



Street space reallocation under austerity: The case of low traffic neighbourhoods in the UK

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ABSTRACT

Street space reallocation measures, such as Low Traffic Neighbourhoods (LTNs), have attracted substantial controversy in the UK and elsewhere, for instance around reported poor engagement with residents and local actors. However, limited attention has been given to the political-economic context shaping scheme implementation, such as the impacts of reduced resources or of the use of short-term, contingent funding. Based on 37 interviews with officers and councillors who implemented or sought to implement LTNs in 12 English local authorities, and part of a larger project investigating the impacts of LTNs in London, this paper addresses this gap. It shows how challenges to design, engagement and delivery of LTNs are often linked to funding scarcity and processes of projectification, advancing the literature on transport governance and controversy.

1. Introduction

Heavy reliance on car use has produced a status quo in transport systems which brings substantial health, social and environmental harms. As planners and scholars explore transitions away from such systems, challenging the established predominance of car-based mobility, conflict and controversy recur (Gössling et al., 2024; Marquet et al., 2024; Villani and Talamini, 2023; Vitale Brovarone et al., 2023; Wild et al., 2018). A growing number of studies explore whether and how new ways of approaching transport planning which fundamentally challenge this status quo can achieve a rapid transformation despite sustained opposition by those who may see their ‘right to drive’ challenged (Bertolini, 2020; VanHoose, 2023; von Schönfeld, 2024). Such controversies in turn challenge policy-makers and planners as they attempt to engage with the public, with frequent talks of a ‘crisis in participatory planning’ (Legacy, 2017; Pløger, 2021).

Conflicts are understood as arising from disruptions to established power dynamics (Gualini, 2015), including car dependency and other social inequalities that are entangled with mobility systems (Sheller and Urry, 2006). However, in analysing their emergence, limited attention

has so far been paid to the political-economic context in which such mobility transitions, and related engagement processes, are attempted. This is particularly the case of so called ‘street space reallocations’, increasingly popular measures which modify how street areas are distributed and used, typically to prioritize forms of transportation other than private cars or urban functions (e.g., new cycle lanes, pedestrianisations, pocket parks, reductions in parking capacity). Some literature on street space reallocations identifies a key barrier as being ‘lack of required [financial, material, and human] resources’ (VanHoose, 2023), which affects implementation, scaling up, and success. Adequate resourcing is key when proponents of street space reallocations ‘have to defend their position, negotiating with opposing residents, business owners and policy makers’ (VanHoose, 2023, p. 8). Other studies concur that consistent and stable funding sources are key to the success of street space reallocations and that changes to political leadership or local support risk undermining them (Eyler et al., 2015; Sarmiento et al., 2017).

Although street space reallocation schemes have diverse roots, they and other contemporary approaches to transport planning need to be understood in the context of austerity urbanism (Verlinghieri et al.,

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Fig. 1. A planter and sign delimiting an LTN in London (Credit “Crispin Hughes www.crispinhughes.co.uk”).

2023). Austerity urbanism broadly indicates an approach to urban governance under fiscal austerity measures characterized by budget cuts, reduced public spending, privatization of public services and assets, and a shift towards debt-driven local governance (Peck, 2012). Indeed, street space reallocations, especially when they take an experimental form (street experiments), may be perceived as a low-cost way of securing swift transitions away from car-based mobility, given a lack of centrally provided resources for such transitions (von Schönfeld, 2024). The systematic understaffing and underfinancing of local authorities that is characteristic of austerity urbanism may, however, also undermine their ability to deal with conflict and controversy.

While there is much research on austerity urbanism in UK and other advanced liberal democracies (Peck, 2012), there has so far been less work on its implications for transport policy and planning (Dixon and Wilson, 2013; Ferreira and Couto, 2015; Verlinghieri et al., 2024a). In response, in this paper we focus on a critical example of street space reallocation, Low Traffic Neighbourhoods (LTNs) in the UK, and particularly English, context. (Figure 1 illustrates a planter and sign delimiting one such scheme, indicating that motor vehicles are prohibited from proceeding). Using LTNs as an in-depth case study, we evidence how austerity urbanism shapes active travel¹ policy and planning. We explore the tension between a demand for more democratic approaches to transport planning which bring in different knowledges in transport (Ferreira et al., 2009; Smeds et al., 2023; Vigar, 2017) and a vastly reduced resource pool available for local planning actors, who remain primarily responsible for addressing transport-related harms (Dixon and Wilson, 2013; Eckersley, 2018; Marsden et al., 2014). We do this through an analysis of 37 expert interviews with officers and councillors from 12 English local authorities, exploring their attempts to implement LTNs, a potentially highly effective yet highly controversial tool for reducing car use and increasing active travel.

Whilst these findings are specific to the UK and, England in particular, they are relevant to other contexts outside the country, especially given the growing international debate on the role of local government in mediating controversies around street space reallocations (Verlinghieri et al., 2023; Villani and Talamini, 2023). Although the UK is one of the most centralised governance systems in the European context (Pike, 2023), transport in the UK is a devolved matter, and hence, while there is substantial control by the national state, the local state is responsible for changes on local roads and multi-level governance (Marsden et al., 2014) is in operation in this sector. Indeed, we can explore here the shifting terrain of multi-level governance as during

our study period national diktats regarding street space reallocations shifted substantially. How these changes were experienced and negotiated by local actors forms part of our discussion.

2. Literature review

2.1. Transport planning under austerity

As in many European countries, local authorities in the UK, including those included in this study, have seen substantial cuts to their funding over the past 15 years.

Internationally, austerity related budget cuts have directly affected public transport provision and accessibility, especially for the most vulnerable populations (Cascajo et al., 2018; Doetsch et al., 2023; Veeneman et al., 2015). More broadly, austerity policies have been associated with the erosion and uneven distribution of public services and infrastructure, particularly in cities (Donald et al., 2014a; Gray and Barford, 2018). Austerity measures have imposed privatization and outsourcing of public services (Peck, 2012), including the ongoing reshaping of public projects and infrastructure to attract private investments and interests (Apostolopoulou and Liodaki, 2025). Furthermore, austerity has been associated with rescaling of government funding and priorities, with local governments receiving less funding whilst facing increasing demands (Donald et al., 2014b; O'Brien and Pike, 2019).

In the UK, devolution of responsibility to local government has been accompanied by drastic budget cuts, with resulting spatial differentiation and inequalities, and poorer areas being hit the hardest (Hastings et al., 2017; Ogden and Phillips, 2024; Peck, 2012). Writing about Greater Manchester, Habermehl and Perry (2021, pp. 562–563) describe “budgets within [some] local authorities in Greater Manchester [...] reducing from 12 to 3 full time equivalent planners”. Their paper details how remaining staff felt they spent most of their time responding to public complaints and were unable to implement innovative approaches to spatial planning. Even in London, boroughs absorbed real terms funding cuts of 44 % over five years (Brown, 2015). A recent report by the Institute for Fiscal Studies revealed a 45 % fall in transport spending per person between 2010–11 and 2019–20 (Ogden and Phillips, 2024). Although the bulk of cuts was concentrated in the 2010s, spending has not yet recovered to pre-austerity levels.

The need for change in road transport, which makes up almost 30 % of UK carbon emissions (Department for Energy Security and Net Zero, 2024) and heavy public health costs, is acute. The need to explore how austerity urbanism impacts local authorities' ability to deliver local transport policies was highlighted a decade ago by Dixon and Wilson (2013), who stressed how severe budget cuts hindered local authorities' ability to develop low-carbon plans, including climate mitigation. Elvy (2014, p. 48) highlighted risks to public engagement with local transport plans, writing that “ongoing funding cuts to public services in general and local government budgets in particular [mean that] increased participation with ‘at risk’ groups will be hard to achieve”. Failing to engage both marginalised groups and the wider public threatens both the effectiveness and the equity of such planning processes.

2.2. Competitive funding, short-term policy and projectification

Interventions under austerity conditions may also deepen existing spatial divisions between more affluent cities and regions able to position themselves as policy ‘entrepreneurs’ and those unable to do so, structurally disadvantaged from long-term industrial decline (Jonas and Wurzel, 2021; Ogden and Phillips, 2024; Schipper and Schöning, 2016; Verlinghieri et al., 2024a). In the UK, such uneven geographies of austerity urbanism feed into and entrench an already established tradition of urban entrepreneurialism in local government and related reliance on competitive funding (Pike, 2023). The Institute for Government found that in 2022/23, a quarter of local authority funding streams used a

¹ Such as walking, wheeling and cycling: see (Cook et al., 2022).

competitive methodology, which it characterised as ‘often bad value for money’ (McKee and Pope, 2024). Such extensive reliance on competitive funding for UK local governance is rooted within the ‘New Public Management’ framework (Pike, 2023), which sought from the 1980s to embed market principles in public services (Simonet, 2015).

In the case of active travel in England, local councils bid for funds from national government, applying to a range of different funding streams. Central government has maintained the bulk of regulatory powers and financial control over transport, despite processes of state restructuring devolving transport provision responsibility and expectations to the local level, for example through the 2008 Local Transport Act (Walker et al., 2015). Funding for active travel itself is mostly short-term and ringfenced to specific projects, a situation that has not changed for decades despite changes in government (Aldred, 2012). As noted by McKee and Pope (2024), the short-term policy approach encouraged by this short-term competitive funding is inadequate to address long term structural issues, including car dependency and the associated marginalisation of active travel. For example, studying the failure of Chester to become a transformational ‘Cycling Demonstration Town’, White et al. (2020, p.184) describe how competitive bidding encouraged fantasy-laden promises of new active travel bridges, which compounded with lack of political will, led to the city implementing solely non-transformational measures such as “new signage, new branding, new fingerposts”.

Competitive funding frequently implies the need to create ‘projects’, with funding specifically covering project-based workstreams rather than ongoing core costs (Lord, 2019). Projectification has been analysed in various ways, encompassing both positive and negative interpretations (Jacobsson and Jalocha, 2021). In the context of our research, projectification involves the widespread use of short-term, temporary staffing and other resources attached to a particular project, against a backdrop of centralised decision-making and uncertainty about follow-on funding. There is a fundamental disjuncture between the social transformations required to tackle climate and health crises, and the conceptualisation of transport policy as a set of separately funded schemes. Austerity urbanism implies that projectification is taking place in the context of very limited ‘permanent’ resources hosting such separately funded projects. This has implications for the ability of authorities to successfully implement changes which – perceived to threaten car dependency – have proved controversial across the world (Wild et al., 2018).

In such contexts, one might expect that active travel in England – never fully incorporated into state planning (Aldred, 2012) – might be ever more neglected. However, while funding remains insufficient, the picture is nuanced. In London, funding for cycling increased exponentially from a low base in the late 2000s and the ‘Healthy Streets’ approach has recently given discursive justification for restricting cars (Plowden, 2020). Covid-19 saw the introduction across the UK and elsewhere of ‘emergency schemes’ such as Low Traffic Neighbourhoods, Streateries, pop-up cycle tracks, footway widening and other schemes that frequently encounter severe implementation difficulties when introduced in ‘normal’ times. This led to some optimism among academics, planners and policymakers that a ‘new normal’ could be found that – instead of a car-based recovery – could use the lessons learnt during Covid-19 to implement transformative policies on an iterative basis (e.g. (Newman et al., 2021)).

3. Low Traffic Neighbourhoods (LTNs)

LTNs are transport schemes that remove or substantially reduce through motor traffic from a set of contiguous residential streets. As such they can be considered a type of street space reallocation scheme. They seek to retrofit a long-standing town planning principle already known under various names. Dutch conurbations are planned based on ‘unbundling’, the separation of motorised and non-motorised traffic at network level (Schepers et al., 2013); Britain’s Ministry of Transport

Colin Buchanan in 1963 promoted ‘Environmental Areas’ where motor traffic would be discouraged (Bianconi and Tewdwr-Jones, 2013); and the English Garden City approach created pedestrian connections closed to motorists through parks and between neighbourhoods or estates (Swensen and Berg, 2020).

Similar street space reallocation policies have been or are being retrofitted to urban areas in and beyond Europe under various names, for instance, ‘Superblocks’ in Barcelona (Anguelovski et al., 2023). In the UK, an LTN will typically create such traffic-reduced areas using cameras, physical barriers and/or signs to stop drivers ‘cutting through’ an area while retaining access for pedestrians, cyclists, and often certain other motorised users (e.g. emergency services, some disabled drivers in most existing London schemes, refuse vehicles, buses). To date, although this is standard practice in other context such as Italy or Spain, LTNs less often include other street transformation measures such as greening, pocket parks. The evidence suggests LTNs can have large benefits for residents and those travelling actively, with relatively little evidence of disbenefits for nearby areas and roads (Aldred and Goodman, 2020; Goodman et al., 2020, 2021, 2023; Thomas and Aldred, 2024). However, they are very controversial, and their political fortunes have shifted relatively quickly.

Despite evidence of their effectiveness and benefits, UK media has constructed a dominant narrative of LTNs as highly controversial and polarising (Mason, 2021; Powell, 2024), with headlines deploying conflict imagery, that reinforced and generated divisions (Larrington-Spencer et al., 2021). Controversy has also been linked to the limited geographical scope of schemes, for example in Birmingham (Pritchett et al., 2024) and the long-term entrenchment of automobility within western society, which renders these interventions inherently controversial and hard to implement (Hickman and Afonin, 2022; Larrington-Spencer et al., 2025). Controversy related to similar schemes in Turin, Italy, has also been linked to the long-tail of austerity urbanism, the distrust it has engendered in local authorities and their limited capacities to appropriately implement schemes (Verlinghieri et al., 2023; Vitale Brovarone et al., 2023).

LTNs were initially supported by then Conservative Prime Minister Boris Johnson (2019–22) and competitively funded through a dedicated funding scheme, called Active Travel Fund (ATF). This was initially issued as a Covid-19 emergency scheme and at the time of writing there have been five tranches, the last covering 2024–5.² However, the last Conservative Prime Minister Rishi Sunak (2022–4) repeatedly denigrated LTNs, and none were funded in 2023 under ATF Tranche 4 (Elledge, 2022; Walker, 2023). As we will discuss, some local authorities (especially in London) used other funding streams to partially fund schemes, for example their own capital programmes or additional national and regional funding pots. All five ATF funding streams have been short-term, with each supposedly lasting only a year, although two tranches have had official extensions.³

Whilst in London over 100 LTN schemes were implemented from 2020 with most remaining,⁴ elsewhere in England relatively few schemes have been implemented.⁵ In a related project, in mid-2021 we compiled 16 planned non-London schemes across England for evaluation. While these were supposed to be implemented in the coming year, only one was subsequently fully implemented and another partially implemented. The remaining 14 had not proceeded as of November

² <https://www.gov.uk/government/publications/emergency-active-travel-fund-local-transport-authority-allocations>.

³ This is in recognition of largely unrealistic funding timeframes, for example assuming that LTNs would be delivered in 1–2 years, against a reality of more often a 3–5 year implementation process.

⁴ This pattern held for the six London boroughs from which we drew participants.

⁵ Unfortunately, there is no national database of LTNs so we cannot say how many.

2024, although their cancellation was not always specifically announced (rather, schemes became indefinitely paused and links to them disappeared from authority websites). This is equivalent to a 94 % failure to implement rate. Often schemes were removed following public opposition. For instance, Newcastle City Council implemented an LTN in Jesmond in March 2023. Following much protest on social media, it removed it in January 2024, halfway through the experimental period and before definitive data on positive and negative impacts could be gathered.⁶ Newcastle City Council has implemented no other LTN schemes and is unlikely to implement more soon. Many other local authorities have similar stories.

The implementation of LTNs encapsulates, we argue, a fundamental tension created through local authority dependence on central government, which in England has chosen to provide very limited funding for active travel and this largely through short-term, competitive funding allocations. Particularly in the case of LTNs, as discussed by [Dudley et al. \(2022, p. 4\)](#) local government seemed to be “being pressured to introduce controversial LTN schemes rapidly, while at the same time being threatened with losing funding if schemes were not deemed as satisfactory in the eyes of government”. Outside London, a city with historically greater capacity to implement potentially controversial transport schemes (it remains the only large UK city or town to have implemented a congestion charge), LTN opponents (or fear of such opposition) have largely succeeded in stopping schemes before or after implementation. The analysis below explains this, exploring how the fragmented funding landscape, in the context of long-standing austerity and lack of resources, aggravated the most problematic aspects of projectification and reduced local authorities’ ability to meet growing demands around participation, engagement, and data.

4. Methods

The paper is based on the analysis of expert interviews ([Bogner et al., 2009](#)) with officers and councillors from 12 different English Local Authorities (LAs) (see [Table 1](#)). The interviews were collected as part of a larger NIHR-funded project called ‘LTNs in London’, studying impacts of several schemes in the capital. For this part of the research, as well as interviewing stakeholders from the six boroughs involved in our study, we included six authorities outside London. When recruiting for the study, our intention was to select non-London authorities which would similarly have implemented, were implementing, and/or would implement LTNs. These interviews were with councillors that held the transport brief and with officers involved in planning and/or implementation of LTNs. Sometimes these were heads of service (e.g. Head of Highways and Transport), at other times lower level with more specific roles, e.g. programme managers of active travel schemes in the authority. We initially sought 24 participants (one councillor and one officer) from our 12 authorities and received response from 22 (two declined to be interviewed). Participants were invited to take part in online semi-structured interviews in summer 2022 and again in spring 2024, to reflect on changes over the past nine months. All 22 people took part in 2022. In 2024, 7 people did not respond to our request for a follow up interview and 15 people agreed to participate, who in four cases were replacements as the original role holder had moved on.

All the authorities were transport authorities, i.e. if the area contained two-tier authorities (county and district) then the respondent would represent the county, which has transport planning powers. Interviews took place on Microsoft Teams and lasted between 45 and 90 min. In 2022 the focus was on participants’ experience in implementing LTNs, including challenges and barriers to governance and implementation, their understanding of impacts of the schemes, and lessons learnt. In 2024, we asked participants to give us an update on the

scheme(s) they were or had been working on and reflect on what they had learnt about LTNs. The interview questions are available in [Appendix 1](#). Interviews were conducted by EV, RA, HRS, or LN. Interviews were recorded on Teams and manually transcribed. An initial deductive coding framework (including main themes on scheme’s genealogy, scheme’s impacts, political context, participant personal experience, barriers to implementation, resources for implementation) was used to double code a first batch of interviews. EV, LN and HLS coded the interviews separately, compared the approaches and refined it also including new inductive nodes. The final coding framework used to code all interviews included emerging themes on opposition, austerity, scarce funding and resources and projectification; a clear difference emerged between accounts by London LAs and non-London LAs which guided the data analysis and structure of this paper. To protect participants’ privacy, in this paper we use anonymised case study codes (see [Table 1](#)) and refer to participants’ roles (Officer or Councillor (Cllr)) and data of interview when quoting directly.

These authorities were not nationally representative in terms of LTN progress but were purposively sampled to explore and compare implementation experiences and barriers among those trying to introduce the measure. All our London-based authorities had LTNs, whereas across all London districts the figure was more like two-thirds ([Aldred et al., 2021](#)). As such, our London interviewees may not be representative of London but rather leaders in LTN implementation in London and England. One, for example, had implemented one LTN per month during a seven-month period in the first year of Covid-19. Another was relatively new to LTNs but had implemented three large schemes in late 2022. All had substantial experience of LTN implementation by the second round of interviews. While often doing more than peer authorities, participants from our six non-London authorities had more limited experience, particularly in the first round of interviews. These authorities included one that had implemented six LTNs (since 2020), one that had implemented four LTNs and removed one, one that had implemented three LTNs and removed two, two that had implemented only one LTN apiece, and one that had not implemented either of two originally planned LTNs. All were predominantly urban although some contained smaller towns as well as larger conurbations.

Summarising, our interviewees represented people from urban English authorities who had attempted to implement LTNs and in most cases succeeded in retaining at least one scheme. They were relatively successful by comparison to their wider context (London or non-London). Thus, the sample provides useful information on processes related to the planning and attempt implementation of this policy across different geographies.

5. Findings

Below, we discuss key findings in three sections which follow key themes emerged in the interview analysis. Firstly, we explore how the approach to funding active travel schemes in England aggravates negative aspects of projectification, particularly in the context of the austerity measures that increase reliance on consultants and create uncertainty about future funding. Secondly, we consider the tension between national government’s conceptualisation of schemes as low cost, and the view expressed by many participants from local authorities that schemes were under-costed and therefore faced additional challenges in engagement and implementation, with processes already problematic due to short-term funding. Not only was long-term engagement and co-design made difficult, but desired enhancements to schemes (such as more expensive ‘greening’ measures to improve the quality of the built environment) risked becoming unaffordable. Finally, we discuss uneven geographies of austerity, in terms of the exacerbating divisions between authorities in England with differing levels of resource, capacity and experience. In our case, the key distinction is between at least some London authorities which can successfully implement schemes due to greater resources and learning from past schemes, and authorities in the

⁶ <https://www.chroniclive.co.uk/news/north-east-news/jesmond-ltn-bollards-council-data-28562054>.

Table 1
Study participants.

Case study code	TIER of governance ^a	Rural/urban ^b	Cllr/Officer	Second interview?
London1	London District	Urban with Major Conurbation	Councillor (Cllr)	Yes
London2	London District	Urban with Major Conurbation	Officer	No
London3	London District	Urban with Major Conurbation	Cllr	Yes
London4	London District	Urban with Major Conurbation	Officer	Yes
London5	London District	Urban with Major Conurbation	Cllr	No
London6	London District	Urban with Major Conurbation	Officer	Yes (replacement) ^a
non-London1	2-tier (county)	Urban with Major Conurbation	Officer	Yes (replacement)
non-London2	2-tier (county)	Urban with City and Town	Cllr	Yes (replacement)
non-London3	Unitary	Urban with Major Conurbation	Officer	Yes (replacement)
non-London4	2-tier (county)	Urban with City and Town	Cllr	Yes
non-London5	2-tier (county)	Urban with City and Town	Officer	Yes
non-London6	2-tier (county)	Urban with City and Town	Cllr	Yes
	Metropolitan district council	Urban with Major Conurbation	Officer	Yes
	Metropolitan district council	Urban with Major Conurbation	Cllr	No
	Unitary	Urban with Major Conurbation	Officer	Yes
	Unitary	Urban with Major Conurbation	Cllr	No
	Unitary	Urban with Major Conurbation	Officer	No

^a Some of England has a two-tier governance system, with county-level authorities holding transport planning powers and district-level authorities dealing with planning applications. Other parts have unitary or single-tier governance, including Metropolitan districts and London Boroughs which are effectively unitary authorities in their area.

^b According to: <https://www.gov.uk/government/collections/rural-urban-classification>.

^a Indicating that the follow-up interview was attended by a new officer/councillor in the same LA.

rest of England, especially those lacking regional leadership and associated funding streams, which remained largely unable to implement.

5.1. Funding, competition, and projectification

5.1.1. LTNs, austerity and eroded local government capacities

Lack of resources as the key barrier to delivering LTNs, particularly for engagement processes, featured prominently in many participants' accounts. Interviewees across the sample underlined the impact of repeated austerity budgets imposed since 2010 on local authority resources. For many authorities, in-house resources had been repeatedly and drastically cut back over the past decade, eroding their internal capacities, and leaving them reliant on temporary support by consultants to deliver projects.

"We have very few staff because we've had a massive cut to our overall budget. Sixty pence in every pound that we had in 2010 has been cut, and so we've got down to 40 % of our budget and we've got far fewer staff. So these processes where you need to go out and actually do face to face engagement with residents where officers are dealing with vast amounts of correspondence, huge amounts of emails, contacts via social media or people getting in contact with their views on all through all of those channels. And that's where we've lacked the capacity. So, we've had to bring in lots of consultancy and support, and that's been the pattern of how we've been delivering transport and highways interventions across the piece since austerity started" (non-London 6 – Cllr, 2022).

Deprived of adequate staff resources and constituent funding to open positions, authorities rely on consultants, or temporary or agency officers for scheme design and engagement. However, such external support brings additional problems and often slows down delivery, including lengthy procurement processes, as commented below:

"We had to write a brief, go through competitive tenders, do a scoring exercise, get procurement involved. So, it was all available, but it slowed down the delivery [and] there was a lot of dead time at the start" (London 1 – Officer, 2022).

Further, relying on temporary staff and consultants means their

knowledge of the scheme is likely limited and any learning from ongoing or past scheme is not retained by the local authority. The former is also likely to impact engagement, as the following quote highlights:

"We had to draft people [consultants] in to help us. But they didn't really understand the scheme so their ability to really respond to [residents'] questions was quite limited" (London 2 – Cllr, 2022).⁷

In response, many interviewees expressed the desire to increase in-house staffing as well as staff retention:

"We've had to outsource some of the infrastructure design etcetera and engagement to external teams. The aim is to have that as an in-house team completely, I think, and we're sort of heading towards that" (London 4 – Cllr, 2022).

5.1.2. The challenges of unpredictable and fragmented funding and projectification

Interviewees felt that the capacity gap experienced with personnel was aggravated by the need to plan in a context of constant uncertainty and short-term, unpredictable funding. In a world in which "everyone bids in for funding pots all the time" (non-London 5 – Cllr, 2022), most interviewees, and particularly, as we discuss later, those based outside London, felt that this severely limited their ability to develop integrated plans. For instance:

"One of the major issues that we have to deal with as a local highways authority is the way that central Government funds these things. So almost everything that we do on the highways is funded by a particular discrete grant or pot of money. So the Active Travel Fund for example, you have to bid for tranche 1, you have to make a list which has to fit their criteria, then they tell you you've got it or you

⁷ Interestingly, however, in the same interview one additional reason for using consultants was what their involvement meant that project monitoring was 'independent' of the authority, something considered key given high levels of controversy and subsequent mistrust by the public. Other studies have highlighted similar trade-offs of involving consultants in the delivery of similar schemes (Lawlor et al., 2023).

haven't got it, and then you go with tranche 2 and tranche 3, and it's the same with bus service money and growth deal money and the Electric Vehicle Infrastructure Fund money. [...] Sensible multi-year funding settlements would just be such a gamechanger" (non-London 4 – Cllr, 2024).

Transport funding comes with specific timeframe, processes, and conditions, often changing across subsequent tranches of the same fund, as in the case of the ATF. For LTNs, [Dudley et al. \(2022, pg.6\)](#) consider how funds available "may not be easily synchronised with the policy agendas and time schedules at the local level", as they demonstrate happening in the case of Oxford. Many of our interviewees reported the too short timeframe planned in the ATF:

"[We had] concern about the amount of time that we had to deliver, you know we've been given the funding and initially it was [to build schemes] in a year and then they did extend it to two years, but that was still quite you know in hindsight quite a short amount of time" (non-London 1 – Officer, 2022).

Such challenging timeframes meant that, especially in a context of schemes taking longer than initially planned, and so costing more staff time,⁸ a constant juggling was needed to ensure money could be allocated and re-allocated legitimately. Juggling was also aggravated by the fact that "the stipulations are different on what you can and can't do with that money" (non-London 5 – Officer, 2024), i.e. conditions for funding use changed even between different tranches of the same fund.

These fragmented income streams, tight deadlines and project-specific funding allocations disrupted organisations' ability to pursue ambitious transport policies and were for most participants "not conducive to good project delivery" (non-London 1 – Cllr, 2022). This reinforced the more problematic aspects of projectification, where (in this case) mobility transitions become packaged into individual projects. Rather than integrated planning, projectification under competitive austerity conditions tends to lead to fragmentation and lack of overarching visions; to periods of long delays followed by periods of intense action when funding suddenly appears for a particular scheme ([White et al., 2020](#)). Covid-19 intensified this process, with an additional imperative to get schemes implemented quickly alongside a withdrawal (initially) of the usual mandated consultation processes:

"We have to spend this money very quickly and we have to apply for it very quickly. With what we do in highways, in transport, we like to plan ahead" (non-London 3 – Cllr, 2022).

Whether due to Covid-19 imperatives or funding timeframes and conditions, authorities which already had schemes at least partially planned (known as 'shovel ready') were at an advantage when rushing to prepare a bid, as long as those schemes met (or could be made to meet) the conditions of the funding pot. More successful authorities submitted schemes that they had already in their portfolio or started implementing what met the funding criteria, while other schemes to increase sustainable transport or reduce car use (like workplace parking levies) were not pursued as not possible during this period, with commuting levels at a record low. An officer remarked:

"Very early on in the pandemic, we realized that we were going to have to make quite a lot of big changes. And that we were going to have to implement a lot of the plans that we have been developing for a long time, but very quickly" (London 3 – Officer, 2022).

While Covid-19 alongside the Active Travel Fund's short timeframes led to extreme short-term planning and uncertainty, interviewees reflected on some version of this having been normal in local transport planning for some time. Active travel in England has never had the long-

term, high level of dedicated funding enjoyed by some other European countries.

"My experience of being in local government for 30 years now, you just have to grab the opportunities, and if something opens up, you grab it and then literally a year later it kind of closes down again and you don't have that opportunity again" (non-London 4 – Officer, 2024).

In response to such challenging landscape for project resourcing, almost all participants, and particularly those whose authorities had particularly struggled due to a failure to access other funding sources to supplement the inadequate resources provided through the ATF, expressed a wish for "some sort of certainty of a longer-term funding programme" (non-London 3 – Officer, 2024). Such programme should ideally be free from competition, allowing them to develop network plans and more meaningful, longer-term engagement with the public.

5.2. Underestimating the costs of LTNs

In their analysis of new cycling infrastructure in Chester, [White et al. \(2020\)](#) White et al. (2020) described how high-profile but challenging projects were under-costed in competitive bidding, and ultimately proved undeliverable. In the case of LTNs, generalised under-costing discussed above, is worsened by the fact that schemes are overall seen and budgeted for as low-cost. As an interviewee suggested, "LTNs shouldn't be perceived as a low-cost scheme. Honestly, the cost of them is huge, but the potential benefits are huge as well" (London 6 – Officer, 2024).

LTNs are resource intensive projects, when considered beyond their relatively low capital costs for planters and bollards. Although they are certainly 'still cheap' compared to other major transport infrastructure, as we discuss in this section, participants felt that resources needed for adequate implementation were systematically underestimated.

"We certainly didn't allocate enough funding for them. For the [area name] ones I think in the bid we only allocated £50,000 and the [area name] ones were £150,000. I would say you need - if you start counting the staff resources and everything else, you at least need about £250,000 for each one. It's still cheap" (non-London 2 – Officer, 2022).

"The idea of just spending £3,000 on a traffic order and that magically working and [an LTN] coming out of nowhere is ludicrous. I think to have a good chance of success you're doing hundreds of thousands per scheme to make it happen" (London 6 – Officer, 2024).

Such initial under-estimate of costs adds up to the context of austerity and projectification previously discussed, meaning that projects' delivery suffers from severe under-resourcing in three different areas we discuss below.

5.2.1. Limiting LTNs potential as street space reallocations

Firstly, as the quotes above highlighted, LTNs were only costed in capital terms, i.e. asset costs not covering every day running and maintenance. As an officer remarked:

"I think one of the issues is whilst LTNs can come out of a capital budget and capital expenditure, the actual consultation process can't be capitalised and has to be via a very low budget, which limits the capacity of what we can deliver anyway. I mean we had capacity issues to deliver anyway, but also it kind of makes that financial ceiling as well" (London 2 – Cllr, 2024).

One important aspect of limited capital costs is directly linked to

⁸ Schemes in turn became increasingly more expensive due to inflation. At the time of the first interviews, inflation had recently reached 10 %.

LTNs' effectiveness as street space reallocation. Capital costs budgeted for often only covered basic materials such as bollards.⁹ Interviewees reflected on how there were frequently no budgets for additional interventions to provide spaces for sociability, play or greening within LTN scheme plans or existing LTNs although local and international experience suggested a need for such interventions (Verlinghieri et al., 2026). As a result, the infrastructures of LTNs themselves were quite austere, often consisting mostly of only planters and bollards. These 'temporary' infrastructures often stayed in place for a long time, even after LTNs were made permanent because upgrades again required more funding. We found only a few exceptions with a couple of London boroughs which, as discussed later, mention using the Mayor of London's Healthy and Green Streets Fund to implement rain gardens, or their own capital funding to create greening interventions to accompany existing and new LTNs.

"I would want to see play equipment and you know, seating areas and other things introduced into these low traffic environments that we've created. So, we start to deliver more social cohesion ... encouraging neighbours to interact with one another, you know, converting streets into play streets and those sorts of things. That's all the sorts of additional outcomes that we'd like to deliver once the funding gets sorted" (London 6 – Officer, 2022).

5.2.2. Limiting potential for adequate engagement

LTN planning also frequently underestimated the need for substantial resources for monitoring schemes as well as engaging with residents and relevant stakeholders. As we learnt from interviewing and talking with officers over the years, typically transport planners would assume the amount of engagement and other 'revenue spending' necessary to be somewhat proportional to the scheme cost. This, however, was not the case with LTNs, measures which are often caught up in national politics and 'culture wars'. Under public scrutiny and likely controversy around data and evidence (Booker, 2023; Powell, 2024; Verlinghieri et al., 2025), LTNs generated several additional costs for officers and other areas of the council - e.g. press team (dealing with negative newspapers), legal team (court threats), Freedom of Information (FOI) team, the cabinet executive (people doing delegations at council meetings) etc. This in turn means that considering LTNs only in terms of capital budget in a context where local government has been progressively hollowed out proves particularly challenging.

Primarily, in such a tense environment, local authority officers want to appropriately document implementation and its impacts. Doing more than in the past is required to avoid scheme failure, especially concerning monitoring and producing evidence and relating such evidence to residents' feedback.

"The work around the Low Traffic Neighbourhoods, not just the actual physical implementation, making sure traffic flows, but the monitoring report, the consultations and the consultation report and the files, that has all been a huge, huge, huge amount of work which has taken up so much officer time" (London 2 – Cllr, 2022).

This in turn requires funds far beyond what is provided by government, a point particularly stressed by the London councils that, as we will clarify later, had been most successful in terms of LTN implementation.

Similarly, having learnt from the first (2020) iteration of the Active Travel Fund during Covid-19, when schemes were introduced rapidly without pre-consultation, officers consider it key to have adequate and encompassing processes for engaging residents. In the interviews, many recognised that appropriate engagement should be far more

encompassing than usual consultation, including "door knocking, pop-up events etc" (London 6 – Officer, 2024) and require "officers [...] frequently talking, talking to residents, talking to businesses, dining, and engaging, engaging with residents" (non-London 6 – Cllr, 2022), i.e. a persistent presence in the area, opening a lasting dialogue with residents, businesses, and organisations. One officer spoke of problematic set up of consultations in the first iteration of the ATF:

"The community felt they had not been involved in the design and development of the schemes and that was a source of considerable frustration and even people who supported the schemes felt frustrated that they had not been consulted even though we were doing this during an emergency period. So that's been a big obstacle for us to try to repair" (London 3 – Officer, 2022).

For interviewees, coping with such amount of work would ideally require, in one participant's view, "the best part of 10 or 12 people working on LTN proposals" (London 4 – Officer, 2022). For another participant, implementing a scheme requires "a full-time member of staff [who] can manage the wider whole planning, the engagement, the consultation, [...] some of the greening elements [...] the resource requirement is quite, quite significant" (London 2 – Officer, 2022) who should be ideally accompanied by someone designated to deal with communications, given that the "there's so much comms going out, not just the consultations and the engagement, but it's also the letters, the updates, the leaflets, the events" (London 2 – Officer, 2022).

As we discussed before, however, the capital funding received to deliver the material aspects of the interventions will not cover such requirements, with revenue funding often unavailable given hollowed out local government with very limited existing staff capacity. This means that, as we will discuss more in the next section, the prospect of implementing schemes well is directly affected by austerity, where structurally disadvantaged authorities who have seen substantial reduction of staff capacities and capital funding to use for activities such engagement remaining unable to effectively approach and ensure the successful continuation of schemes.

Some participants also said that the way funding mechanisms worked limited their ability to build in co-design, because more finished plans were needed before funding would be approved:

"We've got an Active Travel Social Prescribing Team that are working in [the area] to help us codesign the scheme, even though the funding regimes don't allow codesign because you have to have a fully designed scheme to submit to the funding body, which is little of the frustration. We'll just submit another change request and wait another few months for someone to look at that" (non-London 5 – Officer, 2024).

5.2.3. Underestimating the true labour costs of implementing good quality schemes

As discussed, appropriate LTN implementation requires well-staffed teams with unique expertise to deal with a potentially complex project. This it is already at odds with the outsourcing aspects of the scheme design and engagement to consultants, which becomes even more problematic when considering the distinctive emotional labour cost and high level of commitment from officers associated with LTNs. Even London boroughs, as we will further discuss, which rely on relatively good resourcing in the national context, struggled to implement LTNs, and relied upon a small group of dedicated people working many more hours than they were being paid for. One officer referred to 'firefighting' and 'walking around like headless chickens', and the intense workload and endless meetings involved. They continued:

"Like literally there's probably been six or seven of us working on it all hours, late at night trying to get reports done and everything. It's just been all encompassing, like I said, when I first started two years ago that's all I've been working on [...] unfortunately we don't have

⁹ Which often end up costing much more than forecasted "because people will break your planters or remove your signage, or so you need to be ready for that" (non-London 2 – Officer, 2022).

the staff resource and we also don't have much money as well" (London 4 – Officer, 2024).

This is to say, already high labour costs are augmented by safety concerns related to the controversial nature of the scheme. For instance, some participants highlighted how in-person events needed additional security contractors to ensure the safety of staff and councillors:

"[We held] bookable [engagement] workshops that were held over two working days and one weekend. We had to pay for security for that as well. And even with that, on one day we had one large group of men came up and started shouting at one of the people at the desk. [It's] very easy to say you want to do more in person engagement, but the costs start to spiral and the resource requirements starts to spiral very quickly" (London 6 – Officer, 2024).

Even with the use of security contractors, participants referred to staff experiencing threats and abuse. For example, a non-London interviewee reported having a "*Community Protection Order put on somebody who was threatening me and there was all sorts of anonymous texts and all sorts of quite horrible stuff happening*". Another participant reflected on such issues highlighting the need to consider the schemes' overall effects on staff wellbeing:

"There have been some learnings in terms of staff wellbeing, in relation to that. Some staff have been under a lot of pressure and subjected to a lot of abuse, personal abuse in some cases. So, you have to be very mindful of the impact on your staff with these schemes" (London 3 – Officer, 2024).

The success of schemes depends on a number of factors that are difficult to achieve in a context of austerity, projectification and the hollowing out of local government (Pike, 2023), and even more when schemes are only costed in capital terms. Interviewees particularly emphasised the need for an experienced, committed, functioning, stable team of people within the council to implement schemes successfully. Such a team would be able to sustain learning and approach scheme implementation effectively, including, as others emphasised, the development of a vision for the district in which such schemes are embedded (Larrington-Spencer et al., 2021). Where such a team is in place, the marginal cost of LTNs is likely to be low "*in the grand scheme of transport schemes*" (London 5 – Officer, 2024), for example when compared to the treatment of major road junctions or public transport interventions. Otherwise, its costs, as we discussed above, tend to be higher than expected by national government and not met by budgets.

5.3. Uneven geographies of funding, political support, and implementation

One advantage interviewees recognised for London boroughs in implementing LTNs is at least some of their neighbourhoods having low car ownership, resulting in perceived likely lower opposition (some interviewees commented on a correlation between car ownership and negative attitudes towards schemes) and a perception of greater legitimacy (especially where non-car owning households are the majority across the entire district).¹⁰ As the literature has also highlighted, the generally higher availability of and use of non-car options in London likely assisted LTN scheme implementation (Aldred et al., 2021).

Planning and funding structures also obstructed London less than in other areas. As with transport decarbonisation policies more broadly (Verlinghieri et al., 2024b), more successful and resourceful LAs are more likely to innovate as they have the infrastructure to attract more

funds, or the ability to compensate for lack of capital funds thanks to additional internal resources, including, as discussed, being able to attract and retain highly skilled employees or consultants. London councils, pre-Covid-19, had substantially higher transport funding than non-London councils, with multi-year Local Implementation Plan (LIP) settlements from Transport for London (TfL), their own capital programmes, and access to more national and regional funding pots, some less open or unavailable to non-London authorities. This can also be seen as part of London districts' unique position in relation to austerity policies, as they received, for decades, the most transport investment of all UK regions (Shehadi, 2023). Many participants mentioned using their own capital funding and other sources to supplement that received via TfL:

"For the permanent works we've been fortunate in that we've had quite a large council capital allocation for the transport strategy area, so we've been able to use that as well as some TfL funding, which has now returned [to] about 60 % of the level that we used to get pre COVID" (London 3 – Officer, 2024).

Such funding included Mayor of London Green and Healthy Streets Fund, Levelling Up funding, and Section 106.¹¹ This provided the potential to move beyond short-term, project specific planning and take a more integrated, programme-based approach, with for instance engagement activities considered as part of an ongoing process, rather than tied only to specific projects. For example, an officer from our London 3 district reflected on the importance of being able to expand their engagement team to deal with challenging schemes:

"We're doing a lot more engagement since the pandemic, we've had to expand the resources in the team. We now have a dedicated engagement team who are always very busy working with stakeholders and the community and as far as possible co-designing the schemes with the community" (London 3 – Officer, 2022).

A similar case is reported for Oxford by Dudley et al. (2022), where the LA decided to fund one of the LTNs using its own budget to have more feasible timeframes. Existing available resources that can be allocated to new places and projects, as the need arises, enhanced an authority's ability to react to challenges and to pro-actively plan. A councillor, again from London 3, reflected on the importance of being able to rely long-term on experienced staff able to effectively bid and secure extra funds, something which was extremely difficult for other LAs who were unable to hire or retain staff:

"We're very good at bidding for money in [our district], if there's little pots of money going available in central government to bid for. Yeah, our officers are really good at bidding for that money" (London 3 – Cllr, 2022).

Something of a self-reinforcing virtuous circle is possible for those councils with already better financial and human resources in place to acquire more and increase their chances to deliver schemes which match their aspirations, in terms of size, timelines and resources. We note that London councils have not entirely avoided controversy or cancellation of schemes, which, as literature highlights, is linked to broader issues around the locked-in nature of automobility and other factors (Hickman and Afonin, 2022; Pritchett et al., 2024; Larrington-Spencer et al., 2025), nor are they immune to processes of projectification. Despite the availability of capital fund via TfL, as one London councillor pointed out, there still "*wasn't a sort of big bank of staff sitting there waiting to do this project*" (London 6 – Cllr, 2022) and implementing an LTN meant allocating people currently working on other things. The situation was worsened by the discontinuation of the LIP process, with subsequent

¹⁰ This is not inevitably the case – while implementing schemes in affluent areas can be portrayed as benefiting the wealthy, the opposite can also emerge (Gössling et al., 2024). For example, in Leeds, a scheme implemented in a lower-income area with lower car ownership was portrayed by opponents as inflicting a bad policy only on the poor (Campbell, 2023).

¹¹ Section 106 regulates agreements between local authorities and developers often used by local government to raise money for infrastructure to support new housing developments.

changes to staff, redundancies and reshuffling of resources, as commented by a London councillor:

“The pandemic changed everything because the sources of funding changed. The LIP went, it all became project based. Luckily, we had [officers] in place who were able to be reallocated to do the emergency LTN work. There was also a reorganization with other members of the team. [...] I was at a meeting yesterday where somebody said that other boroughs have been making their transport staff redundant, which I think is possibly because they didn't have the ongoing LIP support to keep their costs” (London 1 – Cllr, 2022).

However, the six London authorities we studied at least did successfully implement schemes and were able to learn from their experiences and accordingly prepare for future schemes. One said:

“My view is that we've done too much too quickly. We've done the right things, but we've probably delivered within two years, probably 10 years' worth of schemes” (London 5 – Officer, 2022).

Thus, enabled by unique funding planning and funding structures, and the growing experience of officers, these six London councils were unusual in experiencing (to varying degrees) virtuous circles around LTN implementation. This meant that they continuously acquired and reinvested funding acquisition and delivery experience, including more confidence with dealing with responses to the more controversial schemes.

These London councils' experience was in sharp contrast with what reported by officers and councillors from outside London where after *“the government imposed 10- or 12-years austerity on local governments [...] we're at a phase where our head count and the organisation has been absolutely slashed to a minimum level”* (non-London 6 – Cllr, 2022). Another councillor explained the impact of austerity on the (non)implementation of road space reallocation schemes in their region:

“Officers are really, really stretched and engineers really, really stretched and to put this burden on them as well, although it's something we've actually prioritized, it has actually caused major issues with other parts of the Council” (non-London 3 – Cllr, 2022).

Non-London councils, even where they had clear commitment to active travel, were more affected than London councils by the shift away from support for LTNs at national government level. This was because of their greater reliance on a smaller number of nationally determined funding sources, such as the Active Travel Fund. As discussed earlier, Rishi Sunak's Conservative government (2022–24) established a much less supportive environment to LTNs compared to the previous government, including the discontinuation of LTN funding as part of the ATF.

“If they're not going to give funding for LTNs, that means we can't really progress them, that's as simple as that really. So, if the funding is available, we certainly do what we think needs to be done. We're quite conscious of national politics is moving a little bit more away from sustainable and active travel, because it's not a political vote winner to be fair. But we're still, as a County Council, our policy is still towards sustainable and active travel” (non-London 3 – Officer, 2024).

Non-London councils had also struggled much more with implementation of other sustainable transport policies, speaking of schemes being delayed for years with repeated consultations leading to objections leading to inaction, a pattern that has continued in many of these areas with LTNs and other active travel schemes.

“We've been consulting for about four years on a series of controlled parking zones, and each time they've been a huge number of objections to the TRO [Traffic Regulation Order], so another round of statutory consultation has been launched and then nothing's moved forward” (non-London 6 – Cllr, 2022).

The above is an interesting example of repeated inaction, with consultation following consultation without any change happening. Non-London councils in particular may experience a vicious circle where an inability to fund and implement schemes means officers lack any positive experiences of implementing schemes, which in turn can make them less likely to reapproach schemes in the foreseeable future.

6. Conclusions: learning from LTNs

This paper examined the challenges encountered by local governments in England in implementing novel street space reallocation schemes, LTNs. The interviews revealed concerns regarding the established approach to funding active travel schemes, which, in the context of austerity urbanism (Peck, 2012), exacerbated negative aspects of projectification (Fred, 2020). These include prolonged reliance on consultants and a fragmented approach to planning, a lack of dedicated resources to respond to novel and ongoing concerns by the public and galvanise potential support by increasing the appeal of interventions, for example by increasing opportunities between sociability, play and leisure by adding more greening and redesign features. In the context of ambitious and contested schemes, this translated into an inability to adequately plan for mobility transitions, particularly in response to local concerns or opposition, which might in turn lead to an escalation of controversy.

Interviews highlighted how such challenges are partially linked to a conceptualisation of street space reallocation schemes which are perceived and branded as cheap, hiding the need for substantial investment in terms of staff time and knowledge, and the desirability of additional and more expensive ‘greening’ elements. With LTNs being costed only in terms of minimal capital costs, this may have helped reinforce the systemic underfunding which made long-term engagement and co-design difficult, and desired enhancements unaffordable.

The data also highlight the exacerbated effects of austerity and projectification within uneven geographies, where authorities experience differing levels of resource, capacity, and experience (Gray and Barford, 2018). In our case, a central distinction emerged between our London authorities and those in the rest of England, especially those lacking regional leadership and associated funding streams. We found that local authorities needed access to extra resources boosting the limited capital budgets allocated to successfully design, implement and sustain schemes. These local authorities could experience a virtuous circle where learning from past, even failed, schemes was retained and used for new ones. Conversely, less successful local authorities (which likely include some in London not part of this research, as well as most non-London authorities) saw initial failures translate in increasing challenges for future schemes and overall, an inability to implement successfully.

Where, as in these examples, a hollowed-out local government relies on project funds or its own capital programmes to bring in experienced staff or consultants or more advanced design features than those deemed necessary (such as greening), LTNs can become unfeasibly expensive for under-resourced English councils such as many outside London. This means that in a context of austerity, where local government has seen a progressive erosion of its core capacity and staff resources, the success of a scheme is hampered by the fragmented and projectified funding frameworks available. Those councils that have managed to successfully implement and sustain schemes have done so because they have had the availability and commitment to invest their own resources and capacity, which may have impacts on other areas of expenditure and/or staff wellbeing.

Further cross-national and international research comparing the ability of different sub-national states to implement similar types of policy may prove beneficial in improving future similar schemes and in addressing the capacity gap between local governments in England and elsewhere. As discussed in the introduction, studies such ours may help inform a growing international debate on the role of local government in

mediating controversies around street space reallocations. Although we have only studied the English context, the devolution of local transport and the existence of fragmented funding in a context of austerity are conditions shared by local government in many countries, making the study of wider relevance. The findings suggest that changes to funding frameworks which enable longer term and more comprehensive funding may be fundamental to implementing such controversial schemes outside the 'easiest' local contexts (here, largely comprised of some Inner London districts). Such funding frameworks may also enable local governments to develop learning cultures where both successful and unsuccessfully implemented schemes can encourage better practice in future.

CRediT authorship contribution statement

Ersilia Verlinghieri: Writing – review & editing, Writing – original draft, Supervision, Project administration, Methodology, Investigation, Funding acquisition, Formal analysis, Data curation, Conceptualization. **Rachel Aldred:** Writing – review & editing, Writing – original draft, Supervision, Project administration, Methodology, Investigation, Funding acquisition, Formal analysis, Conceptualization. **Harrie Larington-Spencer:** Writing – review & editing, Methodology, Investigation, Formal analysis, Data curation, Conceptualization. **Anna Goodman:** Writing – review & editing, Funding acquisition, Conceptualization. **Emma R. Lawlor:** Writing – review & editing, Methodology, Conceptualization. **Luz Navarro:** Writing – review & editing, Methodology, Investigation, Formal analysis, Data curation. **Haneen Khreis:** Writing – review & editing. **Anthony Laverty:** Writing – review & editing.

Declarations of interest

AG lives in a former LTN in South London. It is not one of the LTNs studied in this paper. From time to time, AG volunteers in a personal capacity with local healthy streets and safe routes to school groups.

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Appendix 1. Stakeholder interview schedule – phase 1

Overview: This interview will be conducted individually with stakeholders (i.e. local transport officers and councillors) over Teams and will be recorded. This interview will focus on stakeholders' experiences of implementing Low Traffic Neighbourhoods. Questions will be responsive to the interviewee's role (which may prompt variants of these questions) and the questions given here are flexible.

Aim of interview: Understand stakeholders' experiences of implementing Low Traffic Neighbourhoods.

Preamble: We are conducting interviews with stakeholders that have had a role in the implementation of an LTN as part of academic research funded by the National Institute for Health and Care Research. . We hope that this will help improve implementation of active travel schemes in future. Specifically, we would like to learn about your views and experiences of the process of implementing LTNs and similar types of active travel schemes. If you do not feel comfortable answering any of the questions, that is okay, and we can stop at any time. Your participation in this interview is entirely voluntary and data from the interviews will be anonymised in publications based on the study. The interview should last around 60 min. Do you have any questions before

we begin?

1. Role/experience general
 - Could you please introduce your role and reflect briefly on your experience as so far?
2. LTNs
 - Could you describe for us your experience so far specifically around [LTN scheme name] since you started in post?
 - o Possible probes/check covered: design, any changes to design/ exemptions etc, decision to implement, implementation, engagement & consultation.
 - o Did it go as you expected?
 - What is your sense so far of the impacts of these schemes in the [name of council]?
 - o Probe: do you think the impacts of these schemes will change in the coming years?
 - o Probe: current/future impacts on different groups? How might LTNs increase/reduce equity?
 - Can you tell me about the staff and other resources that were available to implement the [LTN scheme name]?
 - Can you tell us a bit more about how you engaged with residents, the public, and stakeholders over these schemes?
 - o Probe: who supported, who opposed? Why? How were concerns addressed, if they were?
 - How does the council decide whether to make a scheme permanent or not?
 - In terms of the various aspects of scheme implementations so far - what has worked well do you think?
 - Are you doing anything different with the [other schemes]? What about other future similar schemes?
3. LTNs processes more broadly
 - Do you think that [scheme name] is typical of the other LTNs in the area, or not?
 - o Probe: are issues similar elsewhere? Is this one particularly easy/difficult? Particularly problematic or unusual in any specific regards?
 - How has [local authority name] decided which areas to prioritize for the scheme?
 - o Probe: Do you feel that the current picture is equitable in terms of which areas have schemes within the county?
 - o Probe: How will the county council decide on whether there should be more schemes in future, and where?
4. Wrapping-up
 - What is it that makes an LTNs successful or not, in your view?
 - What would be the top two pieces of advice that you'd give to someone else in your position looking to implement an LTNs and active travel schemes in another area?
 - Is there anything else you would like to add?

Stakeholder interview schedule – phase 2

Aim of interview: Understand changes to the governance of LTNs since last year. Consolidate findings from first wave of interviews.

Preamble: We are conducting follow-up interviews with stakeholders that have had a role in the implementation of an LTN as part of academic research funded by the National Institute for Health and Care Research. We hope that this will help improve implementation of active travel schemes in future. Your participation in this interview is entirely voluntary and data from the interviews will be anonymised in publications based on the study. The interview should last around 45 min. Have you received the information sheet and had an opportunity to read it? [If not received – Can you please return the consent form to us?] Do you have any questions before we begin?

We last spoke [month, year]. [couple of sentences about what we

spoke about].

1. Role/experience
 - Has there been any change in your role since we last spoke? In terms of scope, responsibilities, what your priorities are, what you spend most of your time doing?
2. Specific LTNs
 - Since we last spoke have any new LTNs been implemented? [tailor question, look up whether new LTNs have been implemented]
 - What is your sense of the impacts of these new LTNs? (potentially ask about monitoring and evaluation exercises they did)
 - Has there been any changes in terms of the design and implementation of LTNs since we last spoke:
 - i. Exemptions
 - ii. Engagement processes
 - iii. Monitoring
 - iv. How decisions are made on whether to make permanent
 - If so to above, what is the reason for such changes?
3. What's worked well with the new LTNs?
4. LTN processes [your area] more broadly
 - Are any more LTNs planned for the in the future? Is your transport strategy going to continue to involve LTNs?
 - How is the national political context around LTNs [be specific] influencing local LTN processes in [your area]?
 - If there will be more LTNs, what areas are being prioritised?
5. Wrapping up
 - Last time you said [paraphrase] makes an LTN successful. Is there anything you would add to this?
 - If you could do things again, is there anything you would do differently?
 - Is there anything you would like to add?

Data availability

The data that has been used is confidential.

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