LTN dissertation

by Hayley Al-Siaidi

Submission date: 12-Sep-2022 02:44PM (UTC+0100)
Submission ID: 185910509
File name: LTN_dissertation_3828312_321779562.pdf (3.2M)
Word count: 20909
Character count: 114269

LONDON'S GLOBAL UNIVERSITY

UCL

University College London

Faculty of the Built Environment

The Bartlett School of Planning

Low Traffic Neighbourhoods and behaviour change: a study of travel attitudes and acceptability in Streatham Hill

SVLV8

Date: 12th September 2022

	Word count
Main body of dissertation	10,871
Appendices (excluding ethical clearance and risk assessment)	2,918

Being a dissertation submitted to the faculty of The Built Environment as part of the requirements for the award of ***MSc Sustainable Urbanism*** at University College London:

I declare that this dissertation is entirely my own work and that ideas, data, and images, as well as direct quotations, drawn from elsewhere are identified and referenced.

Acknowledgements

I would like to thank my supervisor Jonas de Vos for providing advice and support throughout the dissertation process. Also to the people who I interviewed and agreed to share their valuable time and experiences of the Streatham Hill Low Traffic Neighbourhood.

I will be eternally grateful for Tim and Roland for always listening to my endless ramblings and ensuring I was well fed, walked and watered throughout the dissertation process. As well as my family and friends for supporting me throughout my masters.

Contents

List of figures

List of tables

Abstract

Addressing the current climate emergency will require a significant shift in current travel patterns and behaviours. However, climate-oriented policies which aim to induce behaviour change away from car use are highly controversial, with recent implementation of Low Traffic Neighbourhoods in London exemplifying this. Significant public opposition means that LTNs are often not politically feasible to implement, or are removed post-implementation due to objection. Studies of acceptability offer potential to understand reasons for opposition, and how to reduce these in future LTN implementation. Lower levels of acceptability may also impact on mode shift, therefore, acceptability theories have been combined with psychological theories for behaviour change, to understand how acceptability and effectiveness can be improved.

This study therefore brings together existing research to understand if travel attitudes impact public acceptability and if public acceptability (alongside travel attitudes) influences behaviour change within the LTN. Going on to identify how acceptability and behaviour change can be increased through improved LTN implementation.

Findings indicate that public acceptability factors are relevant to the study of LTNs and acceptability does play a role in behaviour change, alongside perceived behavioural control. Travel attitudes had a variable impact on acceptability, with positive sustainable travel attitudes being related to higher acceptability.

1. Introduction

60 years ago, cars represented the future of travel, with cities and towns across the world re-designed to enable their free movement. Now, with the climate emergency looming urban professionals are faced with the wicked challenge of extricating people from their cars, and cars from our inner cities and neighbourhoods.

In the UK and London greenhouse gas emissions from surface transport have been notably stagnant in reacting to the climate emergency in comparison to other disciplines, as shown in Figure 1. With high levels of car use also contributing to more localised problems of poor air quality, congestion, and collisions (Hickman et al. 2010). Reducing car use is therefore essential to improving local health and meeting the UK Government target to reach net zero by 2050 and London's more ambitious target of 2030. Existing policies such as the UK's Transport Decarbonisation Plan (DfT, 2021) focuses largely on technological innovation to decrease emissions, with limited recognition given to reducing car use or changing behaviour. However, The Climate Change Committee (2022 p130) found that "the Government has not yet set out a clear vision of the extent of traffic reduction that is desirable, nor a coherent set of policies to deliver this". Reflecting the need to implement more effective strategies which can reduce transport associated carbon emission.

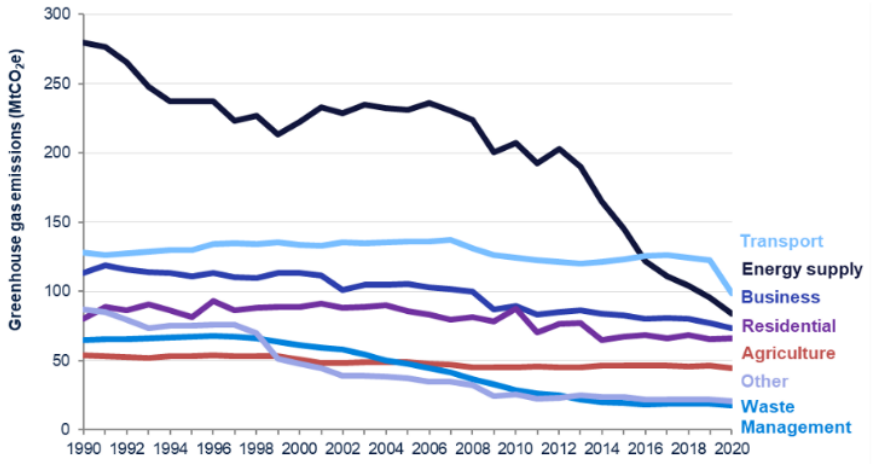


Figure 1 UK greenhouse gas emissions by sector 1990-2020 (Department for Business, Energy & Industrial Strategy, 2022)

Policies attempting to reduce car use are often highly controversial and can meet with significant public resistance, with recent experience of Low Traffic Neighbourhoods (LTNs) in London exemplifying this. LTNs seek to reduce through traffic in residential areas by closing roads at strategic points to improve air quality and create a more pleasant environment for walking and cycling while discouraging car use for short trips (TfL, 2022). Many LTNs were in the early stages of

planning pre-Covid-19 pandemic, however, implementation was brought forward in line with Transport for London's (TfL) Streetspace guidance to enable social distancing.

Overall, 72 LTNs were introduced between March – September 2020 as 'emergency LTNs', which were largely installed overnight through Experimental Traffic Regulation Orders (ETRO). ETROs enable schemes to be implemented without consultation for up to 18 months, while monitoring and consultation takes place retrospectively based on people's experience of the scheme. However, the hurried implementation and patchy communications associated with these emergency LTNs meant that they became contentious with residents, leading to protests and vandalism of schemes across London (Hickman, 2021). The level of objection led to significant political pressure, with nearly one third of LTNs since being removed (Cuff, 2022).

Local authorities are caught between delivering publicly acceptable schemes and making meaningful change to deliver net zero commitments (Banister, 2008). For LTN's or any similar schemes to be successful in the future, it is essential that they can gain broader public support, which will require a greater understanding of people's current motivations for choosing travel modes, and opportunities for altering this.

This dissertation uses Streatham Hill Low Traffic Neighbourhood as a case study to understand how travel attitudes and acceptability of LTNs impacts mode shift. By better understanding public acceptability, LTNs could become more politically feasible, and potentially increase their effectiveness in terms of behaviour change, which is currently not well studied. The aims of this dissertation are therefore:

1. To identify Streatham Hill Low Traffic Neighbourhood resident attitudes towards cars and other transport modes
2. To explore resident attitudes towards the Streatham Hill Low Traffic Neighbourhood
    a. To identify if attitudes towards cars and other modes impact acceptability of the LTN
3. To evaluate the role of attitudes and acceptability on behaviour change in Streatham Hill LTN
4. To develop recommendations for improving the impact and acceptability of Low Traffic Neighbourhoods in reducing car use

2. Literature review

2.1. Travel behaviour

The impact of the built environment on travel behaviour is well researched, with a consensus that the built environment has a significant impact on how people travel (Cervero and Kockleman, 1997; Ewing and Cervero, 2010; Newman and Kenworthy, 1989, 2015). This has led governments to develop policies to reduce car use, by altering the relative convenience, speed, and cost of travel by car and sustainable modes, which are known as instrumental motives for travel choice.

Travel behaviour interventions can largely be categorised as either 'stick' or 'carrot', depending on whether they disincentivise an undesirable behaviour such as driving (stick), or incentivise a desired behaviour such as cycling (carrot). Stick measures include congestion charging, vehicle taxation or increasing car parking charges (Piatkowski et al., 2017). Whereas carrot measures include provision of segregated cycle lanes, footway enhancements or improving public transport network and efficiency. The type of transport intervention employed is inherently connected with how planners assume the targeted travel choice is made (Steg, 2003). Altering the instrumental value of travel options to influence behaviour assumes that travel choice is made by rational subjects, balancing decisions between the individual costs and benefits that each option provides. This is in line with Ajzen's (1991) Theory of Planned Behaviour (TPB) which states that behaviour is determined by intentions to perform the behaviour. Ajzen (1991) identified three core elements which determine travel intentions, which drive behaviour. These elements are attitudes (towards the behaviour, such as driving), subjective norms (perceived social pressure), and perceived behavioural control (the perceived difficulty or not of participating in the behaviour). Alterations to the instrumental attributes of travel by different modes can therefore improve perceptions of sustainable modes while also enhancing both actual and perceived behavioural control (Bamberg et al., 2003). LTNs contain elements of both carrot and stick measures as they reduce driving convenience for residents and non-residents cutting through, and improve the environment for people walking and cycling by reducing vehicular traffic pollution and safety concerns within the LTN.

Over the last twenty years, beliefs that instrumental motives are the primary drivers of mode choice have been tempered against psychological theories which prioritise the impact of personal attitudes, habits, and social norms (Handy et al., 2005, Schwanen and Lucas, 2011). This goes beyond understandings that assume transport choices are a purely rational process, to understand how these are embedded in cultures, norms and identities (Jensen, 2015). With car use being a particularly strong and embedded habit, which Matthies and Klöckner (2015) identify as developing

over time causing 'behavioural lock-ins' to develop with habits performed without conscious deliberation making them challenging to alter.

Academics have sought to understand the relative importance of instrumental, affective, and symbolic motivations for travel choices and how these contribute to the formation of pro-car attitudes. Affective motives relate to the ability to alter mood and choose mode because of this, and symbolic motives are the ability to express yourself and social status through car use and ownership (Steg, 2005). Both symbolic and affective motives were found to be greater predictors of frequency of car use than instrumental, contrary to rational choice theories. Kent (2014) confirms this, identifying feelings of freedom, comfort and the physical experience of travelling by car as greater determinants of mode choice than journey duration. This underscores why interventions aimed at reducing car use based on purely instrumental motives aren't always as successful as predicted and can meet with resistance, as people may have greater symbolic and affective attachment to car use beyond just travel efficiency. There has been significantly less study on the role of symbolic and affective attitudes towards active travel in mode choice, although Fallah Zavareh et al., (2020) found that affective motives were significant in active travel choices, however, symbolic functions were not found to be important, contrary to car users. This may be associated with the lower levels of visible equipment needed for walking particularly, which reduce the relevance of symbolic motivations. Understanding different motivations for mode choice will be necessary to devise effective behaviour change strategies.

Beyond the impact of mode-specific attitudes, level of environmental concern and awareness of the impact of car use has been hypothesised to impact travel behaviour. However, many studies have dismissed the importance of environmental concern in travel behaviour (Nillson and Küller, 2000). Which Anable (2005) identified as being due to varying levels of Perceived Behavioural Control (PBC). Some people perceive they have limited ability/alternatives to enable them to alter travel mode, meaning that when presented with the same travel options different people may perceive the difficulty in engaging in each option differently. With those with low levels of PBC feeling unable to alter their travel behaviour, despite their concern for the environment, this is contrary to people with high PBC who can make choices in line with their environmental concern (Anable, 2005). Beirão and Cabral (2007) also highlight the importance of perceptions in determining levels of car and public transport use. With car users perceiving public transport to be poor quality and inefficient, compared to public transport users who rate the same services more highly, meaning that public transport may be of a better quality than frequent drivers perceive it to be (Beirão and Cabral, 2007). Therefore, improving the image and information about public transport services could improve perceptions and encourage mode shift (Lanzi and Khan, 2017). Further to this,

environmental concern may have a more indirect role on travel mode choice by influencing habits towards or away from frequent car use (Donald et al., 2014). Environmental concern evidently does impact travel mode choice, although the relationship may not be direct. The importance of perceptions has been found to be influential in mode choice for both car users and public transport.

2.2. Traffic calming and LTNs

The Netherlands has a strong track record for implementing successful traffic calming in residential areas through Woonerf since the 1960s. Woonerf were developed in response to a public outcry against increasing vehicle dominance and associated road fatalities (Gill, 2006). Woonerf are residential areas, where vehicles are treated as guests, with streets designed for walking and cycling with low-speed limits, limited widths and street furniture (Fietsberaad, 2006). Strong public support enabled policies which restrained car use and supported travel by more sustainable modes, with Dutch cities now having the highest levels of cycling in the world. These ideas were translated to the UK context as 'home zones' in the 1970s – 90s, though the principles were watered down from the original concept (Gill, 2006). Yet, the culture and attitude towards cars during this period was vastly different in the UK, reflected by an increase in car ownership from 30% in the 1960s to 70% in 1995 (Bonsall, 2000). This led to car-centric urban developments with infrastructure for cycling and walking largely designed to restrain these slower modes to enable the free movement of people driving (Ishaque and Noland, 2006; Oldenziel and Bruhèze, 2011). This occurred across the country, although to a lesser extent in London due to higher densities and an integrated public transport network (NTS, 2020). There remain significant differences in car use across London, with areas (particularly outer London) having car levels comparable to other UK cities (TfL, 2009).

In London Mini-Holland schemes, which include elements of the Woonerf, have been implemented since 2015 in Enfield, Kingston and Waltham Forest. Mini-Hollands include traffic filtering (in line with LTNs) in addition to segregated cycle lanes and streetscape improvements. In Waltham Forest Mini-Hollands were highly controversial when implemented sparking significant public debate and objection with approx. 40% of residents opposing schemes, in 2020 this figure had dropped significantly to just 1% (Loakes, 2020). Monitoring during the first year of implementation showed the schemes were successful with traffic in the residential area decreasing by half, and decreases on surrounding main roads (Enjoy Waltham Forest, 2016). This was alongside increased rates of active travel, which increased by 41-44 minutes per week on average per resident. With longer-term impacts on car or van ownership which decreased by 6% between 2016-2019 in well-established Mini-Holland locations (Aldred et al., 2021; Goodman et al. 2020). This recent experience in London shows there is potential for neighbourhood-based schemes to alter travel behaviour, despite low

initial public acceptability. However, the changes to do not prove causation and the results may not be transferable to different contexts within London.

Low Traffic Neighbourhoods, unlike preceding Mini-Holland schemes lack supporting infrastructure such as new cycle lanes, footways, and crossing improvements. Despite this, initial research on emergency LTNs gave similar results of decreasing car use and increasing levels of walking and cycling, indicating that they may be successful in causing behaviour change (Aldred and Goodman, 2021). Although, due to the multitude of changes occurring during the Covid-19 pandemic, and restrictions on travel, it isn't possible to determine causality between introduction of the LTN and a change in travel behaviour. Furthermore, the majority of recent LTN research has been funded by Transport for London (TfL) who also promoted the LTN schemes, meaning they may not be entirely impartial. Aldred and Goodman (2021) note the need for more research considering resident experiences of the new emergency LTNs, as this is primarily quantitative to date.

The rapid implementation of LTNs has led to significant public debate and resistance. With opposition often characterised as being a small but vocal minority, as polls in London show 47% of Londoners support LTNs, and 21% oppose them, with the remainder undecided (Redfield and Wilton, 2021). More recent qualitative research cited reasons for opposing LTNs including a lack of meaningful engagement, meaning people did not understand why LTNs were introduced or how they could effectively reduce car use (Centre for London, 2022; NatCen,2022). The poor perception of LTNs was compounded by a lack of complimentary alterations to the built environment which make walking and cycling feel safer. This had most significant impact for people with disabilities and could have more negative impacts on people who have cross-cutting disadvantage such as people of a particular race, or socio-economic group (Transport for All, 2021). Despite public concern for equality of implementation, initial research found LTNs were 2.5 times more likely to benefit people in areas of deprivation (Aldred et al. 2021). However, this research is purely quantitative and does not consider the lived experience of people in areas of deprivation, or other disadvantaged groups.

Currently the literature on LTNs focuses either quantitively on behaviour change potential, or qualitatively on lived experiences of implementation. This presents a gap in current research to understand the factors which may influence car use and behaviour change building on psychological theories.

2.3. Public acceptability of climate-oriented transport policies

A key challenge for LTN's in the UK is a lack of public acceptability, which limits political impetus for implementation, and behaviour change where schemes are pushed through (Schlang and Teubel, 1997). Existing research around public acceptability to climate-oriented transport policies largely focuses on acceptability of congestion pricing and more recently Low Emission Zones (LEZ) (Ejelov and Nillson, 2021). These studies identify public acceptability is influenced at an individual and policy specific level, which is influenced by how people experience the scheme post-implementation (Jagers et al., 2017). Individual factors which influence acceptability include problem perception and prior attitudes such as environmental beliefs and existing transport mode choice (Ortiz et al., 2021). Whereas policy specific beliefs, include process legitimacy (linked with institutional trust), fairness, effectiveness, and infringement on freedom (Huber, 2019; Jakobsson et al., 2000; Oltra et al., 2021).

Considering the individual influences, environmental concern is closely linked with problem perception and is strongly associated with public acceptance of transport policies (Ejelöv and Nilsson, 2020). This was reflected within the Barcelona LEZ, with people who have a greater concern for the environment (related to climate change) and believe that air pollution is a serious problem being more likely to view the LEZ as acceptable (Oltra et al., 2021). In addition to these factors Ortiz et al. (2021) identified Madrid Central LEZ was more acceptable to users who used sustainable modes before implementation than those who changed their travel patterns or mainly drove pre-implementation, highlighting the relationship between travel behaviour and acceptability. This study demonstrated that support for the LEZ was high due primarily to perceived effectiveness. More recent studies apply socio-psychological models used in behaviour change, finding that PBC was directly linked to acceptability (Xianglong, 2016). Although this finding is potentially variable as it was not found to be significant by Morton et al. (2021), although attitudes towards the policy were found to be influential in acceptability. There is potential to further incorporate theories from travel behaviour in public acceptability to gain a better understanding of which factors are important.

Individual factors then influence policy specific beliefs, increasing perceptions of effectiveness and fairness, as those believing there is an existing problem to solve are more likely to agree with the need to implement, and see the benefits (Oltra et al., 2021). Impact on freedom is more likely to be negatively perceived with more coercive or stick measures, such as congestion charging (Groot and Schuitema, 2012). Fairness can be perceived in many ways, including how the gains and losses are divided within society, individual impact (freedom) and how they are implemented through process legitimacy (Steg and Schuitema, 2007; Stradling et al., 2000). Where policies have been implemented through a justifiable process based on consultation and evidence, legitimacy is perceived to be

higher and policies more acceptable (Jagers at al., 2016). These studies utilise quantitative survey methods and do not enable different ideas to be identified by respondents which drive acceptability.

There is a paradox between schemes which are most acceptable to the public and those which they identify as being most effective at reducing their car use (Steg, 2003). With public acceptance being low for policies which are deemed to have the greatest impact and high for policies which are likely to have little impact. This presents a challenge for policy makers as acceptability, has potential to influence effectiveness through behavioural intentions (Schlag and Teubel, 1997). When studying China's License Plate Restriction (LPR) policy, which restricted number plates use to certain days of the week, lower levels of acceptability resulted in lower levels of compliance (Jia et al., 2017; Ling et al., 2021). This is because drivers who found the policy unacceptable continued driving despite the regulations. This positions acceptability as important in ensuring LTN policies are effective, as they do not prevent people from driving, but make it more difficult, therefore those who have a strong desire to drive and low acceptability may continue driving.

2.4. Theoretical framework

Public acceptability has potential to influence behaviour change through intention and is essential in making scheme delivery politically possible, which has been a challenge to delivering LTNs in London. To understand the factors which influence public acceptability and therefore potential for behaviour change a theoretical framework has been developed combining theories on public acceptability and travel behaviour. This is shown in Figure 2. This framework builds on approaches set out by Jia et al. (2017) and Ling et al. (2021) in linking public acceptability and behaviour change.

The framework includes elements of TPB as Morton et al. (2021) found behaviour factors relevant in acceptability studies. This develops attitude theories in line with Steg's (2005) acknowledgment of the important role of affective and symbolic motives for car use in addition to traditional instrumental motives. As actions do not always reflect attitudes, Perceived Behavioural Control (Anable, 2005) has also been incorporated. Travel motives were added to factors which are consistently found to be crucial in determining policy acceptability, including environmental concern, which is acknowledged as influential in both travel attitudes (Anable, 2005; Donald et al., 2014) and policy attitudes (Ejelov and Nillson, 2021), and problem perception. These are included alongside policy specific beliefs related to effectiveness, impact on freedom, process legitimacy and fairness all of which are frequently found to be significant in public acceptability of climate-oriented strategies (Oltra et al., 2021; Ortiz et al., 2021).

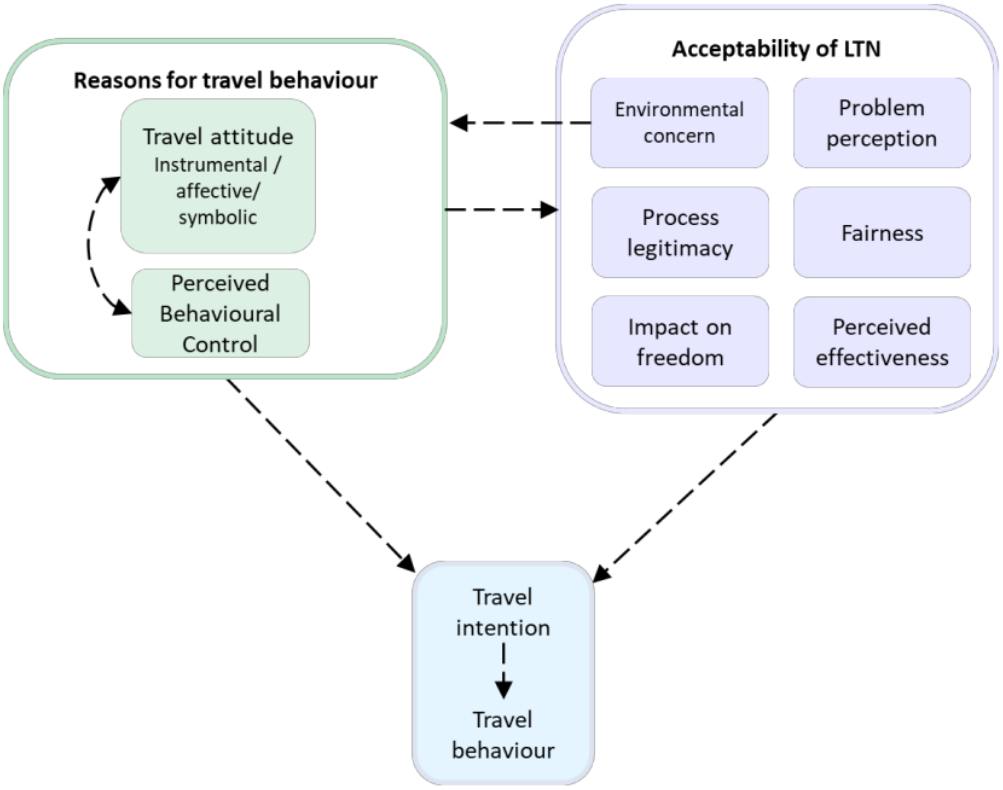


Figure 2 Theoretical model of travel motives, public acceptability and travel behaviour

The combination of these factors is novel, therefore this research is qualitative and exploratory to identify if these factors (car attitudes, PBC, effectiveness, fairness etc.) are relevant to LTN acceptability and behaviour change. By incorporating these theories into a post-implementation evaluation of Streatham Hill LTN, lessons can be identified to improve acceptability and behaviour change potential.

2.5. Case study: Streatham Hill Low Traffic Neighbourhood

Lambeth Council have been progressive in responding to the climate emergency, as the first London Borough to declare a Climate Emergency in 2019 and aiming to reduce traffic in the borough by 27% by 2030 (Lambeth Council, 2019). LTNs in Lambeth were part of a suite of measures to achieve this goal, and were proposed for implementation in 2023, these were brought forward due to the Covid-19 pandemic (Lambeth Council, 2019). Lambeth initially implemented five LTNs Figure 4including Streatham Hill through ETRO's in August 2020 (Lambeth Council, 2021), with a further two now proposed. A map of Streatham Hill LTN is included in Figure 3Figure 3. It was proposed the LTN would be made permanent in June 2022, however, the ETRO expired and permanent traffic orders are pending, meaning the LTN has not been enforceable since June 2022.

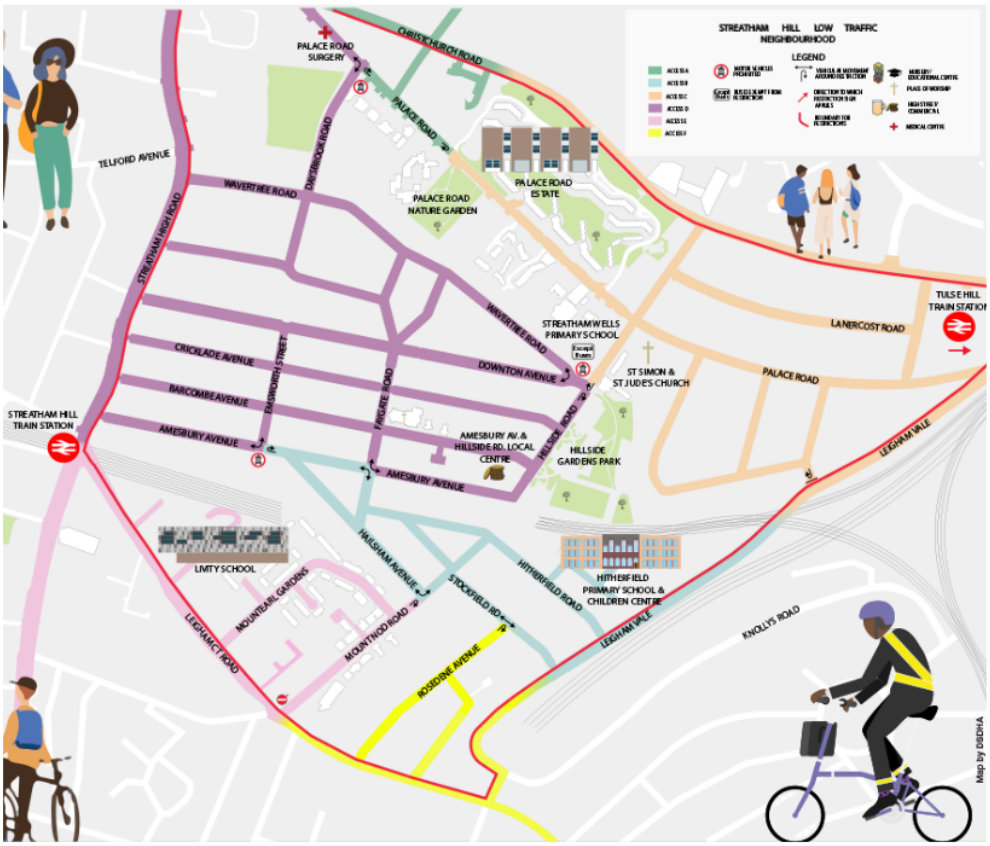


Figure 3 Streatham Hill LTN map (Systra, 2021)

As an inner London borough, Lambeth has relatively low car ownership (40%). Though, ownership increases travelling south through the Borough as accessibility worsens (Figure 4). With transport challenges including an unreliable rail network, poor accessibility travelling east-west, poor air quality and congested road, rail and tube networks (Lambeth Council, 2019). Streatham Hill has a suburban character and has the lowest accessibility levels and highest car ownership, of all emergency LTNs in Lambeth as shown in Figure 3 and Figure 5.

The LTN had the following aims in response to existing issues (Lambeth Council, 2022a):

- Reduce traffic volumes across the neighbourhood to deliver improved air quality, safety and create street spaces where people can socialise and play
- Preserve motor vehicle access for residents and local business
- Enable people to travel safely through the area by walking, cycling, scooting or wheeling
- Contribute to target 27% reduction in traffic across the borough

The main elements of the Streatham Hill LTN were addition of planters in the road to close routes, and enforcement cameras which were added later. Due to the fast deployment of the scheme, there was no formal consultation prior to implementation. Instead, consultation took place post-implementation, through various channels including the online platform 'Commonplace', online and in person meetings, email and telephone (Lambeth Council, 2020).

In a 2021 consultation for the Streatham Hill LTN 57% of respondents disagreed that the LTN made a positive change to the local area, compared to 39% agreeing. At the same time monitoring showed that vehicular traffic has decreased by 54% within the LTN, and increased traffic by 13% on external roads, known as boundary roads (Lambeth Council, 2022c).

Figure 4 Lambeth LTN map (Lambeth Council, 2022)

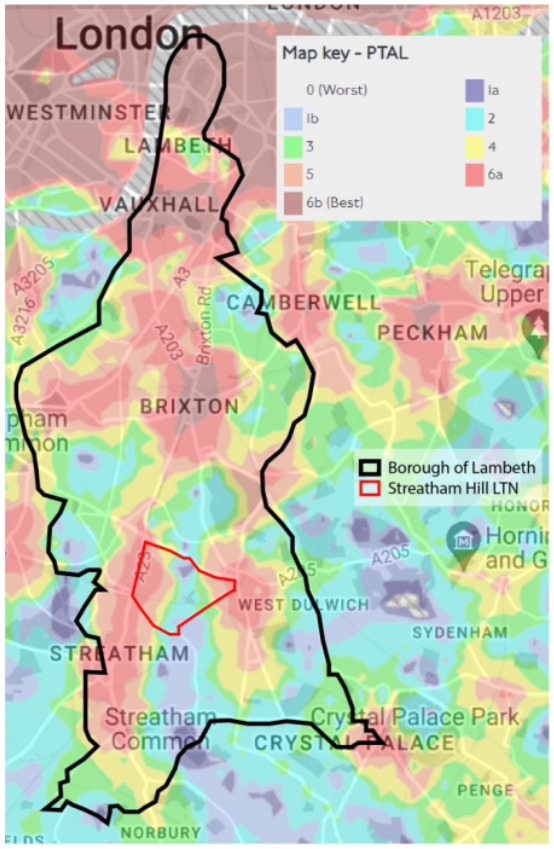


Figure 5 Public Transport Accessibility Levels Lambeth (TfL, 2022)

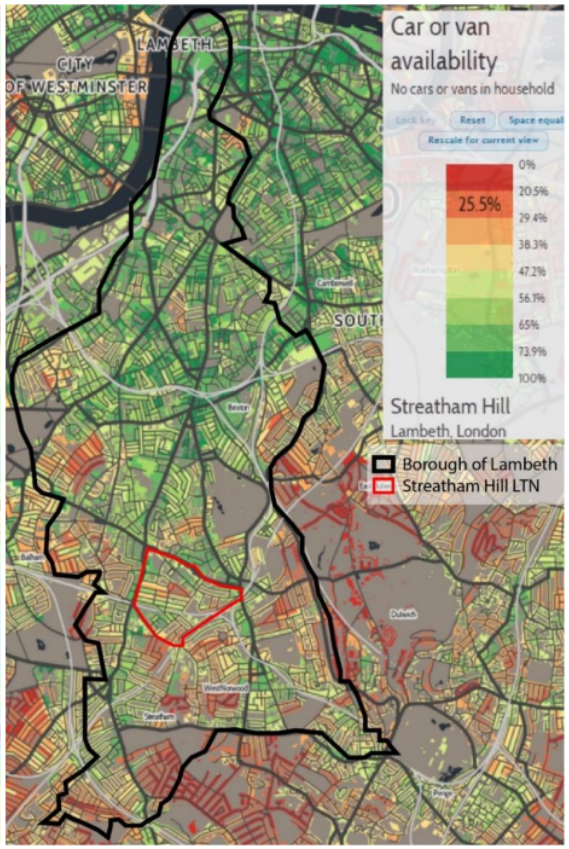


Figure 6 Percentage of households without access to a car or van (Census, 2011)

High levels of opposition have resulted in repeated vandalism to implementation equipment, with signage being painted over and planters being defaced (Walker, 2021). In addition to a High Court appeal against LTNs in Lambeth based on equalities issues. Public protests have also taken place at Lambeth Town Hall against the LTNs.

Figure 7 Vandalism of LTN in Lambeth (Urban, 2021)

Streatham Hill has been selected as a case study as it has a suburban character and travel challenges reflective of much of Outer London and low scheme acceptability. As this study is post-implementation it enables an evaluation of attitudes and travel behaviour change of residents and people living on boundary roads. The evaluation can then identify reasons for high levels of unacceptability (57%), and propose opportunities to improve acceptability and behaviour change.

3. Methodology

The current research takes a qualitative approach to understanding travel behaviour and acceptability in the Streatham Hill LTN, employing interviews to understand resident's experiences and opinions on the LTN and car use. The research responds to four objectives in line with the theoretical framework included in Section 2.4:

1. To identify Streatham Hill Low Traffic Neighbourhood resident attitudes towards cars and other transport modes
2. To explore resident attitudes towards the Streatham Hill Low Traffic Neighbourhood
    a. To identify if attitudes towards cars and other modes impact acceptability of the LTN
3. To evaluate the role of attitudes and acceptability on behaviour change in Streatham Hill LTN
4. To develop recommendations for improving the impact and acceptability of Low Traffic Neighbourhoods in reducing car use

Qualitative methods were selected as the current theoretical framework is novel bridging travel behaviour and acceptability theory. Therefore, the research aims to understand the relevance of these existing theories to acceptability, behaviour change and LTNs. As LTNs and the research on them has had a quantitative focus to date, using qualitative methods, the range of opinions and motivations for attitudes and acceptability can be uncovered. This contrasts with quantitative surveys which limit the range of possible responses to only issues deemed to be relevant by the researcher at the outset (Clifton and Handy, 2001). While questionnaire style surveys are the most frequent method of study within transport and acceptability research, enabling large data sets to be captured, analysed and compared in a standard format to understand travel attitudes and public acceptability to policy measures. Using qualitative research can "fill the gaps" (Clifton and Handy, 2001, p3) left by quantitative techniques, enabling new issues to be uncovered and identify factors which might not be evident at the outset of research.

The personal experiences gained through interviews have been corroborated with secondary data to enable triangulation of the factors deemed to be important. The full methodological process which has been taken to answer the research questions is included in Figure 8.

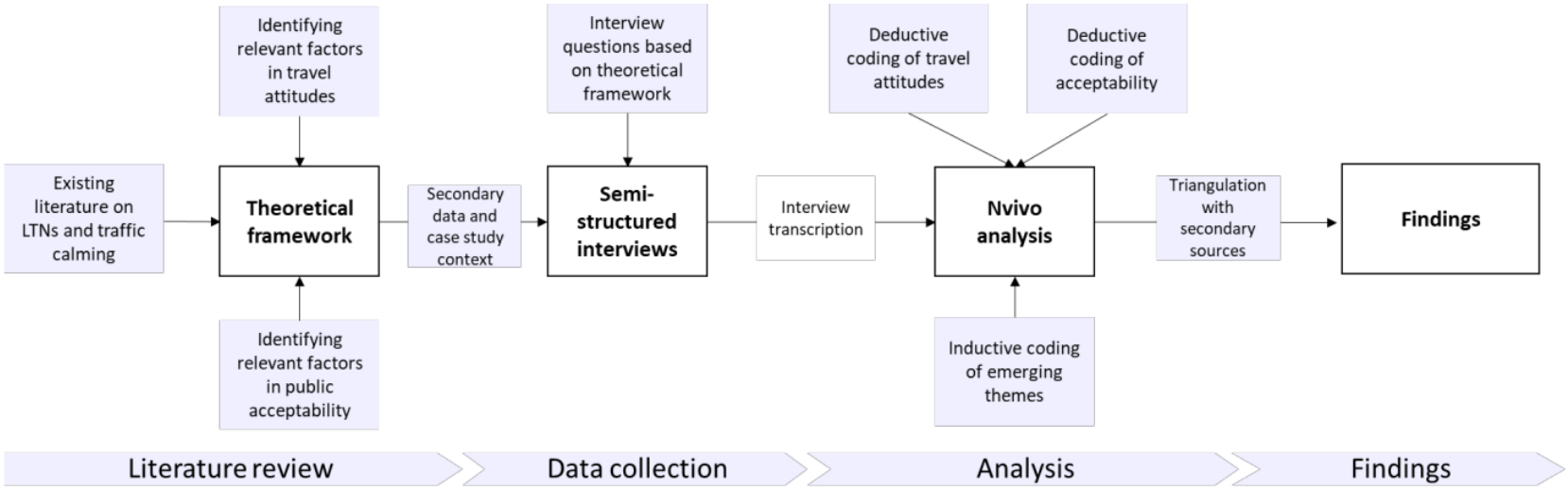


Figure 8 Methodological process

3.1. Interviews

Sixteen semi-structured interviews were undertaken between July and August 2022, all lasting between 25 – 80 minutes. Most interviews were undertaken online using Microsoft Teams with one being held by phone. An interview guide of questions was formulated ahead of the interviews in line with the proposed theoretical framework and research questions, this guide is included in Appendix A. The interview questions were used to guide the conversation, however, conversations varied dependent on the issues and order of issues raised by respondents. With additional probing questions were included to fully understand the views and points presented by the interviewees. A sample interview is included in Appendix B.

Interview participants were recruited through Facebook groups about the Streatham/Streatham Hill area and OneLambeth (an anti-LTN group). The research focuses on LTN and boundary road residents, as these groups are likely to have been most directly impacted by the LTN, although they are not the only targets for behaviour change. No systematic sampling method was used, however, during the initial interviews no respondents were identified who lived on boundary roads of the LTN. So, snowballing of existing interviewees was utilised to contact residents on boundary roads, to ensure a range of views and opinions were gained. A summary of participants is included in Table 1. The sample includes an over representation of people in the 50-59 age bracket, car owners and LTN supporters (compared to Lambeth monitoring). However, as Valentine (2005) highlights, the strength of interviews is in undertaking person-centred research and understanding their lived experiences, which are inherently unique and are not generalisable, therefore, achieving a representative sample is not a core goal of an interview-based methodology.

Table 1 Interview participants

	Age	Gender	Car owner	Main mode	Preferred mode	Inside or Boundary Road	Attitude towards LTN
1P	60 - 69	M	✓	Car	Car	Inside	Pro
2P	30-39	F	✓	Walking	Electric bike	Inside	Pro
3P	30 - 39	M	✓	Walking + PT	Walk	Inside	Pro
4P	60 - 69	M	×	Bike or PT	Bike	Inside	Pro
5P	20 - 29	M	×	Bus	Bus	Inside	Pro
6A	60 - 69	F	✓	Car	Car	Inside	Anti
7P	40 - 49	F	✓	Walking	Walk	Inside	Pro
8A	50 - 59	M	✓	PT	Tube	Inside	Anti
9A	30-39	F	✓	Walking + PT	Walk	Inside	Anti
10P	50 - 59	M	✓	Moped	Tube	Inside	Pro
11A	50 - 59	F	✓	PT or car	Car	Inside	Anti
12A	50 - 59	F	✓	Car	Car	Inside	Anti
13A	50 - 59	F	✓	PT	Car	Boundary	Anti
14P	50 - 59	F	✓	Walk or cycle	Walk	Inside	Pro
15P	50 - 59	M	×	Bike	Bike	Boundary	Pro
16M	40 - 49	M	✓	Bike	Bike	Boundary	Mixed

To analyse the interview responses Nvivo software was utilised, to undertake several rounds of coding which categorised sections of text with elements of the theoretical framework. This approach was primarily deductive, as the themes were identified prior to coding, however, there was also an inductive element to this process, enabling new themes specific to the LTN to emerge from interview responses, which were included as themes and sub-themes of the coding framework. This framework is included in Appendix C. Use of Nvivo software, coding and making 'cases' reflecting interviewee characteristics enabled the analysis of interview data.

3.2. Ethics

All participants were fully informed of the research aims before the interviews were undertaken. All participants were informed that the interviews would be fully anonymised and any personal identifying information removed before it was, processed, analysed and presented within the current work. All participants gave full consent for the recording and analysis of the interviews and

current work. All participants gave full consent for the recording and analysis of the interviews and use of the information that they shared and were given the option for their information to be excluded at any point. Full detail of the ethical consideration of the research is included in Appendix E, and a sample interview consent sheet is included in Appendix F.

3.3. Limitations

A key limitation of the current research is the small sample size and the focussed location of study. This means that the results are not generalisable to other LTNs. Further to this triangulation through surveys could have enabled triangulation of interviewee reports more broadly once the influential factors in acceptability and travel attitudes were identified.

4. Analysis

The analysis is divided to respond to each of the identified research questions in turn. Quotes demonstrate the views of interview participants and have been selected by the researcher based on their perceived relevance. The decision to include or exclude quotes have been made by the subjective opinion of the researcher and may be influenced by the positionality. The number of respondents stating an opinion is included in brackets (1) to highlight the frequency.

4.1. Travel attitudes

4.1.1. Car attitudes

Instrumental

Instrumental were the most significant reasons for car ownership or use with all interviewees, including non-car owners mentioning this. Among car owners the most frequent instrumental reasons for using a car were related to convenience and flexibility, which were frequently associated with family and caring responsibilities (9), with the need for flexibility in travelling to different destinations or travelling as a group making a car more appealing.

> *"when you've got three children doing three or four different things …you just can't get to everywhere at once. So a car, for me is necessary"*13 A

> *"Well with 4 people it is much easier to get in the car, particularly when you have prams and scooters and things"9A*

The cost of travelling as a family both inside and outside of London was also a frequent (5) reason for choosing car travel over other modes for respondents who had families.

> *"It's cheaper if I have the whole family for us all to go in the car than it is to go by public transport"11A*

> "*an advanced booking with kids would be a £300 on the train there and back. So the car is really much cheaper and it gives us more flexibility"16M*

Policies such as the congestion charge and parking restrictions were noted as key reasons for not choosing to drive for all trips by people who preferred to drive (3).

> *"I'm not gonna drive my car into town because of the congestion charge, because I'm gonna have to find somewhere to park."12A*

Affective

Fewer respondents (3) noted affective reasons for car use which were generally about having control over the environment, enjoying the personal space of travelling by car. This was in comparison to travelling by public transport which was perceived as more restrictive. As well as a sense of freedom in comparison to travel by other modes.

> *"It's just faster and nicer to go in my own vehicle…I'm in control. I can take whatever size handbag I wish. I can have the radio on"*6A

> *"So it's about having free will and sort of not having to compromise"16M*

> *"not being bound to a timetable…you're in your own environment…there's not that many interactions with other people. I like the freedom that having a car affords"3P*

Contrastingly two interviewees whose main mode of travel was cycling, noted that safety concerns were reasons they did not drive frequently.

> *"I felt that the vehicle that I'm in is capable of killing somebody if I didn't react quickly enough"15P*

Symbolic

Only one respondent reflected the symbolic value of driving and car ownership which was developed through childhood experiences in line with Matthies and Klöckner (2015) suggestion of the important role of early exposure in embedding car use. The respondent also reflects a reluctance to admit the symbolic motives for car use in line with Steg (2001) assertion that people are generally less willing to state symbolic reasons for car use, which could also be why this was only raised once.

> *"I'd love to say it doesn't, but yeah it absolutely does matter (the type of car I drive). Growing up outside of London there was always pressure to have like a nice car… I think that's just something that's ingrained"3P*

4.1.2. Public transport attitudes

Instrumental

Attitudes towards public transport were mixed among all participants, with 16 highlighting negative instrumental aspects, and just 10 highlighting positives. Travelling with family and convenience were frequent reasons for not travelling by public transport as noted in Section 4.1.1, in addition to reliability which was related to buses and trains.

> *"It can be a bit erratic so sometimes you wait a while and sometimes you don't"8A*

"the transport links here are really poor. And since COVID the trains just don't run regularly and many times they are cancelled."11A

The most frequently noted positive instrumental reasons for using public transport were associated with low cost for buses (3), and convenience (6). These were more frequently reported by frequent PT users.

"I can walk down to the bus stop at any moment and know it's coming in next couple minutes... Affordability is quite a big point for me it's only £1.50 to get anywhere in London"5P

Affective

Negative affective experiences of tube travel were highlighted mainly by people who prefer to cycle (3). With the presence of other people and lack of personal space being issues raised most frequently.

"So you're always in somebody's armpit, and it's just really grim and antisocial. Hot. Horrible."14P

Positive affective experiences of PT were mainly about the free time to do other things (4) in comparison to other modes.

"get on the tube, get off the tube. Life is just so easy that way, you don't think about anything other than, well, you don't think anything at all. So, there's a sense of freedom with the tube."10P

Symbolic

No symbolic motivations for PT were identified.

4.1.3. Walking and cycling attitudes

Instrumental

The most frequently reason for choosing to walk or cycle was related to journey time reliability and directness to destinations (7) which were generally compared to PT use. These instrumental motives for walking or cycling were not described by people who primarily travel by car.

"I can leave when I want, and I know how long it will take to get there, versus never being sure if the bus is going to be 100% accurate on the timetable."9P

The benefit of getting exercise of combining multiple tasks was noted by people who reported walking frequently (3).

"It's almost just like a little free bit of exercise and just keeps you moving"3P

Affective

Concern for safety was the most frequently mentioned affective factor associated with cycling, highlighted by participants who reported cycling frequently and not at all, showing this is both a perception and a reality.

"Not all the time but sometimes I feel vulnerable and threatened by motorists."15P

"I would never cycle in London I think cycling in London is a death wish"8A

Contrastingly people who cycled frequently (4) acknowledged safety concern but also identified a feeling of freedom and enjoyment from cycling, which seemed to outweigh safety concerns.

"Uh, I love it. Feels very freeing. And it makes you feel like you're a kid again, actually as well. Probably because you didn't cycle apart from when you're a child."14P

Symbolic

No interviewees mentioned symbolic motivations.

4.1.4. Perceived Behavioural Control (PBC)

PBC reflects perceived ease of using alternative travel modes. This is important to understand for frequent and occasional car users, to understand actual and perceived barriers to switching modes which impact travel intentions and therefore behaviours. A lack of alternative travel options was frequently mentioned by people who reported driving frequently which often related to family or work commitments.

"my daughter does gymnastics near Clapham Common, that's about 40 or 45 minutes walk and by bus takes longer than walking…the only viable option for getting her to gymnastics in the time available is to drive."8A

The availability of transport links was frequently cited as a reason for travelling by car to destinations either out of London or within south London, where public transport was reported to be poorer (6).

"Some journeys in South London are incredibly difficult to make by public transport. You have to use all the modes of transport and even then you're still faced with a 20 minute walk the other end"3P

People who did not own a car were more likely to report positively on the public transport network or using active travel having positive perceptions of efficiency and network coverage.

"in London the public transport options that are available to me are so incredibly wide I don't feel the need to drive"15P

"I can walk down to the bus stop at any moment and know it's coming in next couple minutes… and the buses go to exactly the locations I need to go"5P

4.2. Attitudes towards the Streatham Hill LTN

Interviewees have been grouped as being primarily pro-LTN or anti-LTN, with one respondent stating they were undecided. Interviewee views on the LTN are summarised in Table 2. On several occasions interviewees had mixed views on issues reporting both positive and negative attitudes towards the LTN, therefore some scores have a total greater than the number of participants.

Table 2 Attitudes towards LTN

Factors influencing acceptability		Attitudes towards LTN		
		Pro (9)	Anti (6)	Mixed
Environmental concern	Concern	7	1	1
	Not concerned	2	5	
Problem perception	Problem	6		
	No problem	3	6	1
Effectiveness	Positive	9	2	
	Negative	5	6	1
Impact on freedom	Positive	6	2	
	Negative	3	5	1
Process legitimacy	Positive	3		
	Negative	7	6	1
Fairness	Fair	3		
	Unfair	4	6	1

Environmental concern

Environmental concern was expressed by all respondents who were pro LTN or had mixed opinions. This was expressed as a personal moral responsibility to change behaviour and contribute as well as justifying the current implementation of the LTN and any other pro-environmental policies (6).

> *"climate change is the one overriding thing that everything else is judged against, we have to get people out of their cars… anything which means that people might leave their cars at home, is justified under those circumstances."10P*

> *"I think everyone has a personal responsibility to reduce carbon emissions"2P*

Environmental concern was also evident in influencing individual travel behaviours for people who were pro-LTN with seven respondents saying carbon emissions were a consideration in their most frequent transport mode.

> *"And it's (cycling) just better for the environment."16M*

> *"I'm very conscious of the environmental impact of, you know, starting up my car, driving 2 minutes down the road"3P*

Environmental concern in terms of the impact of emissions on climate change was rarely expressed by people who were anti-LTN, with EV's seen as a preferable solution than the LTN (3).

> *"I don't think driving is the problem, I think pollution and the type of vehicle and the size of vehicle is"6A*

Problem perception

Attitudes towards the local air quality and levels of congestion within the LTN pre-implementation were split between those who were generally pro, and anti-LTN. With those opposing the LTN stating that there were no problems related to through traffic and air pollution within the LTN area, comparing this to air pollution concerns on boundary roads (5 anti-LTN, 1 mixed).

> *"There's never been any traffic…So why have these cameras sitting on your street to just to try and catch people and give them fines on an empty Road."14A*

> *"The levels of pollution were not dangerously high in any of the LTN areas. So by reducing that level of pollution, your reducing a problem that never really existed, whereas in the boundary roads they were almost dangerously high beforehand."16M*

Conversely, those that were more accepting and pro-LTN more commonly reported problems with cut through traffic, prior to LTN implementation (5).

"it's been amazing at stopping the volumes of traffic and the congestion that we had outside the front door."14P

"I live on a very residential street and it shouldn't be taking the weight of traffic it took before, it wasn't built for it"10P

Effectiveness

Effectiveness was reported by interviewees in terms of the impact the LTN has had on their travel behaviours, which is considered in the next section, and to what extent the stated goals were perceived to have been achieved in terms of local environmental improvements, which could contribute to broader CO2 reduction. People who were anti-LTN discussed the redistribution of traffic towards boundary roads (6) but believed the LTN did not currently (and would not) decrease traffic volumes overall. So far the LTN has reduced overall traffic volumes by 5%, but increased traffic on boundary roads by 13% (Lambeth Council 2022c).

"I don't think the LTN does reduce emissions…the traffic numbers haven't gone down. They just moved around."8A

Whereas people who were more pro-LTN focussed on the positive impact on internal roads (9).

"it's been a game changer. The area has dramatically improved…I've also noticed that there have been an increase of families and children on bicycles on roads in this area, the whole area feels safer"7P

Impact on freedom

The impact on freedom was most noted by people who were anti-LTN (6) or had mixed views. With people who were pro-LTN being less likely to acknowledge an impact on their personal freedom, or noting that this was minor (3), where it was experienced.

"We can't get out. We just feel like we're now in this little closed area."11A

"it's really not that much of an inconvenience for the purposes of the trips we were doing to have just gone around the longer way"5P

Process legitimacy

People who were both pro and anti-LTN reported that due to the rushed implementation, there was a lack of consultation and engagement with the council. The most frequent issue being a lack of opinions being taken on board (7), and manipulation of monitoring data (4 all anti), with the majority (7) reflecting the consultation experience was poor.

"There's been a consultation, but the key is the word con all the findings have been ignored because they've been anti-LTN. The local council have completely ignored them and have actually twisted some of the figures"13A

"There's no compromise. No-one has ever come to say what can we do to make it better? How could it fit better for you?"14A

"it looks like my opinion and anybody who shares my opinion hasn't been listened to"16M

"It was a pretty much a foregone conclusion that they were putting it in…it was forced on us"1P

Three anti-LTN respondents suspected the council had ulterior motives for maintaining the LTN, due to the significant revenue they have generate. This has been reflected in main stream media, highlighting that £22 million in fines were issued within 12 months in Lambeth (BBC, 2022).

"they've actually made £22 million from the fines from the LTN…it's almost like it's in their interest to keep it because it's a real cash generator."11A

Contrastingly, three pro-LTN residents reflected on positive interactions with the council and feeling listened too.

"they've really put a lot of effort into explaining it and sort of carrying the message to the population far more than they really had to"10P

Fairness

The perceived fairness of the LTN was a concern for all people who were anti-LTN (6) or had mixed opinions (1). This was reflected by people living on boundary roads and within the LTN, with participants (3) mentioning a higher proportion of social housing along boundary roads. Concern for fairness was also closely linked with perceptions of effectiveness and the extent to which levels of traffic and air pollution would be reduced by the LTN.

"fly tipping your pollution onto your neighbours road is never going to be acceptable in my book."13A

"I think it is an absolute travesty that people who live on Christchurch road now have nose to nose traffic almost all the time…as far as I can tell, it's almost all local authority housing and I think it is absolutely appalling"9A

People who were more pro-LTN less frequently mentioned the impact on boundary roads and the fairness implications of this (4), comparatively they put a greater weight on global environmental justice concerns.

> *"This isn't just a local thing, what about people in poorer countries who won't be able to cope with climate change"7P*

Travel attitudes and acceptability

As most participants highlighted instrumental motives for car use, there was not a clear link between instrumental motives and attitudes towards the LTN. However, most interviewees who stated they used the car at least weekly were anti-LTN (6), with only one frequent car user was pro-LTN. The most common reasons for this were they perceived they had no alternative travel options (low PBC), which meant the LTN was perceived to have a significant impact on their freedom.

> *"the trips I had to do, I still have to do them. It's made it not one iota of difference just because it's there I don't go ohh the road is blocked. Therefore I think I will cycle and walk more."11A*

> *"I have to drive because I don't have any choice because… I'm not gonna ride a bike with my work stuff… So it just has made my journeys longer"12A*

In comparison to people who rated walking, cycling or using public transport in terms of positive instrumental functions (and used these modes more frequently) which were more closely related to LTN acceptability. Generally, this was related to feeling the LTN had a less significant impact on their personal freedom, even though they may have still rated driving highly for instrumental functions, these trips are less frequent and so any inconvenience is accepted.

> *"When I borrow a car, I have to come a long way around. But part from that? No, not in any way whatsoever."4P*

> *"it (the LTN) has made it slightly more annoying for me to travel via Tulse Hill"2P*

Results related to affective motives for car travel were varied, with those noting positive affective reasons for car use each being pro, mixed and anti LTN. Conversely those (2) who expressed a sense of concern for driving related to potential road danger were pro-LTN. The most significant connection between positive affective motives for travel and LTN attitude, was that people who rated cycling highly due to a sense of freedom (4) were all pro-LTN.

4.3. Attitudes, acceptability and travel behaviour

Reports on changing travel modes were mixed, with four pro LTN and six anti/mixed-LTN respondents noting the introduction of the LTN did not impact on their travel patterns at all. Across both groups this was because they were already travelling by modes other than car frequently (8) and they felt their remaining car trips were not switchable due to instrumental functions of car use.

> *"No, the journeys we make by car are done because its significantly more convenient, even with the LTN, if we need to drive we need to drive"9A*

> *"we don't rely on the car that much and we probably would have walked anyway, even if these roads were still super busy Just because that was the preferred way to get around. I don't think it's changed our patterns that much"3P*

This was frequently noted to mean that journeys would take longer, and people were spending more time in their car.

> *"Living within the LTN, the main impact is that all my journeys take longer. So I'm driving more than I was before the LTN, which is annoying."8A*

Only five people reported that the introduction of the LTN caused them to increase use of sustainable travel, all of whom were pro-LTN. Two of these were an increase in recreational walking, which they did in areas with LTNs due to an improved local environment within LTNs which increased the affective value of travel within LTNs.

> *"With walking I have preferred and veered towards the LTN's I've noticed that they're a lot quieter. It's easier to cross the roads. There's a lot less aggro in the Streets."15P*

Three of these were for functional trips which were switched to cycling or public transport, related to changing instrumental value of travel modes. Two people who reported changing their travel modes for existing trips were also the only respondents who responded positively across all of the factors influencing acceptability, with the third only rating process legitimacy poorly.

> *"Both of us now have bikes, and we didn't prior to the LTN. And now that's my first port of call when it comes to travelling further than a quick walk"14P*

> *"It has encouraged me more to use public transport more and also now I feel it's safe for my children to cycle to school…It's using my car as the last resort."7P*

One anti-LTN respondent stated the LTN had increased their travel by car, as the LTN made them feel unsafe due to hostility between pro and anti-LTN groups and a lack of people in the streets.

"They're eerily quiet, I've been verbally abused by somebody who supports LTNs… I don't personally feel safe walking… that means I need to drive."

Some people reported (3) that other LTNs had a greater impact on their travel patterns, than the LTN they lived in, particularly to encourage them to cycle, as the LTNs felt safer than travelling on main routes. Reflecting an affective improvement in travel.

"here there's a long way until the next protected bike lane. So I will go the long way round joining up LTN's that I know about. Although it's difficult to know about them if you didn't live in one"14P

"So LTN's existing elsewhere are more likely to make me cycle than my own LTN."2P

Among people who were both pro and anti-LTN they reported that the LTN felt minimal in terms of encouraging travel by more sustainable modes, and primarily made driving harder. This was due to a lack of provision of incentives to make walking, cycling or using public transport easier.

"the pavements are still the same…it has made no impact on walking."9A

"I haven't noticed a change in the public transport which has gone ohh. Right now I'm gonna take a train now, whereas I previously would have driven. That hasn't happened"11A

"It's changed the balance because driving was very easy and cycling was quite easy and it's made cars more difficult. But it hasn't made it easier to cycle per se."2P

"We've got all these LTNs to try and encourage active travel and it strikes me as doing the least possible that you could to achieve that specific task."4P

5. Discussion and recommendations

This research has identified factors which are commonly cited to influence public acceptability of climate-oriented transport strategies are relevant to understanding acceptability of LTNs. Findings are in line with Eliasson and Jonsson (2011) that post-implementation effectiveness and environmental concern were the greatest determinants of public acceptability. With people expressing greater environmental concern preferring to travel by sustainable modes, reducing car usage and framing LTN acceptability within wider climate challenges. However, there were still some journeys which could not be converted to sustainable modes, due to a perceived lack of public transport options when travelling in south London or leaving the city, or due to caring responsibilities such as travelling as a family. This is in line with Anable (2005) who cites PBC as a reason for environmental concern not always being displayed in travel patterns. Conversely, people who were more likely to be anti-LTN, felt that car usage wasn't a primary issue related to climate change and expressed lower interest or willingness to switch mode.

Negative perceptions of the LTN appeared to reinforce each other. Problem perception was closely linked to perceptions of fairness and effectiveness of the LTN. With people who were anti-LTN stating that the LTNs were improving air quality in areas perceived to have no issue, and increasing air pollution on boundary roads, where pollution was already high. This was perceived to have a greater impact on lower socio-economic groups living on boundary roads and meant the policy was seen as ineffective in achieving the central goal of improving air quality and unfair as this was at the expense of less advantaged groups. This was reflected in monitoring which showed an increase in traffic along boundary roads surrounding the LTN (Lambeth Council, 2022c).

Perceptions of process legitimacy seemed to have a variable impact on overall attitudes towards the LTN, with anti and mixed-LTN respondents stating process legitimacy was poor which was corroborated by several pro-LTN respondents. This is contrary to acceptability literature which generally finds this to be a key determinant of acceptability (Oltra et al., 2021). Suggesting process legitimacy was not as important to people who were pro-LTN, with other factors being more influential. The most frequent reasons for process legitimacy being perceived poorly was a lack of consultation throughout implementation meaning the LTN was perceived as a foregone conclusion, a perception that monitoring information was manipulated, suspicion over significant fine revenues and negative impacts accruing to less-advantaged demographics. This feeling of not being heard is in line with narratives that describe the anti-LTN movements as a 'small but vocal' minority, which enables the concerns raised by these groups to be largely disregarded, as is evident in Streatham Hill where opinion polls show a majority disagree with the LTN, yet it is due to be made permanent.

Specifically, equity and pollution concerns have not been adequately addressed, despite Aldred et al. (2021) finding that across LTNs impacts were generally equitable, this varied significantly between boroughs. As the Covid-19 pandemic has again highlighted that the poorest in society also suffer from the greatest levels of pollution, which are generally concentrated along arterial roads (Barnes et al., 2019). There is a serious need to consider the localised impact of increasing traffic volumes in areas with already high levels of pollution. As such any transport intervention needs to balance local health and equity concerns, with decreasing emissions sufficiently to reduce impact in the poorest countries.

The LTN did not have a significant impact on resident travel behaviour, however, all of those who did report altering travel behaviour were pro-LTN, which indicates acceptability may influence behaviour change (Jia et al., 2017). With people who reported changing their travel modes also responding positively on most of the factors influencing acceptability, which may show that these factors do influence acceptability and therefor behaviour change. The remainder of respondents felt unable to reduce their car use since LTN implementation, reflecting low levels of PBC and also a lack of supporting infrastructure.

Attitudes towards travel modes had a variable impact on acceptability and behaviour change in the LTN, with people who rated walking, cycling and public transport higher in terms of instrumental functions having a higher acceptability of the LTN. Contrary to Steg (2005) findings motivations for car travel primarily being instrumental. Although instrumental motives for car use were not related to LTN acceptability. However, frequency of travel by different modes was related to acceptability, with more frequent car drivers finding the LTN impacted their personal freedom, and reflecting low levels of PBC. Compared to people who used sustainable travel modes more and felt they had greater options to switch their travel modes, reflecting higher levels of PBC. The incorporation of travel attitudes and PBC remains valuable to the current study in understanding motivations for travel by car and barriers to increasing use of alternative travel modes.

Future LTN implementation could be improved through more in-depth consultation with residents within the LTN, and on boundary roads. Consultation should be more open and participatory, focussing on identifying existing transport and environmental challenges in the local area, and barriers to increasing sustainable travel. This could be done in addition to providing factual and transparent information about existing levels of pollution, traffic and overall carbon reduction goals. This would improve transparency of the councils goals, and alignment of problem perception between the council and communities and also enable the joint identification of solutions. A similar approach could also be taken to identifying solutions through a process of co-design which enables

residents with the council to jointly identify and hone proposals to improve the local area. These could contribute to improving the perceived the process legitimacy by involving residents in the design process at all stages and also have positive impact on perceptions of fairness and effectiveness which were linked to process legitimacy.

A key challenge to inducing behaviour change for both pro and LTN interviewees related to the lack of 'carrot' measure which incentivise travel by more sustainable modes which was connected to low levels of PBC. Based on the current research the most cited instrumental reasons for traveling by car relate to convenience and flexibility, which cycling (or e-bikes) can provide a viable alternative for, enabling door to door journeys. Based on the current research, safety is a key barrier to increasing cycling uptake. Therefore, provision of infrastructure to separate cyclists from motor traffic could improve perceptions of safety. This could include new cycle lanes, reduced speed limits and signage towards low traffic routes (such as LTNs). However, this may not adequately increase perceptions, even if it does influence actual cycle safety. Complimentary cycle training, group rides, and awareness campaigns could serve to increase positive experiences of cycling and confidence to improve perceived safety. By encouraging people to experience cycling this may highlight affective motives of enjoyment and freedom noted by frequent cyclists. Cycling can still be challenging for some people, so increasing support for hiring or buying e-bike and e-cargo bikes could also significantly improve the instrumental value of cycling (compared to car use), to enable people to cycle as a family, and carry heavy loads. Similar improvements could be made to the walking environment through increased planting and urban greening, and priority crossings for pedestrians.

Further to active travel 'carrot' measures improvements associated with the LTN, improvements to the frequency and range of destinations offered by public transport could increase behaviour change, as these were common reasons for not using PT. This is particularly true for journeys travelling east, west or south from Streatham Hill, where public transport options are poor and perceived as slow. Improvement in the public transport network would enable more journeys to be switched from car use (Beirão and Cabral, 2007). Although these may be more challenging to implement by the local authority, as the public transport network is run by TfL. This points to a key challenge in implementing LTNs, which are often characterised as local interventions, but, as the current research has highlighted people frequently need to travel beyond their immediate locality. Meaning LTNs need to be planned as part of a suite of interventions to improve travel options for non-radial journeys in London.

As this research has highlighted perceived behavioural control plays a significant role in determining travel behaviours therefore, equal attention needs to be paid to improving cycle safety and public

transport accessibility and reliability. Alongside awareness raising campaigns to highlight the utility of cycling, use of e-bikes and any public transport improvements. So that the impact of these enhancements is maximised. By tackling both actual and perceived behavioural control, barriers to sustainable travel uptake could be reduced, making the LTN more effective in terms of mode shift and therefore reducing local traffic and associated equity issue of increasing pollution along boundary roads.

Finally, acceptability could be improved by increasing transparency of LTN revenue allocation and ring fencing these funds for investment in sustainable travel enhancements in the local area. Allocation of revenues gained through congestion pricing have identified that acceptability is higher where revenues are reinvested into transport improvements (Schuitema and Steg, 2008). While LTNs are not directly comparable to congestion charging, the limited extent of interventions to improve sustainable travel options was frequently mentioned by anti-LTN respondents. Therefore, by specifying any revenues in fines would be reinvested into sustainable travel, improved street scape in the local area, or to LTNs across the borough may contribute to improved process legitimacy and improve acceptability through a greater balance between 'push' and 'pull' measures, as the latter are often found to be more acceptable.

6. Conclusions

This research has considered the implications of psychological theories of travel behaviour and acceptability on behaviour change within Streatham Hill LTN, to identify how future LTNs can be more publicly acceptable, and therefore impactful in terms of behaviour change. Acceptability is related to all of the factors considered including, environmental concern, problem perception, effectiveness, impact on freedom, process legitimacy, fairness and PBC. Attitudes towards cars and other modes appeared less influential in LTN acceptability, than frequency of car use, which was often associated with lower acceptability of the LTN. Acceptability of the LTN appeared to be influential in behaviour changes, alongside PBC and travel attitudes.

Proposals have been made to improve acceptability and behaviour change impacts of LTNs. Firstly, improving the consultation process and building consensus around existing problems between the council and local community to improve process legitimacy, problem perception and fairness. Second including measures which incentivise sustainable travel, based on barriers identified by the community, this can target instrumental motives for travel attitudes which were found to be most influential within the current study. The importance of ensuring marketing any improvements to active and sustainable travel is also important to improve perceived behavioural control, which was found to be influential in behaviour change.

Improving acceptability of future LTN implementation will be important in ensuring they can be implemented outside of London where sustainable transport options are often poorer and car dependency higher. Understanding existing motives for car use and drivers of LTN acceptability will be important in supporting authorities in developing publicly acceptable schemes which also make a tangible difference to behaviour change and meeting carbon reduction targets.

As the current research is limited to a small sample size and single case study location, future research should utilise a mixed methods approach, building on the theoretical framework developed. A mixed method approach with both quantitative and qualitative date could enable the testing of relationship strength, a greater sample size (improved confidence in results) and triangulation of results. As the current research has identified the relevance of factors, future research could look to define the strength of relationship between acceptability and behaviour change and if this is apparent in other LTN locations. Future research could also consider the role of subjective norms and habits which are influential in travel behaviour research but were beyond the current scope of this research. Finally, longitudinal study could be used to uncover how acceptability of LTNs changes through their implementation, which may influence further recommendations for improvements.

References

Ajzen, I., 1991. The theory of planned behavior. *Organizational Behavior and Human Decision Processes*, 50(2), pp.179-211.

Aldred, R., Verlinghieri, E., Sharkey, M., Itova, I. and Goodman, A., 2021. Equity in new active travel infrastructure: A spatial analysis of London's new Low Traffic Neighbourhoods. *Journal of Transport Geography*, 96, p.103194.

Aldred, R. and Goodman, A., 2021. The Impact of Low Traffic Neighbourhoods on Active Travel, Car Use, and Perceptions of Local Environment during the COVID-19 Pandemic. *Findings*,.

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

Anable, J., 2005. 'Complacent Car Addicts' or 'Aspiring Environmentalists'? Identifying travel behaviour segments using attitude theory. *Transport Policy*, 12(1), pp.65-78.

Bamberg, S., Ajzen, I. and Schmidt, P., 2003. Choice of Travel Mode in the Theory of Planned Behavior: The Roles of Past Behavior, Habit, and Reasoned Action. *Basic and Applied Social Psychology*, 25(3), pp.175-187.

Bamberg, S. and Schmidt, P., 1998. Changing travel-mode choice as rational choice: results from a longitudinal intervention study. *Rationality and Society*, 10(2), pp.223-252.

Barnes, J., Chatterton, T. and Longhurst, J., 2019. Emissions vs exposure: Increasing injustice from road traffic-related air pollution in the United Kingdom. *Transportation Research Part D: Transport and Environment*, 73, pp.56-66.

BBC, 2022. Lambeth: £22m in low-traffic fines an abuse of power, say campaigners. *BBC*, [online] Available at: <https://www.bbc.co.uk/news/uk-england-london-62016690> [Accessed 19 July 2022].

Beirão, G. and Sarsfield Cabral, J., 2007. Understanding attitudes towards public transport and private car: A qualitative study. *Transport Policy*, 14(6), pp.478-489.

Centre for London, 2020. *Reclaim the kerb: The future of parking and kerbside management in London*. [online] London: Centre for London. Available at: <https://www.centreforlondon.org/wp-content/uploads/2020/03/Centre_for_London_Future_of_parking.pdf> [Accessed 28 August 2022].

Centre for London, 2021. *Street Shift: The Future of Low-Traffic Neighbourhoods*. [online] London: Centre for London, pp.1 - 56. Available at: <https://www.centreforlondon.org/wp-content/uploads/2022/06/CFL-StreetShift-LTNs-Final.pdf> [Accessed 28 August 2022].

Cuff, M., 2022. Cycling and walking 'revolution' threatened as 28% of Low Traffic Neighbourhoods are scrapped EXCLUSIVE. *i*, [online] Available at: <https://inews.co.uk/news/cycling-and-walking-revolution-threatened-as-28-of-low-traffic-neighbourhoods-are-scrapped-1641558> [Accessed 5 September 2022].

Department for Business, Energy & Industrial Strategy, 2022. *2020 UK Greenhouse Gas Emissions, Final Figures.* London: Department for Business, Energy & Industrial Strategy, pp.1 - 47.

Ejelöv, E. and Nilsson, A., 2020. Individual Factors Influencing Acceptability for Environmental Policies: A Review and Research Agenda. *Sustainability*, 12(6), p.2404.

Enjoy Waltham Forest, 2016. *Comparison of vehicle numbers before and after the scheme and during the trial | Enjoy Waltham Forest*. [online] Enjoywalthamforest.co.uk. Available at: <https://enjoywalthamforest.co.uk/work-in-your-area/walthamstow-village/comparison-of-vehicle-numbers-before-and-after-the-scheme-and-during-the-trial/> [Accessed 8 September 2022].

Fallah Zavareh, M., Mehdizadeh, M. and Nordfjærn, T., 2020. Active travel as a pro-environmental behaviour: An integrated framework. *Transportation Research Part D: Transport and Environment*, 84, p.102356.

Fietsberaad., 2006. *Continuous And Integral: The Cycling Policies Of Groningen And Other European Cycling Cities*. [online] Rotterdam: Fietsberaad. Available at: <https://www.cycling-embassy.org.uk/sites/cycling-embassy.org.uk/files/documents/060608_Fietsberaad.pdf> [Accessed 6 January 2021].

Gärling., T. 2007, "Effectiveness, Public Acceptance, and Political Feasibility of Coercive Measures for Reducing Car Traffic", Gärling, T. and Steg, L. (Ed.) *Threats from Car Traffic to the Quality of Urban Life*, Emerald Group Publishing Limited, Bingley, pp. 313-324.

Gill, T., 2006. "Home Zones in the UK: History, Policy and Impact on Children and Youth." *Children, Youth and Environments* 16(1): 90-103.

Goodman, A., Urban, S. and Aldred, R., 2020. The Impact of Low Traffic Neighbourhoods and Other Active Travel Interventions on Vehicle Ownership: Findings from the Outer London Mini-Holland Programme. *Findings*,.Greater London Authority, 2018. *Mayors Transport Strategy*. London: Greater London Authority, pp.1 - 163.

Greater London Authority, 2022. *Coronavirus (COVID-19) Mobility Report – London Datastore*. [online] Data.london.gov.uk. Available at: <https://data.london.gov.uk/dataset/coronavirus-covid-19-mobility-report> [Accessed 20 July 2022].

de Groot, J. and Schuitema, G., 2012. How to make the unpopular popular? Policy characteristics, social norms and the acceptability of environmental policies. *Environmental Science & Policy*, 19-20, pp.100-107.

Handy, S., Cao, X. and Mokhtarian, P., 2005. Correlation or causality between the built environment and travel behavior? Evidence from Northern California. *Transportation Research Part D: Transport and Environment*, 10(6), pp.427-444.

Havelock, L., 2022. Petrol prices: Half of UK drivers are using less fuel than a year ago as costs hit record highs, study finds. *i*, [online] Available at: <https://inews.co.uk/inews-lifestyle/money/bills/petrol-price-half-uk-drivers-using-less-fuel-costs-record-highs-1708843> [Accessed 20 July 2022].

Hickman, R., Seaborn, C., Headicar, P. and Banister, D., 2010. Planning for sustainable travel: Integrating spatial planning and transport. In: M. Givoni and D. Banister, ed., *Integrated Transport*, 1st ed. Routledge.

Hickman, R., 2021. LTNs and Lefebvre. *Town and Country Planning*, (November/December 2021), pp.365 - 367.

Hollander, J., 2004. The Social Contexts of Focus Groups. *Journal of Contemporary Ethnography*, 33(5), pp.602-637.

Ishaque, M. and Noland, R., 2006. Making Roads Safe for Pedestrians or Keeping Them Out of the Way?. *The Journal of Transport History*, 27(1), pp.115-137.

Jagers, S., Matti, S. and Nilsson, A., 2017. How exposure to policy tools transforms the mechanisms behind public acceptability and acceptance—The case of the Gothenburg congestion tax. *International Journal of Sustainable Transportation*, 11(2), pp.109-119.

Jakobsson, C., Fujii, S. and Gärling, T., 2000. Determinants of private car users' acceptance of road pricing. *Transport Policy*, 7(2), pp.153-158.

Jensen, O., 2015. More than A to B: cultures of mobilities and travel. In: R. Hickman, M. Givoni, D. Bonilla and D. Banister, ed., *Handbook on Transport and Development*. Cheltenham: Edward Elgar, pp.479-489.

Jia, N., Zhang, Y., He, Z. and Li, G., 2017. Commuters' acceptance of and behavior reactions to license plate restriction policy: A case study of Tianjin, China. *Transportation Research Part D: Transport and Environment*, 52, pp.428-440.

Johnston, K., 2021. *Pandemic timetable chaos: Trains cut by half in south London blamed on COVID - Southwark News*. [online] Southwark News. Available at: <https://southwarknews.co.uk/news/transport/caroline-pidgeon-criticised-gtr-savage-cuts/> [Accessed 10 September 2022].

Kent, J., 2014. Driving to save time or saving time to drive? The enduring appeal of the private car. *Transportation Research Part A: Policy and Practice*, 65, pp.103-115.

Lanzini, P. and Khan, S., 2017. Shedding light on the psychological and behavioral determinants of travel mode choice: A meta-analysis. *Transportation Research Part F: Traffic Psychology and Behaviour*, 48, pp.13-27.

Lambeth, 2019. *Lambeth Transport Strategy*. [online] Lambeth.gov.uk. Available at: <https://www.lambeth.gov.uk/sites/default/files/pl_Lambeth_Transport_Strategy_2019.pdf> [Accessed 19 July 2022].

Lambeth Labour., 2022. *Lambeth makes first LTN schemes permanent*. [online] Lambeth Labour. Available at: <https://www.lambeth-labour.org.uk/2022/01/05/lambeth-makes-first-ltn-schemes-permanent/> [Accessed 3 April 2022].

Lambeth Council, 2022a. Proposals for permanent Streatham Hill and Tulse Hill low traffic neighbourhoods. [online] Love Lambeth. Available at: < https://love.lambeth.gov.uk/ltn-proposals-for-streatham-hill-tulse-hill/> [Accessed 2 September 2022].

Lambeth Council, 2022b. *Statement: High Court rejects challenge to Lambeth's Low Traffic Neighbourhoods*. [online] Love Lambeth. Available at: <https://love.lambeth.gov.uk/statement-high-court-rejects-challenge-to-lambeths-low-traffic-neighbourhoods/> [Accessed 2 September 2022].

Lambeth Council, 2022c. *CABINET MEMBER DELEGATED DECISION 8 JUNE 2022*. [online] London: Lambeth Council, pp.1 - 28. Available at: <https://moderngov.lambeth.gov.uk/documents/s137557/Streatham%20Hill%20Low%20Traffic%20Neighbourhood.pdf> [Accessed 11 September 2022].

Ling, S., Ma, S. and Jia, N., 2021. Sustainable urban transportation development in China: A behavioral perspective. *Frontiers of Engineering Management*, 9(1), pp.16-30.

Loakes, C., 2020. *Waltham Forest's Mini Holland: LTNs and Clean Air | UK100*. [online] Uk100.org. Available at: <https://www.uk100.org/blog/2020/10/waltham-forests-mini-holland-why-ltns-are-so-important-clean-air> [Accessed 8 September 2022].

Matthies, E. and Klöckner, C., 2015. Car-fixation, socialization, and opportunities for change. In: R. Hickman, M. Givoni, D. Bonilla and D. Banister, ed., *Handbook on Transport and Development*. Cheltenham: Edward Elgar, pp.491-499.

Morton, C., Mattioli, G. and Anable, J., 2021. Public acceptability towards Low Emission Zones: The role of attitudes, norms, emotions, and trust. *Transportation Research Part A: Policy and Practice*, 150, pp.256-270.

NatCen, 2022. *Low Traffic Neighbourhoods*. Research Report. [online] London: NatCen, pp.1 - 38. Available at: <http://chrome-extension://efaidnbmnnnibpcajpcglclefindmkaj/viewer.html?pdfurl=https%3A%2F%2Fnatcen.ac.uk%2Fmedia%2F2135892%2FLow-Traffic-Neighbourhoods-Research-Report.pdf&clen=1111553&chunk=true> [Accessed 5 April 2022].

Nilsson, M. and Küller, R., 2000. Travel behaviour and environmental concern. *Transportation Research Part D: Transport and Environment*, 5(3), pp.211-234.

Oldenziel, R. and Bruhèze, A., "Contested Spaces: Bicycle Lanes in Urban Europe, 1900-1995." Transfers 1, no. 2 (2011): 31-49

Oltra, C., Sala, R., López-Asensio, S., Germán, S. and Boso, À., 2021. Individual-Level Determinants of the Public Acceptance of Policy Measures to Improve Urban Air Quality: The Case of the Barcelona Low Emission Zone. *Sustainability*, 13(3), p.1168.

Ortiz, J., Soria-Lara, J., Gómez, J. and Vassallo, J., 2021. Public Acceptability of Low Emission Zones: The Case of “Madrid Central”. *Sustainability*, 13(6), p.3251.

Redfield and Wilton, 2021. *Steady Support for for Low Traffic Neighbourhoods in London*. [online] Redfield & Wilton Strategies. Available at: <https://redfieldandwiltonstrategies.com/steady-support-for-for-low-traffic-neighbourhoods-in-london/> [Accessed 8 September 2022].

Schlag, B., & Teubel, U. (1997). Public acceptability of transport pricing. IATSS Research, 21, 134–142.

Schwanen, T., Banister, D. and Anable, J., 2012. Rethinking habits and their role in behaviour change: the case of low-carbon mobility. *Journal of Transport Geography*, 24, pp.522-532.

Sheller, M., 2004. Automotive Emotions. *Theory, Culture & Society*, 21(4-5), pp.221-242.

Steg, L., Vlek, C. and Slotegraaf, G., 2001. Instrumental-reasoned and symbolic-affective motives for using a motor car. *Transportation Research Part F: Traffic Psychology and Behaviour*, 4(3), pp.151-169.

Steg, L., 2003. Factors influencing the acceptability and effectiveness of transport pricing. In: J. Schade and B. Schlag, ed., *Acceptability of Transport Pricing Strategies*, 1st ed. Helsinki: Emerald Group, pp.187-202.

Steg, L., 2005. Car use: lust and must. Instrumental, symbolic and affective motives for car use. *Transportation Research Part A: Policy and Practice*, 39(2-3), pp.147-162.

Steg, L., and Schuitema, G., 2007,. Behavioural Responses To Transport Pricing: A Theoretical Analysis. Gärling, T. and Steg, L. (Ed.) *Threats from Car Traffic to the Quality of Urban Life*, Emerald Group Publishing Limited, Bingley, pp. 347-366.

Stradling, S., Meadows, M. and Beatty, S., 2000. Helping drivers out of their cars Integrating transport policy and social psychology for sustainable change. *Transport Policy*, 7(3), pp.207-215.

Systra, 2021. *LB Lambeth Low Traffic Neighbourhood*. [online] London: Systra. Available at: <https://beta.lambeth.gov.uk/sites/default/files/2021-03/Streatham%20Hill%20LTN%20Monitoring%20Stage%201%20Report_SYSTRA_FINAL_v2.pdf> [Accessed 19 July 2022].

TfL, 2009. *Travel in London*. [online] London: TfL, pp.1 - 224. Available at: <https://www.rbkc.gov.uk/pdf/33%20travel%20in%20london%20report-number-1%2005%2009.pdf> [Accessed 28 August 2022].

TfL, 2017. *Analysis of Cycling Potential 2016*. [online] London: Mayor of London. Available at: <https://content.tfl.gov.uk/analysis-of-cycling-potential-2016.pdf> [Accessed 20 July 2022].

TfL, 2022. *Low Traffic Neighbourhoods: what, why and where? - Made by TfL*. [online] Made by TfL. Available at: <https://madeby.tfl.gov.uk/2020/12/15/low-traffic-neighbourhoods/> [Accessed 4 April 2022].

Transport for All, 2021. *Pave The Way The impact of Low Traffic Neighbourhoods on disabled people and the future of accessible active travel*. [online] London: Transport for All, pp.1 - 41. Available at: <http://chrome-extension://efaidnbmnnnibpcajpcglclefindmkaj/viewer.html?pdfurl=https%3A%2F%2Fwww.transpo

rtforall.org.uk%2Fwp-content%2Fuploads%2F2021%2F01%2FPave-The-Way-full-report.pdf&clen=8585435&chunk=true> [Accessed 5 April 2022].

Urban, M., 2021. *Lambeth Council issues statement about ongoing vandalism around Low Traffic Neighbourhood schemes*. [online] Brixton Buzz. Available at: <https://www.brixtonbuzz.com/2021/07/lambeth-council-issues-statement-about-ongoing-vandalism-around-low-traffic-neighbourhood-schemes/> [Accessed 2 September 2022].

Walker, P., 2018. 'Mini-Holland' schemes have proved their worth in outer London boroughs. *The Guardian*, [online] Available at: <https://www.theguardian.com/environment/bike-blog/2018/jun/26/mini-holland-schemes-have-proved-their-worth-in-outer-london-boroughs> [Accessed 2 September 2022].

Walker, P., 2021. London council to step up security as vandals target low-traffic zones. *The Guardian*, [online] Available at: <https://www.theguardian.com/uk-news/2021/jul/19/london-council-step-up-security-vandals-target-low-traffic-zones> [Accessed 2 September 2022].

Wheeler, P., 2022. London needs a new approach to reducing congestion and air pollution. *On London*, [online] Available at: <https://www.onlondon.co.uk/paul-wheeler-london-needs-a-new-approach-to-reducing-congestion-and-air-pollution/> [Accessed 21 July 2022].

Xianglong, S., Feng, S. and Lu, J., 2016. Psychological factors influencing the public acceptability of congestion pricing in China. *Transportation Research Part F: Traffic Psychology and Behaviour*, 41, pp.104-112.

Appendix A Interview guide

Interview guide

Demographic questions

- Gender
- Age
- Disability
- Children
- Education
- Employed?
- Car license?
- Year licence gained
- First part of your post code?
- Do you live in the Streatham Hill LTN? Or a boundary road?

Questions

Travel patterns and preferences

1. What is your most common mode of travel?
    a. How frequently do you use this mode?
    b. What do you like most about travelling by this mode?
    c. What do you dislike most about this mode?
    d. Why do you choose this over other modes? Walk/cycle/tube/train/bus/drive
    e. Could you use a different mode of transport (bus/train/walk/cycle) for most of your journeys?
2. What is your preferred mode of travel?
    a. What do you like most about travelling by this mode?
    b. What do you dislike most about this mode?
3. Do you currently own a car?
    a. How many?
    b. Business or personal use?
    c. Are you a car club member?
4. Why do/don't you own a car?
5. Does it matter the type of car that you own (e.g. make and model)?
6. Considering people who live in the same area as you, so anyone else you live with or a neighbour you have the most contact with, how do they prefer to travel?
7. How do your friends and family outside of the LTN prefer to travel?

Attitudes towards the Low Traffic Neighbourhood

1. How has the LTN impacted the Streatham Hill area?
    a. What have been the positive and negative outcomes in terms of travel?
2. Has the LTN impacted the way you travel?
    a. How?
    b. Has the LTN made it easier to walk and cycle?

3. Do you agree with the overall goals of the LTN which were stated by the council? (Improving air quality, reducing CO2 emissions and through traffic, making a better environment for walking, and cycling etc.)
4. Do you feel your opinions have been taken on board by the Council in the LTN implementation process?
5. Do you think the LTN has been a success?
    a. Why?
6. Do you think that other residents within the LTN would agree with this?
    a. If not, how do you think they have perceived it?
7. What would you change about the LTN?
8. Is there an alternative to an LTN that you would have preferred/could have been more successful?
9. Is there an alternative to an LTN that would have encouraged/enabled you to drive less?

Appendix B Sample interview transcript

HA	What is your most common mode of travel?
ANONYMOUS	Train or bus
HA	How frequently do you travel by train and bus?
ANONYMOUS	Most days, probably, oh no um. Probably in a standard week I would use the train twice and the bus twice.
HA	What do you like most about travelling by train and bus?
ANONYMOUS	Well usually I would be travelling, I am not a terribly confident driver, usually my husband would do most of the driving, so the fact that I don't have to drive is good. But also that the trains and buses would usually go places that either you cant park, or they would go into central London where I would never drive. No no, mainly just that It's not that I like getting the train or the bus particularly, its just that's kind of like what you do, most people take public transport most of the time. You know I don't have to sit in traffic, you cant park you don't have to drive into central London which is a nightmare. Yes usually I would be going into Central London, or going from Streatham to Brixton, and you know you cant really park in Brixton, and most of the time it is just quicker.
HA	What do you dislike most about travelling by train and bus?
ANONYMOUS	Nothing that I particularly dislike I don't think. At Tulse Hill station for example which is the train I would usually get to work there is no lift and so that is a bit tricky if I have 2 kids on my own, if I have one in a pram and one walking that is quite challenging. Accessibility at some stations is really challenging if you have children. Nothing else I dislike, sometimes they don't go to where you want to go, and that is when we would usually drive. I mean usually you can find someone to help you but it can be a bit touch and go if you can find someone getting of at the same place you are getting off or something.
ANONYMOUS	I walk every day.
HA	Why do you choose this over other modes? cycle/tube /drive
ANONYMOUS	I would usually walk everywhere if it isn't too far and if it is convenient, I would walk over anything else if it was convenient.
HA	What journeys do you walk instead of getting the train or the bus?
ANONYMOUS	Usually shorter journeys, but for example I would, quite often when I am with kids I am combining chores with something fun, so I could walk for 45 mins, if it incorporated a shop and then going to a playground. But then

	sometimes it depends whether your talking about travelling for purpose or pleasure. For example the other day I needed to go to a shop in Brixton, and I needed to go to the post office on the way, so I went to the post office on the way to Brixton and on the way back I thought I may as well take my kids to Brockwell park on the way home so walked to Brockwell park. So that wasn't really like, do you see what I mean the walk was part of the day out, we could have gone on a bus I suppose but it was a nice day so I thought I might as well walk.
HA	Why do you like to walk?
ANONYMOUS	Exercise, I like being outside, I have got more time on my hands because I am on maternity leave, my baby will nap in the pram while I am walking so that is another good thing. It is mainly just being outside and exercise, killing 2 birds with one stone, doing exercise and getting somewhere at the same time. Time is sometimes a reason for not walking while working. My sons nursery is a 25 minute walk there and back, and I could get a bus, but I never have done. Mainly because I do like the exercise and if I am working that is the only exercise I would get in the day, so it is quite nice to know that I have got that exercise coming. It also means I can leave when I want, and I know how long it will take to get there, versus never being sure if the bus is going to be 100% accurate on the timetable. The bus has a slight unreliability, they don't run to such a strict timetable as the trains do.
HA	Could you use a different mode of transport (bus/train/walk/cycle) for most of your journeys?

ANONYMOUS	So for example, my husband or I would drop off or pick-up, and would get the train afterwards, so we cant be stuck with the car down there. We do drive if one of us is working from home and doing the drop off and pick up and it is like peeing it down with rain for example, but we would be a lot less likely to drive because of the LTN. One of the things that is really annoying about the LTN, is it doesn't prevent us from making the journeys by car that we need to make, it just makes them more difficult. And then you get stopped by the LTN by the barriers and cameras. We would want to drive through there to get to his nursery, or to get to Dulwich park, with two kids if we all want to go for a family day out to Dulwich park we are going to drive, regardless of the LTN even though it is much more inconvenient. So it doesn't prevent us from doing that journey by car, it just means that for a return journey we spend 15-20 more in the car. Well with 4 people it is much easier to get in the car, particularly when you have prams and scooters and things, but also because the only bus route we would take for example is the P13, and it stops quite far away from Dulwich park so it means that like half an hour of our day our is spent getting to and from the bus stop rather than playing in the park. Whereas we can park our car right outside the picture gallery park, and we are like in the park for the whole duration. And also because, where the bus stops it is quite a busy road and you could be waiting there 15 minutes for the bus, and I don't particularly want to be waiting there for 15 minutes with 2 children. Because again that is like part of the day out, so you could end up wasting a good hour of the day out that you are having, waiting at bus stop, and walking to and from bus stops, when we can leave when we want in the car, and park right outside the park.
HA	Is the destination a key factor in how you travel?
ANONYMOUS	We would be very unlikely to get public transport south, unless it was a quick journey without the kids. Like if I was going to a pub in Streatham and I didn't have time to walk I would jump on the bus, or if I had my children taking them to the doctors. I would never drive that locally I would always get the bus, but if I was going to Croydon to go to Ikea there is absolutely no way I would get public transport. Inconvenient, take a long time, you don't get right to the shop where you want to get to you have to carry things on the way home. I would say that we don't use our car that frequently, but when we do, its because we have to. But yes I suppose that might be sorted by better buses. But say if we were going to see friends in Sutton there is no way we would get the bus because it would take hours, and you would have to change loads of bsues, and trains, I suppose we might get the train if we wanted to have a drink. But we wouldn't do that now we have children, it would take too long.

Appendix C Interview coding framework

Level 1 code	Level 2 code	Level 3 code
Cycling		
	Affective	
		Safety
		Freedom
		Enjoyment
	Instrumental	
		Carrying things
		Flexibility
		Signage
		Safety stolen
		Children
	Environmental concern	
	Negative	
	Positive	
Driving/moped		
	Affective	
		Personal space
		Freedom
	Instrumental	
		Comfort
		Convenience
		Cost
		Family
		Flexibility
		Speed
		Transporting things
		Parking
		Congestion charge
	Lack of alternatives	
	Symbolic	
	Type of car	
	Electric cars	
	Habit	
	Hire car	
	Positives	
	Negatives	
Public transport		
	Affective	
	Instrumental	
	Symbolic	
	Travel to central London	
	Negative PT	
	Positive PT	
	Train	
	Buses	
	Tube	
Walking		
	Affective	

	Instrumental	
	Negatives	
	Positive	
Perceived Behavioural Control (PBC)		
	Travelling out of London	
	Travelling east/south/west from Streatham Hill	
Attitudes towards LTN		
Effective		
	Positive	
		Local air quality
		Improved environment within LTN
	Negative	
		Boundary air quality
		Boundary congestion
Freedom		
	Impact	
	No impact	
Fairness		
	Fair	
		Wider environmental concern
	Unfair	
		Boundary impact
		Wealth inequality
Problem awareness		
	No problem	
		Local
	Problem	
		Local
		Broader environmental concern
Process legitimacy		
	Legitimate	
		Consultation
	Illegitimate	
		Forced
		Consultation
		Lack of information
		Mistrust over finances
Positive impact		
		Safety
Negative impact		
		Speeding
		Safety
Disagreement over LTN		
Environmental concern		
	Negative	

	positive	
Most common mode		
	Walk	
	Cycle	
	Drive	
	PT	
Preferred mode		
	Walk	
	Cycle	
	Drive	
	PT	
Suggestions		
	Better PT	
		Increase train frequency
	Cycle improvements	
		Signage
		Cycle lanes
	Support for EVs	
	Environmental improvements	
	More crossings	
	More LTNs	
	More measures	
	Alter LTN	
		Resident exemption
		Timed closure
	Signage	

Appendix D Risk assessment

The Bartlett School of Planning

Supervisor sign-off for Ethical Clearance Forms and Risk Assessment Forms

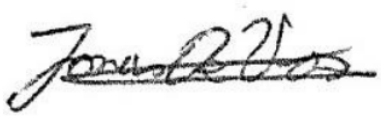
(For supervisor completion only BEFORE submission via Moodle)

Are you satisfied with the **ethical clearance form** (*yes/no*)?

Please provide any additional comments about the form that may help the student. ***(If the form is missing, the proposal must be given a mark of 0, and the student will have 48hours to resubmit the complete proposal. If the form is unsatisfactory, the student must amend their ethical questionnaire to your satisfaction before they can proceed with their research)*** *Yes*

Are you satisfied with the **risk assessment form** (*yes/no*)?

Please provide any additional comments about the form that may help the student. ***(If the form is missing, the proposal must be given a mark of 0, and the student will have 48hours to resubmit the complete proposal. If the form is unsatisfactory, the student must amend their ethical questionnaire to your satisfaction before they can proceed with their research)*** Yes



Your 2 response(s)

Previous | 1 | 2

Respondent: **Hayley Al-Siaidi** Submitted on: Tuesday, 5 April 2022, 9:00 AM

Ethical Clearance Pro Forma

It is important for you to include all relevant information about your research in this form, so that your supervisor can give you the best advice on how to proceed with your research.

You are advised to read though the relevant sections of UCL's Research Integrity guidance to learn more about your ethical obligations.

Please ensure to save a copy of your completed questionnaire BEFORE hitting 'submit' (you will not be able to access it later).

Submission Details

1 * Please select your programme of study.

Sustainable Urbanism : Sustainable Urbanism

2 * Please indicate the type of research work you are doing.

- [x] Dissertation in Planning (MSc)
- [ ] Dissertation in City Planning (MPlan)
- [ ] Major Research Project

3 * Please provide the current working title of your research.

Low Traffic Neighbourhoods and car use, examining potential for reducing CO2 emissions

4 * Please select your supervisor from the drop-down list.

De Vos, Jonas : De Vos, Jonas

Research Details

5 * Please indicate here which data collection methods you expect to use. Tick all that apply.

- [x] Interviews
- [ ] Focus Groups
- [x] Questionnaires (including oral questions)
- [ ] Action research
- [ ] Observation / participant observation
- [ ] Documentary analysis (including use of personal records)
- [ ] Audio-visual recordings (including photographs)
- [ ] Collection/use of sensor or locational data
- [ ] Controlled trial
- [ ] Intervention study (including changing environments)
- [ ] Systematic review
- [ ] Secondary data analysis
- [ ] Advisory/consultation groups

6 * Please indicate where your research will take place.

UK only : UK only

7 * Does your project involve the recruitment of participants?

'Participants' means human participants and their data (including sensor/locational data and observational notes/images.)

◉ Yes ○ No

Appropriate Safeguard, Data Storage and Security

8 * Will your research involve the collection and/or use of personal data?

Personal data is data which relates to a living individual who can be identified from that data or from the data and other information that is either currently held, or will be held by the data controller (you, as the researcher).

This includes:

- Any expression of opinion about the individual and any intentions of the data controller or any other person toward the individual.
- Sensor, location or visual data which may reveal information that enables the identification of a face, address etc. (some postcodes cover only one property).
- Combinations of data which may reveal identifiable data, such as names, email/postal addresses, date of birth, ethnicity, descriptions of health diagnosis or conditions, computer IP address (of relating to a device with a single user).

◉ Yes ○ No

9 * Is your research using or collecting:

- special category data as defined by the General Data Protection Regulation*, and/or
- data which might be considered sensitive in some countries, cultures or contexts?

*Examples of special category data are data:

- which reveals racial or ethnic origin, political opinions, religious or philosophical beliefs, trade union membership;
- concerning health (the physical or mental health of a person, including the provision of health care services);
- concerning sex life or sexual orientation;
- genetic or biometric data processed to uniquely identify a natural person.

○ Yes ◉ No

10 * Do you confirm that all personal data will be stored and processed in compliance with the General Data Protection Regulation (GDPR 2018)?

- (•) Yes
- ( ) No
- ( ) I will not be working with any personal data

11 * I confirm that:

- [x] The information in this form is accurate to the best of my knowledge.
- [x] I will continue to reflect on, and update these ethical considerations in consultation with my supervisor.

You **MUST** download a copy of your responses to submit with your proposal, and for your own reference.

To do this, use the print screen function of your web browser, and print to PDF in order to save.

Previous | 1 | 2

RISK ASSESSMENT FORM
FIELD / LOCATION WORK

DEPARTMENT/SECTION: BARTLETT SCHOOL OF PLANNING
LOCATION(S): LONDON
PERSONS COVERED BY THE RISK ASSESSMENT: Hayley Al-siaidi

BRIEF DESCRIPTION OF FIELDWORK (including geographic location): Interviews, likely in person, potentially some online

COVID-19 RELATED GENERIC RISK ASSESSMENT STATEMENT:

Coronavirus disease (COVID-19) is an infectious disease caused by coronavirus SARS-CoV-2. The virus spreads primarily through droplets of saliva or discharge from the nose when an infected person coughs or sneezes. Droplets fall on people in the vicinity and can be directly inhaled or picked up on the hands and transferred when someone touches their face. This risk assessment documents key risks associated fieldwork during a pandemic, but it is not exhaustive and will not be able to cover all known risks, globally. This assessment outlines principles adopted by UCL at an institutional level and it is necessarily general. Please use the open text box 'Other' to indicate any contingent risk factors and control measures you might encounter during the course of your dissertation research and writing.

Please refer to the Dissertation in Planning Guidance Document (available on Moodle) to help you complete this form.

Hazard 1: Risk of Covid -19 infection during research related travel and research related interactions with others (when face-to-face is possible and/or unavoidable)

Risk Level - Medium /Moderate

Existing Advisable Control Measures: Do not travel if you are unwell, particularly if you have COVID-19 symptoms. Self-isolate in line with NHS (or country-specific) guidance.

Avoid travelling and face-to-face interactions; if you need to travel and meet with others:

- If possible, avoid using public transport and cycle or walk instead.
- If you need to use public transport travel in off-peak times and follow transport provider's and governmental guidelines.
- Maintain (2 metre) social distancing where possible and where 2 metre social distancing is not achievable, wear face covering.
- Wear face covering at all times in enclosed or indoor spaces.
- Use hand sanitiser prior to and after journey.
- Avoid consuming food or drinks, if possible, during journey.
- Avoid, if possible, interchanges when travelling - choose direct route.
- Face away from other persons. If you have to face a person ensure that the duration is as short as possible.
- Do not share any items i.e. stationary, tablets, laptops etc. If items need to be shared use

disinfectant wipes to disinfect items prior to and after sharing.

- If meeting in a group for research purposes ensure you are following current country specific guidance on face-to-face meetings (i.e rule of 6 etc.)
- If and when possible meet outside and when not possible meet in venues with good ventilation (e.g. open a window)
- If you feel unwell during or after a meeting with others, inform others you have interacted with, self-isolate and get tested for Covid-19
- Avoid high noise areas as this mean the need to shout which increases risk of aerosol transmission of the virus.
- Follow one way circulation systems, if in place. Make sure to check before you visit a building.
- Always read and follow the visitors policy for the organisation you will be visiting.
- Flush toilets with toilet lid closed.
-'Other' Control Measures you will take (specify):

NOTE: The hazards and existing control measures above pertain to Covid-19 infection risks only. More generalised health and safety risk may exist due to remote field work activities and these are outlined in your Dissertation in Planning Guidance document. Please consider these as possible 'risk' factors in completing the remainder of this standard form. For more information also see: Guidance Framework for Fieldwork in Taught and MRes Programmes, 2021-22

Consider, in turn, each hazard (white on black). If **NO** hazard exists select **NO** and move to next hazard section.
If a hazard does exist select **YES** and assess the risks that could arise from that hazard in the risk assessment box.
Where risks are identified that are not adequately controlled they must be brought to the attention of your Departmental Management who should put temporary control measures in place or stop the work. Detail such risks in the final section.

ENVIRONMENT	**The environment always represents a safety hazard. Use space below to identify and assess any risks associated with this hazard**
e.g. location, climate, terrain, neighbourhood, in outside organizations, pollution, animals.	Risk of adverse weather when travelling to interviews and risk of collision if walking or cycling near roads. Low

CONTROL MEASURES	**Indicate which procedures are in place to control the identified risk**
	work abroad incorporates Foreign Office advice
	only accredited centres are used for rural field work
X	participants will wear appropriate clothing and footwear for the specified environment
X	refuge is available
	work in outside organisations is subject to their having satisfactory H&S procedures in place
	OTHER CONTROL MEASURES: please specify any other control measures you have implemented:

EMERGENCIES	Where emergencies may arise use space below to identify and assess any risks
e.g. fire, accidents	Examples of risk: loss of property, loss of life

There are risks of theft, assault or being in a traffic collision (when crossing roads).

CONTROL MEASURES	Indicate which procedures are in place to control the identified risk
	participants have registered with LOCATE at http://www.fco.gov.uk/en/travel-and-living-abroad/
X	contact numbers for emergency services are known to all participants
X	participants have means of contacting emergency services
	a plan for rescue has been formulated, all parties understand the procedure
	the plan for rescue /emergency has a reciprocal element
X	OTHER CONTROL MEASURES: please specify any other control measures you have implemented:

The researcher will carry a charged phone at all times and will inform partner of location and duration to ensure safety.
Researcher will take due care to undertake all interviews in public places during day light hours.

EQUIPMENT	Is equipment used?	YES	If 'No' move to next hazard If 'Yes' use space below to identify and assess any risks
e.g. clothing, outboard motors.	Examples of risk: inappropriate, failure, insufficient training to use or repair, injury. Is the risk high / medium / low ?		

A mobile phone will be utilised to record participant interviews, possibly with an external microphone.
Low risk.

CONTROL MEASURES	Indicate which procedures are in place to control the identified risk
	the departmental written Arrangement for equipment is followed
	participants have been provided with any necessary equipment appropriate for the work
X	all equipment has been inspected, before issue, by a competent person
X	all users have been advised of correct use
	special equipment is only issued to persons trained in its use by a competent person
	OTHER CONTROL MEASURES: please specify any other control measures you have implemented:

LONE WORKING	Is lone working a possibility?	YES	If 'No' move to next hazard If 'Yes' use space below to identify and assess any risks
e.g. alone or in isolation *lone interviews.*	Examples of risk: difficult to summon help. Is the risk high / medium / low?		

Lone interviews, potential for adverse reaction from interviewee.

Low risk, questions will be written in an impartial manor and undertaken in a public place.

CONTROL MEASURES	Indicate which procedures are in place to control the identified risk
	the departmental written Arrangement for lone/out of hours working for field work is followed
	lone or isolated working is not allowed
X	location, route and expected time of return of lone workers is logged daily before work commences
X	all workers have the means of raising an alarm in the event of an emergency, e.g. phone, flare, whistle
	all workers are fully familiar with emergency procedures
X	OTHER CONTROL MEASURES: please specify any other control measures you have implemented:

A fully charged mobile phone will be carried at all times and interviews will be taken in day light hours in a public place.

ILL HEALTH	The possibility of ill health always represents a safety hazard. Use space below to identify and assess any risks associated with this Hazard.
e.g. accident, illness, personal attack, special personal considerations or vulnerabilities.	Examples of risk: injury, asthma, allergies. Is the risk high / medium / low? Risk of traffic incidents, trips/falls or other on street accidents. Low risk

CONTROL MEASURES	Indicate which procedures are in place to control the identified risk
X	all participants have had the necessary inoculations/ carry appropriate prophylactics
X	participants have been advised of the physical demands of the research and are deemed to be physically suited
	participants have been adequate advice on harmful plants, animals and substances they may encounter
X	participants who require medication should carry sufficient medication for their needs
X	OTHER CONTROL MEASURES: please specify any other control measures you have implemented:

Charged mobile phone to be carried at all times.
Interviews to be undertaken when participant and researcher are in good health.

TRANSPORT	Will transport be required	NO		Move to next hazard
		YES	X	Use space below to identify and assess any risks
e.g. hired vehicles	Examples of risk: accidents arising from lack of maintenance, suitability or training Is the risk high / medium / low? Low risk related to potential for break downs or traffic accidents on public transport to get to interviews.			

CONTROL MEASURES	Indicate which procedures are in place to control the identified risk
x	only public transport will be used
	the vehicle will be hired from a reputable supplier
	transport must be properly maintained in compliance with relevant national regulations
	drivers comply with UCL Policy on Drivers http://www.ucl.ac.uk/hr/docs/college_drivers.php
	drivers have been trained and hold the appropriate licence
	there will be more than one driver to prevent driver/operator fatigue, and there will be adequate rest periods
	sufficient spare parts carried to meet foreseeable emergencies
	OTHER CONTROL MEASURES: please specify any other control measures you have implemented:

DEALING WITH THE	Will people be		If 'No' move to next hazard

PUBLIC	dealing with public	YES	If 'Yes' use space below to identify and assess any risks
e.g. interviews, observing	Examples of risk: personal attack, causing offence, being misinterpreted. Is the risk high / medium / low?		
	Interview questions may provoke negative reaction from interviewee due to the nature of the questions. Low risk.		

CONTROL MEASURES	Indicate which procedures are in place to control the identified risk
X	all participants are trained in interviewing techniques
	advice and support from local groups has been sought
X	participants do not wear clothes that might cause offence or attract unwanted attention
X	interviews are conducted at neutral locations or where neither party could be at risk
X	OTHER CONTROL MEASURES: please specify any other control measures you have implemented:

Participants will be informed of the interview content ahead of the interview to ensure they are happy with the nature of the questions and research intentions.

WORKING ON OR NEAR WATER	Will people work on or near water?	NO	If 'No' move to next hazard If 'Yes' use space below to identify and assess any risks
e.g. rivers, marshland, sea.	Examples of risk: drowning, malaria, hepatitis A, parasites. Is the risk high / medium / low?		

CONTROL MEASURES	Indicate which procedures are in place to control the identified risk
	lone working on or near water will not be allowed
	coastguard information is understood; all work takes place outside those times when tides could prove a threat
	all participants are competent swimmers
	participants always wear adequate protective equipment, e.g. buoyancy aids, wellingtons
	boat is operated by a competent person
	all boats are equipped with an alternative means of propulsion e.g. oars

	participants have received any appropriate inoculations
	OTHER CONTROL MEASURES: please specify any other control measures you have implemented:

MANUAL HANDLING (MH)	**Do MH activities take place?**	**NO**	**If 'No' move to next hazard** **If 'Yes' use space below to identify and assess any risks**
e.g. lifting, carrying, moving large or heavy equipment, physical unsuitability for the task.	Examples of risk: strain, cuts, broken bones. Is the risk high / medium / low?		

CONTROL MEASURES	**Indicate which procedures are in place to control the identified risk**
	the departmental written Arrangement for MH is followed
	the supervisor has attended a MH risk assessment course
	all tasks are within reasonable limits, persons physically unsuited to the MH task are prohibited from such activities
	all persons performing MH tasks are adequately trained
	equipment components will be assembled on site
	any MH task outside the competence of staff will be done by contractors
	OTHER CONTROL MEASURES: please specify any other control measures you have implemented:

SUBSTANCES	Will participants work with substances	NO	If 'No' move to next hazard If 'Yes' use space below to identify and assess any risks
e.g. plants, chemical, biohazard, waste	Examples of risk: ill health - poisoning, infection, illness, burns, cuts. Is the risk high / medium / low?		
CONTROL MEASURES	**Indicate which procedures are in place to control the identified risk**		

	the departmental written Arrangements for dealing with hazardous substances and waste are followed
	all participants are given information, training and protective equipment for hazardous substances they may encounter
	participants who have allergies have advised the leader of this and carry sufficient medication for their needs
	waste is disposed of in a responsible manner
	suitable containers are provided for hazardous waste
	OTHER CONTROL MEASURES: please specify any other control measures you have implemented:

OTHER HAZARDS	Have you identified any other hazards?	NO	If 'No' move to next section If 'Yes' use space below to identify and assess any risks
i.e. any other hazards must be noted and assessed here.	Hazard: Risk: is the risk		
CONTROL MEASURES	**Give details of control measures in place to control the identified risks**		

Have you identified any risks that are not adequately controlled?			
	NO	**X**	**Move to Declaration**
	YES		**Use space below to identify the risk and what action was taken**

DECLARATION	The work will be reassessed whenever there is a significant change and at least annually. Those participating in the work have read the assessment.

	Select the appropriate statement:
X	I the undersigned have assessed the activity and associated risks and declare that there is no significant residual risk
X	I the undersigned have assessed the activity and associated risks and declare that the risk will be controlled by the method(s) listed above

NAME OF SUPERVISOR Jonas De Vos

Appendix E Ethical clearance

Your 3 response(s)

Previous | 1 | 2 | 3

Respondent: **Hayley Al-Siaidi** Submitted on: Tuesday, 30 August 2022, 8:17 PM

Ethical Clearance Pro Forma

It is important for you to include all relevant information about your research in this form, so that your supervisor can give you the best advice on how to proceed with your research.

You are advised to read though the relevant sections of UCL's Research Integrity guidance to learn more about your ethical obligations.

Please ensure to save a copy of your completed questionnaire BEFORE hitting 'submit' (you will not be able to access it later).

Submission Details

1 * Please select your programme of study.

Sustainable Urbanism : Sustainable Urbanism

2 * Please indicate the type of research work you are doing.

- [x] Dissertation in Planning (MSc)
- [ ] Dissertation in City Planning (MPlan)

☐ Major Research Project

3 * Please provide the current working title of your research.

Local government climate change-oriented transport strategies acceptability and effectiveness: a study of travel attitudes in a Low Traffic Neighbourhood

4 * Please select your supervisor from the drop-down list.

De Vos, Jonas : De Vos, Jonas

Research Details

5 * Please indicate here which data collection methods you expect to use. Tick all that apply.

- ☑ Interviews
- ☐ Focus Groups
- ☐ Questionnaires (including oral questions)
- ☐ Action research
- ☐ Observation / participant observation
- ☐ Documentary analysis (including use of personal records)
- ☐ Audio-visual recordings (including photographs)
- ☐ Collection/use of sensor or locational data
- ☐ Controlled trial
- ☐ Intervention study (including changing environments)
- ☐ Systematic review
- ☑ Secondary data analysis
- ☐ Advisory/consultation groups

6 * Please indicate where your research will take place.

UK only : UK only

7 * Does your project involve the recruitment of participants?

'Participants' means human participants and their data (including sensor/locational data and observational notes/images.)

◉ Yes ○ No

Appropriate Safeguard, Data Storage and Security

8 * Will your research involve the collection and/or use of personal data?

Personal data is data which relates to a living individual who can be identified from that data or from the data and other information that is either currently held, or will be held by the data controller (you, as the researcher).

This includes:

- Any expression of opinion about the individual and any intentions of the data controller or any other person toward the individual.
- Sensor, location or visual data which may reveal information that enables the identification of a face, address etc. (some postcodes cover only one property).
- Combinations of data which may reveal identifiable data, such as names, email/postal addresses, date of birth, ethnicity, descriptions of health diagnosis or conditions, computer IP address (of relating to a device with a single user).

○ Yes ◉ No

9 * Is your research using or collecting:

- special category data as defined by the General Data Protection Regulation*, and/or
- data which might be considered sensitive in some countries, cultures or contexts?

*Examples of special category data are data:

- which reveals racial or ethnic origin, political opinions, religious or philosophical beliefs, trade union membership;
- concerning health (the physical or mental health of a person, including the provision of health care services);
- concerning sex life or sexual orientation;
- genetic or biometric data processed to uniquely identify a natural person.

○ Yes ◉ No

10 * Do you confirm that all personal data will be stored and processed in compliance with the General Data Protection Regulation (GDPR 2018)?

◉ Yes
○ No
○ I will not be working with any personal data

11 * I confirm that:

☑ The information in this form is accurate to the best of my knowledge.
☑ I will continue to reflect on, and update these ethical considerations in consultation with my supervisor.

You **MUST** download a copy of your responses to submit with your proposal, and for your own reference.

To do this, use the print screen function of your web browser, and print to PDF in order to save.

Previous | 1 | 2 | 3

Appendix F Interview consent sheet

Information and consent form

Project Title **Attitudes towards transport modes in the Streatham Hill Low Traffic Neighbourhood**

Researcher Hayley Al-Siaidi

Introduction

You are being invited to take part in a research project being undertaken by a part-time Masters student from the Bartlett School of Planning, University College London (UCL).

Before you decide whether or not to participate it is important for you to understand why the research is being conducted and what participation will involve. Please read the following information carefully, feel free to discuss it with others if you wish, or ask the research team for clarification or further information. Please take time to decide whether or not you wish to take part.

Why is this research being conducted?

The aim of this project is to investigate residents attitudes towards Low Traffic Neighbourhoods (LTNs), and how this is impacted by their attitudes towards other transport modes, with a focus on cars. As well as highlighting potential for improvements to future schemes.

Why am I being invited to take part?

You are being invited to take part as you are a resident of the Streatham Hill Low Traffic Neighbourhood (LTN).

Do I have to participate?

Participation is entirely voluntary. If you do choose to participate and then change your mind, you may withdraw from the research at any time with no consequences and without having to give a reason.

What will happen if I choose to take part?

If you do choose to participate, you will be invited to face-to-face or online interview explore the issues highlighted above. The interview will be conducted at a mutually agreed location. The interview will last approximately 30-45 minutes and will be audio recorded (and transcribed at a later date). You will have the opportunity to see the interview transcript and agree any amendments with the researcher after the interview is concluded.

What are the advantages of taking part?

There are no immediate benefits for participating in this project and no financial incentive or reward is offered, however it is hoped that this project will inform future policies on Low Traffic Neighbourhoods.

What are the possible disadvantages of taking part?

We anticipate no significant disadvantages associated with taking part in this project. If you experience any unexpected adverse consequences as a result of taking part in the project you are encouraged to contact the researcher as soon as possible using the contact details on page 2 of this information and consent sheet.

If I choose to take part, what will happen to the data?

The interview data will be anonymised at the point of transcription and identified by a general identifier (e.g. 'Participant A' or a suitable pseudonym). A record of participant identities and any notes will be kept separately and securely from the anonymised data. All data and information affiliated with this project will be securely stored on an encrypted computer drive and physical documents will be stored securely on University property.

The data will be only used for the purposes of this research and relevant outputs and will not be shared with any third party. The anonymised data may be utilised in the written dissertation produced at the end of this project, and this dissertation may then be made publicly available via the University Library's Open Access Portal, however no identifiable or commercial sensitive information will be accessible in this way.

What will happen to the results of the research project?

It is anticipated that the data collected in this project will be included in the dissertation produced at the end of this project, submitted for the award of a Masters degree at University College London (UCL). You will not be personally identified in any of the outputs from this work, and attributions and quotations will be anonymised. If you would like to receive an electronic copy of any outputs stemming from this project please ask the contact below who will be happy to provide this.

Contact Details

If you would like more information or have any questions or concerns about the project or your participation please use the contact details below:

Primary contact	Hayley Al-Siaidi
Role	MSc student
Email	hayley.al-siaidi.20@ucl.ac.uk
Supervisor	Jonas De Vos
Role	MSc dissertation supervisor
Email	jonas.devos@ucl.ac.uk

Concerns and / or Complaints

If you have concerns about any aspect of this research project please contact the MSc student contact the student in the first instance, then escalate to the supervisor.

Informed Consent Sheet

Title of project

If you are happy to participate, please complete this consent form by ticking the boxes to acknowledge the following statements and signing your name at the bottom of the page.

Please give the signed form to the researcher conducting your interview at the interview. They will also be able to explain this consent form further with you, if required.

1.	I have read and understood the information sheet.	☐
2.	I agree to participate in the above research by attending an online interview as described on the Information Sheet.	☐
3.	I understand that my participation is entirely voluntary.	☐
4.	I understand that I may withdraw at any time without giving a reason and with no consequences.	☐
5.	I agree for the interview to be audio recorded.	☐
6.	I understand that I may see a copy of the interview transcript after it has been transcribed and agree any amendments with the researcher.	☐
7.	I understand that the intention is that interviews are anonymised and that if any of my words are used in a research output that they will not be directly attributed to me unless otherwise agreed by all parties.	☐
8.	I understand the data from this project will be considered for repository in the UCL Open Access repository as described on the Information Sheet but that this will be anonymised data only.	☐
9.	I understand that I can contact the student who interviewed me at any time using the email address they contacted me on to arrange the interview, or the dissertation supervisor using the contact details provided on page 2 of the information sheet.	☐

Participant name: **Signature:** **Date:**

Researcher name: **Signature:** **Date:**

LTN dissertation

GRADEMARK REPORT

FINAL GRADE

/100

GENERAL COMMENTS

Instructor

PAGE 1

PAGE 2

PAGE 3

PAGE 4

PAGE 5

PAGE 6

PAGE 7

PAGE 8

PAGE 9

PAGE 10

PAGE 11

PAGE 12

PAGE 13

PAGE 14

PAGE 15

PAGE 16

PAGE 17

PAGE 18

PAGE 19

PAGE 20

PAGE 21

PAGE 22

PAGE 23

PAGE 24

PAGE 25

PAGE 26

PAGE 27

PAGE 28

PAGE 29

PAGE 30

PAGE 31

PAGE 32

PAGE 33

PAGE 34

PAGE 35

PAGE 36

PAGE 37

PAGE 38

PAGE 39

PAGE 40

PAGE 41

PAGE 42

PAGE 43

PAGE 44

PAGE 45

PAGE 46

PAGE 47

PAGE 48

PAGE 49

PAGE 50

PAGE 51

PAGE 52

PAGE 53

PAGE 54

PAGE 55

PAGE 56

PAGE 57

PAGE 58

PAGE 59

PAGE 60

PAGE 61

PAGE 62

PAGE 63

PAGE 64

PAGE 65

PAGE 66

PAGE 67

PAGE 68

PAGE 69

PAGE 70

PAGE 71

PAGE 72

PAGE 73

PAGE 74

PAGE 75

PAGE 76

PAGE 77

PAGE 78

PAGE 79

PAGE 80

PAGE 81