

## ICE Curated Knowledge

### Cycle Design Guidance Material

#### Transportation

#### HIGHWAY ENGINEERING



Figure 1: England's National Cycle Network

### Introduction

The following information aims to present a collection of recommended cycle design guidance and good practice information for Transport professionals and those interested in street design.

### Preamble

Improving the design of the roads and streets as well as the broader built environment is vital to allow and encourage cycle use.

ICE has created this briefing sheet to provide information for transport engineers and planners on how cycling infrastructure can be effectively designed, planned and integrated into our towns and cities.

### About this document

The information and links given below collate some of the guidance and information available to transport infrastructure professionals for planning, designing and delivering cycling infrastructure in

the built environment. Some of the guidance also makes reference to providing for walking. Simply click on each report title, which will take you directly to the host site. This information is compiled as:

- A. National guidance
- B. Scottish Design Guidance
- C. Welsh Design Guidance
- D. Northern Ireland Design Guidance
- E. ICE guidance, journals and manuals
- F. International Design Guidance and information

Although not all documents listed focus specifically on cycling, they contain components which must be considered when designing for cycling, and in some cases walking, infrastructure in the built environment. As a disclaimer, it should be borne in mind that ICE is not responsible, or liable, for the content included in this briefing sheet.

## A. National Guidance

### [Case studies: developing new cycling infrastructure \(2016\)](#)

UK Government's [Cycling](#) webpage provide Case studies that illustrate examples of good practice when developing new cycling infrastructure.

Commissioned by the [Cycle Proofing Working Group](#), the studies focus on the processes taken when delivering cycling provision rather than the infrastructure itself.

Examples covered include stakeholder communications, consultations, design, planning and implementation, lessons learnt and impact.

### [Sustrans Handbook for Cycle Friendly Design \(2014\)](#)

This document is part of a suite of technical design guidance on active travel being developed by Sustrans. There is much useful material already available from a range of organisations, and this guidance from Sustrans aims to provide detailed technical advice on key issues around on and off highway cycle infrastructure whilst signposting users to this developing library of further resources.

### [Transport for London Streets Toolkit \(TfL, 2014\)](#)

The Transport for London (TfL) design guidance documents, were produced to help planners, engineers, designers and other practitioners create high quality streets and public spaces. The Streets toolkit includes guidance on streetscape, cycle infrastructure and accessible bus stops.

This toolkit includes the London Cycling Design Standards (LCDS), which was comprehensively revised and updated in 2014. The LCDS sets out requirements and advice for cycle network planning and for the design of dedicated cycle infrastructure, cycle-friendly streets and cycle parking.

### [Greater Manchester Cycle Design Guidance \(TfGM, 2014\)](#)

To ensure consistent and high quality implementation of cycling infrastructure as part of the Vélocity 2025 programme, this Greater Manchester Cycling Design Guidance document (hereafter GMCDG) has been developed in collaboration with the Greater Manchester District Authority partners.

The key design criteria for successful and effective cycling infrastructure are safety, coherence, directness, attractiveness and comfort.

### **[Local Transport Note 1/12: Shared Use Routes for Pedestrians and Cyclists](#) (DfT, 2012)**

The DfT produced LTN1/12, focuses on routes within built-up areas, where the predominant function of the route is for utility transport, and where use by pedestrians and/or cyclists is likely to be frequent. This guide should be read in conjunction with LTN 2/08 Cycle Infrastructure Design (DfT, 2008b).

For guidance documents specifically on how designers can provide inclusive access, the DfT have also [produced Inclusive Mobility – A Guide to Best Practice on Access to Pedestrian and Transport Infrastructure](#) (DfT, 2002a)

### **[Local Transport Note 1/11: Shared Space](#) (DfT, 2011)**

Shared space is a design approach that seeks to change the way streets operate by reducing the dominance of motor vehicles, primarily through lower speeds and encouraging drivers to behave more accommodatingly towards pedestrians. Local Transport Note 1/11 is mainly concerned with the use of shared space on links. While it focuses on High Street environments, many of its principles will apply to other types of shared space. It is intended to assist those designing and preparing street improvement and management schemes.

### **[Local Transport Note 2/08: Cycle Infrastructure Design](#) (DfT, 2008)**

The Department for Transport (DfT) produced local transport note LTN2/08 in 2008, which brought together and updated guidance previously available in a number of draft Local Transport Notes and other documents.

Although its focus is the design of cycle infrastructure, parts of its advice are equally appropriate to improving conditions for pedestrians.

### **[Local Transport Note 3/08: Mixed Priority Routes – a Practitioners Guide](#) (DfT, 2008)**

Mixed Priority Routes (MPR) are streets that carry high levels of traffic and also have:

- a mix of residential use and commercial frontages;
- a mix of road users, i.e. shoppers, cyclists, bus passengers, schoolchildren;
- a mix of parking and deliveries.

Local Transport Note 3/08 provides guidance for project managers and senior technical staff who might be involved in the development and delivery of MPR schemes, building on the experience of those that have already been through the process and understand the organisation and delivery issues involved.

Further DfT Local Transport notes are available via the Gov.uk website's [Traffic management guidance for local authorities](#) collection.

## **B. Scottish Design Guidance**

### **[The Scottish Government's 'Designing Streets' Toolbox](#) (TSO, 2010)**

[Designing Streets](#) (2010) supports Designing Places and is the first policy statement in Scotland for street design. This marks a change in the emphasis of guidance on street design towards place-making and away from a system focused upon the dominance of motor vehicles.

As a result of research on policy implementation, a [Designing Streets toolbox](#) was created to help with specific tasks, guidance, street design and development processes.

## C. Welsh Design Guidance

### [Active Travel Wales Act Design Guidance](#) (2013)

The Active Travel (Wales) Act 2013 provides the primary legal foundation on which active travel in Wales will be supported.

The Welsh Government have published an [Active Travel Action Plan](#) (2014) alongside a [design guidance document](#) (2014) for everyone involved in the planning, design, approval, construction and maintenance of active travel routes in Wales.

## D. Northern Ireland Design Guidance

### [Creating Places: Achieving quality in residential environments](#) (NI Planning, 2000)

This [guide](#) describes the contributions to quality and sustainability that developers in Northern Ireland will be expected to make through the design of new residential developments.

The [guide](#) is for use by all those involved in the design of new residential developments and the rejuvenation of existing housing areas – primarily house-builders, architects, landscape architects, urban designers, planners and road engineers. It is intentionally not slanted towards any one profession or group, in the belief that what is said here is relevant to all those who have an interest in the design of the places where we live.

## E. ICE Guidance, journals and manuals

### [ICE Sustainability Journal - Active travel: a review of ICE sustainability proceedings](#) (2016)

This briefing looks at the benefits of travel by self-propulsion and why wider uptake is essential for sustainability. Some of the barriers and benefits of active travel are discussed in an Institution of Civil Engineers journal themed issue, which is also reviewed in this article.

### [Practical Road Safety Auditing, 3<sup>rd</sup> edition](#) (2015)

Practical Road Safety Auditing explores the systematic process for checking the safety of new and improved road schemes for the benefit of future road users. Not only will a successful Audit help road users such as pedestrians, cyclists, motorcyclists, bus users, equestrians and those with visual and mobility impairments, but an understanding and appreciation of an efficient Road Safety Audit will also improve design and evaluation processes for both new and existing road schemes

### [ICE Manual for Highway Design & Management \(2011\)](#)

The ICE manual of highway design and management is a one-stop reference for all practicing engineers working in the field of highway engineering. Written and edited by a wide selection of leading specialists, this manual covers each of the key aspects of highway engineering projects - from funding, procurement and transport planning to traffic engineering, materials and design - as well as the management and maintenance of existing highways assets.

## **F. International guidance and information**

Internationally, levels of cycling and cycling activity can vary. Town and City Planners who have promoted active travel choices and infrastructure have seen citizens adopt walking and cycling in their droves. Conversely, cities which have planned the built environment around motor travel as the primary transport mode continue to suffer from congestion and pollution.

For engineers outside of the UK, or for transport professionals seeking inspiration or guidance from successful schemes applied elsewhere, ICE have collated International guidance used for designing, engineering and maintaining cycling and walking infrastructure.

Listed below are recommended examples which transport professionals/engineers would benefit from further investigation:

### [Focus on Cycling: Copenhagen guidelines for the design of road projects \(2014\)](#)

The goal of the guidelines set forth in focus on Cycling is to ensure that bicycle traffic is factored into all Copenhagen road projects to the greatest extent possible, on a level that corresponds to the city's political aspirations, regardless of whether it is a cycling project or a more general traffic project. Furthermore, the guidelines are intended to ensure a consistent traffic design.

### [Cycling Embassy of Denmark \(2013\)](#)

The Cycling Embassy of Denmark unites knowledge of cycling from the private, public and voluntary sectors in an effort to become a primary source of cycling knowledge. Thus, the Cycling Embassy of Denmark holds the best knowledge of all areas related to bicycling ranging from bicycles and bicycle equipment to bicycle tourism, parking facilities, bicycle infrastructure, city planning, and much more. Recommended material from this site, include the Collection of Cycle Concepts, Danish Roads Directorate (2012)

### [NACTO Urban Bikeway Design Guide \(2011\)](#)

The National Association of City Transportation Officials (NACTO) have published an Urban Bikeway Design Guide, as part of the 'Cities for Cycling' initiative. This initiative, by NACTO, was a project to catalogue, promote and implement the world's best bicycle transportation practices in American municipalities. The Urban Bikeway Design Guide is a collection of the best in innovative bikeway treatments from around the US.

### [National Cycling Manual \(2009\)](#)

The Irish National Transport Authority have published a National Cycling Manual, which embraces the Principles of Sustainable Safety, stating that this will offer a safe traffic environment for all road

users including cyclists. It offers guidance on integrating the bike in the design of urban areas. A PDF version can be downloaded [here](#).

### [C.R.O.W. Design Manual for Bicycle Traffic \(2007\)](#)

In order to retain the bicycle's rightful position within the traffic system and, where possible, to strengthen it, a bicycle-friendly infrastructure is needed. The CROW-record 25 entitled 'Design manual for bicycle traffic' is a Dutch publication describing the steps required to achieve such an infrastructure. It is a revision of record 10 'Sign up for the bike'. This manual can be ordered, but is not currently available to view online.

### **Our Experts Discuss..**

#### [Engineering a Cycle Revolution \(July 2015\)](#)

This recorded event discussed the nature of highways and traffic engineering that will help create the environment to accommodate large volumes of cycle traffic in urban areas. Speakers include:

- Phil Jones, Managing Director, Phil Jones Associates
- Peter Murray, New London Architecture
- Dr Claudia Penaranda, Principal Technical Specialist for Cycling, TfL
- Dr Alexander Longdon, Cycling Strategy Planner, TfL
- Prof. John Parkin, Professor of Transport Engineering, UWE Bristol (Chair)

### **Case Studies**

The following case studies provide examples of where industry best practice on highways engineering:

- [Poynton Town Centre](#): How pedestrian, bicycle and vehicle interaction was enhanced by introducing low-speed design and shared space.

### **ICE Training courses**

- [Highway Design and Detailing using the DMRB](#)
- [Pavement Design Using the DMRB](#)
- [Specifying and using asphalts in roads and other paved areas with confidence](#)
- [Eurocodes courses](#)

### Journals

- [Proceedings of the ICE - Transport](#)
- [Proceedings of the ICE – Municipal](#)
- [Proceedings of the ICE - Sustainability](#)

Books

- [ICE Manual for Highway Design & Management \(2011\)](#)
- [Highways: \*the location, design, construction and maintenance of road pavements\* \(2015\)](#)
- [Principles of Pavement Engineering \(2014\)](#)
- [Sustainable Infrastructure: Principles into practice](#)
- [ICE Manual for Health & Safety in Construction](#)