Institution: University of Westminster		
Unit of Assessment: 13 Architecture, Built Environment and Planning		
Title of case study: Creating Step Changes in Cycling Policy and Infrastructure Planning across the UK		
Period when the underpinning research was undertaken: Sept 2012 – Dec 2020		
Details of staff conducting the underpinning research from the submitting unit:		
Name(s): Rachel Aldred	**Role(s) (e.g. job title):** Reader, now Professor, in Transport	**Period(s) employed by submitting HEI:** 09/2012+
Period when the claimed impact occurred: Aug 2013 – Dec 2020		
Is this case study continued from a case study submitted in 2014? ~~Y~~/N		

1. Summary of the impact (indicative maximum 100 words)

Prof Rachel Aldred has led influential research into active travel and evidence-based measures aimed at enabling greater uptake of cycling in the UK, resulting in the following impacts:

- Enabled planners to envisage cycling as both mainstream and inclusive, and to thus proactively entice and cater to a broader range of potential cyclists, through changes to Transport for London and national infrastructure design guidance.
- Provided the evidence base for the wider expansion of, and investment in, the mini-Holland scheme in London, which has demonstrably increased cycling uptake.
- Provided the evidence base for the UK's first Close Pass Operation, which aims to reduce the number of close overtakes people cycling experience and thus increase both real and perceived safety. The success of this operation has led to the Department for Transport introducing a UK-wide initiative to help the police crackdown on close passing.
- Enabled planners to locate area- and route-level hotspots for cycling potential through the open source Propensity to Cycle tool. This tool has been used by Local Authorities (county, district and borough councils) and major regional bodies to plan for future growth and to prioritise key routes/neighbourhoods for investment in cycling infrastructure.

2. Underpinning research (indicative maximum 500 words)

Seeking to understand how cycling is experienced by a bigger group of people than dedicated cyclists, Aldred undertook an in-depth ESRC-funded study, *Cycling Cultures* (2010-12). This study used mixed qualitative methods to compare how people in emerging and established cycling cultures experience travelling by bike, and how they are treated by other road users and by transport planning and policy.

Joining University of Westminster in September 2012, Aldred identified from her data that there was a persistence of perceived cycling stigma / marginalisation in England, even in areas with high cycling levels. The concept of 'cyclist' in the UK was found to be inherently problematic and associated particularly with stigmatising concepts of danger and rule-breaking, helping maintain it as a niche pursuit. Recognising this as a barrier to the broader adoption of cycling, Aldred identified how changing cycling-related narratives and images might help support diversification of cycling uptake [1,2].

Aldred further explored the experiences of cycling marginalisation by quantifying the rate at which people who cycle regularly in the UK experience 'near misses' – non-injury incidents such as 'close passes' that are nonetheless often frightening [3]. This research involved undertaking a national survey of near miss experiences (2014-6). The results showed that 'very scary' incidents may happen on a weekly basis to regular cycling commuters, compared to once every 20 years for an actual injury. This finding highlighted the role of non-injury incidents in explaining the gap between 'objective' injury data and 'subjective' risk perceptions.

Following up these research findings, Aldred sought to explore how planning methods could be reformed to make cycling safer and more comfortable. Such work includes a focus on how cycling with children affects infrastructure needs, the extent to which disabled people's cycling needs are considered in transport policy and planning, and variations in infrastructure preferences by age and gender [4]. The findings highlight the importance of high-quality infrastructure in diversifying cycling.

From the project's inception in 2015, Aldred has been part of the core team developing the Department for Transport (DfT) funded Propensity to Cycle Tool (PCT), and the project's Lead on Policy and Practice. The PCT (2016–) was developed as an online application with freely available

data downloads (https://www.pct.bike/) that quantifies 'cycling potential' across England and Wales. This tool enables data-driven local planning for future growth in this form of active travel. Output [5] provides a critical examination of the methodology underpinning the design of the PCT, which calculates potential for cycling growth (commute and school travel) under different scenarios, maps it at small area and route network level, and calculates the health and carbon benefits of achieving the potential. This research both establishes the scope for substantial increases in cycling and provides local planners with a DfT-endorsed free and open source tool for identifying priority neighbourhoods and corridors for intervention.

Finally, since 2016 Aldred has run an innovative 'natural experiment' cohort study ("People and Places") evaluating Outer London's £100m programme of 'mini-Holland' active travel interventions, which principally involve creating protected cycle lanes and reducing motor traffic in neighbourhoods. Output [6], for instance, found that 41-44 minutes per week extra active travel due to new infrastructure leads to a health economic benefit of £724m from interventions costing £80m. The significance of this research is that it provides evidence on the impacts of building such infrastructure and thus collapses the mutually reinforcing knowledge gap and implementation gap in this area.

In short, Aldred's novel approach to the study of cycling culture encompasses both the subjective perceptions of broader communities of people who do/not cycle and methodological innovations that embed new theoretical approaches and perspectives into practical tools for transforming transport planning.

3. References to the research (indicative maximum of six references)

[1] Aldred, R. 2013, Incompetent or too competent? Negotiating everyday cycling identities in a motor dominated society, *Mobilities* 8 (2), 252-271

[2] Aldred, R. 2014, Why culture matters for transport policy: the case of cycling in the UK, *Journal of Transport Geography* 34, 78-87

[3] Aldred, R, S Crosweller, 2015, Investigating the rates and impacts of near misses and related incidents among UK cyclists, *Journal of Transport & Health* 2 (3), 379-393

[4] Aldred, R, B Elliott, J Woodcock, A Goodman, 2017, Cycling provision separated from motor traffic: a systematic review exploring whether stated preferences vary by gender and age, *Transport Reviews* 37 (1), 29-55

[5] Lovelace, R, A Goodman, R Aldred, N Berkoff, A Abbas, J Woodcock, 2017, The Propensity to Cycle Tool: An open source online system for sustainable transport planning, *Journal of Transport and Land Use*, Vol 10, No. 1

[6] Aldred, R., Woodcock, J. and Goodman, A. 2020. Major investment in active travel in Outer London: Impacts on travel behaviour, physical activity, and health. Journal of Transport & Health, 20, March 2021, 100958

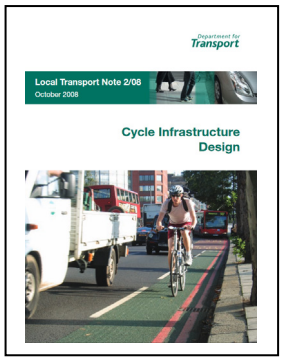
Details of funded projects (selected from relevant external funding totalling £1,157,404)

- Jan 2019 – Jul 2020: Road Safety Trust funding for 'Reducing Cycling Injury Risk While Cycling Grows' (PI). £128,994.
- Jan 2015 – Dec 2019: DfT funding for Propensity to Cycle Tool (Co-I): £532,898
- Dec 2015 – Mar 2021: TfL funding for 'People and Places' study (PI): £176,211
- Sep 2014 – Sep 2016: Creative Exchange (AHRC)/Blaze funding for "The Near Miss Project" (PI): £42,422

4. Details of the impact (indicative maximum 750 words)

1. Imagining the cyclist: changing a policy paradigm and related infrastructure design

Both local and national policy guidance has traditionally reproduced stereotypical images of cyclists as 'fast commuters' happy to share streets with heavy vehicles. In turn, these conceptualisations have shaped transport planning and design, creating a vicious circle whereby exclusionary infrastructure led to poor cycling experiences and low uptake, particularly by groups most sensitive to risk and discomfort, which in turn reinforced the view that only a small minority are able to cycle, leading planners to ignore the potential for mass cycling among wider populations.



This is encapsulated by the cover of the now superseded national English guidance, *Cycle Infrastructure Design* (Oct 2008) which depicts an 'advisory cycle lane' shared with motor traffic on a busy road (see image on the right) [a-i]. This is off-putting to risk adverse cyclists, as Aldred's 'near miss' research attests [3], and, more generally, cycling infrastructure has been unsuitable for the diversity of potential and actual cyclists – for example, older people and people travelling with children [4].

Aldred's research, which highlights the importance of expanding and diversifying our understanding of the (potential) cycle user, and her engagement activities with key governmental stakeholders, has changed the way the documents used by transport planners are designed and written and, in turn, resulted in the creation of inclusive infrastructure.

As a result of Aldred's translation activities [a-ii], **Transport for London (TfL), for instance, decided to use more inclusive images, language, and engineering specifications**, e.g. adaptive bikes used by disabled people, within their 2018 *Cycling Action Plan* (see the image on the left). This guidance directly references Aldred's work on cycling stigma [1] to justify this change in design guidance, stating: 'We can all work to normalise cycling, making it clear that it is something that everyone can do, with no special equipment or clothing required. A key part of this Plan is developing a more inclusive branding for London's cycle network, to make it appealing to more people" [a-iii, p.32].

Further, Aldred's work in 'critiquing and analysing continued inequalities in take-up […] has encouraged a continuing GLA (Greater London Authority) and TfL concern with "de-Lycrafying cycling"' that has fed into infrastructure change in London [a-iv]. London's former Deputy Mayor for Transport, 'responsible for setting London's transport policy and overseeing its delivery on behalf of the Mayor', states that the 'connections she [Aldred] has drawn between culture and infrastructure have encouraged us as London policy-makers to see infrastructural change as a way of enabling cultural change, through **creating a virtuous feedback circle in which a more inclusive infrastructure helps shift perceptions of what it means to be "a cyclist"'** [a-iv]. In this way, Aldred 'has been a key part of this process' of 'creat[ing] a nearly £1 billion 10-year programme that is designed to put London's cycling facilities on a par with those in the best cycling cities in the world' [a-iv].

Aldred's impact on infrastructure guidance is further demonstrated by her **contribution to the development of the new *Cycle Infrastructure Design* (LTN 1/20)**, published July 2020. The new guidance cites her evidence that 'programmes of investment have illustrated that there is significant potential for change in travel behaviour and that more people cycle for everyday journeys where acceptable conditions are provided' [a-v, p.16]. As such, the guidance 'aims to help cycling become a form of mass transit in many more places' by 'boost[ing] design standards and improv[ing] safety' [a-v, p.3]. Aldred sat on the steering group of experts who helped to develop the guidance through four in-person meetings and virtual discussions in-between these.

2. Providing an evidence-base for expanding active travel interventions in London

In March 2013 the TfL launched the £100m mini-Holland scheme in three Outer London boroughs, aimed at creating 'dramatic change – not just for cyclists, but for everyone who lives and works there' [b-i, p.16]. Implemented in 2016, the TfL committed to ongoing funding for a longitudinal study – 'People and Places', led by Aldred – that measures the impact of the mini-Holland scheme on active travel. Along with four academic outputs (including [6]) that draw on the findings of this study, Aldred's team have produced annual reports for TfL. The latter are used in the TfL's own *Travel in London* reports [b-ii, p.115], which 'provide an interpretative overview of progress towards implementing the Mayor's Transport Strategy, to inform future policy development', and also provide '**an evidence and analysis base for the general use of stakeholders and policymakers** whose responsibilities cover many different aspects of travel and transport in London' [b-ii, p.7].

The impact of Aldred's research project upon the policymaking of the TfL is demonstrated by the July 2020 *Gear Change: A Bold Vision for Walking and Cycling* document, where output [6] is cited as **justification for the expansion of the mini-Holland scheme,** which Aldred found had

'increased [cycling] by 18 per cent and walking by 13 per cent in a single year' [b-iii, p.19]. As a result, 12 non-London local authority areas will 'benefit from intensive investment in mini-Holland schemes on the same model', with the main focus being on replacing short car trips in places where cycling is currently low [b-iii, p.19].

3. Reducing near misses: police and transport authority action on close passes

West Midlands Police (WMP) describe how 'Dr Aldred's work' on near miss experiences 'gave us an evidence base to change driver behaviour around cyclists, firstly to create a safer environment that would encourage people to cycle & also to improve driver awareness around vulnerable road users reducing the amount of cyclists killed and injured on our roads' [c-i]. This took the form of **the UK's first Close Pass Operation,** which launched in August 2016. This approach uses plain-clothed officers on bikes who report close passes to a patrol car team, which can then stop the offending driver and educate and/or enforce. In its first year, WMP report that the operation reduced Killed and Seriously Injured [KSI] numbers by 20% (from 115 to 92) [c-ii], and in Nov 2018 the DfT reported that: 'Since the launch of the operation in 2016, over 300 motorists have been stopped at the roadside for education and over 600 have been offered educational courses following third party reporting of a close passing incident' [c-iii, p.43].

The DfT found that among the 14,000+ email responses from individuals and organisations to a call for evidence for their *Cycling and Walking Investment Strategy: Safety Review*, the enforcement of road traffic laws regarding close passing was the fourth most commonly raised topic regarding the laws and rules of the road [c-iv, p.13], and that '[m]any respondents highlighted the West Midlands Police initiative Operation Close Pass, as an example of a successful intervention combining enforcement with education to target drivers who do not give cyclists sufficient space when overtaking' [c-iv, p.15].

On the basis of these responses and the WMP operation's objective success, in June 2018 the **DfT introduced 'a new UK-wide initiative to help the police crackdown on close passing and provision of materials for police forces'** [c-iii, p.14]. This involves 'working with West Midlands Police to produce educational materials and support for police forces so that more drivers are made aware of the need to leave safe distances when overtaking cyclists' [c-iii, p.43]. This expansion of the closepass initiative is specified as Action 27 in the 'Safer Passing and Overtaking' package of the DfT's *Cycling and Walking Investment Strategy: Safety Review* (Nov 2018) [c-iii, p. 63]. Since then, 'Operation Closepass has subsequently been replicated by 27 Forces across the country', and the WMP report that it also used 'in 14 other countries worldwide' [c-i].

Announcing this initiative, then Transport Minister Jesse Norman MP highlighted the importance of such a pedagogical approach: 'We shouldn't only concentrate on catching and punishing drivers when they make a mistake, but try to ensure that they have the skills and knowledge to drive safely alongside cyclists in all conditions', as 'we will only achieve our ambitious aims if people feel safe when they walk and cycle' [c-v]. These aims relate to **obtaining the 'benefits of cycling' for people, businesses, and 'society as a whole'** – 'better health', 'lower congestion, better air quality, and vibrant, attractive places' [c-v].

4. Planning for potential cyclists, through measuring and estimating cycling potential

The Propensity to Cycle Tool [5] is an open access planning tool available since 2017. The PCT is helping to break down the barriers to cycling investment identified by Aldred and colleagues by **providing a rigorous evidence base for the planning of cycling growth**. The PCT allows authorities to choose an appropriate growth scenario, and to then quantify potential uplift in cycling in neighbourhoods and on routes. On this basis they can then prioritise investment in areas where they would expect to see change. In addition to her contributions to the design of the PCT software's functionality, as the Policy and Practice Lead for the project team Aldred has played a key role in achieving the uptake of PCT by a range of planning authorities in the UK.

In their *Local Cycling and Walking Infrastructure Plans (LCWIP): Technical Guidance for Local Authorities* of April 2017, the DfT 'strongly recommended that authorities make use of the DfT-funded Propensity to Cycle Tool (PCT) through the LCWIP process' and explained how it works [d-i, p.14-15]. As of July 2020, 81 public or voluntary sector organisations (mostly local/transport authorities) across England have since made reference to its use [d-ii]. These include major regional bodies, such as West Midlands Combined Authority, and Local Authorities (district, borough, and county councils), such as Derbyshire and Essex. These organisations have

published 108 documents referring to use of the PCT, of which 74 contained detail of how they had used it. Most used at least one scenario of cycling uptake [5], with the most popular being the 'Go Dutch' scenario, whose use was described in 42 documents. This demonstrates wide use of the scenarios as well as high ambition. Take-up is particularly high in the South-East region (29 authorities using PCT) but present across all English regions [d-ii]. The impact of this usage of PCT is described below.

The Economic Advisor for Local Transport at DfT confirms that 46 Local Authorities who completed an LCWIP using PCT have received DfT support, noting that: 'The PCT has **enabled an evidence based way for each these local authorities to create and prioritise a pipeline of active travel schemes'** and has 'also **reduced the burden local authorities face when conducting appraisals of schemes'** [d-iii]. The Economic Advisor further specifies that the PCT has been 'vital' to applications for tranche 2 of the DfT's 'Active travel fund' for local transport authorities, which supports the creation of longer-term infrastructure projects, stating that: 'A survey of bidders indicated that over 75% of non-London local authorities used the PCT or a separate prioritisation tool based on the PCT' [d-iii]. According to the Advisor, '[t]his **will significantly improve the likelihood that the £175m allocated in tranche 2 delivers value for money'** [d-iii].

The impact of PCT usage at the level of major regional bodies is demonstrable in Greater Manchester. On behalf of Transport for Greater Manchester (TfGM), the PCT team produced a Greater Manchester Case Study, which was acknowledged by Chris Boardman MBE (Cycling and Walking Commissioner) in his *Made to Move* report that outlines a strategy to increase commuter cycling rates 'ten-fold, from 2.2% to 21.3% of all journeys. This tool […] will be used to help prioritise investment" [d-iv, p.11]. In January 2020 it was confirmed that **the PCT was used in the identification of '[t]hirteen "major trip generators" in Greater Manchester'**, i.e. routes within 'areas with the greatest propensity for modal shift to walking and cycling' [d-v, p.24]. These routes constitute the Bee Network, a 10-year £1.5 billion project that takes the form of a '1,800-mile network of walking and cycling routes [that] will connect neighbourhoods, ensure children can make safe journeys independently and – most crucially – give people within our communities genuine choice about the way they make short journeys' [d-v, p.7 & 5].

5. Sources to corroborate the impact (indicative maximum of 10 references)

[a] (i) Department for Transport (DfT). *Cycle Infrastructure Design* LTN 2/08 (Oct 2008) (ii) Document detailing Aldred's engagement activities [link] (iii) Transport for London (TfL). *Cycling Action Plan* (2018) (iv) Testimony from Deputy Mayor for Transport (5/2011–5/2016) (v) DfT. *Cycle Infrastructure Design* LTN1/10 (July 2020)

[b] (i) TfL. *The Mayor's Vision For Cycling In London* (March 2013) (ii) TfL. *Travel in London 12* (2019) (iii) TfL. *Gear Change: a bold vision for walking and cycling* (July 2020)

[c] (i) Testimony from the Road Harm Prevention Team, West Midlands Police. (ii) Owen Rogers. "Operation Close Pass hailed a success…", *Cycling Weekly*. 25 Sept 2017 (iii) DfT. *Cycling and Walking Investment Strategy: Safety Review* (Nov 2018), (iv) DfT. "Summary of Responses to Call for Evidence" related to the Safety Review (Oct 2018) (v) DfT. "Government focus on cycling awareness and training in boost to cycle safety". 29 June 2018

[d] (i) DfT. *Local Cycling and Walking Infrastructure Plans: Technical Guidance for Local Authorities* (April 2017) (ii) Holly Weir, Asa Thomas, Rachel Aldred. *The Propensity to Cycle Tool: Impact Report 2020* [link] (iii) Testimony: Economic Advisor for Local Transport at DfT (iv) Greater Manchester's Cycling and Walking Commissioner. *Made to Move* (2018) (v) Mayor of Greater Manchester, GMCA, TfGM, *Change a Region to Change a Nation* (Jan 2020)