-residential uses.
- 8.2.3 A middle by use as well as by design. Where it is possible however, centres should always seek to offer a corner shop, a post office, and a café.
- 8.3 Guidance on principles on block patterns, permeable streets, filtered streets – New developments should have clear block patterns, with homes having clear backs and fronts. This creates clear frontages onto the streets and makes their navigation easier, as well as giving the area a more distinct character.



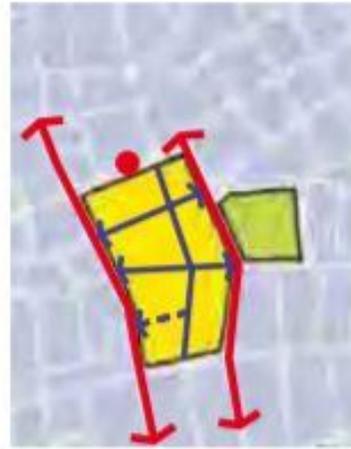
● Bus stop  Principal routes  Internal streets



Consider how best the site can be connected with nearby main routes and public transport facilities.



The typical cul-de-sac response creates an introverted layout which fails to integrate with its surroundings.



A more pedestrian friendly approach that integrates with the surrounding community. It links existing and proposed streets and provides direct routes to bus stops.



This street pattern then forms the basis for perimeter blocks which ensure that buildings contribute positively to the public realm.

Integrating new developments into the existing urban fabric is essential (credit: Urban Design Compendium)

Section 9: Governance

- 9.1 CIL/S106 funding. Both Section 106 (S106) and the Community Infrastructure Levy (CIL) are important sources of funding to improve infrastructure in a given area. It can be used to improve roads, pavements, open spaces, SuDS and public transport infrastructure. How these funds are spent should be decided in partnership with the local community.
- 9.2 Beyond the red line. When designing new developments, it is crucial to think 'beyond the red line' of a given plot of land and understand how the development will work with its surroundings. This will ensure that new developments do not negatively affect their surroundings through issues such as

increased traffic or an increased pressure on services. Thinking beyond the red lines requires understanding how places come together, from the level of the street, the block, the village, town and region.

- 9.3 A developers' forum (bringing landowners together). Bringing together landowners in a given area to coordinate for development has generally been a successful process to ensure that new developments are linked coherently and take on a similar character. It also allows for continuity of work, and it is a good tool to resolve any issues that come up.
- 9.4 A community trust can be a permanent means of funding and managing the revenue costs of the essential elements that make much of this design guidance happen. On larger sites, developers can endow an income generating asset (for example a quantity of residential homes for rent on the private market) that generates permanent income to fund management companies, upkeep of communal areas, bus subsidies, travel planning resources to name a few.

* * *

CREATE Streets



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