Street Design Guide

OXFORDSHIRE COUNTY COUNCIL

Foreword

This First Edition of the Oxfordshire Street Design Guide is published at an unprecedented time, when we are responding to the challenges of the climate emergency and improving the health, economic and social outcomes for Oxfordshire's residents.

Oxfordshire has significant growth plans for 100,000 homes and 85,000 new jobs in the period 2011-2031. Creating new places for everyone to live and work presents sustainable development challenges, but also exciting opportunities for new healthy, connected, and innovative places – enriching an already diverse Oxfordshire.

This guide provides clear expectations of our development aspirations and standards but also flexibility to enable innovation through collaboration with developers. Streets have an important role in creating social and connected neighbourhoods for all. We have drawn on the best current thinking and practise to produce a guide that looks at how different designs will suit the needs of residents – prioritising walking, cycling, and using public transport. This guide presents practical advice we expect to be followed and, alongside early engagement, it will assist designers and developers to create sustainable and successful places.

This guide has been developed in consultation with a wide body of experts, stakeholders and the District Councils. It includes key references to national and local policies and guidance. It was adopted by the Council in September 2021 and we expect developers to demonstrate its use in planning applications.

It is important to stress that this is a First Edition and will evolve as we learn from its use and reflect any new policies and guidance. We will commit to bringing out a Second Edition within 18 months. We hope everyone will agree it is a very positive step in the right direction.

Cllr Enright
Cabinet Member for Travel and Development Strategy

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Vision

A vision for Oxfordshire:

A place where streets, through integrated and quality design, lead to a greater economic and social well-being and improved health for its residents, creating an environment for healthy lifestyles, sustainable travel and a zero carbon economy.

Street design guide

Part 1

Introduction

1.1 Introduction

Policy Context

The design of our streets has a significant impact on how a place, be it a residential development, a town centre, or an area of employment, looks and feels. The quality and design of streets can be the difference between a vibrant and successful place and one that isn't. Streets are active places. In many cases they are, and should be, the lifeblood of neighbourhoods and communities. Streets help to define the soul of a place. This sets them apart from roads. We would define roads as linear movement corridors which simply serve to connect places. On arrival at a place, roads should very quickly evolve into streets.

In line with good placemaking, streets should help to ensure that each new development or intervention contributes positively to creating or enhancing places within which children, adults, families, communities, businesses, and nature can thrive.

This document is the First Edition of the Oxfordshire Street Design Guide for new developments and replaces the Residential Road Design Guide (2002) - Second Edition (2015). It is a living guide and so is subject to ongoing changes and updates. It sits below the Local Transport and Connectivity Plan (due to be adopted in 2022) and the Local Transport Plan 4.

Design of positive 'streets'...

...not soulless 'roads'.

1.1 Introduction

Purpose of the Guide

Oxfordshire County Council is responsible for ensuring that new streets meet certain design standards. These standards help to ensure that new streets function in a practical and safe manner and help deliver the aspirations of the county. Currently, these standards are set out in various documents. Whilst these guides are important to communicate standards, they do not necessarily demonstrate how all the various disciplines might come together in a holistic manner to create streets and places.

The primary purpose of this design guide is to bring together the key design principles from the multitude of disciplines covered by the existing guides. This will then allow designers and developers to very quickly understand all the County Council's clear expectations for early collaboration, standards, and innovation. This document is, of course, intended to be a companion to the various existing District Design Guides, which generally cover the wider masterplanning elements.

This guide makes reference to various national and local guidance and it should be read in conjunction with these documents, which include:

- National Design Guide (Ministry of Housing, Communities and Local Government 2021)
- Manual for Streets (Department for Transport, 2007)
- Manual for Streets 2 (CIHT, 2010)
- Inclusive Mobility (Department for Transport, 2005)
- Local Transport Note 1/20 Cycle infrastructure design (Department for Transport, 2020)
- Healthy Streets Toolkit (TfL, 2007)

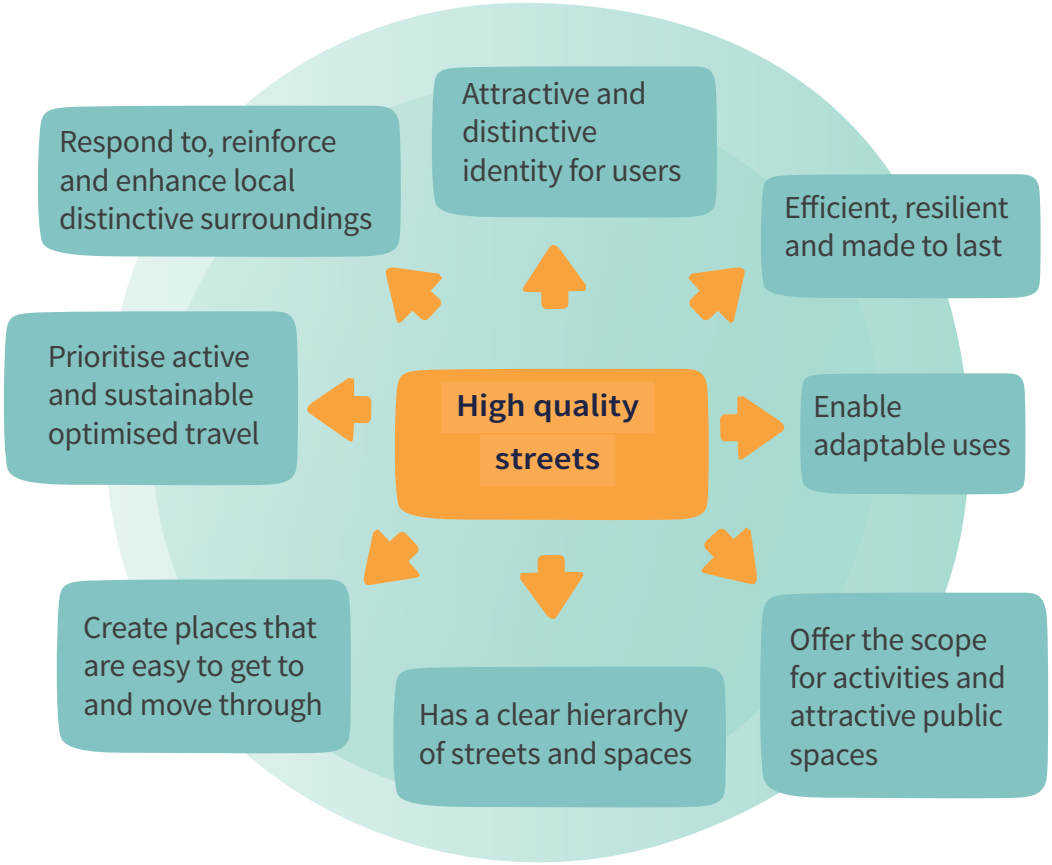
The Street Design Guide:

- Provides street design guidance to deliver high quality streets and places.
- Inspires landowners, developers, and designers to deliver the highest quality development through positive and constructive working relationships.
- Promotes good quality design by helping people understand the process and the criteria that deliver it.
- Instils confidence in the residents of Oxfordshire that developments will be designed and delivered to the highest quality.

1.1 Introduction

We want to deliver high quality streets and places

What do we mean by *high quality streets*?



Ref: National Design Guide (Ministry of Housing, Communities & Local Govt. 2021)

Contemporary and traditional creating non-car dominated streets

Punctuation through height

Integrated green infrastructure

Integrated green infrastructure

Mix of uses

1.2 Street space allocation

What will be the future of our streets?

As set out in our vision statement at the beginning of this document, we are looking towards a future where car ownership is reduced due to modal shift. One outcome of this might be the overall space we give over to tarmac is reduced. We would encourage designers and developers to also embrace this vision.

The Council is looking for innovative ways in which the pressures placed on streets by the current high levels of car ownership can be accommodated today, whilst also considering how tarmac space could be lessened or reclaimed for public/community use in a less car reliant future.

Oxfordshire will experience an unprecedented amount of growth in housing and employment over the next few decades. This will increase the demand for travel within and beyond the county. We recognise that to accommodate the level of growth planned, we need to address existing congestion and resulting carbon emission issues. Therefore, the way we travel has to change, shifting towards more active and sustainable travel by making journeys on foot, cycle and public transport. Oxfordshire County Council has secured various bids to deliver strategic transport schemes to realise this ambition. At local development level, there is an exciting opportunity to design streets in a way that creates a presumption in favour of walking, cycling and using public transport. This document seeks to provide guidance to create streets that encourage this shift away from the private car.

We realise that this is a challenging topic. It is, however, a topic that needs tackling today for the sake of the future. If we continue to allocate the same levels of space to roads and cars as we currently do without such consideration, in the future reclaiming redundant space will be more difficult.

Designers have begun to consider reclaiming streets. Existing streets are being successfully reclaimed as multi-purpose places. Examples include the retro fitting of 'homezones', pocket parks, pop up 'green' spaces/seating, and parking bays being converted into cycle lanes.

1.2 Street space allocation

Remnants of original standard road.

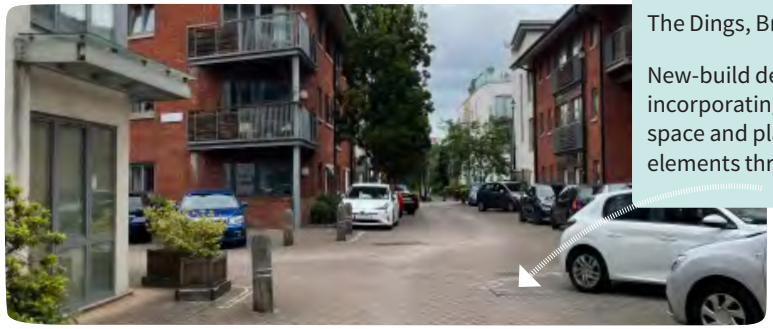
The Dings, Bristol

Here, what was previously a standard road, has been re-purposed to become a place for people to live, interact and create community.

Hendrefoilan, Swansea

Proposed development incorporating SuDS and Placemaking.

Roads transformed into places for people. The car is merely accommodated rather than being domineering.



The Dings, Bristol

New-build development incorporating shared space and place making elements throughout.

1.2 Street space allocation

This concept of claiming back space for people is equally relevant to new build developments. It starts from the outset of the design process: ensure that streets are designed to be fit for purpose without being over engineered. Utilising the basic concepts set out within Manual for Streets will help to set some initial basic parameters. For example, reducing geometry radii at side junctions.

Oxfordshire County Council believe, however, that more can be done to further reduce 'tarmac' and space taken by cars. For example, the introduction of variations in street widths through localised street narrowings can provide the opportunity for additional green space, rain gardens, seating, growing or local areas of play. This is space that would otherwise be tarmac but that can now contribute positively to the use of the street by people.

Oxfordshire County Council is keen to work with designers and developers on this concept when designing new developments. We anticipate that solutions will require developers to be more flexible and innovative with their design solutions. As such, we appreciate that we too, need to have a degree of flexibility in how we enforce 'standards'. For example, for a design solution which positively promotes our vision we may need to be more flexible on what we are willing to adopt.

1.3 Structure of the design guide

Part 1

This is Oxfordshire

This part of the document comprises of a summary illustrating some of the key character areas of Oxfordshire from Oxford City Centre, Bicester, Banbury and Didcot to small hamlets and the challenges facing 'standard' street design across such different places.

Assumptions: good masterplanning design

For the purposes of this document, it is assumed that general good masterplanning design has been undertaken, in accordance with national guidance and the various District Design Guides. This section does, however, set out some key masterplanning objectives that specifically relate to movement and street design.

Collaboration

This document follows a natural design process relating to the design of quality streets. An integral component of this process is consultation and collaboration with key stakeholders. Consultation events have taken place during the period of 2018 - 2021 and this document incorporates raised issues and opportunities.

Part 2

The importance of a user and function based street hierarchy

This section sets out the user hierarchy required to prioritise active travel and the key principles that should be followed to help create legible street patterns. This is generally referred to as a hierarchy of routes and can often help to define different character areas related to the type of streets that are within them.

Several examples are set out to help demonstrate:

- Primary
- Secondary
- Tertiary

Part 3

Detailed design: Street components

Whilst Part 2 deals with general streetscape parameters, Part 3 looks at those elements of the street which add the detail. These are often considered in isolation on a discipline by discipline basis. This can result in streets whose overall design is compromised by, for example, the late requirement for a previously unconsidered bus stop.

The section considers:

- Road space allocation
- Parking: cycle and car and school drop off areas
- Drainage: surface water collection and distribution
- Trees and landscape
- Street lighting
- Innovation
- Refuse collection

Throughout the course of Part 3, future innovation and travel behaviour is considered and developers are encouraged to build innovation into developments to achieve the vision and aims of this document.

Part 4

Further Advice

This section within the document covers standard advice on topics such as tree planting, refuse, highways and lighting etc.

1.3 Structure of the design guide

Design considerations

Elements of detail design

Street lighting

Cycling facilities

Refuse

SUDS

Parking

Technology

Trees

High quality public transport service

Cycle parking

Safe routes to School

1.4 This is Oxfordshire

The five districts

Oxfordshire is a County in the south of England, immediately west of Buckinghamshire, consisting of five District Councils:

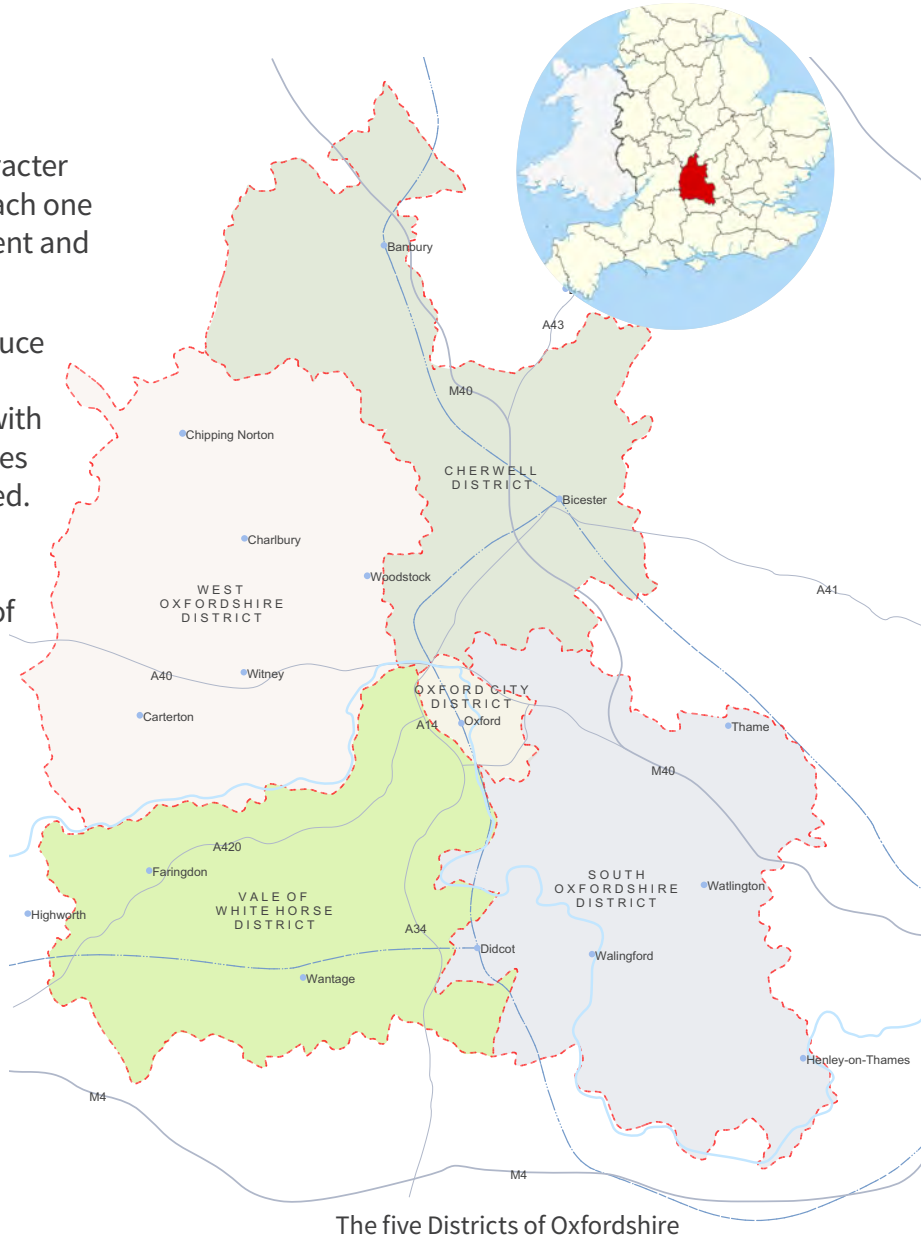
- Cherwell
- West Oxfordshire
- Oxford City
- South Oxfordshire
- Vale of White Horse

Within these districts, a vast variety of settlement types and characters can be found. These range from the dense urban centre such as Oxford, Bicester, Abingdon and Didcot through to small rural villages and hamlets.

Each District Council has its own general design guide which is bespoke and distinct to that particular area. They have been written to respond directly to the context and character of each particular District. This makes each one unique and bespoke with different content and approaches to development.

One of the primary challenges is to produce guidance which can be interpreted and adapted to suit different situations but with similar guiding principles. Some principles are flexible whereas others are more fixed. The guide sets out examples of how principles, be they guiding or technical, could be implemented across a variety of situations and places.

Core challenge: To prepare county wide Street Design Guide with the flexibility to be applied to each of the five Districts.



The five Districts of Oxfordshire

Additional useful and interesting resources:

- South Oxfordshire Design Guide 2017
- Cherwell Design Guide 2017
- West Oxfordshire Design Guide 2016
- Vale of White Horse Design Guide 2015

1.4 This is Oxfordshire

Oxfordshire

Rural

Village

Market town

Market town

Town

City

Village

City

1.5 What do we want to achieve?

Key street design objectives

Meeting the following objectives is critical in delivering high quality streets and places. These objectives should be considered at the outset and throughout the design process and are generally reflective of District Design Guides.

The street design within the context of a masterplan:

- Prioritise sustainable and active travel to help reduce congestion - Design streets and places in a way that reduces car use while promoting sustainable active travel modes to help combat the climate emergency. This means creating streets that are linked, well connected, safe and attractive for walking and cycling.
- Provide a clear and permeable hierarchy of streets, routes and spaces which are inclusive and create safe and convenient ease of movement by all users
- Ensure local services and facilities beyond the development are easily accessible by sustainable and active modes of travel
- Built to last and to meet the County Council's maintenance needs
- Understands and addresses the needs of all potential users to ensure inclusive design
- Ensures a sufficient level of well-integrated and imaginative solutions for car and bicycle parking and external storage including bins
- Take into account all relevant County Council/District Council Design Guides - including County Council School Design and Process documents in a holistic manner, ensuring streets are designed through multidisciplinary collaboration
- Informed by a contextual analysis of the area

Additional objectives

- Use land efficiently whilst respecting the existing landscape character, enhances biodiversity and as a minimum, leads to no net loss of habitat
- Promote minimum energy consumption through design and mitigate water run-off and flood risks
- Ensure that streets and spaces are well overlooked creating a positive relationship between fronts and backs of buildings
- Respect the local context working with and complementing the scale, height, density, grain, massing, type and details of the surrounding area
- Secure a high quality public realm with well managed and maintained public areas
- Ensures potential future development in the local area is considered
- Functions well and adapts to changing requirements of occupants and other circumstances
- Creates safe communities and reduces the likelihood of crime and antisocial behaviour

1.5 What do we want to achieve?

There are certain basic design principles which should be adhered to in order to achieve high quality streets. The following design principles are drawn from local and national planning policy such as the National Design Guide Best Practice Guidance relating to development. These principles and qualities apply equally to the design of quality streets:

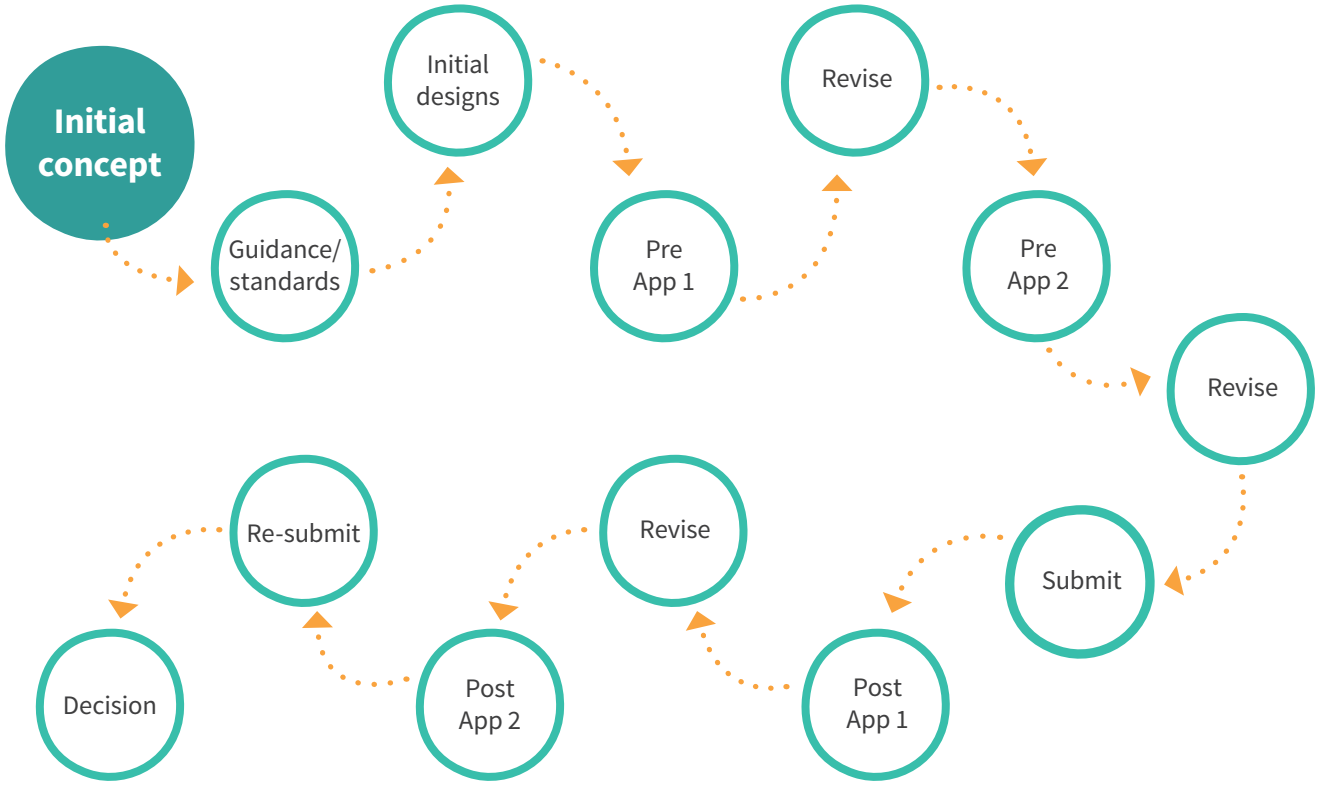
Principles	What is high quality?
Movement and access:	Ensuring movement corridors are safe and welcoming for all, including the elderly and disabled
Ease of movement:	Ensuring places can be easily understood including a legible street hierarchy
Diversity:	Providing variety, choice and sensory richness
Sustainable travel:	Ensuring places are easy to get to and move through for sustainable modes, and encourage physical activity
Legibility:	Masterplans should promote walking, cycling and public transport as the first choices for movement
Adaptability:	Anticipating the need for change as travel behaviour and technology changes
Sustainability:	Minimise the impact on our environment and reduce carbon emissions
Designing for future maintenance:	Designing streets and spaces so that their quality can be maintained over time and will age well using robust materials
Good streets and spaces:	Creating streets which act as attractive outdoor spaces including high quality green and blue landscape infrastructure
Well designed buildings:	Constructing sustainable buildings appropriate to their function and context to help enhance streetscapes considering landforms, orientation and massing
Innovation:	Designed to be adaptable to future technologies and innovations

1.5 What do we want to achieve?

Collaboration from the outset

Oxfordshire County Council understand that it is essential that all elements of street design are considered together as part of the initial and on going design process. Traditionally, it may only have been the developers and highway consultants that consult the County. This has often led to a single discipline led approach to street design. The County Council encourages the developer/lead designer, urban designer, masterplanner, or architect to consult the County early on as part of the initial masterplanning process. This could be done directly but, ideally, should form part of any district pre-applications consultations/meetings. This is an essential step and its value should not be underestimated. Pre-application highways advise on major planning applications can be found by clicking here.

Furthermore, this design guide does not give hard and fast rules as it is understood that all places are not the same. The guide leaves flexibility for creating unique and bespoke places. Having said that, it is essential that all layouts and street designs are vehicle tracked and tested to ensure that they can perform to a satisfactory and safe level. This further reinforces the need for early and continuous consultation with the highway authority from the start of the design process right through to delivery on site.



Authority Consultation/Collaboration Process

Part 2

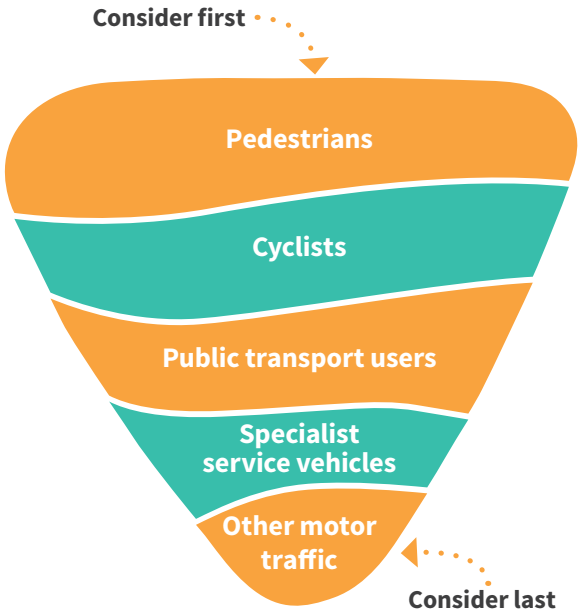
User and street hierarchy

2.1 User and street hierarchy

The user hierarchy

Manual for Streets (2007) recommends user hierarchy is established where pedestrians are considered first in the design process and recommends the user hierarchy outlined below.

The Oxfordshire Street Design Guide follows this user hierarchy. This aligns with Oxfordshire County Council's ambitions to become zero-carbon as a county by prioritising sustainable and healthy travel.



Manual for streets user hierarchy

To prioritise sustainable travel, infrastructure and links for walking and cycling must be considered at the start of the masterplanning process. The location of services within or outside the development must be considered and an assessment of the suitability of walking and cycling to these services should be undertaken. This firmly establishes a movement hierarchy. Following which, public transport movements should be considered and finally movement of general traffic.

Filtered permeability

Walking and cycling routes must be direct, convenient and well designed. When designing new developments, establishing the movement framework using the above user hierarchy will show the opportunities to create modal filters throughout the development.

Planters, trees, bollards, or street art could be used to create modal filters.

Filtered permeability routes can be combined with access for emergency vehicles with removal bollards or planters.

2.1 User and street hierarchy

Establishing a street hierarchy

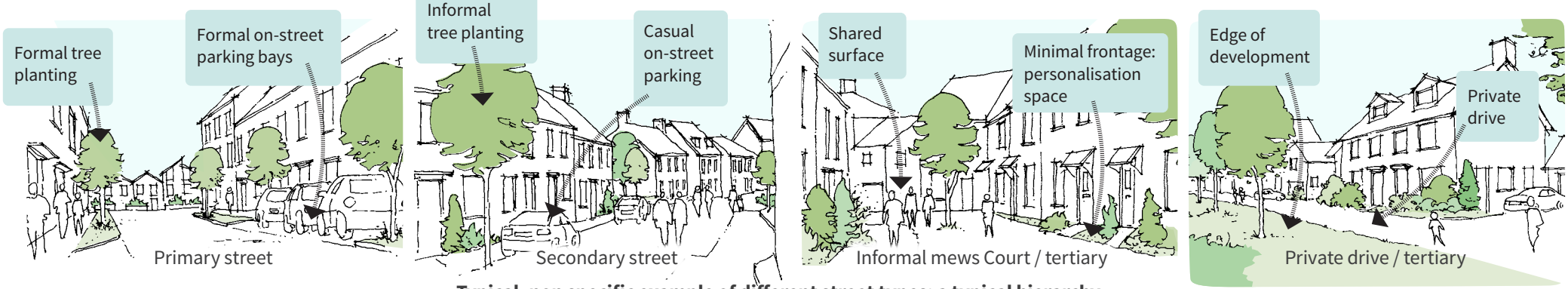
The following pages look more at what the street needs to safely accommodate rather than setting a specific size standard. For example, a primary street may need to accommodate buses (potentially), cyclists, pedestrians and cars. A general carriageway width guide is provided, however, we would encourage designers to make allowances for such parameters and provide information detailing how such users have been safely allowed for. This approach will help to create streets that are bespoke and specific rather than formulaic: varying street widths creating interest and character based on user and place based hierarchy.

It should also be noted that defining a hierarchy can be undertaken in several different ways regardless of, for example, specific size design standards. Something as simple as landscape, tree planting arrangements or boundary treatments can help to differentiate one street type from another (it's not all about street widths and junction radii!)

An important and vital stage of any masterplanning process is to establish a movement strategy. This strategy should take into consideration the site and context analysis. It should therefore be site specific and help set out a clear hierarchy of streets and spaces. As set out in Manual for Streets, it is important that this hierarchy should not be determined by a formulaic approach based on traffic flows or number of dwellings served. They should instead be based on specific location, use, role, user hierarchy, place and movement.

The depth of the street hierarchy will very much depend upon the size and nature of the development. A small development of, say, 20 homes may have a simple single street creating a loop through the development whereas a larger development of, say 200 homes would be expected to have a far greater variety of street characters.

Up to 400 dwellings could be served by one access, while more than 400 dwellings must be served by more than one access. In Addition, development of more than 150 dwellings with a single vehicular access will also require an emergency access. The type and location of accesses should be discussed and agreed with Oxfordshire County Council.



Typical, non specific example of different street types: a typical hierarchy

Additional useful and interesting resources:

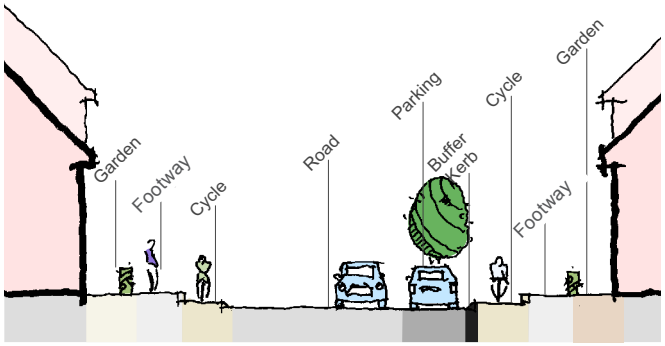
- Manual for Streets 1 (2007) and 2 (2010) Dept for Transport
- Oxfordshire District Councils' Design Guides
- The Urban Design Compendium (2000) Housing & Communities Agency
- Oxfordshire County Council School Design Guidance

2.2 Primary Street

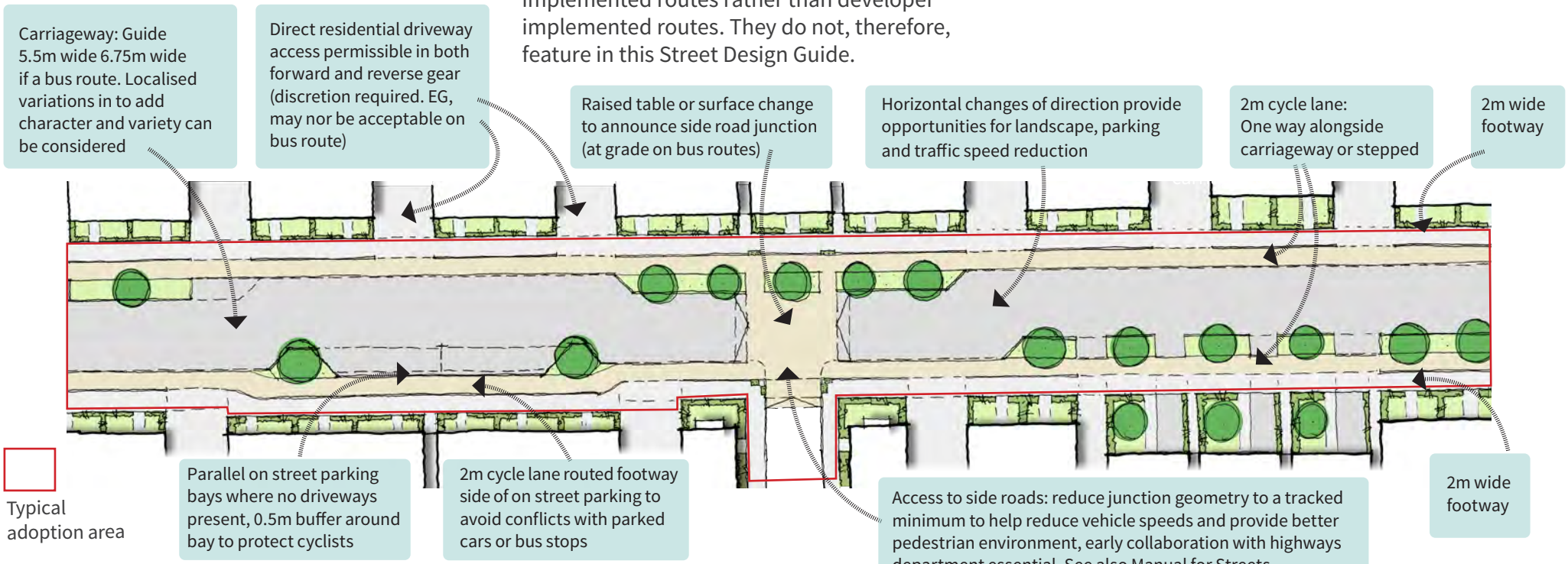
General principles

There are several design factors which can be characterised as being specific to a primary street. The two main features and requirements which will have a significant impact are: the need to accommodate and segregate cyclists, as required by LTN 1/20. With the other being whether the primary routes are part of a bus route, although they do not warrant a dedicated bus lane.

In the context of this Street Design Guide, the 'streets' are those which serve neighbourhoods and communities with a design speed of 20mph, achieved through, for example, horizontal deflection, reduction in geometry radii etc. Generally, streets with speed limits of 30mph or above are designated as local distributor and link roads and are not covered by this guide. These designations would be regarded as strategic routes and, as such, are generally County implemented routes rather than developer implemented routes. They do not, therefore, feature in this Street Design Guide.



Primary street: typical potential section



Primary street: potential layout with guide dimensions

2.2 Primary Street

Cycle routes

Oxfordshire County Council expects high quality infrastructure for pedestrians, cyclists and bus users. The Government has provided detailed guidance on the provision of cycle infrastructure in LTN 1/20 (DfT, 2020). The Street Design Guide follows the parameters set by this guidance and we require all new developments to be designed in line with LTN 1/20. When following this guidance, special attention should be given to the parameters in relation to appropriate types of cycle infrastructure provision as set out in Tables 4.1 and 5.2 of LTN 1/20.

All routes should allow for safe cycling. On many streets where traffic volumes and design speed allow, this can be through on-carriageway provision. All primary routes, however, must provide specific measures to allow for safe use by cyclists. There are generally three accepted methods:

- On carriageway cycle lanes (2m wide) - one way each side of carriageway to match traffic direction.
- Stepped cycle lanes (2m wide) - raised above carriageway via low dropped kerb. One way each side of carriageway to match traffic direction.
- Segregated cycle lane (3m wide) - Detached from carriageway and two way. Only applicable where there is no development fronting carriageway or where there is single sided development.

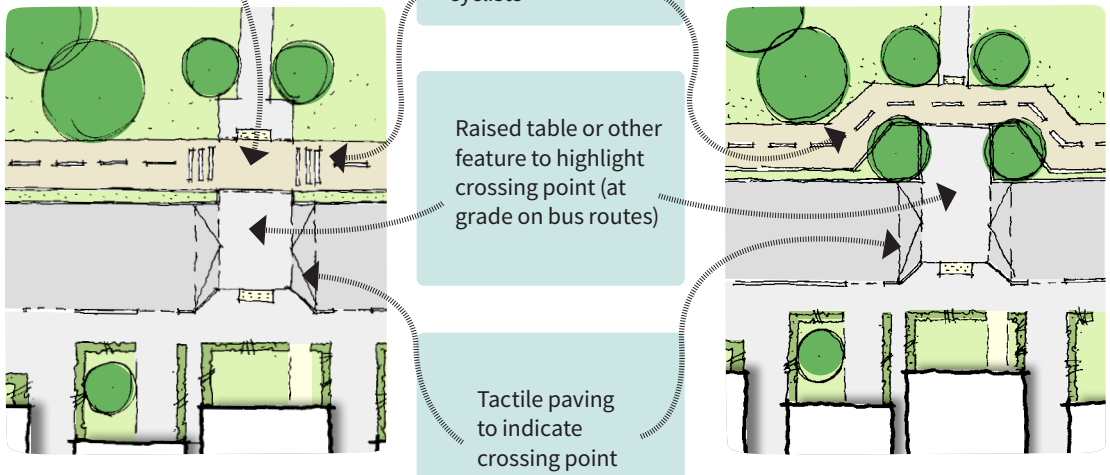
Within a streetscape, there are many obstacles and hazards that could detrimentally impact on a cyclist's experience and safety. Risks including bus stops and on street parking for example, should be designed out as far as feasibly practicable. Here, cyclists riding on the carriageway side of bus stops and parking bays are at risk of cars stopping to reverse into spaces, cars/buses pulling out of spaces, drivers doors opening etc. A simple design solution to minimise such risks might be to divert cycle lanes to the footway side of the hazard thus allowing for free flow of cyclists. In these situations it is important that there is a clear kerb delineation between footway and cycle route to help avoid cyclists straying onto footways.

When designing for the cyclist, it is also important in the early stages to allow for situations where pedestrians may wish to cross cycle lanes. The diagram shown on the following page illustrates a potential solution to a pedestrian crossing a carriageway and a cycle lane:

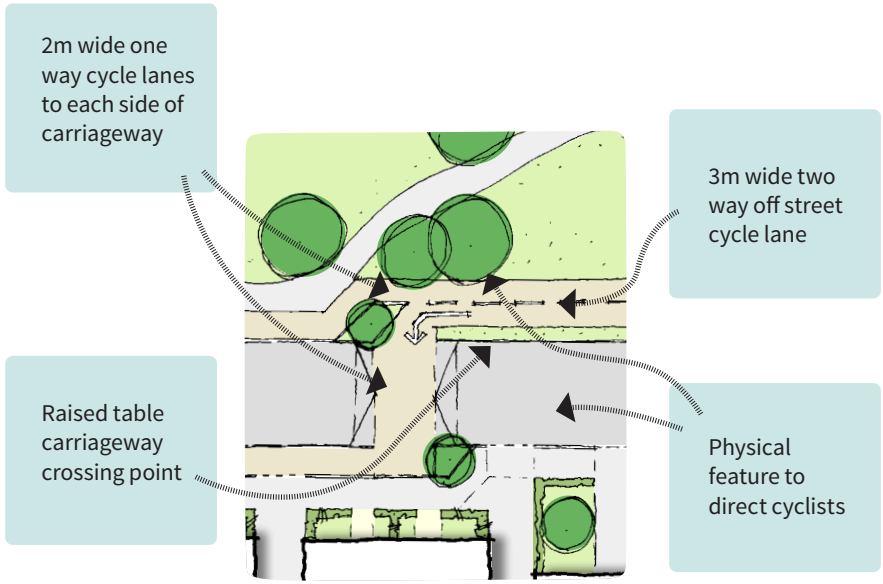
- Raised table/surface treatment: at grade on a bus route or an agreed alternative. This highlights a safe place to cross for pedestrians and highlights a potential hazard to drivers.
- Pedestrian 'refuge' between carriageway and cycle lane.
- Physical/visual features warning cyclists of potential hazard: eg rumble strip or obstacle forcing change in direction/reduction in speed.

It is recommended that designers consult with the County Council at the early masterplanning stage. The Council recognise that this will require a multidisciplinary consultation including highways, public transport, transport strategy, landscape etc and will provide appropriate officers for a combined consultation. See also the Oxfordshire Cycling Design Standards for more detailed information. The County Council would expect all public cycle routes and footways to be to adoptable standard.

2.2 Primary Street



Different scenarios for off-street two lane cycleway with a pedestrian crossover with sufficient visual features to highlight the intersection.



Merging cycle lanes: two way separate cycle lane from a single sided streetscape meets a system of one way lanes each side of the carriageway. A suitable carriageway crossover is provided together with physical and visual features directing the cyclists to cross to the upcoming system.

2.2 Primary Street

Bus stops and pedestrians

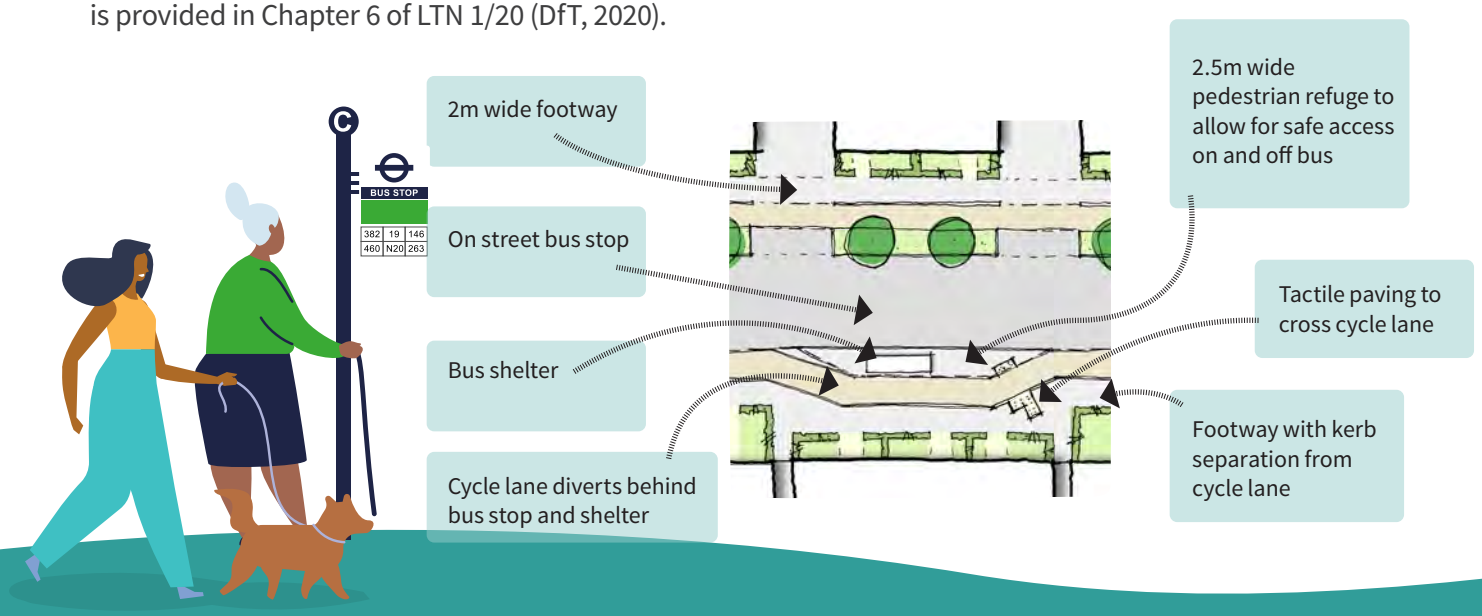
With larger developments, there may be a requirement for bus services to route through the development. Where this is required, carriageways should be a minimum of 6.5m wide to allow buses to pass.

In general, the county council does not favour bus laybys, unless they have been determined to be appropriate on a case by case basis, as it compromises the bus's ability to rejoin the main carriageway when pulling out of a stop.

At bus stops, cycle routes should divert behind the bus stop, creating a floating bus stop, but care should be taken to avoid sharp deflection which is difficult for a cyclist to negotiate. Further guidance is provided in Chapter 6 of LTN 1/20 (DfT, 2020).

For smaller developments, it is important that access to bus services is assessed during the masterplanning process to design walking and cycling routes to and from the most convenient bus stops or interchanges.

Accessible Bus Stop Design Guidance (Transport for London, 2017) and Buses in Urban Developments (CIHT, 2018) provide useful resources when considering bus provision.



E-scooters

As more e-scooter rental systems are rolled out and adopted across the country, we expect that e-scooters will offer another option for sustainable travel.

Laws around the use of e-scooters on the public highway are rapidly changing and therefore it is important to understand current legislation when designing for them within developments. In saying this, the county council encourages developments to consider the provision of infrastructure for e-scooters which meets its ambitions for a zero-carbon county.

2.3 Secondary routes

Strategic secondary, standard secondary and other

The main difference, design wise, between primary and secondary routes is the provision of cycle lanes. There is an understanding that depending on the type of route and specific location, that cyclists will share the carriageway. This exception would be if traffic flow is expected to be high on secondary routes, in which case segregated cycle routes may be required. Reference should be made to LTN 1/20 (DfT 2020). However, that is not to say that secondary routes cannot have cycleways, it is more that they are not a specific requirement.

Whilst it is recognised that routes generally fall under primary, secondary and tertiary categories, there may, depending on the size development, be an opportunity to break these down to sub sets in order to create further character and legibility. This is particularity true of secondary routes which tend to be the most abundant in new developments. The sketches on the following page, for example, illustrate three potential secondary categories:

Strategic secondary

These could be routes which come straight off a primary route, serve a residential area and then connect back to the primary route.

Standard secondary

These could be linked or looped streets which, again, help to serve a wider residential area. They would probably come off a strategic secondary route and link back to it. Their exact definition will depend upon the size of the development.

Other

These routes would, generally, not serve a wider residential area, apart from, maybe, minor tertiary areas. They would be streets that are likely only to be accessed by those living on them. These could be shared surface streets. Carriageway width is 6m overall combined if shared surface.

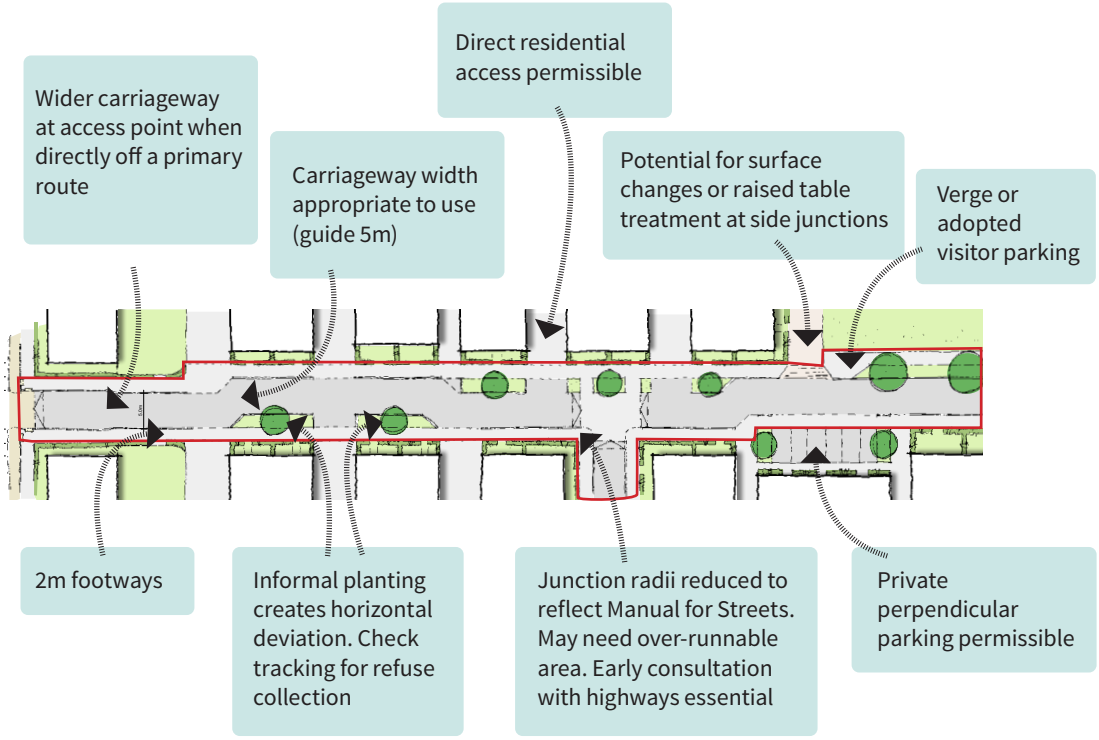
Note: the Council will not adopt parking which is perpendicular to the highway. Echelon and parallel parking can be adopted. If private parking is perpendicular to the highway where there is no footway, e.g. shared space, then an additional safety margin of 1m is required between the parking and the shared surface adopted highway. This would make a shared surface space 7m if perpendicular parking on 1 side and 8m if perpendicular parking on both sides, but only in the vicinity of the perpendicular parking. Perpendicular parking would not be accepted near a school.

Additional useful and interesting resources:

- Manual for Streets 1 (2007) and 2 (2010) Department for Transport
- LTN 1/20 Cycle Infrastructure Design (2020) Department for Transport

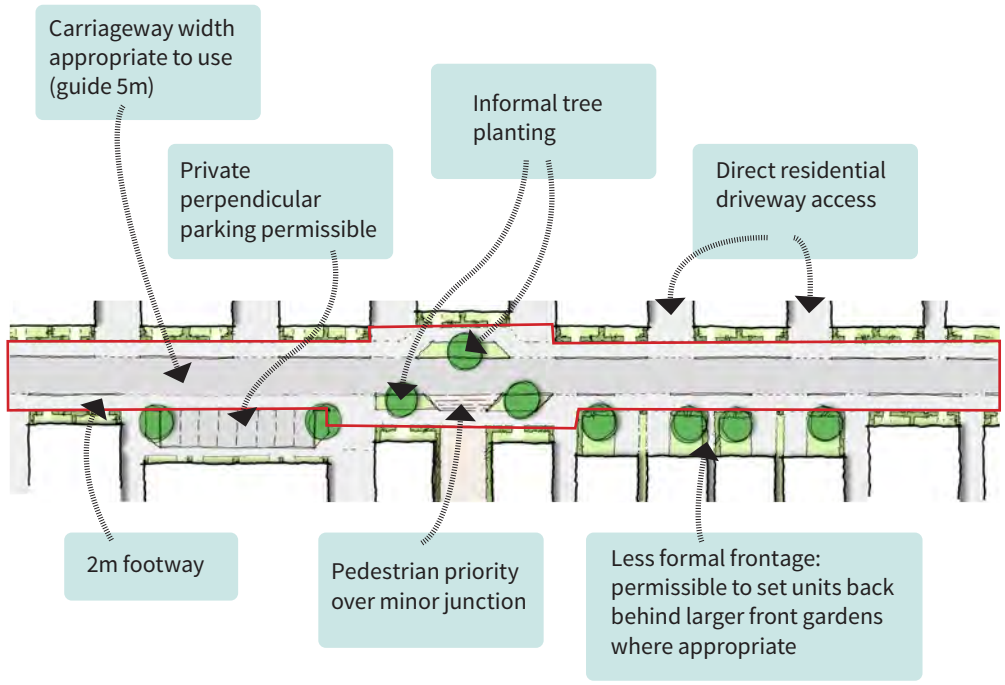
2.3 Secondary routes

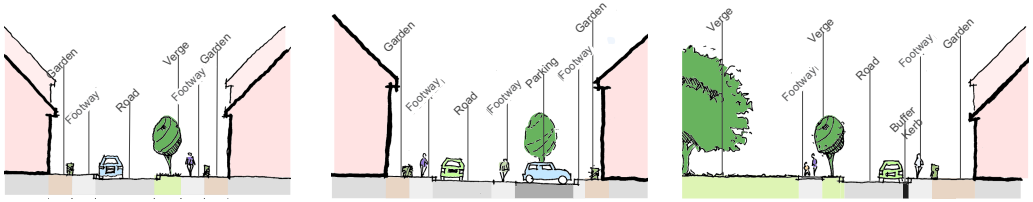
Strategic example

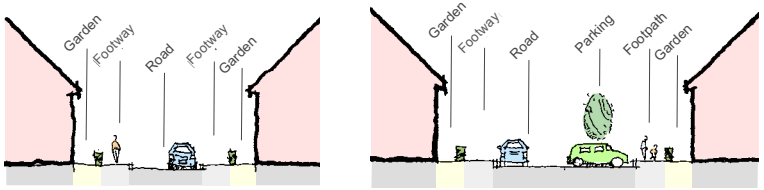


Typical adoption area

Standard example

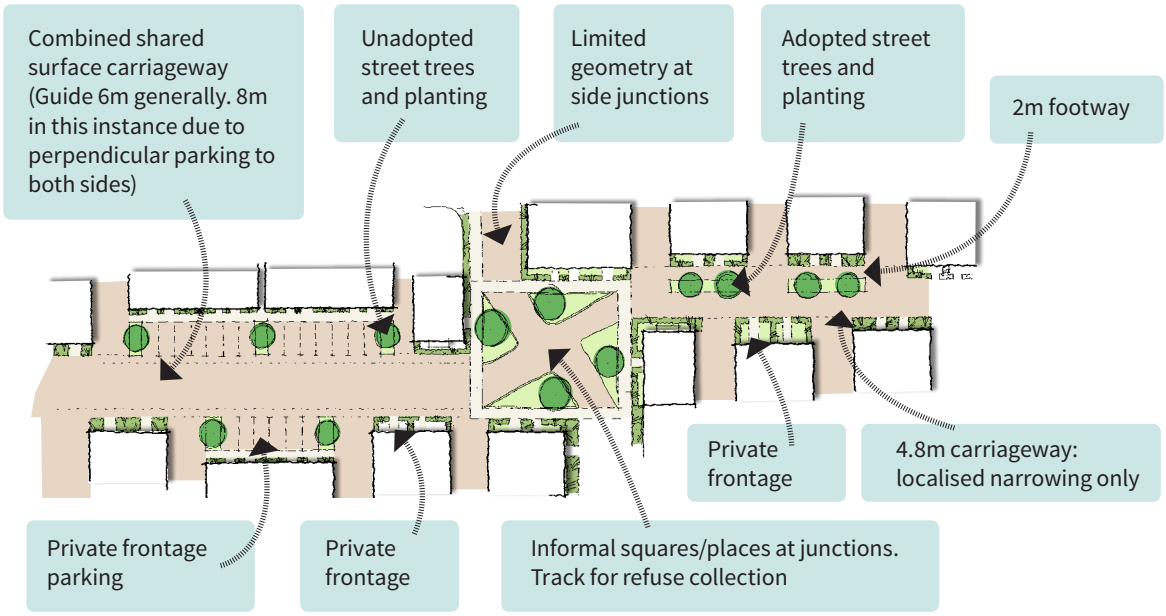


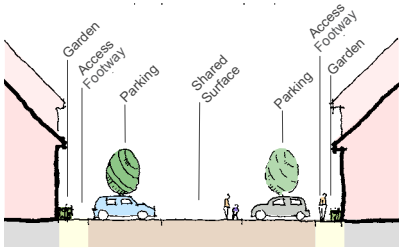


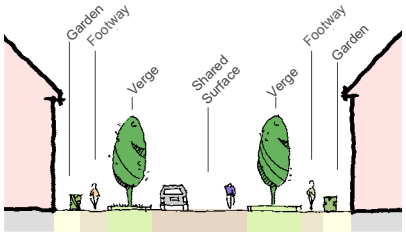


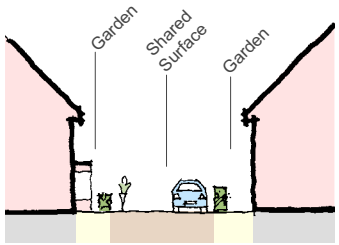
2.3 Secondary routes

Other example: Shared surface







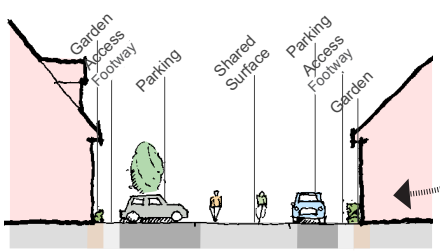


In shared surfaces such as the above, where there is no footway, services should be laid within the adopted highway. No additional service strip is required unless street lighting is to be provided or street furniture outside the 6m adoptable shared surface area. If this is the case then an additional 0.8m service margin will be required. This can be in a green verge or as part of an oversized 6.8m wide shared surface. As discussed page 27, an additional 1m safety margin is required behind perpendicular parking spaces. Area for adoption to be discussed and agreed with Council at early stage of design development.

2.3 Tertiary streets

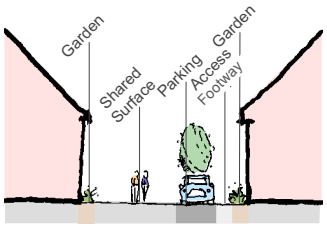
Tertiary streets and spaces can take on many forms. As with other street types, much depends on the size, character and location of the development. In town and city centres, tertiary routes are likely to be far more urban in their nature than those on the edges of villages, for example. This is illustrated on the adjacent extract from a demonstration masterplan. This shows:

- Urban mews street within development blocks
- Tertiary streets on the fringes of development
- Private drives serving up to five homes, generally at the edges of development



Section AA along shared surface street

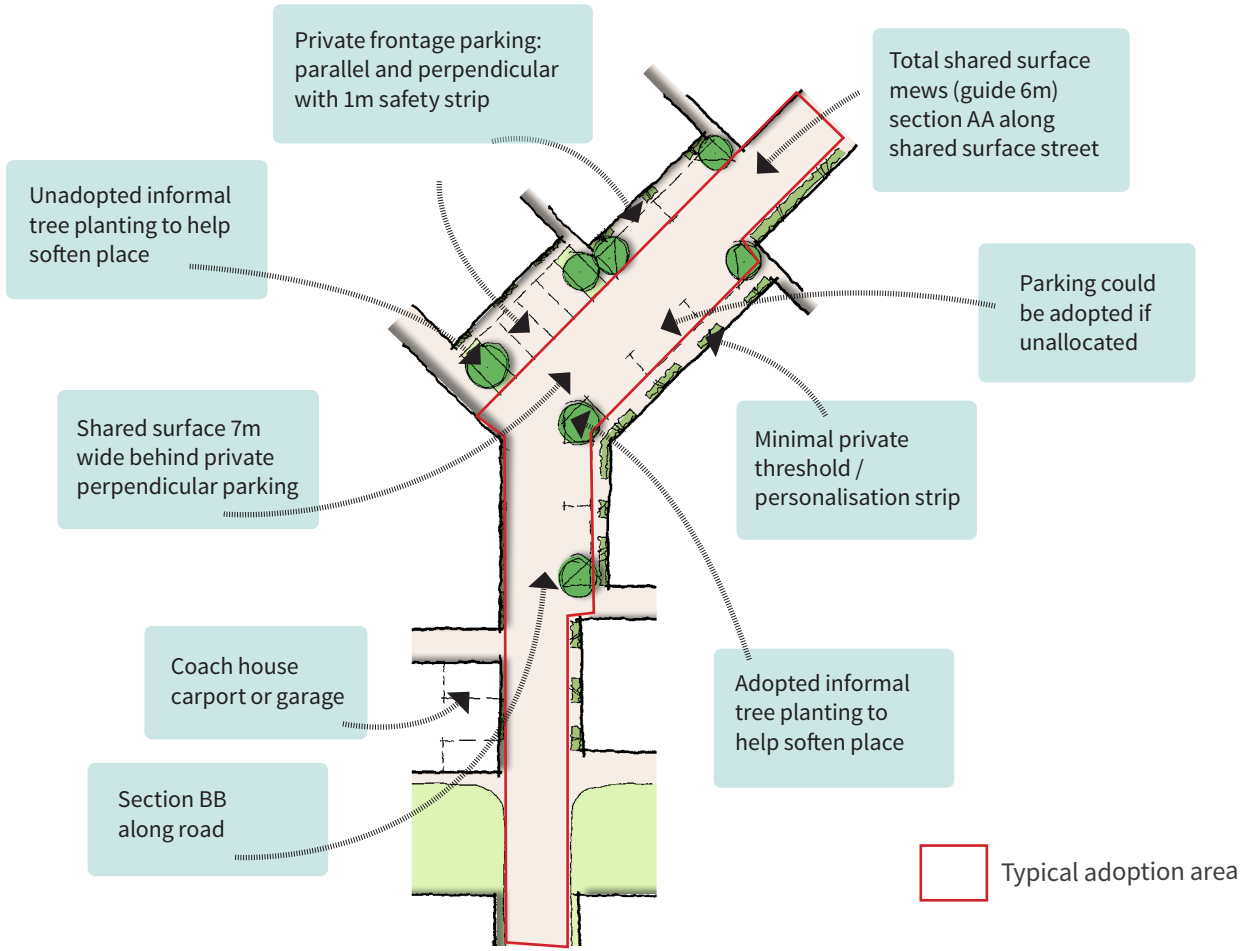
Section BB along road



Urban mews

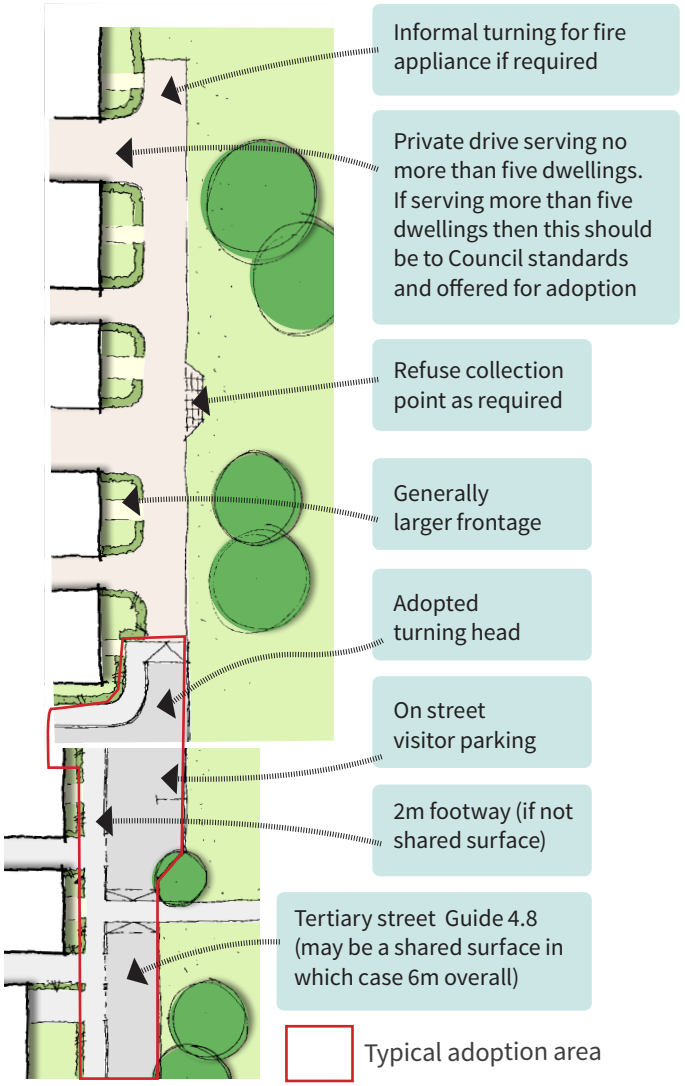
Mews streets, courts and lanes tend to be urban, intimate spaces. They are generally shared spaces with a tight urban grain: close front to front distances with little or no private front gardens. Thresholds between private and public often take the form of narrow personalisation strips rather than front gardens.

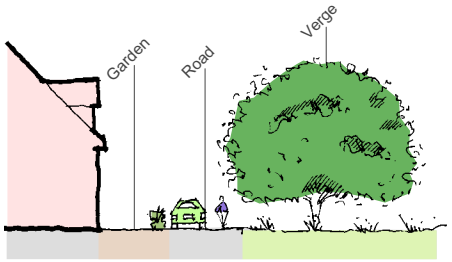
Parking is often casually located on streets or via car ports/garages of coach houses.



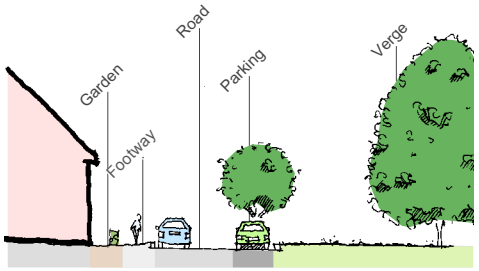
2.3 Tertiary streets

Tertiary edges / fringe and private drives





Typical private drive section



Typical tertiary fringe

Mews street

Informal planting

Coach house parking

Tertiary fringe

Private drive rural edge

Private drive

Part 3

Detailed design elements

3.1 Parking: Bicycles

Promotion of cycling as an active travel preference can only be successful if there is suitable provision for cycle ownership. This includes the requirements for cycle parking. This should be thought of at the start of the projects so that it can be successfully designed into a development in a convenient and usable manner.

The type and form of cycle parking provided will very much depend on its purpose and location. In order for cycling to be a practical active travel option, cycle parking must be provided at various location types: home and destination.

Reference should be made to Oxfordshire County Council's 'Cycling Design Standards' and Chapter 11 of LTN 1/20 (DfT, 2020). In accordance with LTN 1/20, 5% of cycle parking must be for non-standard cycles such as cargo bikes, mobility impaired cycles, etc. With the take up of e-scooters, it is expected that these will use appropriate cycle parking as well so should be considered when planning the type of cycle parking to be provided.

The quantity and type of cycle parking should be considered early in the design process. Doing so ensures sufficient space is made available within the development. Cycle parking being considered too late in the design process can lead to ineffective and unattractive outcomes. Cycle parking shelters provide the opportunity to integrate other infrastructure within the site such as street art, solar panels, green roofs, bug boxes etc. These should be considered and discussed with the district and county councils.

Residential

District Council and Local Plan standards should be consulted to determine the quantum of cycle parking required for a development.

Single home: private cycle parking

- If a garage is suitably sized then it can be considered as secure cycle storage
- When a dwelling has no garage – secure, enclosed cycle parking must be provided. This will likely be in a rear garden, in the form of a specific cycle store or shed. This will only be acceptable provided that the cycle parking is accessible without wheeling a bicycle through the dwelling. Alternatively, cycle storage can be provided at the front of the house or be integrated in the design.

Secure communal apartment parking. Sheffield stands are preferred but alternatives may also be appropriate, subject to user, particularly where space is limited. The image at the bottom uses gas struts to aid lifting the upper tier

3.1 Parking: Bicycles

Provide secure cycle parking for individual houses

Provide secure cycle parking for apartments

Apartments: Communal cycle storage

- Consider at early site planning stage: needs to be in close proximity to the entrance of the apartment block for convenience and security.
- Communal ground floor storage with apartment building with secure external access positioned in well overlooked area.
- Communal separate secure covered cycle store.
- Cycle store should be suitably lit.
- Preferred method of securing is 'Sheffield' type stands with sufficient space around for convenient storage (See Oxfordshire Cycling Design Standards).
- Sheffield type stands can result in very large cycle stores on larger developments. On larger apartments blocks, therefore, of 10 apartments or more, alternative cycle storage systems which take up less space would be accepted.
- Important to recognise that certain user groups, eg the elderly, may have difficulty using cycle storage systems which require cycles to be lifted onto a rack system. It is, therefore, essential that the storage system chosen is appropriate to the anticipated user.
- 5% of cycle parking must be for non-standard cycles such as cargo bikes, mobility impaired cycles, etc.

Communal parking using Sheffield stands at commercial premises, transport interchanges, leisure facilities etc

Employment: Communal cycle storage

District Council and Local Plan standards should be consulted to determine the quantum of cycle parking required for a development

- Covered and secure cycle storage.
- Could be internal, for example, specifically designed into an office building.
- Could be external: will need to be thought about at early site planning stage to ensure safe and visually prominent location and be suitably lit.
- 'Sheffield' type stands are preferred but alternatives will be considered if suitable
- 5% of cycle parking must be for non-standard cycles such as cargo bikes, mobility impaired cycles, etc.

3.1 Parking: Bicycles

Town and village centres: general public cycle storage

District Council and Local Plan standards should be consulted to determine the quantum of cycle parking required. To be provided at key locations: public transport interchanges and key nodal points for first and last mile journeys, including park and ride facilities.

- Provide at key social destinations such as leisure centres, cinemas and libraries
- Provide at key retail locations within town and village centres
- As these are public, avoid complete enclosure: cycles should be in full view of general public at all times
- Simple groups of 'Sheffield' type stands with sufficient space for convenient use in highly visible locations
- 5% of cycle parking must be for non-standard cycles such as cargo bikes, mobility impaired cycles, etc.

Provision of suitably located and visible Sheffield stands for towns and villages and other commercial centres.

Bus Stops

Depending on the location of the development or the bus route within the development, parts of the development could be further than acceptable walking distance to a bus stop. In such cases, cycle parking should be provided at the bus stop to allow bus users to cycle and park at the bus stop. The cycle parking should be covered and secure.

3.2 Parking: Cars

Background

The impact of providing parking for developments of all natures, from residential to commercial, can be very detrimental if not carefully considered.

Over the last 20 years, approaches to parking in the UK have swung from extremities, often related to how we have historically approached the design of new developments. During the 1980- early 90's, for example, many residential developments were based around the provision of garages and driveways to the fronts of properties. This led to long front gardens with cars parked in front of the building line. Densities were low and parking standards were often expressed as minimums. It was recognised that this had a detrimental effect on the visual appearance of streets in addition to not being a very efficient use of land and space.

With regards to residential, the government introduced Planning Policy Guidance 3: Housing (PPG3) in 1996. This set minimum housing densities to encourage more efficient use of land. It also set out to try and encourage a reduction in car ownership by introducing a maximum extremity parking standard of an average of 1.5 spaces per new home. Whilst the intentions of this guidance were good, the reality did not live up to expectations. When visiting any PPG3 development today, it is clear that the levels of parking do not meet the varying demands from different households resulting in indiscriminate parking, often blocking footways and creating highly car dominated streetscapes. The Guidance was withdrawn in 2006 and replaced with Planning Policy Statement 3 which encourages local authorities to devise their own bespoke parking standards.

Parking numbers and arrangements for cars and motorcycles will need to comply with Oxfordshire County Council Parking Standards and Local Plans which are currently being revised and will be included as an Appendix to this guide.

Additional useful and interesting resources:

- Oxfordshire County Council Residential Parking Standards
- Car Parking: What works where (HCA, 2006)
- Rural car clubs (The Countryside Agency, 2004)
- Parking Technical Advice Note (Policy M3 Car Parking) Oxford Local Plan 2036

Typical inefficient 80s parking solution

PPG3 with indiscriminate parking

3.2 Parking: Cars

Towards our vision: an innovative approach to parking

As stated, our vision is looking towards a future of less car ownership due to the increase in, for example, technologies such as autonomous vehicles or increased use of car clubs, public transport etc. We are, however, well aware of the shortfalls of PPG3 and the results that this produced. Our parking standards, therefore, are realistic in terms of current levels of car ownerships.

We do, however, encourage developers to consider how parking is delivered in the context of our vision. We expect developers to work with us to devise innovative parking solutions which keep as much parking within the public realm.....or at least have the ability to become public realm as car ownership drops resulting in less spaces being required. To help support this Oxfordshire County Council, in turn, will also think innovatively on how we might adopt on street parking or consider allocated parking within the public realm. Our parking standards also allow for the provision of non allocated parking counting towards the parking requirements of homes.

It is worth noting at this point that parking within the public realm will need to be carefully designed and considered to reduce the detrimental impact, for example, indiscreet parking on footways.

We would also like to see developers coming forward with innovative approaches to transport infrastructure which, again, supports our vision. If measures can be put in place to lower the demand for car use through for example, integrated transport systems, then Oxfordshire County Council will consider lowering parking standards.

Whilst the above is mainly concerned with residential parking for homes, the same concept of looking to a less car dependant future should also be considered for other land use areas.

Of course, parking is not just related to cars. The provision of scooter and secure cycle parking at home and at destinations can also help to encourage cycling and, therefore, reduce dependence upon car use.

The following pages set out key design parameters for different parking scenarios and solutions. These scenarios are based on a balanced approach to parking solutions. Examples of how parking could be approached with a view to reclaiming it in the future as public realm or community space are also illustrated.

3.2 Parking: Cars

A balance of parking solutions

On street

Car port

Residential courtyard

Undercroft

Undercroft

Commercial

Coach house

On street

3.2 Parking: Cars

On plot

Oxfordshire County Council recognise that potential residents of new development prefer to be within sight of their vehicles and, also, prefer their own driveway on which to park. We believe, however, that this stems from post war developments, where every new house built seemed to have its own dedicated on plot driveway and the negative visual impacts of this on our streets and land-take is well documented. This approach essentially makes these private parking spaces permanent. It doesn't allow for the future reclamation of these spaces for public/ community benefit. Because of this, private spaces do not conform to our vision of reducing space dedicated to cars.

For the above reasons, Oxfordshire County Council therefore encourage developers to consider alternative parking arrangements to on plot which allow for more flexibility and more efficient land use.

We do, however, acknowledge that a balanced approach is needed to parking, depending on external factors eg. context, densities and that there will still be a place for on plot solutions. The bullet points below and accompanying diagrams set out some basic design parameters which we expect to be followed when designing on plot parking facilities:

- On plot garages must be set at least 6m into a plot to allow for a full car space in front whilst being able to open the garage door
- Driveways should be sized to take whole cars, ie. 5m for single car, 10m for two cars, and in-between sizes should be avoided as these tend to encourage cars parking half on the drive and half on the footway thus causing an obstruction to the footway
- Driveways to the sides of houses must be long enough to allow all/most of the car/s length to be behind the building line
- Garages must have minimum internal dimensions of 6m long x 3m wide. These dimensions are clear dimensions measured between any internal structure such as piers
- Driveways must be a minimum of 3m wide and provide a 2mx2m pedestrian vision splay
- Garages must count towards parking allocations. They must also have a planning condition which removes any permitted development rights to help ensure continued use for that purpose
- All houses with on-plot parking should have a dedicated (Electric Vehicle) EV charging point. Chargers should be in line with the Autonomous and Electric Vehicles Act (2018) and the government ambitions on 'Smart EV Charging'
- Where driveways are located on plot to the front of a house, they must be 6m long. This allows for a full car space with no overhang of the footway. It also allows for the ability to walk between the front of the house and the car.

3.2 Parking: Cars

Rear parking courts

Rear parking courts can work well if great design care is taken regarding the design detail. Unfortunately, it is evident across the country that, despite best intentions, the general design and implementation of parking courts is poor. This then leads to them not being used by residents resulting in indiscriminate parking within the streetscape, often at the detriment of pedestrians via blocked footways. Clearly there are some examples of well designed parking courts but these tend to be in the minority.

Parking courts also tend to break the built in public/private threshold security of perimeter blocks, exposing rear gardens boundaries to 'public' realm. Despite every effort to provide design solutions to overcome this, eg semi transparent rear boundaries and housing with the courtyard, the fact remains that connected streets provide far more active surveillance of parking spaces than parking courts.

Oxfordshire County Council strongly discourages the use of rear parking courts. They will only be acceptable where it can be proved that they will be used by residents through good design or where other parking options might not be available eg in towns and cities where parking restrictions may apply, and that their security is not compromised.

Well designed parking court with good natural surveillance

On street - unallocated

On street parking has many design benefits:

- It is convenient for residents, generally being located directly in front of houses
- It shares operational space with the street infrastructure and, as such, represents an efficient use of land
- It provides activity within the street allowing for casual meeting and interactions between residents
- When a resident is not using a space it becomes available for others to use. This, in turn, can reduce the overall number of parking spaces that may be required.
- Minimum of 25% of unallocated spaces to be equipped with Electric Vehicle Charging

If, however, it is not well considered, it can also have a detrimental affect on the street with large areas or parked cars impacting on the visual appearance of the streetscape.

Oxfordshire County Council is keen to promote the use of unallocated on street parking. We recognise its immediate benefits as set out above. We also recognise its future benefit of being easily re-purposed if no longer required due to future reduction of car ownership.

3.2 Parking: Cars

The positive aspects of unallocated parking mean we can accept lower total levels of parking where unallocated spaces are available. Exact quantities required will vary and be judged on a case-by-case basis. Oxfordshire County Council encourage designers and developers to engage with us early in the design process to discuss the parking strategy of a site. We only adopt parking spaces that are unallocated and included as part of an overall street adoption.

For on street parking to be successful, it must be designed into the streetscape from the outset. Space allowance for it must be made at the masterplanning stage with street corridor width generally becoming wider. It should be considered in the context of the whole street design and not just as an individual element. This document will continue in the following pages to demonstrate how on street parking should be integrated into a suite of other design elements and considerations:

- Trees and landscape
- Traffic calming measures
- Sustainable urban drainage
- Street lighting
- Cycle routes
- Pedestrian safety

Set out below are some basic design parameters which should be applied to parking designs:

- Parallel parking should be 6m long and 2.5m wide (it is recognised that doors can open into street or footway)
- Parallel parking spaces which are constrained along one edge by, for example, a fence or wall will need to be wider and 2.7m is recommended.
- Perpendicular spaces must be 5m long and 2.5m wide if next to another parking space or open space. If constrained along one edge then the width should increase to 2.7m. If constrained on both sides the width needs to increase to 2.9m.
- Landscaping, such as shrubs, hedges or trees should be used to help break up large expanses of parking. This is true of both parallel and perpendicular spaces. As a guide, parallel spaces should be kept to a maximum of 3 spaces long and perpendicular 5 spaces before a break for landscaping or other features to visually break up the spaces.
- If adjacent to a cycle lane / route should provide a buffer of 0.5m in line with LTN 1/20.

‘French square’ parking zone

Limited access streets with remote parking areas (non adopted)

3.2 Parking: Cars

In addition to the more standard approaches to on street parking detailed above, Oxfordshire County Council are keen for developers to investigate alternative on street solutions. Such measures could, for example, include parking within central reservations or 'French parking squares'. These are squares distributed at intervals along a street where parking can occur. They are not car parks and should be treated as places within their own right. These can then free up others areas of the street for more beneficial uses such as pocket parks. In some instances on street parking squares can be used in conjunction with traffic orders to limit vehicular use of certain streets. Such streets could have drop off/pick up access only with vehicles then needing to move on and park within the designated parking squares. This could allow for far narrower streets resulting in less space being committed to roadways and tarmac. Such approaches clearly align with Oxfordshire County Council's vision of the future. These alternative solutions to dealing with parking will need to be discussed with the County Council to ascertain what would be suitable for adoption.

On street parking bays broken up with trees, hedges and shrubs

3.2 Parking: Cars

Frontage parking - allocated

Where smaller units are proposed in terraces, these tend to utilise allocated frontage parking: parking which, normally perpendicular, sits between an adopted footway at the front of a row of terraces. This form of parking is generally very efficient and supports higher density and better land use.

However, this approach is often poorly implemented. This can result in runs of parking spaces directly fronting a terrace of homes creating very hard, harsh environments with little or no green/amenity space to house fronts (see image to the right).

Oxfordshire County Council, therefore, will only accept frontage parking that has been well designed and contributes positively to the streetscape. We recommend 2 main approaches:

Scenario 1 - In front of gardens: perpendicular allocated frontage parking as above, but set in-front of front gardens of at least 2m deep. This would probably also require a shared 'private' footway running between the parking spaces and the front garden boundary. This helps to provide usable front garden space that can positively benefit the streetscape and create a setting for the homes.

Scenario 2 - Front driveway parking: This is a standard 3m wide driveway within the front garden a house usually forming part of a terrace. Oxfordshire County Council recommend that, in these circumstances, only 1 allocated space per unit be provided with the remainder of the parking requirement being fulfilled by non-allocated parking positioned elsewhere. Based on a typical terraced house roughly 5m wide, a 3m wide driveway still leaves 2m of front garden space. Putting more care into the layout of houses can result in this garden space being more than doubled, providing 5m wide gardens directly fronting the public realm. Wider gardens improve the quality of the street and home setting.

Scenario 1: Poor quality frontage parking leading to hard barren streetscape: no green garden space

Scenario 1: Good quality frontage parking ample room left for garden and landscaping

Scenario 2: Driveways within front gardens

3.2 Parking: Cars

School drop off areas

When designing a masterplan, all potential land uses and facilities should be considered at the outset and located accordingly. If a school provision is required then this should be located so that it encourages walking and cycling. It should be as central to the catchment it is intended to serve as possible. Clearly, as with all masterplanning elements, site constraints, issues and opportunities will play a role in its ultimate location, shape and form. The walking and cycling routes to the school should reflect the needs of children, demonstrating safe crossing points and school signage etc. Around the school, designs such as zigzag lines and barriers should take into account the safety measures associated with traffic movement and drop offs in the area.

In addition to pupils/parents drop off, consideration should be made to bus provision. This should be discussed at an early stage with the education authority to ascertain the purpose and frequency of bus use. This will help determine the type and nature of facilities to be provided: could be a simple drop off for occasional school trip, or a flow of buses bringing pupils to and from school.

Whilst high rates of walking and cycling to school are our goal, drop-off and pick-up by car still need to be considered. This must take place outside the school grounds and form a fundamental part of early traffic impact assessment and capacity provisions as the numbers of vehicles can have a major impact. Escorted dropping off of young children and early arrival of parents to pick up can very quickly lead to congestion and indiscriminate / unsafe car parking.

We would encourage designers to co-locate schools adjacent to other facilities such as local centres, sport facilities etc. This allows for short term shared use of parking facilities. It also causes less disruption to residential areas and encourages combined trips. Where this is not possible, then dedicated dropping off areas should be considered. These should not, however, be directly in front of school as this causes unsafe conditions for other road uses such as pedestrian and cyclists crossing. We encourage streets fronting schools to be confined. The purpose of this is to make drop offs by vehicle an obstruction issue and discourage them from occurring. Alternative drop off areas should be provided nearby, away from the street frontage of the school..

To assist in the flow of traffic in school locations, schools must be on a through linked loop to ensure that there is no demand for vehicles to turn around.

School drop off areas

3.3 Dealing with drainage

A preference for surface level SUDs

How we deal with foul and surface water drainage, particularly surface water, can influence how our streets look and feel. It can also help to increase green space, wildlife and biodiversity. As has been seen with many elements of the street, it must be considered at the masterplanning stage. With the need for sustainable urban drainage and the control for surface water run off, the ability to attenuate flood water within developments must be considered. It is essential that this is discussed and agreed with the water authority and Oxfordshire County Council in order to set the key drainage design parameters.

Oxfordshire County Council requires the use of SUDS. Such systems not only assist in the sustainable drainage of a place, they can also contribute to improving ecology, provide landscaping opportunities and double up as play and recreation space. As such, we are advocates of open surface water drainage, in preference to piped solutions. We do, however, recognise that a balanced combination of both is sometimes required: indeed, it may be the only practicable design solution.

Oxfordshire County Council will, however, resist schemes which simply pipe surface water around a development to an attenuation basin near the point of discharge from the development.

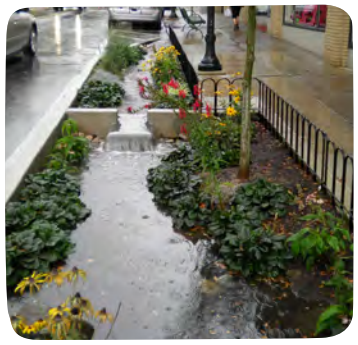
We look for SUDs solutions for all types of development from residential and commercial through to schools and hospitals.

Drainage taking solely highway surface water would have a preference of being adopted by Oxfordshire County Council. Oxfordshire County Council is unable to adopt drainage systems, which take private/unadopted surface water, however, we have a vested interest in the ownership and maintenance of the system as highway is dependant on it functioning.

Open surface level SUDs can take many forms and the level to which they are designed can greatly impact on the character of a place. They can range from small and relatively low key street side rain gardens through to significant central swales forming major design features in a development. As such, their early inclusion within the design process is essential.

Rain gardens in the public realm: Non adoptable if taking water from private areas.

Swales as significant design features



Rain gardens in the public realm taking only highway drainage: preference for adoption

3.4 Landscaping

It's important stuff

Landscaping within streets and developments plays multiple roles:

- Helps to define route hierarchy
- Soften an otherwise potentially hard environment
- Can improve air quality
- Can contribute towards a biodiversity, ecology and wildlife strategy
- Provide food for residents and workers through edible planting
- Raise spirits and improve health and well being
- Provide visually attractive interludes within the streetscape
- Provide shade and help prevent overheating of buildings
- Contribute towards sustainable urban drainage

Landscaping is, therefore, vital to the health and vitality of our streets.

The type and character of the landscape, be it avenue street trees or shrubs and hedging to help break up parking, will be dependent on the type of development and the design character of the masterplan. All landscaping should, however, be robust and design choice should have regard to future maintenance and the suitability of species to the proposed situation. We would welcome early conversations with the schemes landscape architects to help ensure that designs coming forward meet with our approval.

Note: Trees / landscaping within the highway corridor will need to be adopted - private trees covered by license or adoption layout amended to create unadopted islands is not acceptable.

It should also be noted that vision splays / forward visibility etc. are required to be adopted for adopted roads. These areas will also need to meet adoptable standards (i.e. landscaping will be adopted).

Landscaping can add structure to a streetscape

Tress helping to soften an otherwise hard environment

3.4 Landscaping

Street trees guidance

OCC welcomes a diverse and creative approach to providing trees in our county. Trees have a range of environmental, economic and social benefits which should be utilised to the full to provide a lasting landscape fit for the environmental challenges we face.

Design

The overall design should reflect the landscape around it while giving a sense of place to the site to differentiate it from other areas.

Certain points need to be considered in drawing up the design:

- Trees need to be suitable for the location and available planting area including future growth of roots and canopy.
- Sufficient light and water needs to be provided to ensure healthy growth.
- Where trees are part of drainage schemes then species able to cope with the volume of water anticipated should only be considered.
- Retaining existing trees within the site. Surveying to BS5837(2012) is required with an Arboricultural Method Statement (AMS) stating which trees are to be retained or removed; how they are to be protected during construction; and what after care will be provided to ensure long term retention.
- New trees should have detailed specifications on sizes and species, planting methods and after care for a minimum of 3 years to ensure establishment.

Species selection

There are many guides to trees describing their attributes, but it is notable that many designs choose the same species. As the climate changes, our choices should change to reflect that and ensure future adaptation.

- A mix of species is required with no more than 20% of any genus and no more than 10% of a particular species on the site. This is to prevent major impacts on the landscape in event of disease.
- Ideally a range of ages should be planted to prevent all trees aging at the same rate and gaps occurring when they die.
- Consideration should be given in communal areas to providing edible fruit producing trees, bushes or herbs to provide a sense of community and giving children access to a natural experience.

Planting space

While trees can make a space more inviting they can cause problems to those living nearby and be a long-term safety hazard if given insufficient room to develop.

- Trees should have sufficient space above and below ground.
- Canopies develop over time and may even change shape as they age, depending on whether they are obstructed, shaded or free grown. Future pruning and maintenance must be anticipated including the maintenance costs. Pruning can affect a tree's long-term retention.
- Below ground roots need sufficient volume to develop a healthy root system capable of supporting the tree and providing good stability in the long term.
- The impact of kerbs, paved areas and rooting barriers must be carefully considered before selecting a tree to suit.
- It may be that the site is not able to support a mature tree and other more appropriate landscaping should be used.

3.4 Landscaping

Rooting volume

Having sufficient rooting space to provide for the needs of a growing tree is critical in retaining the tree to enable it to reach its full potential. Too small a space will create an unhealthy stunted tree with poor resistance to pests and diseases.

- Rooting space should be considered early in the design to ensure adequate space is allocated.
- Adjoining soil spaces should be connected to provide larger rooting volumes.
- Services should avoid tree rooting areas. This helps avoid the potential for future conflicting maintenance issues.

References

BS5837: Trees in relation to Design, Construction and Demolition 2012 British Standards

BS8545: Trees from nursery to establishment in the landscape 2014 recommendations British Standards

Trees in Hard Landscapes A Guide for Delivery (2014) Tree Design Action Group www.tdag.org.uk

Trees Species Selection for Green Infrastructure (2019) Tree Design Action Group www.tdag.org.uk

3.5 Innovation

Introduction

Innovation technologies available to our streets today is constantly evolving and expanding. Oxfordshire County Council wants to ensure that we, as far as possible, future proof our streets. Streets should be designed to accommodate micro-mobility, freight innovations and autonomous vehicles to name a few. Some technologies are available today and are common place, for example, broadband. Others are on the horizon but should still be allowed for, such as 5G.

As with every other element of street design, technology features should be included in early design proposals and considered together as an holistic and integrated benefit.

Innovation is fast paced and ever changing and therefore it is difficult to provide design parameters. However, we have knowledge of emerging innovations which already have some level of evidence in place to show likely efficacy which we have outlined in the table on the adjacent page.

Street lighting

Oxfordshire County Council can provide a comprehensive street lighting design service. We would work closely with the developers design team to help ensure that overall design and the placement of columns do not conflict with any other design elements. Developers are, of course, also free to undertake their own street lighting design for our subsequent approval.

Street lighting should be considered at the beginning of the design process to be fully incorporated. Locations of lighting columns will need to be considered so that they do not, for example cause nuisance by being too close to bedroom windows.

There may be instances where lighting columns offer other services including but not limited to; provision of public internet, monitoring of streets through sensors, providing charging points and enabling citizen science.

Clearly, in these instances, they must be conveniently located for their dual purpose as well as providing the light required to the right areas. Oxfordshire County Council encourages such dual use as it helps to reduce street clutter and, potentially, minimises future maintenance costs.

Street light with mounted air quality sensor.

Not all streets require street lighting. There are, in fact instances where the provision of lighting may be of detriment, eg, 'dark' villages near wildlife or bat flight corridors. We will consider each development and street individually.

Designers and developers should consider these innovations when masterplanning sites. Oxfordshire County Council is currently working to publish an Innovation Framework to support developers and we would include the relevant officers from the Innovation Hub in pre-application discussions.

Larger and strategic sites will require an Innovation Plan as well as some smaller sites where there is a specific need. An Innovation Plan is a site-specific plan produced by the developer or infrastructure planner, which sets out how a particular development or scheme will both integrate and plan for innovation, which helps planners and developers ensure developments that are fit for future generations.

3.5 Innovation

Innovation technology	Examples of application	Future proofing measures
Connected Autonomous Passenger Vehicles CAV	• Privately owned vs shared (SAV) • Automated buses, shuttles, cars or pods • Semi-automated vs fully automated • Connected vehicles without automation	• Consistent road marking • SAV idling, drop-off and pick-up points • Charging infrastructure • Connected and smart roadside infrastructure (most relevant in congested and more built-up areas) • Next Generation network management support • External Localisation & navigation technology • High definition digital mapping • Resiliency when failing or operating out of its Operational Design Domain (ODD) – where it is designed to operate
CAV Freight	• Automated lorries, trucks, vans or robots • Connected vehicles without automation • Semi-automated vs fully automated • Urban platooning (convoy) • Health and care applications, e.g. delivery of health services	• As above • Loading & unloading points • Docking points for bots
Electric Vehicles - Passenger	• Privately owned vs shared • Wireless charging vs wired charging • Electric buses, cars, boats or pods	• All residential properties with a drive: min 1 charge point • Unallocated residential parking: min 25% of spaces • Non-residential parking (e.g. commercial): min 25% of spaces • Smart chargers to be used, minimum 7kWh AC • Fast charging points recommended for most applications, with rapid only appropriate in some specific situations (e.g. some higher density housing, workplaces and for commercial vehicles) • Provision at transport hubs, such as P&R sites
Electric Vehicles - Freight	• Electric vans, local delivery trucks or robots (larger freight unlikely to be electrified)	• As above (where relevant), plus: • Charging points at commercial locations in loading/unloading areas
Hydrogen Vehicles - Passenger	• Privately owned vs shared • Buses or cars	• Fuelling land use designation
Hydrogen Vehicles - Freight	• Hydrogen lorries, trucks, vans or boats • Most relevant to longer distance/heavy load trips	• Fuelling land use designation

3.5 Innovation

Innovation technology	Examples of application	Future proofing measures
Unmanned Aerial Vehicles - Freight	• Hydrogen lorries, trucks, vans or boats • Most relevant to longer distance/heavy load trips • Delivery, function performance such as maintenance or monitoring, health & care applications, e.g. delivery of medicines and medical equipment • (Longer term, passenger transfer) • Likely alternative-fuel powered	• Consider line of sight • Charging point provision • Privacy from above • High definition digital mapping • Take off/landing • Monitoring infrastructure/corridors • Network management provisions (possible integration of air traffic management with Traffic Management Control centres) • Noise abatement considerations, especially for larger drones
Micro mobility - Passenger	• Privately owned vs shared • E-bikes, pedelecs, e-scooters or e-skateboards (the latter 2 are subject to legal review)	• Secure, convenient, accessible, ideally covered storage at higher volumes • Improved cycle infrastructure - Dedicated lanes
Micro mobility - Freight	• E-cargo bikes • Last mile delivery	• Designated loading areas • Charging facilities • Microdistribution hubs • Dedicated cycle lanes
Mobility as a Service	• All modes • Shared transport services (Car, e-car, bike, e-bike or e-scooter) • Integrated journey planning and payment	• Bus & subway interchanges • Dedicated bike and car sharing spaces at transport hubs • Cycle parking at bus stops • Charging facilities • Real time, open source, multi-modal monitoring data • High definition, digital mapping
5G	• Telehealth • Immersive technologies • Autonomous vehicles navigation and teleoperation • Smart agriculture Emergency response • UAV communications • Vehicle to Everything communications	• Fibre backbone • Accessible assets, e.g. street lighting for mounting and electricity

3.5 Innovation

Electric vehicle charging

Oxfordshire County Council fully supports the provision of electric car charging points at homes, workplaces and key destinations.

Providing EV Charging for off-plot parking

During the previous parking solutions section of this document, we set out our favour for off plot parking solutions and a requirement for 25% of these spaces to be equipped with EV charging. Where properties have access only to unallocated parking on the street developers should carefully consider how to provide access to EV charging. This could mean providing access to residents to use EV charging installed in off-street communal parking areas, or through directly providing access to EV charging in the on-street allocated parking.

EV charging can be provided relatively simply in off-road communal parking. Free-standing EV chargers can create additional street clutter and impact on inclusive mobility, and design should be carefully planned in order to avoid this. The government wishes to encourage the use of integrated street-lighting and EV charging to avoid street clutter. Where this is used, the position of the streetlight must be carefully considered in order to avoid trip hazards from trailing cables on the footway, and the promotion of inclusive mobility.

Where free standing EV chargers are provided on the street, positioning for avoidance of trip hazards, and the promotion of inclusive mobility should also be considered as a priority.

Oxfordshire County Council is working to develop defined policy for on-street EV charging which developers should reference when designing EV charging in an on-street setting.

Electric vehicle charging point.

3.5 Innovation

Powering EV charging:

Developments should be designed to have an appropriate amount of well sited lower power EV charging infrastructure. EV infrastructure should have sufficient energy capacity to meet predicted future demand. Doing so will manage the grid impact of the infrastructure and meet the needs of residents and businesses now and in the future.

Historically, street lighting circuit designs and power capacity have not been required to take into account the need for additional load from EV charging. New developments using traditional processes to design street lighting without consideration of EV charging will require costly and complex retrofitting to meet the energy demand of EV charging. This can be avoided by designing in and ensuring adequate power capacity for EV charging in the street lighting supply from the outset.

Management of EV charging:

Access to working public EV charging has been shown to be a key concern for EV drivers across the UK. Government regulations set out technical standards for EV charging points, but reliability of EV chargers is strongly linked to their competent operation and maintenance. Contractual arrangements for maintenance and operation of charging points by a competent contractor is necessary to meet customer needs and avoid poor reliability of charging networks, this needs careful consideration, especially when charging is installed on-street or is integrated into street-lighting.

In the parking solutions section of this document, we set out our favourable stance towards off-plot parking solutions. Off-plot solutions can cause complications when providing charging points because being in the public realm, they are harder to control and tariff. There are solutions available such as metered charging cables. Knowing this, we welcome developers to come forward with their own solutions for our consideration.

3.6 Recycling & refuse collection

Who should we design for?

Oxfordshire County Council fully endorses Manual for Streets and Manual for Streets 2. We invite developers to consult with us on their manoeuvring street geometries and base them on the principles set out in Manual for Streets.

Within the above parameters, however, Oxfordshire County Council will still expect streets designed to allow refuse vehicle and fire appliances to be able to access the areas of a development for the purpose of collecting refuse and fighting fires. We would expect emerging geometry and street design to be accompanied with relevant proof and tracking diagrams demonstrating a refuse vehicle safely negotiating the street and any parked cars that there may be within the street. Developers should seek guidance from us on the size of refuse vehicle used for the area of their development.

Bin stores designed into the front of homes

Recycling and refuse storage

Bins left out on footways or in front gardens can visually detract from the enjoyment of a place and present an obstruction for other road users. If bin storage is inconvenient then it is possible that residents will simply leave their bins out between collection days. Convoluted access paths to rear gardens should be avoided. This is particularly true where steps are involved. In such circumstances, sensitively designed bin stores should form part of the house frontage.

Manual for Streets outlines that during collection days bins should be left on the adopted highway or within 25m of it. Where this is not possible without the need for bin collection points then these collection points should not be more that 30m from the residents storage location. Refuse vehicle sizes within Oxford City are 9.2m long and 11.6m long throughout the rest of the county.

In terms of commercial premises, bins should be able to be collected from within 15m of the adopted highway. Our refuse vehicles will not drive on private property or private drives.

Innovative alternatives

Whilst designing to Manual for Streets will effectively, reduce the amount of tarmac on our streets, Oxfordshire County Council encourage developers and their designers to consider and investigate potential alternative solutions to refuse collection. In mainland Europe, for example, many areas rely on shared refuse and recycling points. These tend to be on primary routes and negate the need for refuse collection vehicles to enter, say, minor streets, whether they be new or historic. This allows for further reduction in tarmac through further reduction in street geometry. Of course, such an approach would require buy in from future residents as they would need to take their refuse to centralised storage/collection points.

Oxfordshire County Council is currently unsure as to whether we would be able to accept such a proposal and wouldn't be able to make a decision until the details had been presented to us but are happy to explore alternative systems if they provide betterment to streets and places.

Bin stores designed into the front of homes

Part 4

Further advice

4.1 Further advice

This section of the document sets out some basic standing advice which is applicable to both large and small applications. It provides standard advice that is common across many situations and is indented to help streamline the planning process.

4.1.2 Street lighting

Reference should be made to our Oxfordshire County Council Street Lighting Policy 2018. This sets out in detail our standard requirements for street lighting. It must also be read in conjunction with other relevant documents which also encompasses the Oxfordshire County Council corporate vision, the Local Transport Plan, the Highway Asset Management Plan and the Energy Strategy.

Main Objectives

To provide an effective street lighting service to support the authority's corporate objectives including:

- Reduce night time traffic accidents and improve community safety
- Provide safe access to educational facilities supporting life-long learning
- Energy/Carbon reduction and Management
- Promote sustainable transport (public transport, cycling and walking) for thriving communities
- Facilitate social inclusion by providing freedom to use streets after dark
- Support the 24-hour leisure economy, promoting economic development
- Assist emergency services to identify locations and shorten response times
- Enable Smart Cities and innovation of new technology

Lighting Provision

It is no longer assumed that street lighting will automatically be provided at every location. The need for lighting should be assessed in line with the street lighting policy.

The main primary provision of lighting should:

- Increase the safety of all users of the highway, especially vulnerable groups such as pedestrians, cyclists, children, elderly or disabled people.
- Enhance the night-time environment
- Reduce street crime and fear of crime and deter anti-social behaviour
- Be unobtrusive by day and night
- Be based on a sound economic and social assessment of the need for lighting
- Designed using appropriate lighting levels with a LED lighting solution as a default requirement

The secondary provision of lighting should:

- Consider local need where it meets the Council's objectives
- Consider the requirements of conservation areas or areas of outstanding natural beauty
- Not provide additional lighting where an alternative lit route is available

4.1 Further advice

Standards of Lighting

The overall lighting requirements for a specific area will be refined to take account of vehicular/ pedestrian activity, location of local amenities, etc. by the design brief. Specifically, lighting will be designed in accordance with the following lighting design standards:

- BS 5489-1:2013
- BS EN 13201:2014

The standard of lighting in the British Standard categorises the roads based on usage and environmental factors.

Lighting Equipment

Assessment would be made to the type of equipment specified within each area and the equipment would be standard columns with LED type lanterns which are CMS compatible, using like for like equipment and in conjunction with the current recommendations of Public Health England reports. Conservation Area status does not establish a pre-requisite for period style lighting – good functional modern designs may be suitable.

On all new residential developments, the equipment and lighting levels will be assessed and a design brief issued as per each Section 278 and S38 works in-line with the Council's policy.

All equipment must comply with the Council's current specifications and Highway Standard Drawings (HSD drawings) and the current IET wiring regulations BS 7671.

In areas where smart cities are to be established the type of equipment will be specified for each site, as this may be over and above standard requirements.

Highway records

Oxfordshire County Council List of Streets is available to inspect for free on the Highway Register web page at www.oxfordshire.gov.uk/highwaysregister. The Highway records team can supply a plan showing the extent of the publicly maintained highway for a given area.
To obtain this you can make an application from the following web page www.oxfordshire.gov.uk/highwaysearches. There is usually a charge for this service.

For Public Rights of Way, the definitive Map and Statement is available online at www.oxfordshire.gov.uk/residents/environment-and-planning/countryside/countryside-access/public-rights-way/public-rights-way-online this information is managed by the Countryside Records Team who are available at countrysiderecords@oxfordshire.gov.uk.

4.1 Further advice

Bus stops and routes

Minimum bus stop requirement:

- Hard standing, kerb 120mm-140mm max
- Oxfordshire standard pole/flag where the door should open
- Timetable cases in all bus stops

Further bus stop infrastructure if required:

- Standard yellow bus road markings/bus cage – 13 metres long minimum, additional 6 metres each side if unrestricted parking on either side
- Presumption against lay-by unless shown to be necessary

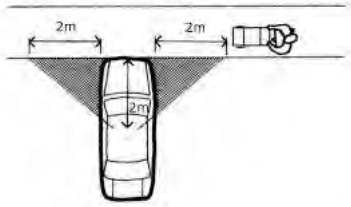
Bus Routes:

- 2-way route needs to be minimum 6.5m wide
- If bus route is on 1-way terminal loop, width can be 6 metres
- Route should be reasonably direct
- Presumption against vertical deflection via speed bumps. Speed tables acceptable if well designed. Should ideally be at least a bus length in length
- Bus stops need to be located near strategic pedestrian links (400m distance where possible but location near strategic links more important). This needs consideration during early masterplan design stage
- Right angle turns strongly discouraged on bus routes.

General

Seek early advice on parking standards.
See Oxfordshire County Council and District Council's standards.

- Parking dimensions need to be clear, including garages and under croft provision.
- Low car/car free developments are considered in the following areas: located within city / town centre or in close proximity located close to public transport interchanges or routes within Controlled Parking Zones. (Ref individual local plan policies such as M3 Car Parking of the Oxford Local Plan and the Car Parking TAN)
- Vision splays need to be shown but refer to standards in Manual for Streets.
- Swept path tracking diagrams needed for parking and refuse vehicle:
- Refuse vehicle sizes are 9.2m long within Oxford City and 11.6m long throughout the rest of the county.
- Swept path of mid-sized vans needed for drives as increasing amount of delivery vehicles.
- Pedestrian visibility splays need to be considered and provided as below.



- No loose material (shingle, gravel etc) on driveways.
- No surface water running onto the highway. Developments need to be SUDS compliant.

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