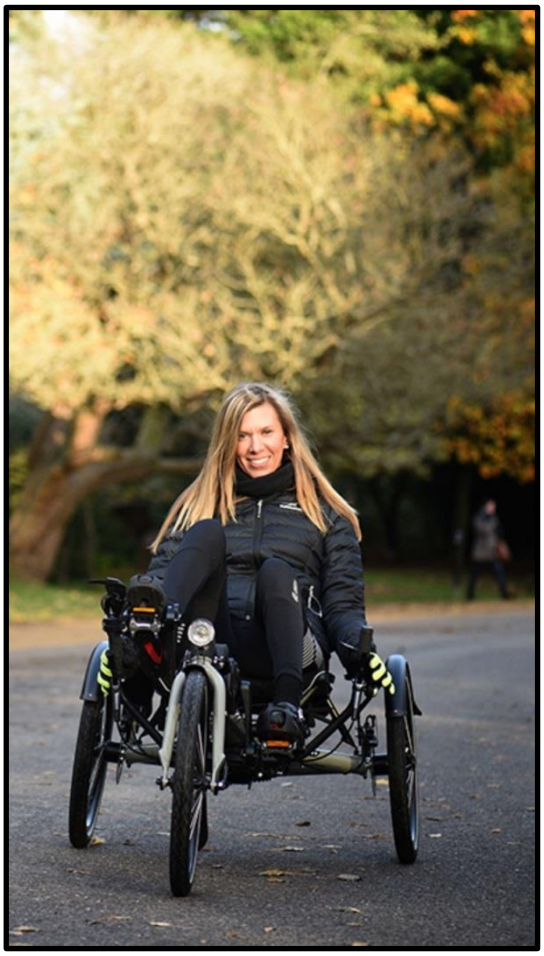
Wheels for Wellbeing

A guide to inclusive cycling

First edition - November 2017




Skateboarding
and Cycling in
the Town Hall
Square
is Prohibited

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Foreword

About Wheels for Wellbeing

Wheels for Wellbeing is an inclusive cycling charity based in Brixton, south London. We were founded in 2007, so this year we are proud to be celebrating our 10th anniversary! We are a grassroots disability organisation, running five sessions a week at our three inclusive cycling hubs. Using any of our fleet of over 200 cycles (handcycles, tandems, tricycles, recumbents, wheelchair cycles, side-by-sides and bicycles) disabled people of all ages can discover or rediscover cycling, whilst enjoying its health and wellbeing benefits. Every year around 1,200 disabled people, aged from 18 months to 99 years-old, cycle at our hubs.

In recent years, we have become increasingly frustrated by the fact that - though disabled people are significantly hampered in the amount of cycling they can do by innumerable features of the cycling environment - they have been mostly absent from the cycling debate. We decided we needed to speak up. We began with a presentation at a London Cycling Campaign (LCC) seminar back in February 2014, where some of the ideas discussed in this handbook were first developed. In 2016 we launched our *Beyond the Bicycle* manifesto at an All Party Parliamentary Cycling Group (APPCG) event we held at the Herne Hill Velodrome, attended by MPs, local politicians, cycle traders and media. Our objective then (as it is now) was to increase the awareness of the fact that disabled people do cycle and to influence cycling infrastructure, facilities and representation so all of us can reach our full cycling potential.

We are very proud to have become the UK's leading campaigning organisation on behalf of disabled cyclists. In short, we are the voice of disabled cyclists.

Our vision

Many disabled people still don't get to enjoy the amazing benefits of cycling because of barriers that are put in their way: be they physical, attitudinal, or otherwise. However, we know that significant numbers of disabled people do already cycle and that many more could do so given the right conditions.

We fight for a world where disabled people are able to cycle whenever and wherever they wish - whether for transport, leisure or exercise. This will be the case when all cycle routes and facilities are inclusive and accessible. We aim to transform the common perception of what cycles and cyclists look like. We believe our work will lead to a healthier population and will transform attitudes to disability.

Who and what this guide is for

This handbook does not claim to be the answer to everything about inclusive cycling. Nor is it a highly technical set of design guidelines. Rather, it is somewhere in between: an accessible, yet thorough guide on the *basic principles* of inclusive cycling. We hope that it

will be a useful tool for local authorities, transport bodies, civil engineers, academics, cycling organisations, disability charities, campaign groups and, of course, disabled cyclists themselves.

This guide covers a number of topics. It begins by defining what we mean by 'inclusive cycling', providing a context to disability in the UK, dispelling some of the myths around disability and cycling and setting out some key facts and figures. It goes on to look at the benefits of cycling for disabled people, the types of cycles used by some disabled people and the barriers faced by disabled cyclists. The first section finishes with an outline of our current campaigns and how UK equalities legislation applies to inclusive cycling. The rest of the handbook is then broken down into three sections - **inclusive cycling infrastructure**, **inclusive cycling facilities** and **recognition** - exploring the practical ways in which cycling can be made more inclusive in each of these areas.

We hope that our guide provides some useful signposting for anyone designing cycling infrastructure, updating a cycling strategy or who is keen to better understand the needs of disabled cyclists. Each section features inclusive cycling imagery, policy recommendations, case studies and quotes from disabled cyclists. There are undoubtedly aspects that we have missed, or which will come to light in due course; therefore, it is our intention that this handbook will be a 'live' online working document that can be regularly updated and added to. If you would like to suggest a contribution to our handbook then please email us at info@wheelsforwellbeing.org.uk using 'Inclusive Cycling Handbook' as the subject line.

This document is our latest contribution towards reaching our ultimate goal of cycling equality for disabled people. We are launching it at the first ever **Beyond The Bicycle Conference**, at City Hall, on 7th November 2017.

Isabelle Clement, Director of Wheels for Wellbeing

What is inclusive cycling?

Disability in the UK

Under the Equality Act 2010, disability is defined as a physical or mental impairment that has a 'substantial' and 'long-term' negative effect on a person's ability to do normal daily activities. According to the Office for National Statistics (ONS), **one in five** people in England and Wales currently have a disability.[i]

Statistically, if you have a disability you are much more likely to encounter health problems, for instance:

- Disabled people are half as likely as non-disabled people to be physically active, resulting in shorter average life expectancies;[ii]
- The majority of disabled people are elderly (and therefore at greater risk of developing health conditions), with the number of people aged 65+ expected to increase by 12% between 2015 and 2020;[iii]
- Disabled people tend to be more reliant for day-to-day travel on driving or being driven, either by door-to-door services, such as community transport services, or by taxis and private car hire;
- Disabled people are much more likely to be socially isolated and have smaller support networks than non-disabled people.[iv]

This paints a bleak picture of the future for disabled people's health and wellbeing. Inactivity and social exclusion are harming disabled people's physical and mental health, which in turn puts added pressure on the NHS. Moreover, a growing dependence on private car hire adds to the plight of the environment and does nothing to decrease sedentary living.

However, if fully inclusive, cycling can be a panacea for huge numbers of disabled and older people. We believe it is in the interests of everyone – disabled people, local authorities, the NHS and society as a whole – that every effort is made to ensure that cycling is made as inclusive as possible.

The social model of disability

The social model of disability says that a person is disabled *by society*, rather than by their impairment or health condition (in contrast to the medical model of disability). It also differs from the charity model of disability, which sees disabled people as unable to do things for themselves.

The **social model** seeks to remove physical and societal barriers to ensure that disabled people are independent and equal in society. Scope has an excellent definition here.

Wheels for Wellbeing works within the social model of disability.

Disabled cyclists - facts and stats

It is a common myth that disabled people don't (or can't) cycle. According to TfL, in London alone 15% of disabled people use a cycle to get around occasionally or often, compared to 18% of non-disabled people.[v]

Many other myths around disabled cyclists abound. Below are some key facts and figures, which we hope might provide some clarity about what cycling is and can be for disabled people. They are taken from a survey we carried out in early 2017, which gathered the views and experiences of more than 200 disabled cyclists from across the UK.

Who are disabled cyclists?

56% of respondents were **male** and most were **middle-aged**

Most cycle on a **weekly basis** (37%)

76% cycle for **exercise**

Most use a standard **two-wheeled bicycle** (41%)

2/3rds find **cycling easier than walking**

The barriers they encounter

Infrastructure causes the most difficulty for disabled cyclists

1 in 3 have been unable to adequately **park or store** a non-standard cycle

Cost is a common barrier to inclusive cycling take-up

32% have been asked to dismount, even when using their cycle as a **mobility aid**

What are the benefits of cycling for disabled people?

A number of studies have shown cycling to have multiple health benefits, from improving alertness at work to reducing the risk of cancer and heart disease. Cycling has also been linked to improved mental wellbeing. Of course, as a sustainable mode of transport, it is also beneficial for the environment.

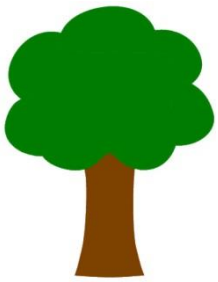
With disabled people more likely to be physically inactive and socially isolated than non-disabled people (and likely to be older), the range of benefits that cycling has to offer is vast…

Health

- Improves physical fitness and strength
- Helps stabilise blood sugar levels
- Helps older people to stay active in life for longer (especially with the use of electrical assistance technology e.g. e-cycles)
- Delays onset of many conditions and reliance on NHS or social care services

Wellbeing

- Improves confidence and skills
- Gives a sense of freedom and empowerment
- Reduces social isolation (especially where disabled people have access to a local inclusive cycling hub or live close to good quality cycling infrastructure)
- Improves mental wellbeing



Environment

- Reduces reliance on private car hire and taxis
- Reduces congestion and pollution
- Supports measures to improve air quality

Types of non-standard cycles

Though large numbers of disabled cyclists use a standard two-wheeled bicycle to get around, it is important to recognise that many use a variety of non-standard cycles depending on their need. These take many different forms, but when it comes to design criteria we refer you to Highways England's cycle design vehicle - an inclusive concept that captures all shapes and sizes of cycles, defined as 2.8m long and 1.2m wide.

Tricycle

Tricycles have three wheels and offer good stability. They also exist in tandem and recumbent versions.

Credit: photojB/Sustrans

Tandem

Tandems are designed for two people to ride together and can be configured either with one rider in front of the other, or side-by-side, as shown here.

Credit: photojB/Sustrans

Handcycle

Handcycles can come as one piece or as a 'clip on' attachment for a wheelchair. Sporty, recumbent versions are available.

Credit: TfL

Recumbent

A recumbent cycling position may put less strain on the rider's back, knees and hip joints. They exist in two and three-wheeled forms.

Credit: photojB/Sustrans

Wheelchair tandem

Wheelchair tandems ensure cycling opportunities are available to absolutely everyone, including those who may not have the required strength or control to move a cycle themselves.

E-cycle

Electrical assistance helps disabled and older people to cycle longer distances and in greater comfort, by reducing the amount of physical effort required. All of the above cycle types are available as 'e-assist' or can be retrofitted as such.

What are the barriers to cycling for disabled people?

Many aren't aware of the fact that disabled people cycle. Growing numbers do, with some using standard two-wheeled bicycles and others using non-standard cycles - for transport, leisure or sport. However, there are a number of physical, financial and attitudinal barriers that continue to prevent more disabled people in the UK from taking up cycling. These can be summarised as:

Cycling infrastructure (pages 17-26)

There is a lack of fully inclusive infrastructure across cycle networks. Narrow cycle lanes, steps, speed reduction treatments, physical obstacles, barriers and potholes reduce accessibility for non-standard cycles, which are often wider, longer and heavier than standard bicycles. Accessibility can also be reduced for disabled cyclists who ride on two wheels but who may not be able to lift, carry or walk their cycle.

Cycling facilities (pages 27-36)

The majority of cycle parking and storage facilities fail to cater for the needs of disabled cyclists. Without reliably available parking facilities at their destination (and fully integrated modes of transport along the way) disabled cyclists will often be discouraged from venturing out in the first place, thus limiting their options for active travel.

Cost (page 35)

Non-standard cycles (including specially adapted bicycles) are typically more expensive than standard road bikes, with access to hire and loan schemes also limited. Disabled people are more likely to be on lower incomes than those who are non-disabled, creating a further financial disadvantage when it comes to purchasing the right cycle.

Imagery, language and perceptions (pages 38-39)

Representations of non-standard cycles and visibly disabled cyclists are absent from most cycling literature. Disabled cyclists are further excluded from cycling culture through use of the word 'bicycle' as a bi-word for a cycle, the branding of e-assist as 'cheating', the perception that cycling is for the fit and athletic, and assumptions like: all cyclists are able to carry or wheel their cycle. This leads to many disabled people assuming, wrongly, that cycling is not an option.

Cycles not recognised as mobility aids (page 40)

Many disabled people find cycling easier than walking. However, under existing legislation cycles are not listed as a mobility aid (unlike wheelchairs and mobility scooters), meaning disabled cyclists may be asked to dismount in designated non-cycling zones (despite the fact that walking, wheeling or lifting a cycle might be physically impossible for some).

Our campaigns

As an inclusive cycling campaigning organisation, we push for the needs and rights of disabled cyclists to be met. Our campaigns span a range of issues, from improving the inclusivity of cycling infrastructure to seeking legal recognition for cycles as mobility aids. We hope that our campaigns will not only inspire disabled cyclists to take action where their rights have been infringed, but will also help to inform policy and practice at a local and national level, leading to a world where cycling by disabled people is easy and commonplace.

Alongside our campaigning activities we provide expert advice, training and consultancy to transport bodies and local authorities. Please contact us if you would like to find out more.

Cycling is easier than walking

The majority of disabled cyclists find cycling easier than walking, with many using their cycle as a mobility aid (just like a wheelchair or mobility scooter). However, under existing legislation cycles are not recognised in this way. We think this is discriminatory and discourages many disabled people from taking up cycling. For instance, many disabled cyclists are told to dismount and walk their cycle in 'non-cycling' areas, despite the fact that it may be physically impossible for them to do so.

We are campaigning to ensure that cycles are legally recognised as a mobility aid, when used by a disabled person for this purpose – putting them on a level playing field with wheelchairs and mobility scooters.

Infrastructure for all

According to our research, inaccessible cycling infrastructure is the biggest difficulty faced by disabled cyclists. Narrow cycle lanes, steps, bollards and anti-motorcycle barriers are just some of the obstacles that can restrict or deny access to disabled cyclists, including riders of non-standard cycles, which are typically longer and wider than standard bicycles.

We are campaigning to ensure that all cycling infrastructure is designed with the needs of disabled cyclists in mind. In particular, we are calling on local authorities to adopt an inclusive cycling 'footprint' as part of their cycling strategies and for government to develop a national technical standard for inclusive cycling.

Subsidies for cycles

The cost of non-standard cycles can put off many disabled people from cycling. The price tag attached to an adapted or specialised cycle far exceeds that of a standard bicycle, leaving many unable to afford the right kind of cycle and excluded from cycle to work

schemes. Added to this, the rules around VAT and non- standard cycles are not always clear, often leaving disabled cyclists unable to afford to cycle.

We are campaigning to raise awareness of inclusive cycling amongst employers, cycle manufacturers, health professionals and government. By exploring opportunities to reduce and subsidise the cost of non- standard cycles, we hope to make cycling a much more attractive and affordable option for disabled people.

Invisible cyclists

Too often disabled cyclists are ignored by cycling professionals, transport bodies and local government. In an audit we carried out of London cycling strategies, we found that only 2% of all images of cycles were of non-standard cycles. Disabled people are also most likely to be seen as car drivers or pedestrians when discussed in transport policy. Rarely are they thought of as cyclists.

We are campaigning to improve the representation of disabled cyclists in cycling policy, imagery and language. By working closely with transport bodies, local authorities and cycling groups, going on study tours and delivering workshops, we hope to increase the visibility of disabled cyclists. In particular we are working with partners to create and make available a photobank of inclusive cycling imagery for use by all who use images of cyclists.

Equalities legislation and cycling in the UK

As part of the Equality Act 2010, a legal duty was placed on public bodies and others carrying out public functions to ensure that they consider the needs of all individuals in their day to day work - known as the **Public Sector Equality Duty (PSED)**. It covers a number of protected characteristics, such as age, race and disability.

The Equality Duty's purpose is to help public bodies consider how different people will be affected by their activities and to ensure this forms part of their policy and decision-making processes. It applies to all public authorities named in Section 19 of the Equality Act, including government departments, health bodies, local authorities, transport authorities, schools and the police. They must have due regard to the need to:

1. Eliminate **unlawful discrimination**, harassment and victimisation and other conduct prohibited by the Equality Act;
2. Advance **equality of opportunity** between people who share a protected characteristic and those who do not;
3. **Foster good relations** between people who share a protected characteristic and those who do not.

It is enforced by the Equality and Human Rights Commission (EHRC), which has overall responsibility for assessing compliance with the Equality Duty and its enforcement, with the power to issue compliance notices to public bodies.

The PSED and cycling

When developing a cycling or transport strategy, local authorities should always take into account the needs of disabled people as cyclists. This could mean, for example:

- Ensuring **cycling infrastructure** is designed to accommodate the needs of disabled cyclists and the dimensions of non-standard cycles (e.g. not installing bollards set too closely together)
- Ensuring the needs of disabled cyclists are taken into account when considering the installation of **cycling facilities** (e.g. allocating a proportion of cycle parking spaces to users of non-standard cycles)
- Ensuring an adequate **visual representation** of disabled cyclists in relevant policy documents, guidance and communications (e.g. increasing the number of images and photos of non-standard cycles)

Inclusive cycling INFRASTRUCTURE

Building inclusive infrastructure

According to our research, inaccessible cycling infrastructure is the single biggest difficulty faced by disabled cyclists in the UK. This is perhaps unsurprising given the kinds of cycles that many disabled people use (e.g. tight bollards may exclude a tricycle, narrow cycle lanes a side-by-side tandem and kissing gates a handcycle or a tandem).These are real, everyday problems that limit disabled cyclists' ability to cycle where and when they want.

Cycle networks and cycling infrastructure have been designed around the two-wheeled bicycle and able-bodied cyclist. This excludes many other types of cyclists. However, a cycle network that meets the needs of disabled cyclists - by being step-free, barrier-free and spacious - is, by default, accessible to *everyone*: two-wheeled bicycle users, as well as individuals, families and businesses who use tricycles, tandems, trailers and cargobikes (the latter of which are increasingly used to transport children and freight). Equally, any measures enabling cycling by disabled people are likely to support a growth in cycling by novice cyclists, including children and young people, as well as older people. It will also improve conditions for those using mobility scooters.

A good indicator of a well-designed inclusive cycle network is the variety of users from under-represented groups using it (inc. disabled people, women, children and older people). We believe that the potential for growth in this area is significant and could yield substantial social, health and financial benefits, which as yet remain untapped.

This section takes a look at cycling infrastructure and how it can be made inclusive of disabled cyclists.

A disabled cyclist using segregated cycling infrastructure in south London. Credit: Mark Treasure

Space and essential features for disabled cyclists

Obstacles

In general, obstacles are a problem if they prevent access or create discomfort.

Many people live with pain conditions. Cycling can be less painful than walking, except where having to go over humps, bumps and engineered uneven surfaces.

"I've been unable to cycle due to barriers on cycle paths and to access certain roads and paths due to objects, such as speed bumps on cycle paths"

Crossings, junctions, turning and visibility

Problem:
Wider cycles such as handcycles and tricycles require a wider lane and turning circle. Also, as they often have a lower seating position, they may be less visible.

Buttons at pedestrian crossings may be out of the reach of cyclists who are low to the ground (recumbent cyclists), or positioned so close to the road that a handcyclist will have to put their front wheel into the road to reach the button.

Solution:
Sufficiently wide cycle lanes are needed to accommodate all types of cycles. See IAN 195/16 2.2.4.1

Disabled cyclists need more space around them to allow drivers to see them. Approaches to junctions and crossings need to be perpendicular for visibility.

Buttons at pedestrian crossings should be positioned in a way that is reachable by all cyclists.

Advanced stop lines (ASLs)

Problem:
Disabled cyclists often need to generate greater momentum when setting off from a stationary/standing position. This is especially the case for those who are unable to ride out of their saddle or who power their cycle by hand.

Cyclists who are lower to the ground often feel vulnerable at ASLs, as they fear they are less likely to be seen by vehicles stationed behind and to the side.

Solution:
Where possible a system of separate signals and traffic stages (minimum 10 second gap) should be used, affording all cyclists more time to get away safely and ahead of traffic.

Design solutions should also be developed for a balancing aid at traffic lights, to be used by cyclists who require a physical prompt/assistance when pushing off from a stationary position at a red light.

Access to/from cycle paths, footways and cycle parking

Problem:
Continuous kerbs lining cycle routes are an important feature of segregated cycle infrastructure, but they can end up trapping disabled cyclists in a cycle track. Pushing/walking a cycle or a tricycle up a kerb is not an option for many. Like wheelchair users, disabled cyclists need dropped kerbs and step-free access. This tends to be more forgiving for everyone, not just disabled cyclists.

Disabled cyclists can also encounter difficulties when forced to cycle up/down cambered inclines.

Solution:
Access to dropped kerbs needs to be at least 1.5m wide and proportionally wider when the approach creates an oblique angle. Kerbs in general should not prevent disabled cyclists from pulling over to stop or from getting out of the way of obstacles, other cyclists or traffic.

Forms of permeable separation are preferred. All on-street cycle parking should have step-free access (see pages 29-32).

Temporary closures of cycle provision

Problem:
Disabled cyclists often have to go to great lengths to plan a journey to ensure it is accessible, so when cycling infrastructure is suddenly closed this can create problems, especially where no alternative accessible route or additional signposting has been provided.

The use of A Boards on cycle paths and footways can create obstructions for cyclists and pedestrians alike.

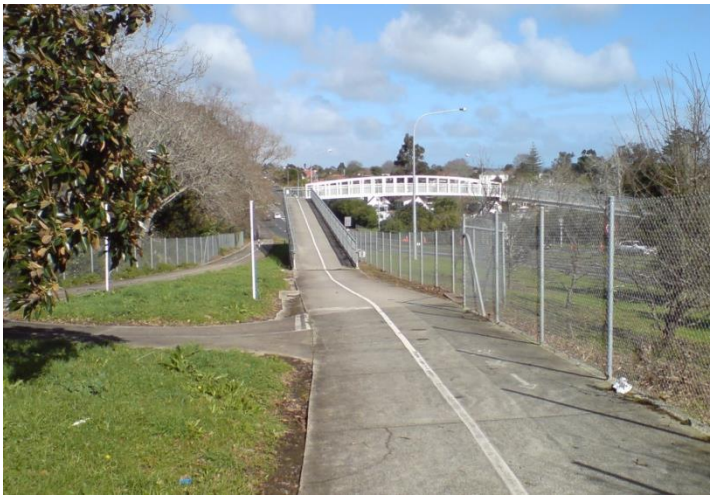
Solution:
When a cycle route or general carriageway is temporarily closed, then an alternative route should be signposted that will not involve steps or rely on dismounting and walking. Whenever possible, there should be enough advance notice of a closure for cyclists to decide upon an alternative route. It is not sufficient to rely upon signage for motorists, since a route that is closed to motorists may still be passable for cyclists. Retention sockets in temporary foundation blocks are preferred to the use of A Boards.

Where cyclists are allowed through an incident area but asked to dismount, disabled cyclists should be understood as not being able to walk their cycle and should be entitled to continue cycling or provided with advice as to alternative routes. Where the alternative route involves walking up a curb, a ramp should always be provided, with adequate width for non-standard cycles.

Gradients and cambers

Problem:

The length of climbs, as well as the gradient, is important for disabled and older cyclists. Some will have difficulty with the approach to a river bridge, or exiting an underground subway, for example.



Three wheelers are particularly adversely affected by steep cambers and can end up in the gutter or even overturn.

Solution:
Steps should never be used for bridges that are on cycle or pedestrian routes. Ramp gradients should be minimised wherever possible on general routes intended for all cyclists, without assuming that cyclists will push/walk their cycle if the gradient is too steep. Paths used for cycling should have the gentlest camber possible to facilitate comfortable and safe cycling, whilst allowing for drainage. A maximum cross fall of 1:40 is recommended for paths used for cycles.

Surface quality

Problem:
Road surfaces are a particular issue for disabled cyclists, who can suffer severe discomfort from bumps and shocks. Handcyclists in particular do not have the option of lifting off the saddle to avoid shocks to their spines when going over potholes or obstacles. Anyone cycling on more than two wheels is also less likely to be able to avoid a hazard, causing them to swerve and putting them at risk from overtaking vehicles and oncoming traffic.

A disabled cyclist whose cycle is damaged by a pothole is unlikely to have the option of dismounting and pushing their cycle to safety.

Solution:
Road surfaces should be free of potholes, badly laid ironworks or other hazards. General maintenance of road surfaces is also important. These should be regularly cleared of leaves and debris, which can hide potholes and create a slip-hazard. Cobbled surfaces should be avoided as they can cause discomfort. In conservation areas, spaces between cobbles should be filled up to create aesthetically pleasing but gap-free surfaces.

Speed reduction treatments

Problem:
Speed humps/speed tables are problematic due to the inconsistency of design and execution. Where they are excessively high or feature straight edges (often cobbled) they can cause handcycles and recumbent tricycles to 'bottom out' and experience discomfort.

Speed cushions are particularly problematic because they can create unavoidable cambers which can cause three wheelers to tip over. Cycling *between* speed cushions is the most stable solution but can force cyclists into dangerous cycling positions. Traffic islands and chicanes creating pinch points can be difficult for those using wider cycles to negotiate.

Solution:
The sinusoidal design should be the only design used for speed humps - covering the full width of a carriageway.

Bollards, posts and kerb upstands

Problem:
Creating cycling permeability while restricting motor traffic passage through location of obstacles is a common traffic control measure, but this should not restrict cyclists.

Solution:
Where bollards or kerb upstands are used across a pathway to prevent access to motor vehicles the minimum distance between two bollards, or gaps between kerb upstands, should be no less than 1.5m. See IAN 195/16 2.3.8.

Access control barriers

Problem:
Many cyclists cannot dismount and push/wheel their cycle. Sections of the road network that are not continuous, or that require the cyclist to make awkward manoeuvres or dismount, pose a significant barrier for disabled cyclists. This is particularly so for handcyclists, where it is not an option for the rider to get off and walk at a barrier or hazard and also applies to many people who use a cycle as a mobility aid. It is wrongly assumed that a cyclist can always lift their cycle over a barrier.

Access control measures and barriers that prevent access to motorbikes, mopeds and scooters also prevent access to inclusive cycles (e.g. A-frames, K-frames, York Chicanes and kissing gates). Kissing gates cannot be used by cyclists who cannot dismount.

Solution:
It is not recommended to have any barriers along a path that is used by cycles. If it is necessary to prevent access for livestock, use cycle- and wheelchair-friendly cattle grids. In addition, provide a firm, smooth path section and gate for those who are able to operate gates (it must not be assumed, however, that a disabled person will always be accompanied by someone who can operate the gate mechanism for them).

"There is still a frustrating fixation for barriers that block new paths to cycles and disabled people. One of my regular frustrations is that I can no longer go shopping on my bike over the traffic-free footbridge over the railway. It has a barrier and no dropped kerbs"

Crossing cycle tracks

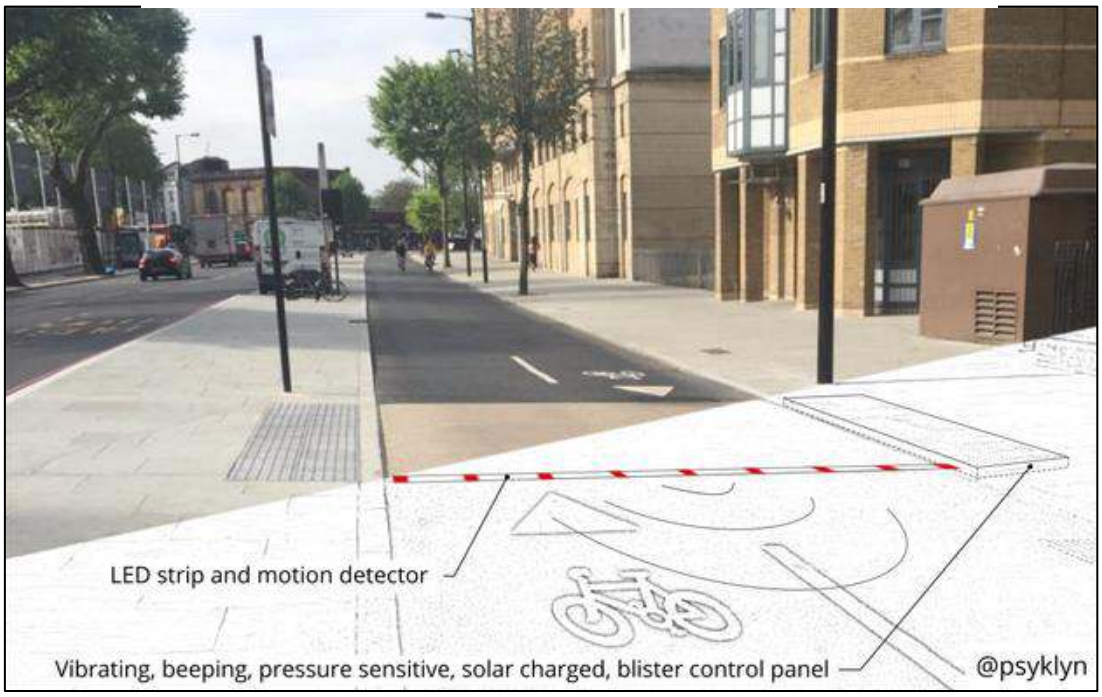
Problem:
A conflict of interest can arise between cyclists and pedestrians (particularly those with visual impairments) at cycle track crossings: bus stop bypasses bring this issue into sharp focus. Our position is that bus stop bypasses are a good thing if they are planned properly for everyone's safety. An entirely satisfactory solution still has to be found for this issue, for the benefit of all cyclists and all pedestrians.

Currently, some cycle lanes with bus stop bypasses can have a narrow width, with high vertical kerbs to slow cyclists on approach to the rear of the bus stop. The width and restricted corner radii, and the high kerbs, can create a barrier to those riding wider cycles.

Solution:
Bypasses need to be designed with regard to those using wider and heavier cycles with a lower level of manoeuvrability, using a forgiving kerb edge that is chamfered.

We recommend further trials, involving both disabled cyclists and disabled pedestrians, in order to develop fully satisfactory solutions to the issue of safety and perceived safety for vulnerable pedestrians. An audio message on buses should alert all passengers to the fact that they are alighting on a bus stop island. Similarly, technical solutions should be developed to help alert cyclists to the fact that pedestrians are going to be crossing the cycle lane, without the use of existing signalised crossings (see design suggestion below).

A possible design solution for bus stop bypasses? Credit: Kevin Hickman



Shared spaces & pedestrianised areas

We are generally opposed to shared space schemes that force a mix of cars, cyclists and pedestrians to interact (e.g. Exhibition Road in London). Such schemes do not fully take into account the needs of cyclists and we are concerned that visually impaired pedestrians could also encounter difficulties and will be deterred from venturing through such places.

People using wheelchairs and mobility scooters are allowed to ride in pedestrianised areas at a maximum speed of 4mph. Public awareness and acceptance of this is widespread - it is a normal, everyday practice. Many disabled people use their cycle as a mobility aid, and so we would like to see police use discretion and permit disabled cyclists to ride on footways, in pedestrianised areas and in 'cyclists dismount' zones where possible; or any other space that would otherwise permit wheelchair or mobility scooter users (e.g. train concourses, shopping centres). A disabled cyclists' Blue Badge could provide a possible solution to this (see page 40).

Exhibition Road, London

Policy recommendations

- We encourage all local authorities to adopt either Highways England's **cycle design vehicle** or the London Cycling Design Standards' (LCDS) **inclusive cycle** concept when designing, or outsourcing the design of, all cycling infrastructure

  Both of these blueprints provide design criteria that are inclusive of all cycle types - including non-standard cycles - ensuring that cycling infrastructure caters for the needs of all types of cycle and cyclist

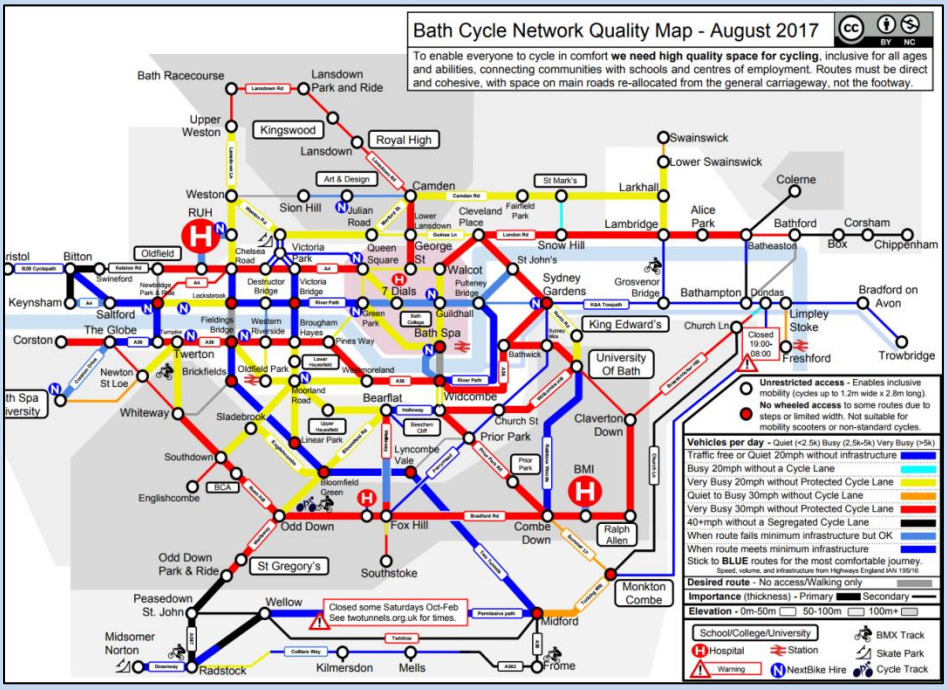
- We call on the government to develop national cycle design standards, in order that predictably inclusive cycling infrastructure is available nationwide

Case study: CycleBath

In 2016 CycleBath, a campaigning and community cycling group, set about creating a comprehensive cycling map of Bath in recognition of the fact that high quality space for cycling is needed for everyone, "inclusive for all ages and abilities".

The result was this superb cycle network map, which takes into account the needs of disabled, family and freight cyclists by highlighting routes that enable 'inclusive mobility' (i.e. cycles up to 1.2m wide x 2.8m long), whilst showing those routes that are currently unsuitable for non-standard cycles due to a lack of wheeled access, steps or limited width.

Similar cycle network 'tube maps' have been developed by cycling groups in Bristol, Harrogate, Derby and Taunton, with some of these being incorporated into the local council's cycling strategy.



Inclusive cycling FACILITIES

Designing inclusive facilities

Our research has shown that just over a third of disabled cyclists have been unable to park or store a non-standard cycle due to inadequate facilities. This could be, for instance, insufficiently wide cycle parking bays. But it could also extend to public transport (especially trains) where the need for onboard storage of disabled passengers' non-standard cycles is a policy neither widely understood nor practiced. Both result in disabled cyclists being denied the opportunity to participate in active travel.

Just like all other cyclists, disabled cyclists need to know that when they leave the house they can be confident of locating adequate cycle parking and storage facilities at their destination. They may also need to use multiple modes of transport along the way. Without all of these things in place, a disabled cyclist may choose not to venture out in the first place or may have to use motorised transport options instead. Added to this, the availability of inclusive cycle hire is negligible, also reducing the options available to disabled cyclists at each end of a journey.

In addition, our research has revealed that 1 in 10 disabled cyclists have been unable to use the Cycle to Work scheme (because the cost of a non-standard cycle exceeded the scheme's £1,000 loan limit); however a new initiative, Green Commute, may provide a solution to this issue.

If we make cycling facilities inclusive of all types of cycles - and ensure transport modes are integrated and made accessible - more disabled people will make the choice of travelling actively.

This section takes a look at cycling facilities and how they can be made inclusive of disabled cyclists.

Cycle parking

There are very few cycle parking facilities designed to accommodate non-standard cycles. Almost all cycle parking stands (e.g. the Sheffield Stand) are intended for use by standard two-wheeled bicycles and are generally placed too close to each other to fit a three-wheeled cycle between them.

This is not the only way that cycle parking can exclude disabled cyclists. For example, it may be that cycle parking facilities are not located on ground level (and without lift or ramp access), or that accessing a parking stand relies on the user having the strength and dexterity to operate technology whilst standing (e.g. hydraulically-assisted double-stacking racks).

A range of possible design solutions, along with a set of technical recommendations, are outlined in this section.

Allocated spaces for non-standard cycles

Specially allocated spaces for non-standard cycles could be installed within existing cycle parking facilities. These spaces should be accessible, step-free and wide enough to accommodate all types of non-standard cycle. They should be clearly signposted, with signage denoting that these spaces have been reserved for non-standard cycles, and monitored. They should also stand out in some way so as to differentiate from other cycle parking (e.g. with the use of ground markings, symbols, different coloured paint on stands).

Wider parking spaces intended for use by non-standard cycles (bottom right of photo), but not signalised as such and regularly occupied by standard bicycles - Hounslow West cycle superhub

Credit: Lockit-Safe

Half-height stands

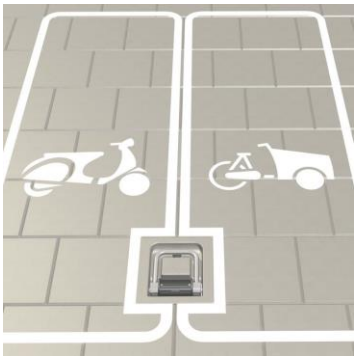
Most non-standard cycles are either self-standing (tricycles) or have a stand (cargobikes). For such cycles a half-height, longer length stand (similar to that pictured below), which is both low enough to prevent a standard two-wheeled bicycle usefully leaning against it, but at the same time is no lower than half-height (as some people will have difficulties bending down) could be used. Such cycle parking bays should be built in groups, be well-marked, well-lit and preferably sheltered, in order to reduce misuse and tripping hazard.

Cargobike parking in Malmo, Sweden

Credit: Kevin Hickman, Twitter

Ground fixings

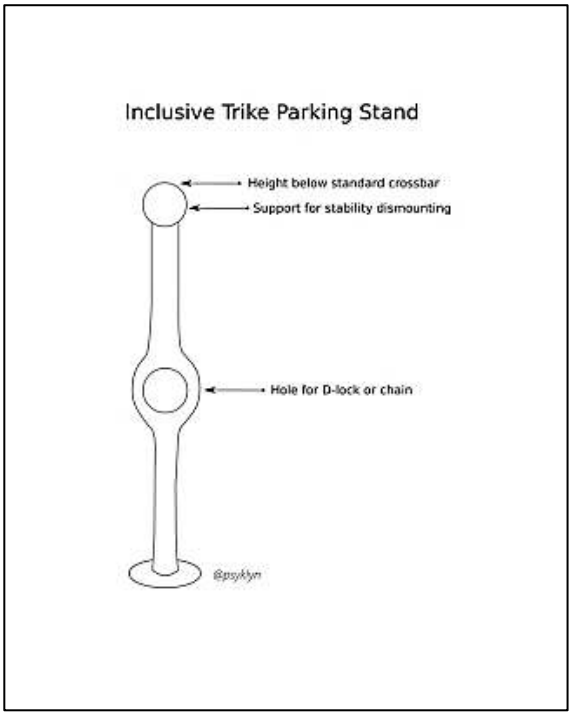
Some ground fixings in longer, wider spaces could be used in addition to a low stand (e.g. the Motu parking bracket, pictured below). This design is not a tripping hazard because it retracts into the ground when not in use. However, these will not meet the needs of some people with limited leg/foot control, or who cannot bend to the ground, and so should only be in addition to the above recommended stands.



Credit all: VelopA

Single pole

Below is a concept featuring a single pole with a hoop in the middle for a cable or D-lock, which could possibly be used in conjunction with a Motu parking bracket (above). These stands should be positioned 1.8m to 2m apart.



Credit: Kevin Hickman

(please note this design idea has not been prototyped. It belongs to Kevin Hickman, Trustee of Wheels for Wellbeing, and is provided with a view to generating further discussion)

Copenhagenize Bar

Designed for on-street cargobike parking, this innovative system operates by securing a bar to a cargobike without touching it. Newer versions will feature a built-in locking mechanism which can be operated by a swipe card for subscribers.

The Copenhagenize Bar, by Cyclehoop/Copenhagenize Design Company

Credit: Cyclehoop

Technical recommendations

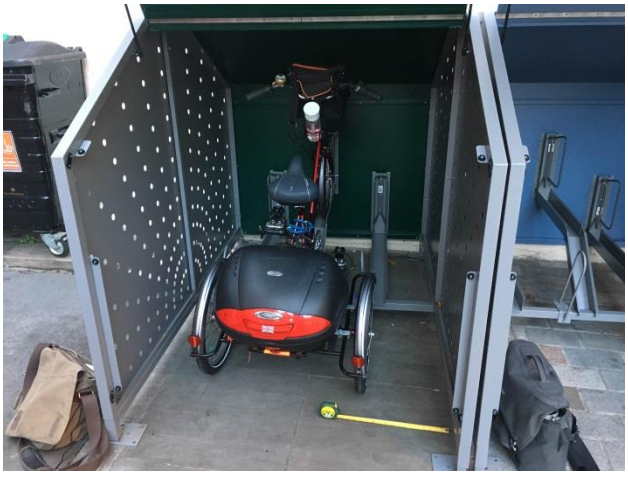
Dimensions	• The minimum gap between cycle stands/bays should be **1m** • At least one bay for non-standard cycles should be allocated at the end of a row of standard cycle parking stands, with these bays a minimum of **1.5m wide** in order to allow for dismounting
Accessibility	• Parking facilities for non-standard cycles should either be located on **ground level** or have step-free access (e.g. via a shallow ramp or large accessible lift) • Where possible, install cycle parking bays that people on non-standard cycles can **ride into and out of** (meaning no need for reversing, turning or lifting a cycle)
Designation and markings	• **Signage** should be put in place that clearly denotes cycle parking allocated for non-standard cycles (e.g. "*Reserved for cargo and non-standard cycles. Priority to disabled cyclists*"). Signs should be on a vertical pole • Blue and white paint should be used to **delineate** the area of a non-standard cycle bay (which could also feature a logo that depicts a disabled cyclist and cargo cycle) • Blue and white paint might also be used on stands/poles to help with differentiation • All signage should be in **large font size** (at least 36pt), with the use of easy read language and symbols for instructions
Further considerations	• **Lighting** in cycle parking bays needs to be at least 100w in order for people with poor vision to be able to read signage • At public facilities a **help point** (similar to those found on tube platforms) should be installed, which includes help for deaf people using British Sign Language (BSL), text and a face so that people can lip-read • Non-standard cycle parking bays should be under **shelter**, not exposed to the elements and nearest to the entrance of any facility it is serving • Thought should be given to the possibility of the **co-location of disabled car and cycle parking bays**, as well as family car and cycle parking bays • Reserved cycle parking for disabled cyclists should be monitored and cycles that are wrongly parked should be removed. A disabled cyclists' **Blue Badge** scheme could help in identifying cycles and cyclists genuinely entitled to park there (see page 40)

Cycle storage

Cycle storage units, such as lockers and hangers, often exclude disabled cyclists because they are too small to accommodate the dimensions of non-standard cycles. Given the expense of non-standard cycles (an average e-assist recumbent trike would cost over £2,000) it is not surprising that many become a particular target for cycle thieves. Having access to step-free, safe, secure storage facilities is vital for disabled cyclists.

Many existing cycle storage units (like those pictured below) could be adapted or retrofitted to accommodate larger cycles. Buddy schemes, where disabled and non-disabled cyclists are paired up to share the same cycle storage space, could also be trialled as part of a wider community initiative.

Cycle storage units in central London. Right: a tricycle being tried out for size in a cycle hanger. Credit: Asgard



The built environment

The needs of disabled cyclists are rarely catered for when it comes to new buildings, premises and facilities. To address this, we recommend that all planning authorities, architects and developers consider the following key points:

- Where new cycle parking facilities are installed, 5% of all spaces are allocated for use by disabled cyclists - matching equivalent provision for disabled car drivers;
- Where accessible car parking spaces are built, the co-location of inclusive cycle parking is also considered;
- When new offices, leisure and commercial spaces are built it is ensured that they accommodate inclusive cycle routes, inclusive cycle parking and accessible showering facilities;
- For local disability groups, including disabled cyclists, to be consulted during the preliminary stages of any new building development.

Public transport

Providing an attractive, whole-journey experience is crucial to encouraging more disabled people to cycle, who often rely on multiple modes of transport to get around (disabled people are more likely to be adversely affected by a lack of integrated transport modes as they already have to go to considerable lengths to plan a journey). However, accessing public transport is all but impossible for many disabled cyclists who use their cycle as a mobility aid, be it taking a tricycle on a bus or storing a tandem on a train.

A recent audit that we conducted of the Disabled People's Protection Policies (DPPPs) of all major Train Operating Companies (TOCs) in England and Wales found that only one out of twenty-five TOCs appeared to have a policy permitting the storage of non-standard cycles onboard. This severely limits the type of journey that disabled cyclists can undertake.

In order for disabled cyclists to feel confident in completing a journey by cycle it is essential that all forms of transport are integrated and made accessible. Where rules exist permitting the storage of wheelchairs and mobility scooters onboard public transport, the same rules should apply (where physically possible) to disabled cyclists who use their cycle as a mobility aid.

"ScotRail refused to take my tricycle on their trains when I told them it was a trike… When I booked my trike as a bike and took the chance it was found to be absolutely fine to take on board"

"I'm a lower limb amputee and use an adapted Brompton as my mobility aid. Fold-up bikes are allowed on the Tube, but I can't fold mine up and carry it for obvious reasons. I was refused access to the Jubilee Line recently. Why can't reasonable adjustments be made for disabled people who use their cycle as a mobility aid?"

Cycle hire

There is a paucity of inclusive cycle hire provision in the UK. This is true even of London, where cycle hire has expanded exponentially in recent years. Existing cycle hire facilities and schemes almost exclusively provide standard two-wheeled bicycles, which excludes many disabled cyclists, families cycling with little children and freight cyclists. Disabled people are more likely to be out of work, on lower incomes or work part-time than non-disabled people, and so less likely to have the funds needed to purchase such equipment.

Moreover, many disabled cyclists are denied access to existing incentive schemes, such as the UK-wide Cycle to Work scheme. This is because non-standard cycles are considerably more expensive than standard bicycles and, as Cycle to Work has a £1,000 limit on the cost of cycle that can be loaned to an employee, most non-standard cycles will fall above this price range. Similarly, the Motability scheme currently enables disabled people to exchange their mobility benefits (PIP/DLA) for a car, a mobility scooter or a powered wheelchair, but not a cycle of any kind.

Some good examples of inclusive cycle hire schemes exist, however these tend to be limited to places outside of towns and cities, such as national and country parks. At a minimum, we would recommend that all cycle hire schemes should include at least e-cycles, which would dramatically broaden the demographic of people who can access cycling. We also recommend that cycle hire schemes partner with inclusive cycling hubs to widen their offer.

Inclusive cycling hubs

Inclusive cycling hubs are places where disabled people can go to cycle in a supportive environment, away from traffic. This could be at a sports arena, velodrome, outdoor park or leisure centre, for example. Cycling sessions are usually led by trained instructors and supported by volunteers. They give disabled individuals and groups an opportunity to try out a variety of cycles, with the support of a friend or carer if needed. They provide a space for disabled people to gain or regain confidence in cycling, develop social networks and enjoy the health and wellbeing benefits that cycling has to offer.

Thanks to organisations like Cycling Projects (who help to develop new hubs nationally) the UK boasts a good number of inclusive cycling hubs. However, these are needed in every part of the country in order to ensure that disabled people are never far from an easily accessible opportunity to discover or rediscover cycling. Local authorities should be encouraged to seek out and develop strategic partnerships with local cycling and disability groups to develop hubs wherever there is an identifiable need.

Policy recommendations

- Where new cycle parking facilities are installed, **5%** of all spaces should be allocated for use by disabled cyclists - matching equivalent provision for disabled car drivers

- We suggest that TfL pilot a disabled cyclists' **Blue Badge scheme** - granting access to purpose-built cycling facilities for disabled cyclists, based upon a set of agreed criteria, method of assessment and devised in partnership with disabled cyclists. If successful, such a scheme could be rolled out nationally

- We encourage local authorities, together with local **Cycle to Work providers and employers**, to improve information about the different kinds of specialised cycles available to disabled people in their area

- Local authorities and their health partners should ensure disabled people have access to cycling opportunities in their area by supporting the sustainable growth of **inclusive cycling hubs**

- Publicly-run cycle hire schemes should all include **e-cycles**, whilst expanding the types of cycles they offer through working with inclusive cycling hubs

Case study: Adaptive Biketown

In 2016 a large-scale bike share scheme was set up in Portland, Oregon (USA) with the support of Nike. However, just weeks before its launch a local politician voiced concerns that the scheme excluded disabled people, as it did not include any non-standard cycles.

The local transport authority subsequently revised its plans and decided to expand the scheme to cater for disabled cyclists. One year later, in July 2017, Adaptive Biketown was born.

The scheme rents out cycles for people with a range of disabilities, including tandems, handcycles and tricycles, and aims to increase access to cycling for all disabled people. It is run by the Portland Bureau of Transportation, in conjunction with a local non-profit disability organisation and a cycle shop specialising in non-standard cycles.

RECOGNITION

Recognising disabled people as cyclists

Our research has shown that in transport policy disabled people are most likely to be seen as a pedestrian, car driver, bus or taxi user. Very seldom is any thought given to the idea that a disabled person might also be a *cyclist*. This is hugely problematic as it means that, in turn, most disabled people will not consider themselves as cyclists, or as potential cyclists, simply because the language used around travel and disability focuses on all modes of transport except cycling.

A similar issue arises in transport imagery. Transport and cycling literature – including official guidance, policy papers and strategies – frequently fails to include *any* images of non-standard cycles, though they feature plenty of images of standard two-wheeled bicycles. This is one example of how disabled cyclists are absent from cycling culture.

The lack of awareness around inclusive cycling spills into the public consciousness and has everyday consequences for disabled cyclists. For example, many disabled cyclists use their cycle as a mobility aid (just like a wheelchair or mobility scooter) and yet this is unbeknown to most of the public. It is also a concept little understood by local authorities and the police, which causes problems for disabled cyclists who may have no option but to cycle on footways, through 'cyclists dismount' zones or in pedestrianised areas.

We strongly believe that across the board, cycling language and imagery must be improved, by making it more inclusive, using more images of non-standard cycles and by actively acknowledging the fact that cycles are sometimes used as mobility aids. This will start a true cycling revolution by spreading understanding of the fact that everyone can cycle. Not only will this support disabled people who are already cycling, but it will lead to many more disabled people to explore cycling as an option.

This section takes a look at the issue of recognition and how transport imagery and language can be made inclusive of disabled cyclists.

Kevin is a lower limb amputee who uses a specially adapted Brompton

Imagery and language

Perhaps the biggest single barrier preventing more disabled people from taking up cycling is the general assumption that disabled people don't cycle. This is particularly reflected in cycling-for-transport policy, where disabled people who cycle or could cycle are mostly absent. This is manifested in the lack of inclusive cycling imagery and language.

This problem is particularly pronounced in cycling policy imagery (i.e. photos, pictures and diagrams) where there is a real lack of images of non-standard cycles. To take one example, a recent audit that we carried out of London Boroughs' cycling strategies found that only *2%* of all images of cycles were of a non-standard cycle (which included cargobikes). What's more, the two-wheeled bicycle is widely seen and used as the universal symbol of cycling: this is the case in the media, cycling websites and publications. Where efforts have been made recently to broaden the representation of cyclists away from athletic white males, this has generally led to increased images of women, people from BME backgrounds and young children. Older people and disabled people tend to remain invisible.

Language can also be a barrier. For instance, just like the image of the two-wheeled bicycle, the terms '*bicycle*' and *'on two wheels'* are used as by-words for a cycle and the activity of cycling. This immediately excludes anyone who doesn't ride a two-wheeled cycle, but also reinforces the societal assumption that cycling can only be done on two wheels. Our research has revealed that when discussing disabled people in relation to transport policy, local authorities and transport bodies are most likely to refer to disabled people as pedestrians, car drivers, bus or taxi users. Very rarely do they even consider that a disabled person might also be a cyclist. Indeed, as we discovered through an audit of London transport plans (Local Implementation Plans, or LIPs) only 2% of all references made to disabled people were of disabled people as *cyclists*.

It is evident that this could have a negative impact on the ability of local authorities to deliver inclusive cycling infrastructure and raises the question: just how aware are local authorities of their obligation towards those disabled people who are *cyclists*? Furthermore, if there is little awareness of disabled people as cyclists in the first place, how will local authorities be able to ensure that new cycling infrastructure is designed with their interests in mind?

Local authorities should be mindful of these issues when developing policy, guidance and strategies relating to transport and cycling. It is important that training institutions and professional bodies start to integrate the principles contained in this handbook when teaching civil engineers and transport practitioners.

Cycles as a mobility aid

According to our research, 69% of disabled cyclists find cycling easier than walking, with many using their cycle as a mobility aid. Often this is because cycling is non-weight bearing, reduces pressure on the joints, aids balance and relieves breathing difficulties.

However, given the lack of awareness around inclusive cycling, disabled cyclists frequently encounter problems when using their cycle as a mobility aid. For instance, we have found that as many as one in three disabled cyclists have been asked to dismount and walk their cycle, even though they were using it as a mobility aid. This is particularly common in 'cyclists dismount' zones, on footways and in pedestrianised areas – places where wheelchairs and mobility scooters are permitted (and accepted by the public), but cycles and cycling are not. The problem also extends to public transport, such as trains, where the storage of non-standard cycles is almost universally prohibited.

The concept of cycles as mobility aids has failed to find its way into law, with disabled cyclists continuing to face harassment, penalisation and even the threat of prosecution for using their cycle as a mobility aid – all as a result of opting for a more active and healthy lifestyle. This leads to a steady increase in mobility scooter use as people who become unable to walk in comfort see no other option, whereas many could in fact continue to travel actively for many years through cycling. We believe that developing a disabled cyclists' Blue Badge (below) provides a possible policy solution.

"I use my bike as a sort of rolling walking stick when I walk and I can cycle very long distances without pain. I therefore class my bike as a mobility aid. However, it is very difficult to have this recognised in certain situations – for example in parks or other large outdoor venues. All they see is a bike. It would be so easy to modify a 'no bikes' rule to say 'unless used as a mobility aid'"

Designing a Blue Badge for disabled cyclists

Local authorities should consider the option of designing and piloting a **disabled cyclists' Blue Badge** scheme in their area. The purpose of such a scheme would be to give disabled cyclists a valuable form of identification, which could be used to:

(a) Permit disabled cyclists to cycle considerately in non-cycling areas (such as 'cyclists dismount' zones) when using their cycle as a mobility aid

(b) Reserve allocated cycle parking spaces that have been designed for use by non-standard cycles.

Such a scheme could be developed in collaboration with local police forces, CCGs, community and disability groups.

Policy recommendations

- Local authorities should consider prototyping a **Blue Badge** for disabled cyclists, which would grant disabled cyclists certain exemptions (see previous page). If successful at a local level, this should be extended to become a national scheme, led by the Department for Transport

- Local authority cycling strategies, guidelines and documents should ensure that at least **1 in 5** images of cycles depicted are of a non-standard cycle - proportionate to the number of disabled people in the UK (20%)

- The term 'bicycle' should be replaced by '**cycle**' wherever possible in cycling-related and transport communications - ensuring that language around cycling is more inclusive

Case study: Southwark Council

Southwark Council's 2015 cycling strategy *Cycling for everyone* is a great example of a strategy that has inclusivity at its core. Though it doesn't feature any images, the strategy's language is very inclusive. As well as referring to disabled people as cyclists, it also:

- Acknowledges the fact that many disabled and older people use their cycle as a mobility aid

- Pledges to address the image of cycling "as something for middle-aged men in lycra… by showing all the different faces of people who cycle in Southwark"

- Advocates the design of cycling infrastructure and facilities that "accommodate different designs of cycles"

This might seem like a straightforward thing to do, but simply by changing the language around cycling local authorities can do a great deal to improve the representation of disabled cyclists and, in the process, affect how all cycling professionals approach policy implementation.

Contact us

It is our intention that this handbook will be a 'live' online working document that can be regularly updated and added to. If you would like to suggest a contribution to our handbook then please email us at info@wheelsforwellbeing.org.uk using 'Inclusive Cycling Handbook' as the subject line.

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Further reading

- 'How do we build an inclusive culture for disabled cyclists?' (Guardian, 2017) https://www.theguardian.com/environment/bike-blog/2017/jun/20/how-to-buildinclusive-culture-disabled-cyclists

- 'Don't assume disabled people aren't interested in cycling – or in proper bike lanes' (Guardian, 2016) https://www.theguardian.com/environment/bike-blog/2016/apr/26/dont-thinkdisabled-people-interested-in-cycling-proper-bike-lanes

- 'Disabled cyclists in England: imagery in policy and design' (Institution of Civil Engineers, 2015) http://www.icevirtuallibrary.com/doi/full/10.1680/udap.14.00048

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[iii] *Political challenges relating to an aging population: Key issues for the 2015 Parliament* (House of Commons Library, 2015). See https://www.parliament.uk/business/publications/research/key-issues-parliament-2015/social-change/ageing-population/

[iv] *Disability and domestic abuse: risk, impacts and response* (Public Health England, 2015), p. 12. See https://www.gov.uk/government/uploads/system/uploads/attachment_data/file/480942/Disability_and_domestic_abuse_topic_overview_FINAL.pdf

[v] *Travel in London: Understanding our diverse communities* (Transport for London, 2015), p. 223. See http://content.tfl.gov.uk/travel-in-london-understanding-our-diverse-communities.pdf

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