The Planning for Walking Toolkit

Consultation Draft
Foreword – Will Norman.................................................................4

1. Introduction.................................................................................4
  1.1 How to use this toolkit ..........................................................6
  1.2 Other related documents.......................................................7

PART A. Policy Context in London.................................................9

2. Aim and objectives ....................................................................9
  2.1 The Mayor’s Transport Strategy and The Healthy Streets Approach ........12
  2.2 The London Plan, Good Growth by Design and Inclusive London........14
  2.3 The Walking Action Plan .......................................................15
  2.4 Borough and local area walking plans .....................................16

PART B. Planning & Design Principles ..........................................17

3. An inclusive approach to planning and designing good environments for walking ..................................................17

4. Pedestrian Network Design Principles ......................................20
  4.1 Safe ....................................................................................21
  4.2 Inclusive ..............................................................................23
  4.3 Comfortable ........................................................................23
  4.4 Direct ..................................................................................24
  4.5 Legible ................................................................................25
  4.6 Connected ...........................................................................26
  4.7 Attractive .............................................................................27

5. Application of the Design Principles ......................................28
  5.1 Fundamental street design features for pedestrians ......................28
  5.1 Planning for construction activities .........................................29
  5.2 Planning for maintenance .....................................................30

PART C. Planning & Design Tools .................................................32

6. Processes to shape the design brief throughout the life cycle of a project ......................................................................33
  6.1 Community engagement ......................................................33
  6.2 Equality Impact Assessments ................................................34
  6.3 Road Safety Audits ................................................................35

7. Tools to understand key issues across different spatial scales .36
7.1 City scale analytical tools for project prioritisation, brief development and objective setting .............. 36
  7.1.1 CityPlanner and Strategic Walking Analysis .................................................. 37
  7.1.2 Strategic Levels of Service: Street Types ......................................................... 39
  7.1.3 Transport and network connectivity ................................................................. 42

7.2 Neighbourhood and local scale analytical approaches for assessing existing infrastructure issues .......... 44
  7.2.1 Urban design analysis ......................................................................................... 45
  7.2.2 Neighbourhood scale analysis .......................................................................... 45
  7.2.3 Local street scale mapping ................................................................................ 54
  7.2.4 Human scale analysis ......................................................................................... 60
  7.2.5 The Guide to Healthy Streets Indicators ............................................................. 62
  7.2.6 The Healthy Streets Check for Designers .......................................................... 64
  7.2.7 Pedestrian Comfort Guidance (PCG) ................................................................. 66
  7.2.8 Walking environment condition assessments ..................................................... 67
  7.2.9 Transport Assessment Guidance ....................................................................... 69

7.3 Local scale analytical techniques for understanding pedestrian movements ........................................... 69
  7.3.1 Pedestrian flows and demographic surveys ....................................................... 70
  7.3.2 Pedestrian desire lines ....................................................................................... 73
  7.3.3 Compliance with traffic signals .......................................................................... 76
  7.3.4 Pedestrian delay ................................................................................................. 77
  7.3.5 Stationary activity analysis ................................................................................ 80
  7.3.6 Interaction surveys ............................................................................................ 81
  7.3.7 Dynamic local pedestrian modelling ................................................................. 82
  7.3.8 Attitudinal surveys ............................................................................................ 83

8. Bringing it all together ................................................................................................. 84
  8.1 Combining datasets into a summary of key issues .................................................. 84
  8.2 Cross-checking key issues with the Pedestrian Network Design Principles.............. 85
  8.3 Writing an evidence based design brief .................................................................. 85
  8.4 Trialling Options .................................................................................................... 86
  8.5 Delivering the design brief ..................................................................................... 87

PART D. Case studies .................................................................................................... 88
9.1 New Park Road, Lambeth ................................................................. 88
9.2 Walk Elephant, Southwark .................................................................. 90
9.3 Tower Bridge Road, Southwark .......................................................... 92
9.4 Marks Gate, Barking and Dagenham .................................................. 94
9.5 Hornchurch, Havering ........................................................................ 97
9.6 Hoe Street, Walthamstow ................................................................... 99
9.7 Archway, Islington ............................................................................ 101

Appendix A - Referenced documents ....................................................... 103
Foreword – Will Norman

Getting people walking is vital for the future health of our city. We need to ensure that the streets we are designing make walking the most attractive choice for short, as well as connected journeys.

Every day more than 35 million journeys in London are walked. This includes six million walk-all-the-way trips and seven million walked journey stages of over five minutes. However the proportion of people choosing to walk has been relatively constant for several years. We need to tackle the over-dependency on private car use by breaking down the barriers to walking.

Planning for walking is complex and no one approach fits all situations - good planning requires an appreciation of how our whole urban system needs to be designed to better facilitate walking: our streets and open spaces; the buildings that front onto these and the transport hubs that support onward movement.

This document raises the aspiration for planning better environments for walking and looks to elevate walking as the mode that binds all aspects of successful and healthy urban living.

1. Introduction

The Planning for Walking Toolkit is a handbook for planners and designers involved in the redesign of existing streets, as well as for those involved in the development of new streets. The document emphasises the importance of embedding good practice urban design principles in the planning and design process for all streets in London. It sets out key planning principles and recommended design tools to understand existing issues and set the vision for creating good environments for walking - from data collection through to design brief development.
A vibrant station interchange environment, designed to encourage a range of walking and dwelling activities

This guide is intended to contribute towards creating a more walkable city, improving the experience for people using the public realm and enabling more active travel, by raising aspirations within the project brief. It does not create new design policy but instead references existing policy and design approaches to place a renewed emphasis on the importance of high quality places for walking.

Typical projects and interventions that fall within the remit of this document include:

- Refurbishing the urban realm
- Street clutter reduction
- Street furniture placement
- Wayfinding strategies
- Footway widening proposals
- Minor crossing improvements e.g. signal retiming
- Junction safety improvements
- Traffic management measures
- New uncontrolled crossings
- New non-signal controlled crossings
- New signal controlled crossings
- Grade separated facilities
• Major new developments
• New public spaces
• Area wide neighbourhood scale improvements

1.1 How to use this toolkit
The toolkit is structured to provide planners and designers with a list of options for collecting and assessing data that can then be used to inform design decisions which impact on the walking environment. It is not expected that most users will read the whole document from cover to cover and has therefore been designed for readers to dip into sections where they are looking for specific recommendations. In some instances this means that there is cross-referencing of other sections and/or deliberate repetition of key information to ensure that readers do not miss the fundamentals within each section.

The document is laid out into four main chapters, and while some users may feel that particular sections are more relevant for their everyday role than others, some familiarity of each chapter is recommended to understand the wider context for good planning and design for walking.

Part A: Policy Context in London
Relevant policy objectives for walking are described up front to provide the context for ensuring a coordinated spatial approach.

Part B: Planning and Design Principles
This section includes recommended approaches for ensuring good planning and design is embedded across existing streets and new developments.

Seven key network design principles are then defined, focusing on the needs of all pedestrians. Fundamental infrastructure recommendations are set out throughout, to clarify the physical implications of the design principles.

Part C: Planning and Design Tools
Tools for analysing walking environments are then presented, summarising the range of approaches available for identifying key issues for walking so that an evidence base can be assembled to inform a design brief and set out scheme priorities.

Part D: Case Studies
Case studies are then used to illustrate exemplary schemes where the pedestrian network design principles have been applied in practice.
1.2 Other related documents

This toolkit acts as a source book for a range of TfL developed tools and selected industry best practice techniques to assess the quality of the walking experience on urban streets. It is designed to complement TfL’s suite of design guidance documents, known as the ‘Streets Toolkit’, and in particular relates closely to TfL’s Streetscape Guidance.

Once planners have used this document to identify key issues for walking, planned where to target improvements and written a design brief, detailed technical guidance can be referred to in Streetscape Guidance to develop concept designs. This relationship is outlined below to show how these two documents are complementary but focus on different stages of the project life cycle.

Table X: The relationship of The Planning for Walking Toolkit and Streetscape Guidance

<table>
<thead>
<tr>
<th>Project life cycle</th>
<th>Relationship of The Planning for Walking Toolkit and Streetscape Guidance</th>
</tr>
</thead>
<tbody>
<tr>
<td>TfL Pathway</td>
<td>RIBA Terminology</td>
</tr>
<tr>
<td>Stage 0</td>
<td>Strategic definition</td>
</tr>
<tr>
<td>Outcome Definition</td>
<td>Preparation and brief</td>
</tr>
<tr>
<td>Feasibility</td>
<td>Concept Design</td>
</tr>
<tr>
<td>Concept Design</td>
<td>Developed Design</td>
</tr>
<tr>
<td>Detailed Design</td>
<td>Technical Design</td>
</tr>
<tr>
<td>Delivery</td>
<td>Construction</td>
</tr>
<tr>
<td>Project Close</td>
<td>Handover and close out</td>
</tr>
<tr>
<td>Post scheme monitoring</td>
<td>In use</td>
</tr>
</tbody>
</table>
The toolkit links between the strategic vision outlined in the Walking Action Plan and the detailed design guidance provided by Streetscape Guidance.

Supplementary Planning Documents should also be referred to for localised street materials, with most local authorities having detailed context specific guidance for the design of the public realm.

Wider best practice literature has been used to inform this document and links to relevant sources of information and technical documents are provided alongside the main text. A full list of references is provided in Appendix A.

For more details about the Streets toolkit, please visit: https://tfl.gov.uk/corporate/publications-and-reports/streets-toolkit
PART A. Policy Context in London

2. Aim and objectives

The aim of this document is to reflect the Mayor’s vision for Healthy Streets in London by:

- Raising the aspiration to prioritise walking as part of all urban street design briefs while better balancing the other competing demands placed on London’s streets.
- Referencing a range of tools for planners to respond to the local context and plan for better targeted improvements for walking.
- Setting out design principles to ensure that street improvements for walking deliver comfortable, safe and enjoyable places, so that people choose to walk as part of their daily routine.

In the context of this document, “people walking” refers to all people using the public realm including wheelchair users, people with buggies and users of mobility aids and mobility scooters, emphasising the need to design in an inclusive manner for all.

Walking activities can be subdivided as utility waking, including walking to work and accessing daily services as part of a regular routine; and recreational walking, as a more leisurely pursuit or an exercise routine. People do not just move from A to B, but are likely to undertake a range of other activities as part of a walked trip including resting, standing and sitting; so these activities also need to be considered as part of planning and designing environments for walking that are multi-functional and promote social interaction.

Walking as part of a connected journey

Public transport has a significant role to play in walking. Each day in London 18 million walking journey stages are made as part of a longer trip by another mode. This adds to the 6 million trips that are made daily on foot from origin to destination.

Nearly all public transport trips include at least one walking journey stage, with people walking on average between four to 10 minutes to reach public transport. People walk more if they live in an area that has good public transport.

This is why it is important to consider walking at a city scale, as part of longer journeys, and ensure these journeys are coherent and consistent. Planners
and designers should implement interventions that better connect areas to public transport, and consider what people need for that journey, for example onward legibility or reducing severance around public transport links.

Working together

With more than 90% of London’s streets managed by London boroughs, it is important that a collaborative approach is embedded in all our delivery processes to ensure that we are working towards a shared vision of an accessible and inclusive walking network across the city. Partnership working across the public, private and community sectors is vital to create a cohesive walking environment.

Many of our partner organisations in London are already working collaboratively to achieve this. We will continue to work with the London boroughs, developers and land owners to provide tools, training, support and guidance to help them embed the Healthy Streets approach in street design and borough policy-making, as well as across mixed-use development plans and regeneration projects. It will also be vital to continue working with the Metropolitan Police Service, who provide on-street law enforcement and education, to ensure that policies and proposals are joined up and fit for purpose.

We will work with businesses to highlight the wider benefits of the Healthy Streets approach, identifying opportunities for improved freight management and localised public realm enhancement. We will also continue working with
education and community partners on supporting measures and initiatives to promote walking, cycling and public transport use. Engagement with local communities will remain a fundamental part of the design process and projects need to build in community involvement throughout the life cycle of a scheme, so that streets are designed for the people that will use them.

Pop-up artwork celebrating local skills
2.1 The Mayor’s Transport Strategy and The Healthy Streets Approach

The Mayor’s Transport Strategy (2018) sets out the Mayor’s vision for London’s transport system to 2041, which is centred on the Healthy Streets Approach; putting people, their health and their experience of daily life at the heart of transport planning and design. The Healthy Streets Approach provides a framework to support high quality street design, focusing on delivering better, healthier outcomes for everyone. Our ambition is for all Londoners to enjoy the benefits of being active through walking or cycling for at least 20 minutes a day.
The Healthy Streets Approach encourages the creation of places where people choose to walk and spend time

Using the Healthy Streets Approach as a framework, there is now a focus in London to:

- Prioritise walking, cycling and use of public transport to bring health and wellbeing benefits to everyone
- Provide a more appealing environment for walking, cycling and using public transport options, to reduce discretionary car use

Three scales of delivery are required to fulfil these objectives:

i) **At the city level**: Planning for London’s rapid growth by better integrating transport modes that are linked by walking trips. Better understanding walking as part of connected trips is crucial for encouraging more walking, particularly in outer London.

ii) **At the neighbourhood level**: Planning for walking as part of area wide initiatives is vital so that can people can access local amenities, employment zones and town centres by foot easily and conveniently. New developments should be designed for active travel and link with existing areas successfully.

iii) **At the local place level**: Designing high-quality environments with enough space for dwelling, walking, cycling and public transport use. Streets should be designed for people walking and reduce the dominance of motor vehicles. A well designed street has the potential to act as the stage for events and activities that will entice people out to shop, play and socialise.
Project proposals for improvements to the experience of walking should align with design objectives set out across each of these scales, to ensure that there is a continuity of design approach that is backed up by evidence.

2.2 The London Plan, Good Growth by Design and Inclusive London

The London Plan sets out the spatial development strategy for transport, environment, economic development, housing, culture and health across the capital. Most related to designing good environments for walking are policies T2 Healthy Streets and D7 Public realm, which together reiterate the need to design streets that are of a high quality, in-keeping with the local context.

In addition to the London Plan, the Good Growth by Design programme, advocated by the Mayor of London, is centred on the provision of people-oriented new developments: higher densities of housing, mixed land-uses, low-car use and permeable street networks to encourage walking.

Inclusive London is the Mayor’s strategy for equality, diversity and inclusion across all aspects of urban living and the policies set out within this document must carry through in our approach to inclusive design across the public realm.

Creating walkable places – a redesigned open space in Woolwich within close proximity of the high street and rail station
2.3 The Walking Action Plan

The Walking Action Plan sets out a spatial approach for delivering improvements to encourage walking by highlighting priorities across central, inner and outer London. Planners working out a design brief for a specific street should align design requirements with the following general spatial priorities where appropriate:

Central London

- Create attractive places that improve the experience of walking by using high quality materials and a careful consideration of the character of the area
- Target overcrowded and cluttered pavements, through streetscape decluttering and footway widening
- Facilitate improved interchange with public transport by locating crossings on desire lines and improving wayfinding signage
Inner London

- Improve walking access to high streets and town centres, by reducing severance over major roads through the upgrade or installation of new crossing facilities and creating more attractive walking routes
- Improve walking access to key transport hubs and strategic interchanges by enhancing the quality of the public realm and the space allocated for people to walk

Outer London

- Identify opportunities for new walking trips, by improving links to local amenities and services through area wide public realm enhancements
- Improve town centres and transport interchanges through the creation of multi-functional spaces for people walking and dwelling
- Reduce the impact of motor traffic on local streets and target routes to school by improving the attractiveness of walking routes.

2.4 Borough and local area walking plans

Local authorities in London are encouraged to produce a local walking plan that sets out clear objectives for strategising public realm interventions that are based on the local characteristics and priorities of the borough.
It would be expected that a walking plan would consist of a vision statement and a target for increasing walking trips over a defined period of time that would lead in to a series of objectives with a clear list of demonstrable measures to gauge progress. These objectives would be rooted in a clear evidence base that demonstrates key issues for walking and relates development priorities to overcoming barriers to walking, while linking existing and planned trip attractors. Some of the city scale tools presented in Part C provide guidance for how this can be undertaken.

At a more detailed level, the local walking plan should, alongside supplementary Area Action Plans and Neighbourhood Plans, set out area based priorities, such as:

- improvements needed for links to schools and transport hubs
- mitigation of severance issues
- integration of new developments
- reduction of crime through improvements to natural surveillance
- increasing active frontage and land use mix
- maximising the connectivity and quality of local open green spaces.

**PART B. Planning & Design Principles**

3. An inclusive approach to planning and designing good environments for walking

All planners and designers of the street environment should seek to understand the role of inclusive design for creating streets and places that everyone can use. Inclusive design puts people at the centre of the design process, through engagement and considering the diversity of all people’s needs.

Good quality infrastructure does not in itself encourage walking if there is nothing to walk to or from. Effective planning and design of the pedestrian network should facilitate people’s ability and desire to access places by foot, while enabling the incidental social interactions and amenity value of a multi-functional, attractive place to shine through.

Most journeys involve walking at some point and so the public realm needs to be designed to enable walking, by making it a convenient part of an integrated transport system.

Good street design will draw on local knowledge to enhance, protect and improve existing facilities. High quality streets should ensure that the needs of
people walking can be met, accommodating existing daily routines and behaviours where appropriate.

Engaging a diverse cross-section of the community early in the design process is important to ensure that proposals meet the needs of local people, foster a sense of local ownership and encourage the uptake of walking. Engagement methods should be open and flexible to encourage participation across different groups and ages, and enable the co-production of places that communities want and need.

Community needs are often complex and relate to demographics, culture and economic aspects of a local area. Building an understanding of what people need is crucial for improving conditions that genuinely cater for those that will use the street most often. A solid evidence base is needed to make good decisions that deliver on the equality duties that all public bodies have.

Pedestrian needs extend beyond physical capabilities, and include perceptual and subjective experiential factors such as personal safety and fear of crime. These considerations are more difficult to quantify but nevertheless require careful consideration to minimise the perceptual barriers to walking and encourage greater uptake in active travel.

Building a picture of the existing issues through data collection is fundamental to creating an effective design approach that responds to pedestrian needs.

Collaborative working is vital and design teams should:

- Develop a clear vision for all projects, no matter how small or large, drawing on local aspirations and engagement.
- Think beyond the highway boundary by considering wider land use and the sense of place.
- Consider the seven Pedestrian Network Design Principles set out in the next section of this document, to ensure the delivery of a walking experience that is safe, inclusive, comfortable, direct, legible, connected and attractive.
Providing sufficient space for a range of people with different mobility characteristics is fundamental for maintaining an inclusive public realm.

Good design means considering the needs of the whole community to create spaces everyone can use and enjoy.
4. Pedestrian Network Design Principles
The pedestrian network comprises all publically accessible footways, footpaths, crossings, bridges, underpasses, open spaces and physically permeable buildings and structures where people are permitted to walk.

Designing the pedestrian network requires the consideration of several key principles that focus on the needs of all pedestrians. These principles should be utilised throughout the planning and design process and referred to collectively to ensure the provision of a consistent high quality walking experience. All schemes along the TLRN and TfL funded schemes on borough roads should be informed by these seven principles.

Table X: Pedestrian Network Design Principles

<table>
<thead>
<tr>
<th>Principle</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>Safe</td>
<td>Streets should be safe to use at all times of day and for people to feel safe to spend time in</td>
</tr>
<tr>
<td>Inclusive</td>
<td>All walking environments should adhere to the principles of inclusive design by ensuring that they are accessible to, and usable by, as many people as reasonably possible without the need for special adaptation or specialised design</td>
</tr>
<tr>
<td>Comfortable</td>
<td>Designated walking areas should allow unhindered movement for pedestrians by providing sufficient space</td>
</tr>
<tr>
<td>Direct</td>
<td>Facilities should be positioned to provide convenient links between major walking trip attractors</td>
</tr>
<tr>
<td>Legible</td>
<td>Street features should be consistent and easy to understand for all pedestrians to know intuitively how to navigate within a space</td>
</tr>
<tr>
<td>Connected</td>
<td>Walking networks should have a high density of route options to suit pedestrians' needs</td>
</tr>
<tr>
<td>Attractive</td>
<td>Walking environments should be inviting for pedestrians to pass through or spend time in</td>
</tr>
</tbody>
</table>
Some design approaches such as filtered permeability whereby through motor traffic is reduced or removed entirely from a side road, can positively impact on multiple pedestrian network design principles with a single intervention.

4.1 Safe
Reducing road danger is fundamental to ensuring London’s streets are healthy places to walk and spend time. Fear of road traffic injury is one of the main reasons people give for not walking or cycling, and one that parents often give for restricting the independent mobility of their children.

Everyone has the right to travel on London’s streets in complete safety and without fear. This is why the Mayor has set out his ambition to achieve Vision Zero – the elimination of death and serious injury from London’s streets and public transport network by 2041. The Vision Zero Action Plan sets out the broad range of activities to eliminate road danger and achieve Vision Zero.

- Evaluating collision records at an existing location is important to prioritise design improvements and estimate how a new street design might perform.
- Design that mitigates safety issues is essential to ensure actual and perceptual improvements in safety across urban streets.

Refer to the Vision Zero Action Plan for details on the multifaceted approach being employed by TfL to improve safety for all road users:
Personal safety and security

‘Safety’ as a design principle also encapsulates personal safety and security issues, and the need to embed crime prevention and protective security strategies as part of the design. Personal safety refers to the physical risk and psychological perception of experiencing a crime, both of which have a major impact on whether people choose to walk.

Crime prevention and protective security should be designed in from project inception and build on a strong evidence base that looks at existing conditions, current threat trends and user behaviours.

Different criminal and anti-social behaviours can impact on people and the public realm in different ways: vandalism, graffiti, flyposting and skateboarding damages street furniture, while muggings and other opportunistic crimes are directed at vulnerable people.

Designers should look to understand an offenders’ point of view and how that relates to a particular place.

While it is recognised that quiet streets with low natural surveillance are vulnerable to crime, busier, more crowded areas can also be subject to opportunistic crimes, as the route may form part of a daily routine for an offender, with regular visibility of a vulnerable place.

Street designers should recognise the existing vulnerabilities of the street network and look to tackle these issues directly.

- Provide well-lit streets without hidden corners, dead end routes or single access points, that will improve physical permeability and visual connectivity and encourage more walking and a greater pedestrian presence on the street.
- Incorporate access prevention solutions to reduce the likelihood of offenders gaining access to unauthorised areas without overly impacting on the sense of place.
- Increase an offender’s perception of risk in carrying out a crime by enhancing visibility of surveillance.
- In new developments, assess the extent of natural surveillance from windows and balconies and design for footways and footpaths to be overlooked by multiple properties.
- Provide a safe and secure environment in pedestrianised areas where crowding is predictable.
4.2 Inclusive
TfL has committed to going beyond its legal duties under the Equality Act 2010 to promote the highest standards of inclusive design, while the Mayor has committed to London becoming a Dementia Friendly City. This will ensure that we create safe, seamless and accessible end-to-end journeys for everyone.

When designing streets for walking, it is crucial to recognise the diverse range of people who live, work and visit the Capital, and to accommodate their attributes and requirements through an understanding of diversity that includes and goes beyond those characteristics protected by the Equality Act 2010.

- Many visually impaired pedestrians use regular street features such as kerb lines or tactile paving to navigate safely and these features should be provided consistently across the street environment.
- People with mobility impairments benefit from level surfaces and require sufficient footway widths to pass along the street easily.
- Consistency of materials and street layouts can assist in providing a reliable and predictable network for people with cognitive impairments.
- Older people may struggle to cross a signalised crossing at the designated 1.2m/sec standard walking speed assigned to signal timings, and consideration should be given to allow for additional time on busy pedestrian crossing phases.
- Young children usually start walking when they are around 0.8m in height; this creates potential safety issues relating to visibility. Unobstructed visibility at a height of 0.6m should be provided wherever there is a risk of children crossing informally, around schools or on the approach to formal crossings.
- Streetscape Guidance sets out TfL approved standards for infrastructure on the TLRN. Where non-standard arrangements are being considered such as a continuous footway, it is important to consult those impacted and protected by the Equality Act.

4.3 Comfortable
Comfort covers a broad range of experiential factors relating to walking. Within the context of this document, the term primarily refers to spatial considerations, notably footway capacity, and the sense of comfort from having sufficient space to make decisions on route choice.
Reducing footway clutter through the rationalisation of all on-street infrastructure is key to maximising and maintaining effective footway widths.

- To fulfil Pedestrian Comfort Guidance recommendations, footways and crossings should be designed to maximise usable effective width by reducing clutter and improving physical pinch-points to offer footway widths of no less than 2.0m and crossing widths of no less than 2.4m.
- Minimising pedestrian wait times at signal crossings, particularly where pedestrian flows are relatively high, can help to mitigate issues of overcrowding and discomfort at busy crossings.

It is also important to understand the range of other factors which influence user comfort on our streets including climatic factors such as temperature, humidity, solar and wind exposure, noise and air pollution and these should be considered as part of the design process where appropriate.

### 4.4 Direct

Good street design should support direct movement for pedestrians to enable them to walk where they wish to go. Links that prioritise walking over motorised modes of transport enhance the relative convenience and attractiveness of walking.

Pedestrians tend to favour direct routes without deviation, changes in grade level or long waiting times at traffic signals. If directness and convenience is not provided for, it is likely that people will follow their own preferred desire lines. Where these considerations are not accommodated as part of the street layout, there may be an increased road safety risk for all road users, as well as the potential for damage to existing infrastructure from informal or unintended use.

To cater for desire lines it is necessary to understand pedestrian behaviour. Ad hoc observational studies can identify when a pedestrian desire line is not being met: an informal muddy path through a park can highlight a preferred route; forced gaps in hedgerows or broken fencing are evidence of issues in permeability; or other behavioural observations such as walking on the carriageway around footway obstructions.

Better accommodating pedestrian desire lines may include:

- introducing a new signal-controlled crossing point.
- replacing subways with at-grade crossings.
• supporting informal crossing support where deemed appropriate via the use of interventions such as central reservations accompanied by traffic speed reduction measures.
• formalising surfacing as part of a new footpath.

Accommodating pedestrian desire lines with a signal controlled crossing

4.5 Legible
Legibility can be defined as the ease with which a street and its component features can be understood and navigated. Legibility relates to a consistency of application of readily identifiable features that are structured in such a way that they improve recognition. It is therefore important that street furniture and the arrangement of streets are consistent and logical in their general arrangement.

Understanding of the architectural setting is equally important, requiring due consideration for the relationship, scale and distinctiveness of buildings to aid navigation.

Consistent wayfinding signage is vital, particularly with regards to the content provided and the messaging so that people are presented with information in a coherent progression with clear points of arrival.
A consistent wayfinding signage system, such as Legible London, should be considered as part of all town centre regeneration schemes and should be updated as appropriate.

The key design principles when planning good wayfinding systems include:

- Providing wayfinding where there are high pedestrian numbers such as central London, inner and outer London town centres, transport hubs and tourist hotspots
- Placing wayfinding signs at pedestrian decision making points, typically outside transport hubs, on key corridors, at junctions and route intersections
- Positioning signs to be clearly seen, where they do not restrict or obstruct pedestrian flows and where they do not obstruct inter-visibility between drivers and pedestrians
- Planning for a coordinated network of signs with consistent signing content

### 4.6 Connected

Connectivity relates to how well a street network provides multiple integrated routes to various destinations. Providing a high density of walking routes with a fine grain of connectivity makes walking the natural choice for completing multi-modal journeys.

Barriers to pedestrian movement including major roads, railways, canals and rivers, can reduce local connectivity and sever one neighbourhood from another. Where barriers have existed for generations, development patterns may mean adjoining neighbourhoods have turned their backs on each other.

If a major destination lies close to a barrier for walking, there may be a strengthened case for overcoming it. Breaking this severance can help to open up suppressed demand for walking and should be prioritised where there is most potential for additional walking trips. The type of severance as well as wider connectivity needs should inform whether an at-grade crossing or grade separated facility is provided.

Designers should think beyond the highway boundary to ensure that streets are considered as part of the wider area context. This includes considering where other pedestrian links intersect the street and how connections will impact on pedestrian desire lines.
Connectivity principles for walking should focus on how to:

- overcome severance by coherently stitching urban areas together by connecting streets and spaces of contrasting use, importance, character and size
- provide signal controlled crossings that are convenient and link all sides of a major junction where adjacent the land use is conducive to walking
- provide a fine grained network to facilitate a choice of routes between different places and create an opportunity for variation in walking journeys
- connect efficiently to wider transport networks designed to facilitate walking, cycling and public transport use.

### 4.7 Attractive

A combination of factors contributes towards making a street attractive, including the consistency of materials and relationship with the architectural character of the place. Maintenance is one of the most significant factors affecting the attractiveness of a street and maintaining walking surfaces in good condition is fundamental to ensuring an attractive place for walking. Minimising street clutter can also help to enhance the visual appeal of a place by removing unnecessary infrastructure such as excessive signage.

- Set out within the design brief how spaces can be enhanced to provide multi-functional use that will inspire people to walk by being vibrant and appealing to the senses.
- Existing and potential new green infrastructure must be considered as part of any major street improvement project in order to ensure that environmental, economic and social benefits are delivered to contribute towards creating an attractive walking environment.
- Amenity street lighting offers the opportunity to further enhance the public realm by accenting the architectural context, adding to the vitality of streets and spaces.
- Public art could be considered where there is an ambition to enliven a street or space, provide points of interest to attract pedestrians and act as a wayfinding landmark.
An example of a parklet demonstrating a small but significant enhancement in attractiveness and functionality

5. Application of the Design Principles

5.1 Fundamental street design features for pedestrians
The following street design features are considered fundamental for fulfilling the seven Pedestrian Network Design Principles, particularly to ensure a street is inclusive for all pedestrians. Any deviation from this list of features should only be considered in exceptional circumstances and in relation to a particular problem that is trying to be solved, taking into account the local context and all stakeholder views.

- A perimeter footway along the building frontage with recommended clear widths of minimum 2.0m, to allow two wheelchair users to pass one another.
- A detectable kerb upstand of at least 60mm, to allow all people to know where the footway ends.
- Where a low kerb upstand is applied on a bus route, kerb upstands of 100-140mm should be provided at bus stops, to allow for the bus ramp to deploy at an appropriate angle.
- Tactile paving should be provided at all designated crossing points (using blister paving), to allow for the crossing to cover two strides and be physically detectable.
- A detectable delineator strip and ladder tactile paving should be provided, to delineate cycle tracks from dedicated footway space.
- Controlled crossings should be provided at regular intervals to ensure good connectivity to trip attractors and give certainty in crossing for all road users.
- Uncontrolled crossings with dropped kerbs should be provided at regular intervals, preferably at least every 100m across a main road, to support desire lines and provide access for wheelchair users.
- Tonal contrast should be provided between the footway and carriageway, to provide a clear visual definition for each area of the street.
- Street furniture including temporary or moveable furniture should be located in furniture zones on footways, to enable access for all users and minimise creating an obstruction.
- Encroachment of infrastructure onto footways that does not directly serve pedestrian needs should be minimised; for example, electric vehicle charging points should be positioned such that they do not reduce the effective width of the footway.
- Position formal seating at 50 metre intervals in busy pedestrian areas and where practicable on main walking routes.
- Disabled cycle and car parking spaces should be provided on or near streets which have a public trip attractor, to maintain access for people with limited mobility.

### 5.1 Planning for construction activities

Pedestrian routes around construction works should avoid footway closures or diversions where practicable.

Pedestrian routes through or adjacent to construction zones need to be designed to ensure they fulfil the seven pedestrian network design principles. This is particularly important for blind and partially sighted people as changes in the arrangement of the walking environment can create confusion and difficulties in onward navigation. Maintaining a route parallel to the original layout is preferred to maintain route continuity.

The Construction Phase Plan and Traffic Management Plan should identify mitigation measures to maintain access and safety for all road users.
In most locations, the design of the construction arrangements should prioritise pedestrian movement over construction vehicles and any access points should be carefully managed to minimise risk of interactions.

During construction and post completion it is important to keep local accessibility groups informed so they know to be aware that the streetscape has changed.

Detailed requirements for pedestrians at construction work sites can be found in the following:
TfL’s Temporary Traffic Management Handbook (2018) at:

Street construction with temporary pedestrian diversionary measures

5.2 Planning for maintenance
The condition of street furniture and surface materials, upkeep of soft landscaping and clearing regimes of litter and fallen leaves, all affect pedestrians’ perceptions of a place. Some maintenance issues may only
become evident in certain situations such as inefficient drainage in wet weather or the lack of lighting when it is dark.

Maintenance requirements should be considered as part of the design brief so that delivered schemes can be efficiently and economically maintained. Well-designed schemes should provide high performance standards that ensure long lasting durability.

The Construction Design and Management Regulations 2015 (CDM) requires all designers to include due consideration for how the scheme will be maintained following construction. It is vital to utilise a process of risk management to identify and control foreseeable risks through design by reducing or, where possible, eliminating the need for future maintenance interventions.

It is important to establish a mechanism that ensures the surfacing specification of reinstatements after utilities works matches the surrounding surface materials to maintain a high quality aesthetic and support legibility for visually impaired people.

**Strategies of maintenance minimisation can be achieved by:**

- specifying materials that are fit for purpose
- generally avoiding the use of bespoke treatments
- locating structures and facilities where they are less inclined to be damaged
- minimising street clutter and the number of assets that require maintenance.
PART C. Planning & Design Tools
This section describes the tools and techniques available that can assist in applying the seven design principles at various stages in the planning and design process. Good planning for walking considers different urban scales to ensure that localised design features work as part of a connected and legible wider walking network to create healthy and attractive places to walk.

The tools in this section are presented to follow the structure of a typical planning and design process. Some tools will be applicable at more than one stage. For example, community engagement, Equality Impact Assessments and Road Safety Audits will be conducted throughout the whole design process and can generate valuable input at each stage. Not all the tools are necessary for all projects and each summary description gives suggestions on how a particular tool could be used and the outputs that can be expected to help inform the relevance of that particular tool. This list does not cover every tool available but suggests some of the most commonly used tools and processes applied by Transport for London for schemes that impact on pedestrians.

Table X: Indicative stages to utilise the design tools as part of the design process

1. Network analysis to strategically identify key issues for walking, as well as locations to prioritise and investigate in more detail
2. Neighbourhood and local scale assessment of spatial characteristics in order to identify key infrastructure issues and opportunities to enhance the public realm
3. Detailed assessment of walking behaviours in a local area in order to identify key movement issues and opportunities to enhance the experience for people walking
4. Design development and option appraisal to select and audit a preferred option
5. Post-construction monitoring and evaluation to assess scheme impacts
6. Processes to shape the design brief throughout the life cycle of a project

6.1 Community engagement

Ideally engagement starts before the scope of the project has been defined in order for communities to contribute meaningfully to setting the brief and to be involved throughout the design process.

Continued engagement throughout the project can be beneficial and particularly before key design stages, so that there is a genuine opportunity for change to be made to the design.

Effective techniques for engaging with local communities include:

- Site visits to identify key issues, including involving schools and local businesses
- Round table workshops or ‘design charrettes’ including interactive model-making sessions to provide an open forum for discussion. Consider locating the workshop outside to attract passers-by
- Door to door engagement and community drop in events
- Community design reviews
- On-street trials to test the operation of a preferred design or to compare multiple options

Useful tools include:

- Street condition and place audit tools such as ‘Placecheck’ or Living Streets’ Community Street Audit
- Online engagement tools that allow the public to comment on existing issues in an area or on design proposals allow a wide range of people to enter the conversation in an open and transparent manner
- Visualisation tools such as ‘Streetmix’ that provide a quick way of showing different road space allocation options to get a sense of what is achievable within a limited space.
- TfL’s ‘Small Change Big Impact’ toolkit sets out a recommended approach for community led projects initiating light touch or temporary measures.

Designers need to engage with groups that represent the diversity of the area they are working on including but not limited to those groups who represent issues of accessibility, age, faith, gender, parents, race etc. Given the needs of these groups, the engagement itself needs to be accessible and may include:

- Video journal recordings can be used to understand the on-street experience for different people
• 3D models of proposed designs could be included at workshop events

Good communication of design options is crucial for a constructive conversation; sketches, diagrams and cross-sections are all important to help visualise proposals and ensure that a scheme is being designed to consider wider land uses and the architectural context.

Depending on the stage of design, the following information is recommended to support clear communication of the design approach:

• Pedestrian, cycle and traffic flow data and key movement observations
• Collision data and detailed analysis of collisions involving pedestrians
• Clear differentiation between existing facilities and changes proposed including widths and level changes as appropriate
• Pedestrian crossing times as part of the existing and proposed arrangement where a controlled crossing features as part of a scheme

Consideration of community needs should not end once the preferred design has been selected; it is important to provide opportunities for local involvement in the testing and build phases where appropriate, such as through on-street workshops and DIY initiatives including tree planting.

6.2 Equality Impact Assessments

All new programmes and projects should have an Equality Impact Assessment (EqIA) undertaken to ensure that the Local Authority has met its Public Sector Equality Duty. An EqIA provides a framework for anticipating the likely effects of planned work on people with the characteristics that are protected by the Equality Act (age, disability, gender, gender reassignment, pregnancy and maternity, race, religion or belief and sexual orientation, marriage and civil partnerships).

Some of the common issues in the public realm that can negatively impact on people protected by the Equality Act in relation to walking include (but are not limited to):

• Poor lighting
• Street clutter
• Narrow pavements with pinch points
• Adverse cambers
• Non-standard footway delineation
• Cobbled street surfacing
• Feathered steps which lack adjacent tactile paving
• Chamfered kerbs
• Inadequate signage
• Limited seating
• Low level obstacles
• Insufficient time allocated on crossings
• Lack of toilets
• Overcrowding
• Temporary closures, changes and alterations, especially where little or no advanced warning is given

These issues should be highlighted within the existing situation and design proposals set out to improve conditions. The EqIA will then act as a log to document any design changes made throughout the design process.

To be most effective, EqIAs should be implemented early in the planning process and used to shape the design brief.

6.3 Road Safety Audits
Road Safety Audits are essential in assessing the safety impact of a new street scheme where there is a physical change that will impact on road user behaviour.

Undertaken by independent qualified auditors, Road Safety Audits consider the safety implications of design interventions, including the impact of the overall layout on the network under anticipated operating conditions and the potential implications for all road users.

TfL’s Road Safety Audit team offers London boroughs an auditing service for TfL-funded schemes. The team can be contacted at:
TfLSafetyAudit@tfl.gov.uk

TfL’s ‘Collision Levels in Greater London’ is a series of tables covering all highway authority roads, with regularly updated data on types of collision, different junction controls, crossing facilities and collision rates per kilometre of road.

The online collision maps show the location of all collisions from 2015. These can be useful to identify potential hot spots. In 2016 a new Case Overview and Preparation Application (COPA) system of collision reporting was introduced whereby the type of injury suffered is reported by police with the recording system automatically assigning an injury severity.

Identifying existing patterns in traffic conflict should be investigated, particularly where a pedestrian has been involved, to identify any trends in problematic behaviours that can be reduced through design. Contributory factors noted in STATS 19 data are typically a subjective opinion of the
reporting Police Officer and may have limited application; however assessors are encouraged to refer to Guidance for the analysis of STATS19 contributory factors (TRL, 2015 [https://trl.co.uk/sites/default/files/PPR488.pdf](https://trl.co.uk/sites/default/files/PPR488.pdf)) to build an understanding of safety issues associated with a particular site.


7. Tools to understand key issues across different spatial scales

7.1 City scale analytical tools
for project prioritisation, brief development and objective setting

At the planning stage when projects are being identified and objectives defined, the following tools help the planner to spatially assess walkability at a network scale and ‘set the scene’ for a project proposal. These tools may be particularly useful in assessing where and how to prioritise resources and investment, to ensure that any proposed improvements for walking are considered as part of a strategic approach that links in with the wider public transport network and future development.

The strategic tools listed in this section have been developed by TfL and while most of the tools are publically available, the CityPlanner tool is only currently licensed for use by TfL and London boroughs.
### Information that may be useful to collect for city scale analysis

<table>
<thead>
<tr>
<th>Information</th>
<th>Tools</th>
</tr>
</thead>
<tbody>
<tr>
<td>City scale analysis of the network that can feed into the development of local plans and strategies for walking</td>
<td>CityPlanner, Strategic Walking Analysis (SWA), Public Transport Access Level (PTAL rating), Street Types</td>
</tr>
<tr>
<td>Identification of areas that have high strategic potential for walking (high number of switchable trips and high walking density)</td>
<td>Strategic Walking Analysis (SWA)</td>
</tr>
<tr>
<td>Locations of major trip generators and major severances in the wider area</td>
<td>CityPlanner, Strategic Walking Analysis (SWA)</td>
</tr>
<tr>
<td>Areas where public transport accessibility levels are low and could be improved</td>
<td>Public Transport Access Level (PTAL rating)</td>
</tr>
<tr>
<td>Understanding of key movement corridors and the roles of different streets and spaces in an area</td>
<td>Street Types</td>
</tr>
</tbody>
</table>

#### 7.1.1 CityPlanner and Strategic Walking Analysis

The CityPlanner tool and Strategic Walking Analysis report can be used to understand key locations for investment in walking and strategic level assessments of barriers to walking.

The Strategic Walking Analysis maps at a citywide scale:

- Existing walking levels in an area
- Walking potential in an area (i.e. trips that could feasibly be walked that are being made by other modes)
- Identifying priority areas which have both high walking levels and high potential
- Barriers to walking e.g. severance, road safety issues and crowded footways

It consists of an additional layer of data within the CityPlanner tool, a technical report and an executive summary, including a framework for identifying key areas for investment by using datasets, and a guide to using the walking related layers in City Planner.
The CityPlanner tool is a web based interface for TfL and the London boroughs that present a wide range of datasets in map format, with the whole of London covered and divided into hexagons of 350m diameter. The tool provides legible, simple and accessible analysis across a diverse range of overlapping spatial data sets at the neighbourhood level for quick area prioritisation, area appraisal and spatial policy analysis.

Data layers presented as part of the CityPlanner tool

Data is allocated to a 350m hex cell
The tool is designed to generate insight across the Mayor’s Transport Strategy (MTS) outcomes to help improve decision-making and scheme development and assist in providing best-value, in line with the MTS.

**Uses of the tool for walking design:**

**Strategic Area Priorities** – spatial analysis to identify priority locations for Healthy Streets investment

**Area Studies and Reporting** – flexible geography used to assess boroughs, study areas and corridor characteristics and priorities

**Behaviour Change** – combining employment, pedestrian density, walkability and business engagement data sets to inform the ‘Walk the Last Leg’ campaign

**Buses patronage** – to identify where patronage is falling and why it is happening

**Quick policy insights** – assessment of land use functions and air quality

---

The CityPlanner tool is available online for use by London boroughs. Contact [CPT@tfl.gov.uk](mailto:CPT@tfl.gov.uk) for registering details.

---

**7.1.2 Strategic Levels of Service: Street Types**

In 2014, the Roads Task Force established a framework of Street Type definitions to understand the range of Movement and Place functions of streets across London: the Place function defined by the street’s catchment area, the Movement function defined by the importance of the street in relation to trips being made on the street network for all transport modes, including people walking.

Fundamentally the matrix enables an identification of which locations across London are experiencing an imbalance between people travelling through and people travelling to a street, and whether that relationship is limiting how well it will perform in the future.
London's Street Types

Street Types can be useful to summarise the character of a street and help to build a case for providing a proportionate response for improving pedestrian facilities.

TfL has already agreed Street Types with local highway authorities as part of a collaborative approach to classify a location’s function as part of London’s street network.

Street Types provide a common context allowing us to focus on providing consistent facilities that represent how people are using a space as opposed to how it is governed by highway authorities.

Locations with higher place functions, such as town centres, benefit from scheme designs that promote pedestrians dwelling, which is also desirable for economic benefits. Likewise, where movement is the priority, such as routes out of mainline stations, pedestrian design should generally address footway capacity and route directness as priorities.
Example of street types mapped at the neighbourhood scale and locations for potential interventions focused on improving walking connectivity.

Example of street types mapped around a high street and areas where interventions might be prioritised to improve accessibility to the high street.
7.1.3 Transport and network connectivity

Connectivity concerns the relationship and proximity of streets as part of a network. There are several tools that can be applied to quantify the connectivity of streets and determine whether particular areas are relatively well connected or not.

Public Transport Access Level (PTAL) is a measure of connectivity to public transport in London and is mapped to the walking network and based on:

- distance to the nearest station or stop
- waiting times and service frequency
- proximity to major rail stations

In measuring Public Transport Access Level (PTAL), the walking distance to nearest stations or stops is taken into account – it measures whether people are within 640 metres of a bus stop, and/or 960 metres of a rail/underground station. Already 99.6 per cent of London’s population live within 640 metres (eight minutes’ walk) of a bus stop, and TfL has a target to ensure all new households are a maximum of 400 metres walk to/from a bus (or tram) stop. It should be noted that for many older and disabled Londoners 400 metres would be too far to walk.

Assessing Transport Connectivity in London 2015 provides advice on how to use PTAL data and get the most out of it for a specific assessment of connectivity:


For any selected location, PTAL suggests how well the place is connected to public transport services. It does not cover trips by car.

A location will have a higher PTAL if:

- It is at a short walking distance to the nearest stations or stops
- Waiting times at the nearest stations or stops are short
- More services pass at the nearest stations or stops
- There are major rail stations nearby
- Any combination of all the above.

PTAL can be seen as a measure of the density of the public transport network. PTAL does not take into account the destinations you can travel to from each location or the ease of interchange. PTAL also does not reflect levels of crowding on buses or trains.
Tools to measure connectivity

The CityPlanner tool includes a layer for ‘Connected PT Indicator’ under ‘MTS outcome indicators’. This layer is based on:

- PTAL
- jobs accessible in a 45 minute journey
- population accessible in a 45 minute journey
- households accessible in a 45 minute journey

This can provide a useful wider definition of connectivity, though is only available at a 350m hex level. A more granular level of connectivity can be explored using the Web-based Connectivity Assessment Toolkit (WebCAT) which uses 100 metre squares showing PTAL rankings.

In relation to planning for walking, WebCAT can be useful to understand:

- how well connected different areas of London are to the wider transport system
- how new developments will integrate with the existing transport system

WebCAT includes PTAL data and is accessible online at:

https://tfl.gov.uk/info-for/urban-planning-and-construction/

The toolkit contains two ways of measuring transport connectivity:

1. PTAL assesses connectivity (level of access) to the transport network, combining walk time to the public transport network with service wait times.

PTALs can be viewed for the whole of London or for individual locations, in both the current (base) and future transport networks. A breakdown of the type of public transport services accessible for specific locations is also available.

2. Time Mapping analysis (TIM) assesses connectivity through the transport network or, in other words, how far a traveller can go expressed as a series of travel time catchments

The TIM tool allows plotting of travel times on the map for any location in London with user-selected attributes including year, travel mode, time period and direction.
Route quality is important when considering connectivity and should be assessed where an existing route may be creating issues of severance due to a lack of attractiveness – see 5.3.7 Walking environment condition assessments.

Urban design analysis can be used as an additional approach that can highlight the urban structure and block size to understand the ‘urban grain’ and whether there is a lack of intersecting side streets, contributing to low connectivity. This is discussed in the next section.

### 7.2 Neighbourhood and local scale analytical approaches for assessing existing infrastructure issues

Where a more detailed assessment of existing conditions is needed, a range of data collection and analytical tools can be used to examine factors affecting walkability in a local area. Understanding existing walking conditions is vital to determine the main barriers for walking in an area, and how to prioritise interventions that will improve conditions for pedestrians. These tools help a designer to assess the existing physical infrastructure and character of a defined local area – this could be a street, a collection of streets, or a neighbourhood, depending on the scope of the project.

These tools act as a complementary process to local engagement and should not replace the application of participatory activities that directly involve local people.

Designers may choose to combine the outputs of these tools as part of a baseline study, to ascertain the quality of the existing walking environment and, combined with tools that examine existing walking behaviours, define the key issues for the area at a neighbourhood or more local scale.

<table>
<thead>
<tr>
<th>Information that may be useful at this stage in the design process</th>
<th>Tools and techniques</th>
</tr>
</thead>
<tbody>
<tr>
<td>An understanding of the local walking catchment area 'as the foot falls' (800m/10 minute walk)</td>
<td>Urban design analysis</td>
</tr>
<tr>
<td>Key local barriers to walking and locations of severance such as railway bridges or large junctions</td>
<td>Urban design analysis, Street types, Community engagement</td>
</tr>
</tbody>
</table>
An understanding of local character, land uses, destinations and attractors, walkable routes and connections

Urban design analysis, Street types, Community engagement, Transport Assessment Guidance

An audit of the quality of a street and the user experience of walking

Healthy Streets Check for Designers, Pedestrian Comfort Guidance, Walking condition assessments, Community engagement, Guide to Healthy Street Indicators

Identification of locations with poor walking connectivity and legibility

Urban design analysis, Walk time calculations, Walking legibility assessment

### 7.2.1 Urban design analysis

The following list of baseline data collection processes should be used as a starting point for building an understanding of the spatial layout and configuration of the neighbourhood, to identify key issues and opportunities as part of the design brief. Design teams should identify at an early stage which data will be most helpful for informing the design brief, based on early engagement with the local community.

### 7.2.2 Neighbourhood scale analysis

It can be useful to build an understanding of the strengths and weaknesses of a neighborhood by mapping existing and proposed features, which can be used to start to identify potential opportunities to improve conditions for pedestrians. The neighbourhood scale can be a useful level of detail to link the city scale and more localised issues for walking.

**Defining the study area – the walkable neighbourhood**

A walkable catchment area can be considered as a 10 minute walking distance from a neighbourhood centre, which generally corresponds to around an 800m walking distance (which can be termed the 'Pedshed'). Note that many people are unable to comfortably walk this far, so it is important to note that a walkable neighbourhood is one that provides sufficient infrastructure to be inclusive for all users.

Mapping the distance along streets, rather than as the crow flies, is a more accurate analysis of a real walking catchment area on the ground compared
to an 800m circle laid out on a plan. The ‘Pedshed’ can simply be sketched by hand on a map base using a piece of string that correlates to 800m at the scale of the map base, or by using GIS based software that can automate the walking route analysis.

Measurements are taken from a centre point within a neighbourhood, generally defined based on a series of land uses that may act as the main trip attractor point for people (such as a town centre). Where there is no easily definable neighbourhood centre it may be useful to consider other trip attractors such as transport hubs or parks, as well as building on local knowledge to help define the study area.

Mapping of areas just outside of the ‘Pedshed’ area may be useful where practicable to ensure that any analysis is responsive to wider connectivity issues. The line drawn around the study area should be considered fluid; key links or green spaces may fall outside of the boundary line but may need to be included as part of a well-considered neighbourhood analysis.

Including neighbouring areas, where practical, reinforces the neighbourhood’s context and relationship to local features that may impact on pedestrian movements within and beyond the study area.

Manually calculating a ‘Pedshed’ area on a basemap (courtesy of TfL Urban Design)
The circles on the graphics are the 800m radius ‘as the crow flies’, but the ‘as the foot falls’ distances are shorter due to required changes in direction.

Layering data to analyse a ‘Pedshed’ area (courtesy of TfL Urban Design)
Key destinations
Mapping land uses and trip attractors including highlighting where active frontages are located can be useful to understand the dynamics of a street and/or neighbourhood.

Typically a destination based map might include: local retail centres, employment zones, transport hubs, educational facilities, healthcare, cultural centres, leisure and community facilities, and new development sites.

Example of mapping key destinations for pedestrians (courtesy of TfL Urban Design)
Transport connections
Mapping of cycle routes, bus routes, stops and rail stations can be useful for flagging up where pedestrian walking trips are starting and finishing.

Example of mapping key transport connections (courtesy of TfL Urban Design)
New developments and regeneration projects
Where new planned developments are known, it can be useful to include the size and composition of land uses and the potential for new links through a development site, which may increase the permeability of the neighbourhood.

Example of mapping new developments and regeneration projects (courtesy of TfL Urban Design)
Walking routes to and through open spaces
Mapping these links is useful for identifying connectivity that goes beyond the highway boundary, and may highlight on-street green infrastructure where known, to demonstrate additional qualities of the routes.

Example of mapping key walking links to open space (courtesy of TfL Urban Design)
Severance and barriers to walking

Instances of severance may include elevated roads, rail routes, topography, development sites and infrastructure that does not provide access for all. Poor quality junctions and areas that include large amounts of unnecessary guardrail may also create severance. It is worth noting that additional areas of severance may occur at night time, for example an unlit park may create an area of walking severance at night time for many pedestrians but be fully accessible in the day.

Example of mapping severance issues and barriers to walking (courtesy of TfL Urban Design)

Character assessments

Character assessments look at the layout and impact of new developments with relation to the unique character of the area as defined by local landscape, architectural style, views, layout, materiality, historic buildings and landmarks of significance. They may include views and the scale and height of clusters of buildings and the impact of topography. Looking at the origins of a neighbourhood encourages a consideration of historic legacy and sense of place, which in turn can create an interesting and attractive environment for pedestrians.
Walk time calculations

As part of an analysis that looks at spatial connectivity between two key destinations, for example a school and a local bus stop, it can be useful to calculate directness by measuring the actual walking route length compared to the straight line distance. This can be conducted across various scales as necessary to determine route deviation for people walking. Walk time calculations can then be calculated based on the distance, with a standard measure taken as 1.2m/sec. It is important to note that the walk time for many younger, older and disabled pedestrians will be much slower, and this may be useful to explore in more detail with local people as part of an engagement process.

Walk time calculations between two points using different crossing configurations can be useful at the optioneering stage to understand the impact of crossing layouts. In these situations it is recommended to consider crossing signal cycles and/or pedestrian delay to understand the impact of different options.

For streets in new developments, desire lines should be anticipated based on an assessment of the proposed land use and trip attractors in the area, as well as existing patterns of pedestrian movement in the surrounding area.

Walking route legibility assessments

Mapping the number of changes of direction required to complete a walking journey can be a useful approach for assessing legibility, to understand the quality of the pedestrian experience and the challenges people may face when walking. This form of analysis would typically focus on key routes which link major trip attractors. Ideally this would be carried out on site as a photographic survey, highlighting decision points and places where there may be a lack of landmarks or other features to aid navigation. It is also beneficial to involve local people during legibility assessments to understand what impacts on their preferred route at these decision points. Accompanied visits and journey diary logs can help to capture the user experience and issues associated with legibility.

Online street view analysis could be conducted as part of desktop based assessment to understand vistas and sightlines at decision points as part of a key walking route; however this will not replace the need for a site visit.
7.2.3 Local street scale mapping
Subdividing the walkable neighbourhood into smaller scale segments or cells, typically no more than 200m across, can be useful to focus on more detailed spatial qualities of a cluster of streets or an individual street. Mapping these features and analysing their impact will help show what could be achieved.

Example of a walkable neighbourhood subdivided into smaller segments (courtesy of TfL Urban Design)
Mapping pedestrian surfaces
At a basic level it can be useful to draw out the key physical features of the street that impact on people walking and highlight these on a plan. This could include highlighting footways, dropped kerbs and the location and type of crossings. Further analysis will identify where there are notable gaps in provision, such as a lack of connectivity or constrained provision.

Footway interruptions
Mapping interruptions to the general footway including any crossover or minor side road where the continuity of the footway is severed can help to understand the pedestrian experience of the street and identify opportunities to make improvements that reduce the number of interruptions.
Boundary features and visibility beyond the highway
Mapping the visual permeability of edge conditions can be useful when thinking about the experience of walking and what people are able to see and access. Visible space beyond the highway impacts on the character of the street and can be mapped where there is a visually permeable edge. This information may be useful to inform whether a particular change on the highway is appropriate to the adjacent space.

Land use and building entrances
Mapping of entrances to public buildings and when they are open at different times of day can help to understand pedestrian movement patterns to and from attractors in the neighbourhood. The character of the building façade can also be explored by photographing and documenting the relationship of ground floor activities to the street configuration.
Street furniture
It is critical that existing street furniture is rationalised as part of the design process to reduce physical clutter on footways. Designers should refer to TSRGD 2016 to look at the potential to declutter signage – one of the most common clutter issues is in relation to the use of vertical signs on either side of the street; many of which are now no longer needed on both sides. Road markings, such as give way lines, may be sufficient in isolation and not need accompanying vertical signage. Guardrailing has been subject to an extensive removal programme in recent years and this is another example of rationalising existing street furniture to improve the functionality and visual quality of the street.
Places to stop and rest
Mapping of the distribution of formal seating as well as informal rest points, can build a picture of the quantity and quality of provision across a neighbourhood. The number, distribution, type, condition and placement of seating can be mapped to create a detailed understanding of existing amenity and plan for additional provision. Noting where informal rest points are being used for seating such as bollards, ledges or garden walls indicates demand for seating where it may not currently be formally provided.
Kerbside activity surveys
Kerbside designations will typically be mapped as part of the topographic mapping process; however it is also useful to supplement this information with occupancy surveys at different times of the day to understand how drivers are using the allocated bays. Mapping of this information can provide the clearest way of showing whether there are underutilised spaces and opportunities to change the designation of the kerb edge.

Sunlight mapping
Assessing direct sunlight at different times of day can be useful to inform street furniture placement, particularly seating and planting. For some areas of central London, 3D models have been developed which can be used to create maps of light and shade and show seasonal variation. Where a model is not available, photographic surveys can be used to ascertain when there is direct sunlight at certain times of day.

Assessing how comfortable it is to have a conversation
One of the most fundamental human interactions – having a conversation – is also one of the most important design considerations for assessing the attractiveness of the walking environment. Typically high background noise corresponds to 70 decibels or more, and makes it difficult to hear someone’s voice.

Road traffic is the biggest contributor to noise pollution in the UK (Speed and road traffic noise, UK Noise Association, 2009), with traffic volume, speed, composition of traffic and the behaviour of drivers (accelerating and braking), as well as the road surface, all impacting on traffic noise. Where it is difficult to hear a conversation when standing at the side of the road, designers should
consider the character of the place and whether noise reduction strategies should be prioritised to contribute to the quality of the experience for pedestrians.

Cross-sectional profile of a street
By examining the scale of adjacent buildings in combination to the width of the street and structure of planting, a greater appreciation of the character of the street can be ascertained. The scale and proximity of adjacent buildings can be hugely influential on the pedestrian experience, not just visually; the urban scale affects street level exposure to direct sunlight, impacts on wind, traffic noise and pollution.

Cross-sectional sketches are useful at key points along a route to visualise how the character of the street changes (illustrative sketch)

7.2.4 Human scale analysis
Understanding the lived experience of a street from a human perspective is vital to inform an effective design brief that responds to pedestrian needs. While engagement with local people is a key part of this, spatial analysis at the human scale can be an additional helpful way of understanding the actual experience of walking within a street environment.

One approach to visualising the user perspective is to assess four 2-dimensional planes around a pedestrian, whereby the footway, adjacent
building line, carriageway space and overhead features, all impact on the quality of the walking experience. The visual below helps to explain this and highlights how different features are located within each of these planes, and can impact on a person walking.

It is suggested that for a specific location, identify the range of features that are present and whether or not these positively or negatively contribute to the pedestrian experience. Where there is a significant contrast in the scale or composition of the street along its length, consider repeating the process to create a series of snapshots of pedestrian experience. This can be a helpful starting point for identifying existing features and key issues that may be considered for change within the scope of a project.
<table>
<thead>
<tr>
<th>Spatial Zone</th>
<th>Infrastructure that can impact on the walking experience</th>
</tr>
</thead>
</table>
| Footway                | Surface materials  
|                        | Effective width  
|                        | Street furniture – Lighting, signage, seating  
|                        | Street trees and planters  
|                        | Footway design and crossfall  
|                        | Footway crossovers  
|                        | Utility covers |
| Building frontage      | Building height  
|                        | Character and condition of building  
|                        | Land use and active frontage  
|                        | Building entrances  
|                        | Signage and A-boards  
|                        | Canopies and awnings  
|                        | Outdoor seating and other furniture |
| Carriageway edge       | Kerb alignment  
|                        | Pedestrian crossings  
|                        | Parking and loading designations  
|                        | Cycle tracks / lanes  
|                        | Street furniture – lighting, signage, cycle parking, litter bins, Grass verge, planters, street trees |
| Overhead               | Lighting  
|                        | Signage  
|                        | Street trees  
|                        | Building awnings  
|                        | Shading structures  
|                        | Long vistas and landmarks |

**7.2.5 The Guide to Healthy Streets Indicators**

The Healthy Streets Approach sets out ten interrelated indicators of the quality of a street environment that impact on people walking, cycling and using public transport.

Underpinning all of these indicators is an emphasis on the quality of the experience of being on a street. Reducing the dominance of motorised traffic is a critical aspect of this approach, coupled with the design and construction of on-street interventions that support the needs of people walking, cycling and using public transport.
The 10 Healthy Streets Indicators

Table X: The 10 Healthy Streets Indicators

<table>
<thead>
<tr>
<th>People from all walks of life</th>
<th>Streets should be inviting and accessible for everyone to spend time and make journeys on foot, cycle or by public transport</th>
</tr>
</thead>
<tbody>
<tr>
<td>Easy to cross</td>
<td>On all streets it should be easy for people of all ages and abilities to find a safe place to cross without having to go out of their way</td>
</tr>
<tr>
<td>Shade &amp; shelter</td>
<td>Providing regular shade and shelter from winds, heavy rain, high temperatures and sun exposure can have a significant positive impact on people’s ability to travel actively</td>
</tr>
<tr>
<td>Places to stop and rest</td>
<td>Ensuring there are places where people have room to stop or somewhere to rest benefits everyone, including local business</td>
</tr>
<tr>
<td>Not too noisy</td>
<td>Reducing traffic volumes and speeds, and including low noise road surfaces will all benefit health as well as improve the ambience of street environments</td>
</tr>
<tr>
<td>People choose to walk &amp; cycle</td>
<td>Walking and cycling should be designed for to be the most attractive ways to travel on our streets</td>
</tr>
<tr>
<td>People feel safe</td>
<td>The whole community should feel comfortable and safe from crime, intimidation or injury on any street day and night</td>
</tr>
</tbody>
</table>
### Things to see and do
People are more likely to travel actively when there are things to do locally and will also be less dependent on cars if shops and services are within walking distance.

### People feel relaxed
Good quality street design and a clean, well kept environment can help create attractive and relaxing places to walk and cycle.

### Clean air
Reducing the amount of traffic on the road or reducing the number of high polluting vehicles will help improve local air quality.

As part of the Healthy Streets toolkit, the Guide to Healthy Streets Indicators can be used as a starting point for understanding existing public realm issues. It provides a long list of questions relating to each of the 10 Healthy Streets Indicators to help prompt an investigation of the factors that affect the experience of people walking, cycling and using public transport.


### 7.2.6 The Healthy Streets Check for Designers
Transport for London has developed a design tool that can be used to assess the existing layout of the street and then compare this to a proposed design layout.

The aim of the Healthy Streets Check for Designers is to provide a framework for assessing scheme designs to ensure they are aligned to the Healthy Street Approach. The Healthy Streets Check has been developed to include metrics across the 10 Healthy Streets Indicators. These metrics are designed to support a holistic approach to street design, with all metrics having an impact on whether people choose to walk, cycle or use public transport.

In London, the Healthy Streets Check for Designers is generally applied to schemes that are likely to make a significant change to people walking, cycling and accessing public transport, and there are also programme specific requirements for its application.

The following list of factors all impact on the quality of the pedestrian experience and designers are encouraged to focus on these metrics where the focus of the brief is to improve the quality of the street for walking:
Table X: Relevant design guidance for metrics within the Healthy Streets Check for Designers

<table>
<thead>
<tr>
<th>Healthy Streets Check for Designers Metric</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. Total volume of two way motorised traffic</td>
</tr>
<tr>
<td>3. Speed of motorised traffic</td>
</tr>
<tr>
<td>8. Ease of crossing side roads for people walking</td>
</tr>
<tr>
<td>9. Mid-link crossings to meet pedestrian desire lines</td>
</tr>
<tr>
<td>10. Type and suitability of pedestrian crossings away from junctions</td>
</tr>
<tr>
<td>11. Technology to optimise efficiency of movement</td>
</tr>
<tr>
<td>12. Additional features to support people using controlled crossings</td>
</tr>
<tr>
<td>13. Width of clear, continuous walking space</td>
</tr>
<tr>
<td>14. Sharing of footway with people cycling</td>
</tr>
<tr>
<td>19. Quality of footway surface</td>
</tr>
<tr>
<td>20. Surveillance of public spaces</td>
</tr>
<tr>
<td>21. Lighting</td>
</tr>
<tr>
<td>23. Street trees</td>
</tr>
<tr>
<td>24. Planting at footway level (excluding trees)</td>
</tr>
<tr>
<td>25. Walking distance between resting points (benches and other informal seating)</td>
</tr>
<tr>
<td>26. Walking distance between sheltered areas protecting from the rain including fixed awning or other shelter provided by buildings/infrastructure</td>
</tr>
<tr>
<td>28. Bus stop accessibility</td>
</tr>
<tr>
<td>29. Bus stop connectivity with other public transport services</td>
</tr>
</tbody>
</table>

7.2.7 Pedestrian Comfort Guidance (PCG)

Pedestrian Comfort Guidance is a level of service tool developed specifically for London’s streets to provide a standardised approach for measuring pedestrian crowding and comfort on footways, crossings and refuge islands. It relates the peak hour pedestrian flow to the available footway space and can be described as a ‘static’ model assessment, as it uses a snapshot in time to define the comfort level.

PCG is useful for understanding how the arrangement of street furniture and footway widths affects pedestrian comfort. The tool provides a Pedestrian Comfort Level (PCL) grade, based on the density of pedestrians within a given area.

Pedestrian Comfort Guidance can be used to:
- Understand footway, crossing and refuge island capacity by identifying pedestrian comfort levels
- Predict changes in comfort levels resulting from scheme proposals
- Identify whether footways, crossings and islands can support pedestrian demand
- Assess the impact of street furniture / obstacles on footway capacity
- Identify where to apply mitigation measures such as decluttering, footway widening or crossing widening

Table X: Preferred minimum Pedestrian Comfort Levels

<table>
<thead>
<tr>
<th>Preferred minimum Pedestrian Comfort Levels (‘comfortable’)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Location</td>
</tr>
<tr>
<td>----------</td>
</tr>
<tr>
<td>Footways on high streets, residential streets and adjacent to major tourist attractions</td>
</tr>
<tr>
<td>Footways at transport interchanges and on commercial / office dominated streets</td>
</tr>
<tr>
<td>Crossings</td>
</tr>
</tbody>
</table>
Applying the tool helps to provide an evidence base for proposals that alter footway widths or change the arrangement of street furniture. Design proposals should provide a comfortable arrangement for pedestrians during the peak hour: for high streets, this is recommended as a maximum of 11 pedestrians per metre per minute; for crossings, this is recommended as a maximum of 18 pedestrians per metre per minute.

Auditors should note that comfort levels on crossings are graded differently to footways. Crossing islands should not have queues forming greater than three rows deep at busy times. With four or more rows, people tend to avoid the island and cross elsewhere. Additionally, if the island has insufficient space a pedestrian can be tempted to cross on the ‘red pedestrian symbol’ phase.

Where cyclists are permitted to occupy the same path as pedestrians, defined as a “shared use area”, it is recommended to consider the impact of the cyclist on pedestrian comfort. The PCG does not provide a formal approach for conducting this; however based on the spatial principles of a cyclist as defined by the London Cycling Design Standards, a width of 2m could be applied to represent two cyclists passing one another. This width would be deducted from the total effective width for the footway to provide an estimate for pedestrian comfort on a shared use footway.


7.2.8 Walking environment condition assessments
Assessing the condition of a street, including maintenance and cleaning regimes, can be an important aspect of understanding the attractiveness of the area for walking. Several environment audit tools are available:

Pedestrian Environment Review System (PERS)
For schemes which may be looking to upgrade existing facilities, a PERS audit can be an effective way of highlighting key issues across an area.

Pedestrian Environment Review System audits can be used to:
- Baseline pedestrian environment quality
- Identify existing infrastructure condition issues
- Predict scheme design outcomes
- Prioritise improvements
- Produce cost effective scheme outcomes
- Recognise specific improvements that are being made
- Record before & after site performance
- Identify factors relating to road safety
Developed by the Transport Research Laboratory, PERS is part of a family of street audit tools for auditing the condition of facilities for different modes.

PERS can be used for auditing any external pedestrian environment, including footways and crossings, open spaces and waiting areas. It considers a wide range of factors that impact on the pedestrian experience, including the general look and feel of places. It mixes quantitative and qualitative assessment to understand how a pedestrian space is performing. Results are presented in a seven-point scoring range. The average (0) score should be interpreted as the minimum acceptable standard, with improvement measures targeted at any criteria that score below this value.

PERS provides a baseline score for pedestrian environment conditions and can be used to prioritise interventions. It can also be used to measure the likely impact of improvements. TfL may require developers to carry out PERS assessments as part of significant new land-use developments.

Some elements of the scoring are subjective; therefore TfL recommends that the same auditors are used for a full site assessment, so that there is consistency in scoring where professional judgement is required. PERS results for one site should therefore not be compared with results for a different site, where audited by a different team.

PERS software can be purchased from the Transport Research Laboratory to support the processing of data inputs.

Other walking environment audit tools
Other audit tools, such as Living Street’s Community Street Audits (CSAs), can provide a useful approach for drawing on local knowledge of an area to identify key issues for walking. This process involves active community engagement as part of a site visit that can form the starting point for facilitating co-design workshops.

‘Placecheck’ is an alternative approach that employs a structured walk around a study area involving the community. It aims to identify key issues by asking questions relating to how to enhance the special qualities of the place, assessing whether it is well-connected, accessible and welcoming, safe and pleasant and ‘planet-friendly’.
7.2.9 Transport Assessment Guidance

Transport for London has issued a Transport Assessment template for all new developments of strategic importance.


Applicants are expected to map key destinations and routes within an Active Travel Zone, defined at both the walkable neighbourhood scale and a wider 20min cycling scale. Planners involved in the assessment of new developments are recommended to reference this analytical approach, which is aligned with the Urban Design analysis approach set out in this document.

7.3 Local scale analytical techniques for understanding pedestrian movements

These tools and techniques can be used to collect movement data and assess existing pedestrian behaviours. Pedestrian activity assessments are fundamental for building an understanding of how streets are used, which can help to identify key issues and inform the design development process. This data may also provide an evidence base to make the case for the prioritisation of walking improvements.

Collecting pedestrian movement data can be time and resource intensive, therefore this section highlights the most common approaches used for understanding pedestrian movement and how to collect a proportionate level of data to justify design priorities for a scheme. It is recommended to visit the site at different times of day to get a clear understanding of the existing urban layout and the implications on pedestrian movement.


The application of a range of techniques is recommended to build a robust understanding of existing issues and target improvements that will overcome these issues.
### Information that may be useful at this stage in the design process

<table>
<thead>
<tr>
<th>Information</th>
<th>Tools and techniques</th>
</tr>
</thead>
<tbody>
<tr>
<td>Numbers of people walking and information about the characteristics of people walking</td>
<td>Pedestrian flows and demographic surveys</td>
</tr>
<tr>
<td>Local attitudes to walking and the reasons why people are choosing not to walk</td>
<td>Attitudinal surveys, Community engagement</td>
</tr>
<tr>
<td>Understanding how and where people move around on foot</td>
<td>Mapping desire lines, Compliance with signals, Pedestrian delay analysis, Stationary activity analysis, Interaction surveys, Dynamic pedestrian modelling</td>
</tr>
<tr>
<td>Understanding the distribution of major local trip generators and their impact on walking behaviours</td>
<td>Origin-destination mapping</td>
</tr>
</tbody>
</table>

### 7.3.1 Pedestrian flows and demographic surveys

<table>
<thead>
<tr>
<th>Purpose</th>
<th>Issues that may be identified</th>
<th>Recommended application</th>
</tr>
</thead>
<tbody>
<tr>
<td>To understand the general trends of pedestrian movement, supplemented with ad hoc behavioural observations</td>
<td>Footway and crossing capacity issues, Daily directional trends that may not be accommodated, Lack of inclusion for vulnerable user groups</td>
<td>Projects where changes to footways or crossings are expected</td>
</tr>
</tbody>
</table>
Pedestrian flow survey data is often required to assess the distribution and trends of pedestrian movement throughout the day and to provide data for assessing the performance of the street.

The purpose of the monitoring should determine how many counting points or ‘gatelines’ are needed and the extent of data collection required. Manual counts can be effective for short durations of ad hoc on-site monitoring; however for more extensive analysis and especially in busy areas, CCTV footage can provide a more effective way of capturing pedestrian flows.

The following suggested methods are based on guidance from TfL’s ‘Measuring Pedestrian Activity’ document (2007). It is recommended to note down the location, duration of survey, time, date and weather, as part of the data collection process.

**Selecting count sites** – gatelines for counts should be planned to capture key links and crossings of interest within a site, while avoiding duplication where flows are likely to be the same at different points along a link. Gatelines should be representative of the link as a whole, by avoiding locating near to where there are significant changes in flow, such as next to a bus stop.

**Directional / non-directional** – depending on the detail that is needed regarding pedestrian movement analysis, directional data can be useful to highlight daily flow trends. In many areas with commuter flows, there will be a tidal trend towards the city centre in the morning and away in the evening; however within the city centre itself, directional movements may be more balanced.

**Duration and time of day** – the length of time for undertaking a flow count impacts on the accuracy of the data, with the required degree of accuracy dependent on the proposed use of the data. For a quick, high level estimate, two one hour long counts spread out on a single weekday may be sufficient.

To enable a comparison between sites, it is recommended to count for every 5th 15-minute period between 07:00 and 19:00 on a single weekday.

To allow for a comparison between before and after layouts, it is recommended to conduct a full day assessment across 3 weekdays, from 07:00 to 19:00 or 22:00. On busy routes, it may be suitable to record flows using 5 minute counts every half an hour.

**Days of the week** – for weekday counts, it is recommended to only count on Tuesday to Thursday, as the most representative days of the week. For weekend counts, it is recommended to collect at least three days of data to provide a baseline.

**Time of year** – seasonal variation in pedestrian flows can be significant, and so counts should generally not be undertaken in school holidays. Where
comparing before and after situations, the same month across different years should be used.

**Weather** – counts should generally not be conducted in wet weather as this can impact on pedestrian flows.

**Ad hoc behavioural observations** – noting any trends in behaviour while on-site can help to understand the quantitative data. Photography demonstrating particular behaviours can provide useful evidence of existing issues.

---

**Pedestrian Categorisation**

Different types of pedestrians walk at different speeds and will exhibit different behaviours. It can therefore be useful to classify pedestrians when undertaking flow surveys. Below are some examples of groups that would be used in a typical study:

- Pedestrians with walking aids
- People with a visual impairment
- Children under 16 years of age
- Pedestrians pushing buggies or carrying babies

Additional demographics to supplement this data could include counts identifying gender, age and/or group size. This process of categorisation can be especially useful when applied to delay surveys; the pedestrian delay time should be noted for each group to provide a better understanding of how different categories of pedestrian experience different levels of delay.

**Describing pedestrian flows**

Pedestrian flows should be described based on peak periods, which may include the morning peak (07:00-10:00), interpeak (12:00-14:00), evening peak (16:00-19:00) or daily peak (07:00-19:00). To identify the peak hour for each period, a count is required using either a continuous count, or the 5 minute every half hour method.

Once flows are known, they can be compared with the pedestrian flow categories in Pedestrian Comfort Guidance, Appendix B. 'High flows' describe peak pedestrian flows above 1200 per hour; 'active flows' describes 600-1200 pedestrians per hour and 'quiet' is typically defined as less than 600 pedestrians per hour. Note that these categories are defined slightly differently for shared use footways where pedestrians and cyclists are present (see flow categories in Designing for sharing between pedestrians and cyclists.)
Using pedestrian flow data

At the local scale, pedestrian flows on adjacent streets can be used to infer movement trends between count locations, such as the relative number of pedestrians turning onto a side street compared to continuing straight ahead.

At the neighbourhood scale, this can go further to compare locations over time and see when there are peaks in pedestrian activity as part of daily flow profiles. This can be especially useful when directional flow data has been captured, showing whether there is tidal activity in pedestrian movement.

At a network level, pedestrian flow data can be used as a proxy measure for connectivity. Urban areas where there is a consistent ground floor density of land uses tend to have pedestrian flow levels that are proportional to the level of connectivity of the street network; i.e. higher pedestrian flows are often the product of good connectivity.

Identifying when pedestrian flows are problematic

Where pedestrian flows are especially high, the quality of the pedestrian experience can be compromised. This is usually related to the amount of space available to allow for individual route choice. The Pedestrian Comfort Guidance assessment should be used to determine the relationship of pedestrian flows to pedestrian comfort.

Ad hoc observations can help to supplement this information, such as identifying where people tend to step out onto the carriageway to pass one another, or where static activities impact on footway capacity.

7.3.2 Pedestrian desire lines

<table>
<thead>
<tr>
<th>Purpose</th>
<th>Issues that may be identified</th>
<th>Recommended application</th>
</tr>
</thead>
<tbody>
<tr>
<td>To understand origin-destination movements and crossing desire lines</td>
<td>Trends such as a low use of existing formal crossings Unsafe behaviours</td>
<td>Projects where crossings will be changed and improved connections for pedestrians made</td>
</tr>
</tbody>
</table>
Pedestrian desire lines are the direct routes that people choose to take, usually the product of a range of environmental factors and shaped by the general arrangement of the street, land uses and trip attractors, as well as the actions and behaviours of other people.

Safety and maintenance issues can arise where a major pedestrian desire line has not been formally accommodated in the layout of the street.

**Tracing pedestrian desire lines**

In some places where there is a steady stream of pedestrian crossing movements, it will be relatively obvious where the main pedestrian desire lines are; while in other locations such as where there are sporadic flows associated with events or lower flows in general, pedestrian behaviours may be more difficult to identify. In these instances, a detailed origin-destination assessment, tracing pedestrian desire lines, should be undertaken to fully understand the range of complex pedestrian crossing behaviours to ascertain why people are choosing to cross where they are.

![Tracing pedestrian desire lines shows where crossing points are favoured](image)

Initial studies can be done by observation, with individual pedestrian movements sketched onto a plan. Where appropriate, these can then be traced in a Geographic Information System database to build a picture of origin-destination behaviours. Usually this is conducted across a localised area where a single camera or observer can see a complete movement, rather than trying to link trips across multiple camera angles.

In situations where the results may be contentious, disputed or counter intuitive, it is suggested that origin-destination surveys are recorded on video.
to be able to play back actual examples of crossing behaviours and to collect a large sample size. Typically the time allocation would be expected to be in line with the standard flow count methodology.

Pedestrian desire lines can be used to inform the placement of formal crossing points to best support these organic routes, assuming that they can be safely provided for. They can also be used to inform the design of public space to minimise creating barriers for preferred routes.

It should be noted that desire lines for older and disabled people may be different to other people and based on factors not apparent in a standard GIS map; such as the availability of seating, level surface, public toilets etc. It is recommended to show desire lines for different user groups to provide a richer evidence base to base design decisions on.

In the example below, it was proposed to move an existing crossing away from a junction to improve bus journey times and better serve pedestrian desire lines. Pedestrian origin/destination surveys were undertaken tracking pedestrian movements across and beyond the junction. The results suggested that a better crossing location would be at the adjacent junction, which currently does not have a crossing, to benefit more pedestrians. This highlights the importance of understanding pedestrian movements, rather than making assumptions on crossing behaviours based on the geometry of the street.

Existing crossing location (shown on proposed scheme)
7.3.3 Compliance with traffic signals

<table>
<thead>
<tr>
<th>Purpose</th>
<th>Issues that may be identified</th>
<th>Recommended application</th>
</tr>
</thead>
<tbody>
<tr>
<td>To determine the experience for people looking to cross the carriageway</td>
<td>High levels of delay at formal and / or informal crossing points</td>
<td>Projects where there is anecdotal evidence of crossing issues</td>
</tr>
<tr>
<td></td>
<td>Low levels of compliance at controlled crossings</td>
<td></td>
</tr>
</tbody>
</table>

Unlike drivers and cyclists, pedestrians are under no legal obligation to obey the green walking pedestrian symbol at traffic signals as there are no jaywalking laws in the UK. They can and do cross on the red pedestrian phase by gap seeking and during ‘intergreen’ periods. Of course, at sites without a green pedestrian phase, this is the only way people can cross.

The extent that gap seeking occurs is site specific. At wide, busy and high speed locations, the level of gap seeking is low and pedestrian adherence to the green pedestrian phase is high.
At other sites, particularly those with central refuge islands, the level of gap seeking behaviours is high. This may not necessarily equate to this being deemed a risky behaviour; indeed the central refuge helps facilitate these movements.

Surveys can be designed to ascertain crossing compliance in relation to:

- Crossing during the green or red pedestrian phase
- Crossing in the shadow of a crossing (typically within 50m either side of the crossing)

Compliance results in isolation do not necessarily flag up reasons to change a facility; however when layered with collision data and other observational methods such as desire line tracing, can build a case for improving the design of the crossing facility.

Low crossing compliance where there is a break in traffic flows, supported by a central refuge

7.3.4 Pedestrian delay

Ideally pedestrians should have minimal waiting times when crossing the road. The concept of delay to vehicles and buses is well established; however for pedestrians it is often overlooked. Pedestrian delay, or waiting time, is a good indicator of the level of service for pedestrians in crossing the road.

Longer wait times can cause crowding on footways, increasing the likelihood of pedestrians deviating from the defined crossing point and walking in the shadow of the crossing and between vehicles.

In order to assess delay it is important to understand how pedestrians cross the road. There are three main approaches:
1. Gap seeking

Various studies from around the world have shown that pedestrians will generally cross in gaps of between 1 and 6 seconds.

2. Drivers stopping

Drivers stop and give way either because they are required to by law (at Zebra crossings and traffic signals), or because they choose to.

3. Force

In very busy pedestrian environments such as Oxford Street or after major events, pedestrians will step into the road and benefit from a critical mass of people to force drivers to stop or slow down.

Measuring pedestrian delay

Existing layouts
At traffic signal sites where gap seeking is low and adherence to the green walking pedestrian symbol is high, pedestrian delay can be obtained using traffic signal timing information input into models such as a LinSig model. The model assumes a uniform arrival rate over an hour and works out the average time that a pedestrian has to wait for the green walking pedestrian symbol.

At non signalised and signalised sites where the level of gap seeking is high and adherence to the green walking pedestrian symbol low, a waiting time survey of pedestrians should be undertaken. Where there is a central island,
the waiting time is the time spent at the side of the road and the island added together.

For Zebra crossings, driver compliance in the UK is generally high and pedestrian delay is expected to be low at these sites.

**Proposed schemes**

At signalised sites where adherence to the green walking pedestrian symbol is predicted to be high, LinSig can be used to measure pedestrian delay. At all other sites, pedestrian delay can be predicted using a microsimulation model such as VISSIM. By assessing pedestrian delay in this way, an objective assessment of the impact of schemes on pedestrians can be produced, in the same way that is common for motorised traffic.

### Lower Clapton, Hackney

<table>
<thead>
<tr>
<th>Existing Layout</th>
<th>Proposed Layout</th>
</tr>
</thead>
<tbody>
<tr>
<td><img src="image1" alt="Existing Layout" /></td>
<td><img src="image2" alt="Proposed Layout" /></td>
</tr>
</tbody>
</table>

Initially a LinSig model was used to assess the current level of pedestrian delay at this crossing. This analysis assumes that all pedestrians wait for the green walking pedestrian symbol to cross, and calculated that the average delay was 43 seconds. A manual survey of the delay was subsequently undertaken, with the results indicating an actual delay of 11 seconds, as there is a high level of gap seeking.

The proposed scheme incorporated a ‘courtesy crossing’ in which drivers give way to pedestrians. A VISSIM model was used to assess predicted pedestrian delay. This used two key factors: gap seeking and the percentage of drivers who would give way. This percentage
The Planning for Walking Toolkit

DRAFT

figure was obtained from surveys of a similar site. The predicted delay was 3 seconds.

7.3.5 Stationary activity analysis

<table>
<thead>
<tr>
<th>Purpose</th>
<th>Issues that may be identified</th>
<th>Recommended application</th>
</tr>
</thead>
<tbody>
<tr>
<td>To identify public space use and where people are choosing to dwell</td>
<td>Low volumes of people dwelling in the space</td>
<td>Projects where there are high levels of stationary activity that adversely impacts on other pedestrian movements</td>
</tr>
<tr>
<td></td>
<td>Poor distribution of people around the space</td>
<td>Projects where there are expected changes to amenity and pedestrian provision on footways</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Projects where building frontages are changing</td>
</tr>
</tbody>
</table>

Standing, sitting on formal seats, sitting in informal spaces including on the ground, commercial activities and café seating, can all build a picture of the functionality of the space and be used to identify where pedestrian clustering occurs, where activities create pinch-points and how people choose to use the space.

One to three snapshots of activity per hour across the public realm will provide a useful understanding of stationary activities. Seasonal variation and weather can significantly impact on stationary activities; particularly dwell times and this should be considered in any assessment.

Mapping of these activities on Geographic Information Systems can help to illustrate key issues. Where these activities impinge on functional activities such as access to building entrances, then a design measure may be necessary to encourage activities such as seating in a more appropriate location. Designers may wish to disperse activities to programme the space in a manner that enhances the efficiency of the street.

IMAGE TO BE INSERTED
7.3.6 Interaction surveys

<table>
<thead>
<tr>
<th>Purpose</th>
<th>Issues that may be identified</th>
<th>Recommended application</th>
</tr>
</thead>
<tbody>
<tr>
<td>To understand behaviours by pedestrians and cyclists in shared use areas</td>
<td>Low levels of courteous behaviours being observed</td>
<td>Projects where there is an existing shared use footway</td>
</tr>
<tr>
<td></td>
<td>Sudden changes in direction required by both user groups</td>
<td></td>
</tr>
</tbody>
</table>

Particularly useful for understanding situations where pedestrians and cyclists are using the same sections of public realm, interaction surveys can help to identify whether people are changing their behaviours to accommodate other users' needs. Surveys are typically conducted over at least a 12 hour period using video footage as interactions may not happen especially often. Data collection usually takes the form of people noticeably changing direction for one another and the severity of that change, i.e. a very sudden movement for a pedestrian or cyclist compared to a slight deviation to accommodate one another. Determining when there is an issue will depend on the severity and frequency of the interaction as well as perceptual safety issues.

IMAGE TO BE INSERTED
### 7.3.7 Dynamic local pedestrian modelling

<table>
<thead>
<tr>
<th>Purpose</th>
<th>Issues that may be identified</th>
<th>Recommended application</th>
</tr>
</thead>
</table>
| To predict pedestrian movement implications based on existing data and proposed public realm changes | Footway congestion hotspots  
Crossing waiting area impact on adjacent footway capacity | Projects where there are transformative changes proposed in close proximity to major trip attractors |

Where a design is proposing a transformative impact on the street and it is difficult to estimate the user implications, a dynamic local pedestrian model may be useful to predict patterns of pedestrian movement, pinch-points and congestion to inform the design process.

Dynamic models require a large amount of flow data and origin-destination information to build an accurate representation of existing conditions, so are generally only used in exceptional circumstances. Software, such as Legion, is used to create a micro-simulation of pedestrian movements, with individual entities mapped to show the density of pedestrian movements. This process is usually applied across a localised junction area as large areas can result in too many assumptions being made as part of the model. The design of the Oxford Circus diagonal crossing used this approach to understand cross-flow movements and the impact of waiting areas on the adjacent footway.

Advice on pedestrian modelling using the Legion software product is available in the TfL document ‘Street Level Modelling with Legion – Best Practice Guide’ (TfL, 2008).
7.3.8 Attitudinal surveys

<table>
<thead>
<tr>
<th>Purpose</th>
<th>Issues that may be identified</th>
<th>Recommended application</th>
</tr>
</thead>
</table>
| To collect user opinions on existing layouts and issues | Lack of provision for particular user groups  
Maintenance and condition issues | All projects where anecdotal issues have been raised and the quantitative data is insufficient to make a design decision |

Perceptual surveys are typically structured on a sliding scale to gauge satisfaction and can be presented either as a numbered or discursive scale, depending on the information that is required.

Data collection can involve intercepting people on-street to ask questions there and then, or participants may be provided with a flyer pointing them to an online questionnaire. The flyer approach can be less resource intensive but may risk having a low sample size, so the choice of methodology should balance budget and purpose. It is good practice to include an open ended interview question as well as a semi-structured format to provide useful user feedback and supplement quantitative data. Recording user demographics at the same time can help to understand the composition of the sample.

In relation to the Healthy Streets Approach, surveys have been applied taking into consideration user satisfaction levels.

Table X: User satisfaction measures relating to the Healthy Street Indicators

<table>
<thead>
<tr>
<th>Easy to cross</th>
<th>Shade &amp; shelter</th>
<th>Places to stop and rest</th>
<th>Not too noisy</th>
<th>Things to see and do</th>
<th>People feel relaxed</th>
</tr>
</thead>
</table>
| Ease of crossing road in local area  
Number of traffic lights for pedestrians | Ease of finding shade and shelter in local area | Ease of finding somewhere to sit and rest | Noise levels in streets in local area | Attractiveness of streets in local area  
Enjoyment of streets  
Trees, plants and green spaces in local area | Ability to easily move about  
How clean footways are |
8. Bringing it all together
The long list of tools should be filtered and applied as appropriate for the scale of the project to identify and illustrate key issues relating to a particular area. This approach can then assist in developing ideas for how localised interventions can contribute to overcoming these issues.

8.1 Combining datasets into a summary of key issues
Describing the strengths and weaknesses of a study area in relation to the seven Pedestrian Network Design Principles can be a useful way of bringing together various aspects of the analysis into a cohesive identification of key issues. This would benefit from being presented spatially on a single map to draw together a summary of key issues.

Example key issues map
Mapping of opportunities and linking these to potential delivery issues can be a practical next step to directly address key issues. This process may include a benefit cost appraisal looking at journey times and safety, among other measures to determine a preferred design option. It is recommended to engage local stakeholders again at the design optioneering stage, where several options may remain in contention.
8.2 Cross-checking key issues with the Pedestrian Network Design Principles

By linking the key issues and options back to the Pedestrian Network Design Principles, a focused approach for providing improvements for walking should emerge, which may include:

- Upgrades to existing pedestrian crossings
- New crossing points
- Footway widening
- Enhanced gateways and arrival points to a defined area
- Filtered permeability to reduce through traffic
- Carriageway surface treatments to reduce traffic speeds

Not all intervention options may be practical or mutually beneficial with one another. The relative benefits of these interventions should be assessed in combination by relating their potential benefits back to the key issues, as well as the wider policy context. It may be beneficial to use the seven Pedestrian Network Design Principles as part of the criteria review process, to help define the scope of works for a specific scheme.

8.3 Writing an evidence based design brief

Once a project has been agreed, usually based on a consideration of strategic and local priorities, the design brief will need to reflect the background reasons for delivering a project that is intended to make improvements for walking, setting out the spatial scope, key issues and the main objectives for the scheme. This process should draw on the data collected through the application of the various analytical approaches and tools listed in this document, as well as other tools and processes that are proportionate to the scope of works for other transport modes.

It is vital that the design brief is sufficiently detailed in identifying the key issues for pedestrians to focus the objectives of the project in a quantifiable way and ensure the scheme can deliver against defined priorities that are aligned with the Healthy Streets Approach. An understanding of the potential adverse impact on other transport modes should be recognised and the objectives balanced to ensure that the focus on pedestrians is proportionate and appropriate to the context.

To avoid a dilution of the scheme brief, Project Managers should set out the requirement for the use of tools such as the Healthy Streets Check for Designers, Equality Impact Assessment and the seven Pedestrian Network Design Principles within the design brief itself, to ensure an ongoing review process is in place that maintains an understanding of how the pedestrian environment is being changed.
8.4 Trialling Options
On street trials of design options at a 1:1 scale can be used to test and evaluate the impact and functionality of different layouts in situ. The use of temporary, light touch and low cost projects that change the way a street looks and feels can have a big impact on people’s lives and may be the first step towards more permanent change. Trials allow people to directly experience what a permanent project might feel like which can be a powerful tool in showing the potential of using streets and public spaces for uses other than moving cars.

Temporary trials can be effective in gaining community buy-in to a scheme, and they allow the collection of data about how a design functions before committing to a permanent layout. Collecting data before and after a trial allows for a comparison to a baseline which can help to prioritise design decisions.

Some examples of trials for pedestrian friendly designs may include:

- Use of planters or other objects in the carriageway to trial a road closure or series of road closures (also known as ‘filtered permeability’)
- A one day closure of a street for a community festival
- Taking over a parking space to create an area with seating and planting (also known as a ‘parklet’)
- A trial 20 mile per hour zone
- Highlighting new crossing points on desire lines by use of paint or design on the carriageway
- Using hay bales for indicative seating points
- Using chalk markings to demarcate new footway layouts

An Experimental Traffic Management Order (ETO), made under Sections 9 and 10 of the Road Traffic Regulation Act 1984, is a useful tool when planning to trial infrastructure. An ETO is a type of traffic order that can impose traffic and parking restrictions or change the way existing restrictions function on a street. It allows a designer to try things out often using temporary materials, with an option to make a scheme permanent after 18 months.

Detailed guidance on running temporary trials can be found in TfL’s guidance ‘Small Change, Big Impact’ available at: [http://content.tfl.gov.uk/small-change-big-impact.pdf](http://content.tfl.gov.uk/small-change-big-impact.pdf)
8.5 Delivering the design brief
For the majority of projects which involve improvements to existing streets, the highway authority acts as the scheme designer and the planning body. Once a design brief has been developed and the concept design is underway, it is recommended to assess how different design options relate to the pedestrian network design principles set out in this document. Streetscape Guidance should be referred for detailed infrastructure design guidance.

A range of audits may be carried out to assess the compliance of an emerging design with the project objectives and satisfy planning. These may include:

- a Road Safety Audit to report on potential safety issues and ensure an independent review process is conducted that helps shape and justify the design
- a Design and Access Statement to show how a new development is suitably arranged to benefit all users
- a Transport Assessment to identify the transport implications of a new development and ensure a Healthy Streets Approach can be delivered
- an Equality Impact Assessment to show due regard for all users and particularly people with the characteristics that are protected by the Equality Act
- an Environmental Impact Assessment to consider a range of cross-cutting factors relating to ecology, air quality, townscape and heritage and to mitigate the severity of adverse impacts through the design process.
- a Healthy Streets Check for Planning Application assessment to review proposed developments against the Healthy Streets Approach and ensure compliance with London Plan policy. Contact TfL Spatial Planning spatialplanning@tfl.gov.uk for more information.
Ultimately the success of any project that seeks to provide benefits for pedestrians depends on the effective use of data to identify key issues and ensure that the design brief is sufficiently detailed and focused on positive walking outcomes to drive the project forward and deliver in line with the best practice design principles set out in this toolkit.

**PART D. Case studies**

The following case studies are examples of schemes where the Pedestrian Network Design Principles have been implemented successfully alongside other transformative benefits.

**9.1 New Park Road, Lambeth**

Lambeth Council and TfL delivered a scheme to reduce road danger, traffic levels and traffic speeds outside Richard Atkins Primary School on New Park Road in 2016. Space was re-allocated from vehicles to pedestrians by developing a chicane style layout, with circular build-outs, planters, trees and bike stands. Parking spaces were also removed and a 20mph speed limit introduced. The total cost of the scheme was £200,000.

The layout was designed by Sustrans in collaboration with the school and local residents using a community street design process. Temporary materials were used to transform the street for the day at the end of this process, to allow local people to experience the new layout and feedback their views.
During the trial

After
The scheme adopts the walking design principles of:

**Safe** – horizontal deflection and raised road levels aim to slow traffic and reduce road danger

**Comfortable** – build-outs provide greater space for pedestrians

**Inclusive** – tactile paving and dropped kerbs on built-outs are introduced where the crossing distance is shortest

**Direct and connected** – multiple informal crossing points have been created outside the school

**Legible** – informal coloured circles and markings on the carriageway highlight that this is a space which should not operate as a normal carriageway and priority should be given to children in particular

**Attractive** – the shapes in the layout, the circles of colour, and new trees make the street more playful and attractive

---

### 9.2 Walk Elephant, Southwark

Walk Elephant is changing perceptions of Elephant and Castle from a car-dominated town centre to a green, pleasant space a short walk from the Thames and central London. It has created new walking routes for people to take on their way to work, the shops or home and discover local hidden gems.

Launched in spring 2017, Walk Elephant is a community initiative to improve walking routes across the Elephant and Castle area. Inspired by similar, community-led projects – such as East Walworth Green Links, which created a high-quality route connecting the town centre with Burgess Park – the initiative was kick-started by a series of local walks. Residents took part in these walks to identify potential improvements to help people walking, such as new crossings, better landscaping or clearer signage. This was part of an immersive consultation with fun events and other ways to submit ideas, for example using Commonplace and Spacehive.

These enhancements were plotted on a communal map, and now Southwark Council is helping to bring these ideas to life by seeking support and funds from a variety of sources, including local property developers.
Filtered permeability and new planting at Lamlash Garden

The scheme adopts the walking design principles of:

- **Safe** – traffic calming measures and brightening of underpasses is designed to reduce road danger and make people feel safer
- **Comfortable** – additional footway space and filtered permeability creates more dedicated space for pedestrians
- **Inclusive** – features such as new dropped kerbs allow for improved access and crossing points
- **Direct and connected** – opening up new walking links has been delivered by removing fencing
- **Legible** – wayfinding signposts and use of Walk Elephant branding helps to create a sense of local identity
- **Attractive** – new surfacing, greening and community planting enhances the visual appeal of the street
9.3 Tower Bridge Road, Southwark
Transport for London delivered a £1.5m improvement to the Transport for London Road Network at Tower Bridge Road in 2015. A new public space was created between the main road and Bermondsey Street by removing car parking and repaving the footway. This space was complemented by a new statue of a local WW1 naval hero Albert McKenzie, who was the first London sailor to be awarded a Victoria Cross by King George V. A diagonal crossing was implemented at the junction of Tower Bridge Road, Bermondsey Street and Grange Road as well as widened crossings.

The improved environment for people walking was continued along Tower Bridge Road with raised entry treatments at side roads, upgraded street lighting, and improved bus stops with new bus shelters.
The scheme adopts walking design principles relating to:

**Safe** – raised side road entry treatments reduce vehicle speeds and help to indicate greater priority for pedestrians

**Comfortable** – a road closure has enabled a new public space to be created giving significantly more footway space for people walking

**Inclusive** – new seating and improved bus stops including bus shelters, provide additional rest points for pedestrians

**Direct and connected** – a diagonal crossing at the main junction allows for a more direct walking route

**Legible** – the road closure helps create new public space that is clearly designated to pedestrians

**Attractive** – the widened public space is used by cafes for seating and additional features have been provided such as a memorial statue
A new multi-functional space has been created which can accommodate local events

### 9.4 Marks Gate, Barking and Dagenham

Marks Gate, a housing estate in the London Borough of Barking and Dagenham, faced a number of transport related challenges: severed from the rest of the borough by the A12; and with access by foot and bike limited to subways under this busy road. The Sustrans project was commissioned by the London Borough of Barking and Dagenham as part of their pioneering approach to regeneration.

Working closely with the community, the project combined community-led street design, behaviour change and infrastructure improvements with the aim of increasing opportunities for walking and cycling. Infrastructure changes to the high street and to the school’s entrances have made the area safer and more sociable for all.

The scheme delivered improvements in relation to:

**Safe** – new crossing points were installed aligned to pedestrian desire lines, resurfacing of footways, traffic calming measures and car parking was rationalised on the high street.

**Inclusive** – an involved community engagement approach included pop-up workshops and a street audit carried out with Barking and Dagenham access group to assess usability issues for disabled people.
The parent teacher association came up with the yellow brick road concept and local children designed the mosaic flagstones as well as the 20mph signs.

**Legible** – additional wayfinding signage was employed and directions to a local park applied to the design of shop shutters.

**Attractive** – public art was introduced at a number of sites: on the local shop shutters and in the underpass with a mural and anti-graffiti paint.

Decluttering of street furniture, including guardrail removal, enhanced the streetscape and upgrades included painting of the guardrailing outside the school, tree planting and a community garden.
After - Rose Lane Zebra crossing

Wayfinding signage combined with affordable art installation
9.5 Hornchurch, Havering

A £2.5m renovation scheme by the London Borough of Havering has transformed Hornchurch town centre – tackling its issues of traffic congestion, poor levels of personal safety and a tired public realm.

A significant feature of the redevelopment was the variety of improvements made for pedestrians. Guardrails were removed, crossings were placed on desire lines, footway widths were increased and a central continuous walking strip was created to aid informal crossing.

Social spaces were improved through the additional of new lighting, wayfinding, planting and street furniture. Bus stops were renovated and traffic flows reduced, improving conditions for cyclists. Annual health benefits of £535,000 are estimated to be the result and the scheme was awarded a Highly Commended Urban Transport Design Award in 2014.

Before
The scheme delivered improvements in relation to:

**Direct** – through the provision of courtesy crossings and the median strip, which allows pedestrians more opportunities for crossing directly.

**Comfortable** – wider footways and new open spaces allow for greater pedestrian capacity.

**Inclusive** – colour contrasting materials applied to delineate footways, with new blister tactile paving at crossings and carefully aligned street furniture.

**Legible** – a distinctive look and feel to the street reduces vehicle dominance and increases pedestrian priority.

**Attractive** – good quality surface materials and greening improve the area’s appearance, supporting local businesses during the daytime and restaurants in the evening, boosting the night-time economy.
9.6 Hoe Street, Walthamstow

Walthamstow’s town centre has been transformed thanks to a partnership not just between TfL and the London Borough of Waltham Forest, but with the active participation of local businesses as well.

When the borough and TfL embarked on a £2.6m project to regenerate part of Hoe Street they sought to involve the street’s traders, encouraging them to give their premises a facelift.

Four designers worked with 40 businesses to carry out light-touch improvements to their shop fronts. Six of the shops, located in prominent positions or with notable architectural features, were given more extensive treatments.

Improvements to the street itself included resurfacing, de-cluttering, new wayfinding elements and artwork. At the same time, a new development, called The Scene, brought a further uplift to the area around the junction of Hoe Street and High Street, with a shared space approach adopted at street level. New trees, planters, seating and lighting were also installed along the High Street.
The scheme’s design principles included:

**Comfortable** – the open layout can now comfortably accommodate high pedestrian flows across the full width of the street

**Inclusive** – the level surface has colour contrasting comfort zones, tactile paving at the controlled crossings and carefully aligned street furniture

**Direct** – improved direct access to shops has been accommodated as part of the scheme

**Safe and legible** – the look and feel of the area has reduced vehicle dominance and raised pedestrian priority

**Attractive** – Good quality surface materials and greening improve the look and feel of the area. Local businesses and restaurants have been boosted by the regeneration
9.7 Archway, Islington

Dominated by a busy one-way traffic gyratory, the centre was fragmented and effectively 'marooned' by three lanes of traffic, making it difficult for pedestrians to reach shops and other amenities.

A £12.6m project by TfL and the London Borough of Islington has transformed the area, replacing the gyratory with a re-directed two-way traffic route and
creating an attractive public space, safer cycle lanes and improved pedestrian crossings.

The new layout has reconnected shops and businesses and provided dedicated cycle routes separated from motor vehicles. It has also created a vehicle-free open space outside Archway Tube station and unlocked a site for development of much-needed affordable homes.

The design principles for the scheme included:

**Comfortable** – widening footways and public open space to provide higher capacity for walking

**Inclusive** – use of tactile paving, carefully aligned trees and street furniture contributes towards being accessible for all

**Direct and connected** – new crossings are provided on pedestrian and cyclist desire lines

**Legible** – reduced street clutter and the use of contrasting surfacing for cycle tracks to enhance the clarity in use

**Attractive** – good quality surface materials and greening designed to create a more attractive and vibrant community space that is now used for a regular market

TfL’s Deputy Mayor (Val Shawcross), said the project, completed in July 2017, would substantially improve the local environment and help attract more people to businesses in the area. ‘These are the kind of improvements we want to see rolled out across all parts of London, allowing more Londoners to cycle and walk, and improving quality of life for everyone’.

Cllr Claudia Webbe, Islington Council’s Executive Member for Environment and Transport, described it as a ‘once in a lifetime opportunity to turn a traffic-dominated area into a better, more connected environment for people’.

She added: ‘It goes to the heart of our commitment to improve opportunities for walking and cycling.’

More case study examples can be found in Better Streets Delivered 2 at:

Appendix A - Referenced documents

Transport for London documents:

Collision Levels in Greater London

Streets Toolkit

- Streetscape Guidance - 2015
- London Cycling Design Standards - 2014
- Accessible Bus Stop Design Guidance - 2014
- Kerbside Loading Guidance - 2017
- Sustainable Drainage Systems (SuDS) - 2016

Transport Assessment Guidance (2019)
The Healthy Streets Check for Designers spreadsheet tool (2018)
Small Change, Big Impact (2017)
Road Task Force Report (2013)
PERS factsheet (2010)
Pedestrian Comfort Guidance (2010)
Street Level Modelling with Legion – Best Practice Guide (2008)
Measuring Pedestrian Activity (2007)

Other referenced documents:

The London Plan (GLA, 2019)
The Mayor’s Transport Strategy (GLA, 2018)
Good Growth by Design (GLA, 2018)
Inclusive London (GLA, 2018)

Guidance for the analysis of STATS19 contributory factors (TRL, 2015)

The Equality Act (UK Government, 2010)