Pedalling toward better cycle lanes

KEEPING BRITAIN ON THE BIKE



White Paper

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Are the UK's Cycle Lanes Fit for Purpose?

The UK's cycle lanes and paths are more important than ever. The drive to lower emissions, create more sustainable cities and improve the nation's collective health all involve the bicycle, and active travel in general.

Achieving these goals are vital to reducing the country's carbon footprint and improving its wellbeing, but more is required beyond good intentions. To get people physically active and back in the saddle, the nation's cycling infrastructure should be fit-for-purpose, and users need to feel safe when on two wheels. The demand is there for biking, and for the UK to follow the example of other cycle-centric European nations. Indeed, according to the UK Government's latest Cycling Index, cycling levels are 11% higher than they were in 2019 before the pandemic, and have increased 24% in the last decade.¹

These are encouraging figures, but other statistics within the Index show cause for concern. Namely, the number of cyclists on the road has been dropping since its peak in March 2021, with usage falling by 24% between then and December 2022. While pandemic restrictions can be cited as an influencing factor during this period, the fact cycling rates also dropped by 3.2% from December 2021 to December 2022 shows continued waning enthusiasm from a previous peak. If the UK is to truly establish a public cycling culture like other European nations – with all the benefits that brings – this trend needs to be arrested and reversed.

It is for this reason that ACO Water Management has surveyed cyclists in this country and other European nations where cycling is popular. By understanding the issues faced by cyclists and what best practice looks like when designing cycle networks and pathways, further uptake of active travel can be encouraged. From safety and navigation concerns to the quality of roads and lanes, obstacles remain for bike riders. If the nation is truly to enjoy a cycling revolution, these should be addressed.

Michelle Osborne, Product Manager ACO Water Management



Section 1 – Key Findings

ACO Water Management's (ACO) survey questioned 100 urban cyclists from the UK in October 2023, alongside an equal sample size from four other nations where cycling is popular – Denmark, Germany, the Netherlands, and Sweden.

Studying the results, it is clear British cyclists feel much work needs to be done to improve overall infrastructure. Compared to their European counterparts, the results may paint a dispiriting picture.

UK cyclists are the least satisfied in the maintenance of their city's cycle lanes

Only **58%** of British cyclists felt their cycle lanes were well-maintained, against an average of **75%** for other nations surveyed.

- The Netherlands 83%
- Denmark 81%
- Sweden 72%
- Germany 64%



UK cyclists are most likely to face barriers preventing them from using a bike to travel around the city more

Only **20%** of British cyclists use their bike the vast majority of the time for travelling and experience minimal barriers to using it more often, against an average of approximately **32%** for other nations.

- The Netherlands 46%
- Sweden 29%
- Germany 27%
- Denmark 27%



UK cyclists do not feel as safe as their European counterparts when cycling in the city

23% of British cyclists disagreed that they felt safe cycling around their local city, against an average of under **9%** for other nations surveyed.

- Germany 1%
- Denmark 1%
- The Netherlands 6%
- Sweden 11%



UK cyclists most dissatisfied with the design of cycling infrastructure in their city

24% of British cyclists expressed dissatisfaction with their city's cycling infrastructure, compared to an average of **9%** for other nations.

- The Netherlands 3%
- Denmark 8%
- Sweden 8%
- Germany 17%



While the outcomes are not encouraging, highway engineers and local authorities are likely unsurprised. Cycling infrastructure remains a divisive topic not only for cyclists themselves, but also residents and motorists affected by proposed new routes.

Similarly, the condition of British cycle lanes and pathways can vary from council to council. Standardisation has only recently been introduced with the publication of local transport note (LTN) 1/20 in 2020, which provides guidance to local authorities on delivering high-quality cycling infrastructure. The same year also saw the founding of Active Travel England, the funding body for cycling schemes which allocates £2bn a year, further demonstrating that while there has been welcome progress in this area, the full effect of these initiatives and updates are likely yet to be fully seen.

Consequently, it would not be exaggerating to say the UK has faced an uphill struggle when it comes to cycling infrastructure. A lack of centralisation and standardisation has led to hugely varying cycling network quality, with some councils benefiting from new, post-LTN 1/20 routes, and others less so. This can already be seen today,

with certain city centres – for example, Manchester – experiencing a complete, LTN 1/20-inspired overhaul of existing infrastructure, with new lanes and paths being increasingly interconnected to the overall network.

Others, including Sunderland, however, have seen their cycling infrastructure expanded as a mix of new and old routes built using differing advice at different times. The variation in lane quality and safety offered against passing motorists is keenly felt and highly visible to those using their bicycles every day. Though likely unavoidable, these issues and inconsistencies may colour cyclists' experience out on the road.

Yet the existence of new funding and guidance is something to celebrate, and the opportunities for expansion and improvement are there. But to effectively solve the concerns raised by UK cyclists and replicate LTN 1/20-driven successes in more cities, potential learnings from both other countries and at home should be identified and implemented.

What is LTN 1/20?

LTN 1/20 was issued in July 2020 to address the rapid pace of change in cycling infrastructure since the publication of preceding notices LTN 2/08 and LTN 1/12, which previously provided guidance on cycle network design.

The purpose of LTN 1/20 was set out in the notice's foreword by then-Minister of State with responsibility for cycling and walking, Chris Heaton-Harris MP:

⁶⁶ This updated national guidance for highway authorities and designers aims to help cycling become a form of mass transit in many more places. Cycling must no longer be treated as marginal, or an afterthought. It must not be seen as mainly part of the leisure industry, but as a means of everyday transport. It must be placed at the heart of the transport network, with the capital spending, road space and traffic planners' attention befitting that role.⁹⁹

With this aim in mind, the guidance contains tools to give local authorities flexibility on infrastructure design and establishes a measurable quality threshold when designing cycling schemes. It is an integral document setting out updated good practice, standards and legal requirements when developing cycling infrastructure in the UK. As such, it should be central to any route design and building process.





Section 2 – Safety First

According to ACO's survey, UK cyclists felt less safe cycling in the city than their counterparts in Germany, the Netherlands, Denmark and Sweden. Questioning cyclists from all five nations led to interesting conclusions, with the UK often finishing bottom or second-from-bottom compared to other nations surveyed.

Only **60%** said they felt safe in the UK, much lower than the average among the other nations surveyed (approximately 77%)



24% of UK cyclists have reported feeling threatened by a motorist when cycling, comparing unfavourably to the 15% on average reported by other surveyed nations



15% of UK cyclists have reported feeling threatened by a pedestrian when cycling, comparing unfavourably to the average of just under 6% reported by other surveyed nations



38% of German cyclists and **32%** of UK cyclists have experienced a car dangerously overtaking them, markedly more than the other nations surveyed



A majority of cyclists in Germany (61%) and the UK (**52%**) have experienced a car driving dangerously close to them, markedly more than the other nations surveyed:





There is not a singular reason behind the UK's poorer results concerning cycling safety when compared to other cycling nations. Instead, a mixture of factors is likely influencing this outcome, including a less extensive and developed cycling culture than other European nations and more car-centric urban infrastructure design.

However, the fact cyclists often share the road with pedestrians, as well as vehicles much larger and more robust than them, cannot be overlooked, and should always be appropriately addressed in cycle lane design. Cycling should not be an unsafe activity, yet UK path and route users continue to feel vulnerable – especially from cars. Changing attitudes in this area will require consistency in design when upgrading existing cycle routes or further extending infrastructure. For example, integrating changing gradients, raised markings or other tactile, non-intrusive features that prompt cyclists, pedestrians and motorists on shared routes can make a marked difference. When they are moving onto the wrong part of the road, these solutions can provide a natural deterrent against potentially dangerous situations. From here, bike users may come to feel less threatened and safer when out and about.

To their credit, all nations surveyed in this report have taken steps to improve cyclist safety. This can be seen in application processes – for example, Active Travel England will not fund cycle routes that use painted lanes as a sole deterrent against oncoming traffic – or in larger campaigns and initiatives.

Cycle Lane Water Management



The Netherlands

As a nation with more bikes than citizens and featuring **35,000km of cycle paths**, cyclists enjoy a privileged position on The Netherlands' roads. Initiatives include:

- 'Cars Are Guests' Official signage underlining that 'cars are guests' are common in Dutch cities, setting out roads where cyclists have priority.²
- **Roundabout Design** 60% of roundabouts in Dutch cities have a physically separated circular cycle track that runs around the roundabout intersecting its exits.
- Right of Way In most urban areas, bikes are given the right of way, with cars expected to stop.



Sweden

Sweden's national cycling strategy **encourages more bicycle-friendly municipalities** and looks to inspire greater knowledge about different groups of cyclists. ³ It includes:

- Prioritising Bicycles Higer priority is placed on bicycle traffic in community planning, with the emphasis on more functional and user-friendly cycling infrastructure.
- First Bicycle Street Stockholm's city council announced in February 2023 the introduction of a 900m 'bicycle first' street where cyclists have priority over motorists, to be completed by the end of the year

3 https://ecf.com/system/files/The_State_of_National_Cycling_Strategies_2021_final_0.pdf

² https://www.euronews.com/next/2022/09/17/the-worlds-cycling-nation-how-the-netherlands-redesigned-itself-as-a-country-fit-for-bikes



Germany

Germany is known for its extensive cycling path infrastructure, with **30% of Germans regularly cycling to work.**⁴ Initiatives explored in the country include:

- The Radverkehrsplan to create safer bike routes in and around Berlin, the city enacted the Radverkehrsplan plan to double Berlin's already extensive 1,500 kilometres network in 2021, with work currently underway.⁵
- Projekt Graefekiez Berlin's Kreuzberg neighbourhood is switching to more sustainable urban mobility by phasing out most public car parking as part of a larger plan to create a city-wide, 88 square kilometres car-free urban area.⁶



Denmark

Approximately **36% of Copenhagen residents travel to school by bike**, with 1.1 million kilometres covered in the city daily.⁷ Efforts to ensure safety involve:

- The Green Wave Initiative A string of green lights are embedded in Copenhagen's cycle paths to help cyclists avoid red traffic lights.
- Green Wave 2.0 Technology is currently being trialled in the city that will detect bicycle users approaching an intersection – if there are five or more cyclists together, the light will stay green until they pass.

- 5 https://www.berlin.de/sen/uvk/mobilitaet-und-verkehr/verkehrsplanung/radverkehr/radverkehrsplan/
- 6 https://www.projekt-graefekiez.de/
- 7 https://www.centreforpublicimpact.org/case-study/green-waves-bicycles-copenhagen

⁴ https://www.dw.com/en/germans-and-their-beloved-bike-paths/a-59215483



Section 3 – Navigating the Urban Environment

On the issue of urban navigation, British cyclists continued to voice concerns. Data from survey respondents show the UK is languishing either on or near the bottom when it comes to lane quality and accessibility.

58%

Dissatisfaction over the level of investment to maintain and expand UK city biking infrastructure was also notable, further illustrating an environment where improvement is not just desired but expected.

Cycle Lane Quality

Only **58%** of UK cyclists believe the cycle lanes in their local city are well maintained, much lower than the European average (**72%**)

UK and German cyclists are least satisfied with quality of cycle lanes and access in their local cities:

- Netherlands (7.72/10)
- Denmark (7.63/10)
- Sweden (7.3/10)
- UK (6.78/10)
- Germany (6.75/10)

When it comes to infrastructure upkeep, 58% of British cyclists felt cycle lanes in their local city were well maintained. While this suggests a positive majority view, it is worth comparing the result to those from other nations.

As 72% of respondents on average across Denmark, Germany, the Netherlands and Sweden expressed a similar sentiment, it can be argued that while the UK's figure of 58% demonstrates greater positivity than negativity towards infrastructure maintenance, there remains room for improvement.



Cycle Lane Accessibility and Connectivity

UK and German cyclists think the road network in their local city accommodates cyclists the least:

- Netherlands (93%)
- Denmark (76%)
- Sweden (73%)
- UK (64%)
- Germany (56%)

German cyclists least likely to recommend cycling to someone else living in or visiting their local city:

- Netherlands 7.92/10
- Sweden 7.67/10
- Denmark: 7.63/10
- UK: 7.06/10
- Germany: 7.02/10

Almost a quarter (24%) of UK cyclists expressed dissatisfaction with the design of cycling infrastructure in their local city. Taken alone, the fact that nearly one in four regular bike riders are unhappy with their everyday routes is notable. Yet placed into context alongside other regions it is even more stark, as the figure is higher than any other region and double the European average (12%).

Overall, cyclists across all five nations held a positive view over whether their local city accommodates cyclists and whether they would recommend bike travel to other residents and visitors. That said, the UK still tended to trend close to the bottom. Interestingly, Germany joined the UK in expressing less positive views of cycle lane accessibility and connectivity, with cyclists from both nations less likely to believe cycling lanes connect them across their respective cities.



What Do These Findings Show?

⁶⁶ As these survey statistics suggest, more work is needed to improve the interconnectedness of cycling infrastructure in the UK's urban environments. The issue is not knowledge-related, as the expertise is already there within local authorities and the highway engineering sector, which are highly aware of the difficulties and considerations involved with building new cycle routes or expanding existing paths and networks. Instead, a simplification of the specification process should be pursued, with consistency prioritised across cycling infrastructure wherever possible.

⁶⁶ However, changing attitudes around cycling infrastructure will not happen overnight. It will be a gradual process involving the whole supply chain on projects of this kind. By working with related organisations on key areas such as surface water management and material suitability in abrasive environments, more effective designs and solutions can be identified and specified, leading to more positive perceptions of city cycle path quality, accessibility and connectivity. ⁶⁶ Developments from 2020 onwards, including the publication of LTN 1/20 and founding of Active Travel England, show that the nation is on the right track in this regard. As local authorities and highway engineers use new and existing funds and apply standardised guidance to upgrade existing routes and establish new ones, the perception gap to the rest of Europe identified in this survey should shrink.⁹

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Section 4 – Designing Better Cycle Lanes

With more money becoming available and design guidance being standardised, there will be greater pressure to demonstrate all funding earmarked for upgrading or adding to existing cycling infrastructure is being allocated and used as effectively as possible.

Key to this will be ensuring stakeholders consider essential aspects of the cyclist's experience earlier in the design stage, before any works begin. Aspects including easier demarcation of roads and cycle lanes, and safe and effective water management should be prioritised throughout the construction process. As a result, not only can cycle lane access and connectivity be improved across cities, but route quality will also be enhanced.

Local authority decisionmakers and highway engineers should also be aware that with council and active travel budgets continually in flux, any specified cycle lane solutions must be high-quality, durable and deliver long-term value. Considering how common rain is in the UK, combined kerb and drainage systems that can meet surface water and infrastructure protection demands should therefore be considered vital.



Effective hydraulic design will also be critical to this. Ensuring cycle paths and infrastructure remain traversable and natural flooding is not worsened is central to underlining cycling's viability as mode of transport. Cloudbased software such as ACO's QuAD Hydraulic Design 2.0 are well-placed to tackling this prominent concern. These tools can provide local authorities and highway engineers with a system to design, create and specify cycle paths that are compliant with sustainable drainage systems (SuDS) standards. These routes can therefore be constructed with peace-of-mind that are hard-wearing and can withstand the drainage challenges posed by the UK's wetter climate.

Effective Solution Specification

Using effective software and tools is key to creating the high-quality and long-lasting cycling paths required to foster further enthusiasm for cycling as the UK's go-to option for everyday travelling. However, without the specification of effective solutions, promising designs cannot be made into a reality.

In this vital part of the design process, project decisionmakers should closely scrutinise the features and benefits of the specific components that make up the entire cycle path – especially when relating to water management. With over half the 500 cyclists questioned in ACO's latest survey confirming they had experienced pooling or ponding in the cycle lane when on their bikes, tackling this disruptive and potentially dangerous issue should be a priority.



ACO KerbDrain[®] CycleKerb BN305 Transition



It is with this in mind that ACO has developed the KerbDrain CycleKerb range. A set of combined kerb and drainage products, it has been designed to provide safe and effective drainage specifically for cycle lanes, while taking all road users into account.

The inlets situated on the solution's vertical face helps reduce standing water on cycle paths, while also keeping the lane's surface free of other drainage components such as gullies. As a result, trip and slip hazards are reduced for pedestrians and cyclists, with the bike riders able to enjoy a smoother ride while making total use of the path.

Additionally, the range's bullnose profile and 60mm upstand make the solution ideal for keeping pedestrians safe from tripping hazards or slipping in surface water. As it is made of polymer concrete, the KerbDrain CycleKerb has superior resistance to freeze and thaw cycles, so it is highly durable against changing weather conditions and will perform well in abrasive environments for decades to come.

The range is also fully certified to BS EN 1433:2002 Load Class D 400 and complies with LTN 1/20 standards, resulting in a collision-resistant solution that is applicable for government funding. Implemented alongside other solutions from ACO Water Management's KerbDrain range to suit urban or rural environments and road usage frequency, CycleKerb can be swiftly installed and retrofitted on new and existing routes. This allows for a quicker overhaul of cycling infrastructure, with consistent, high-quality solutions used throughout.



SuDS Schemes and Flood Risk Management

Transport infrastructure has a crucial role to play in facilitating and sustaining better environments for people and nature. Cycle lane design especially can greatly impact flood and pollution risks by ensuring surface runoff water is appropriately treated within the drainage system before returning to the natural environment.

As climate reports indicate the UK is becoming wetter, ensuring kerb and drainage systems are set up to mitigate increasingly rainy weather is important. KerbDrain CycleKerb has therefore been hydraulically designed with large inlets to intercept flow from the kerb to SuDS schemes and rain gardens. Silt and other waste that ingresses into the product via channel drainage can then be cleared during routine path maintenance.

This combination of proprietary products compatible with existing SuDS schemes will be instrumental for highway engineers and local authorities, for whom the impact of rainfall is set to become an increasingly urgent issue. Subsequently, cyclist safety can also be assured regardless of changing weather patterns.



Conclusion

The results of ACO's latest survey demonstrate that there is still much to do for the UK to become a leading cycling nation. However, the direction of travel around cycle paths and infrastructure show that this goal can be achieved, and many steps have already been taken towards it.

Yet to create effective cycling routes and systems throughout the nation's cities, highway engineers and local authorities must continue to focus on future challenges when improving overall path quality and connectivity. This includes emphasising sustainability and safety during product specification, as well as ensuring compliance with guidance and standards, including those set out in LTN 1/20. Maintaining consistency during design will be key to ensuring safe routes where surface water is effectively managed, while also enhancing the experience of individual cyclists. Engaging with drainage manufacturers such as ACO throughout the build process is therefore encouraged to best provide a cycling network that can meet current demand and is fit for the future.

For more information, get in touch with the ACO team today at **technical@aco.co.uk**. They can help design the right solution to meet your project's requirements.

Find out more

To find out more about ACO's industry-leading products and unique approach, please visit **www.aco.co.uk** or contact us on **01462 816666**



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