

February 2019

Briefing

Planning for less car use

Lisa Hopkinson and Lynn Sloman, Transport for Quality of Life

Summary

Transport is now the UK's largest source of greenhouse gases. Friends of the Earth asked the transport consultancy Transport for Quality of Life to produce a series of papers on what changes are needed in transportation and transport policy if the UK is to deliver its fair share of global emissions reduction. The first paper identified that the level of traffic reduction needed by 2030 could be anywhere between 20% and 60%, depending on factors including the speed of the switch to electric vehicles and how fast the electricity powering them is decarbonised.

This third paper identifies the critical role of good land-use planning in reducing the need for car travel. Instead of urban sprawl we need to be building a diverse mix of dense, well designed new developments in existing urban areas (mainly on brownfield land) centred around high-quality public transport. This requires major revisions to national planning policy. In addition, Local Plans should be required to meet zero-carbon targets and a new Wellbeing Act in England should set a statutory purpose for the planning system to achieve sustainable development (as is already the case in Wales). Plans and funding for new towns and car-dependent 'garden communities' should be cancelled. Friends of the Earth is happy to endorse these recommendations.

Friends of the Earth Limited • 1st Floor, The Printworks, 139 Clapham Road, SW9 0HP • Tel 020 7490 1555 • Website friendsoftheearth.uk

Registered charity 281681, company number 1012357, registered in England and Wales.
In both cases the registered office is: 1st Floor, The Printworks, 139 Clapham Road, SW9 0HP

Our paper is totally recycled.

1. Introduction

This is the third in a series of eight papers commissioned by Friends of the Earth on the transport policies that are needed to cut carbon emissions in line with the Paris Agreement. The first paper showed that we will need to reduce demand for car travel significantly, in addition to a rapid transition to electric vehicles, if we're to limit global warming to 1.5°C above pre-industrial levels¹. This paper looks at the important role of land-use planning to reduce the need to travel and the distance travelled by car, focusing on urban areas where the majority of people live and work. It includes evidence on how planning can help to cut car travel (Section 2), why this isn't currently happening in the UK (Section 3) and what needs to change to make this happen (Section 4).

2. How planning can cut car use and transport carbon

2.1 The evidence

The way we travel and the amount of time we spend travelling are strongly influenced by land-use planning and its impact on the location, mix and character of development. Evidence from many studies across the world shows that concentrating developments in urban areas, and planning compact, dense, diverse settlements with good access by walking, cycling and public transport are the key to reducing the distance travelled by car^{2,3,4}. A number of built environment factors, many of them interrelated, have been shown to contribute to this.

The most important of these is **location**, with developments in central locations likely to generate less car travel than even the best designed development in a remote location⁵. Transport carbon dioxide (CO₂) emissions from households in the suburbs have been found to be 2-3 times greater than those of households in central neighbourhoods⁶.

Transport CO₂ emissions also tend to decline with increasing residential **density**, which enables better public transport and makes more destinations accessible by foot or bike⁷. Increasing the housing density from less than 10 dwellings per hectare (dph) to more than 40 dph has been found to cut the likelihood of driving by a factor of three⁸. There's evidence that minimum housing densities should be around 100 dph to support a high-quality mass transit service such as a tram⁹. Such densities do not require high-rise buildings. They can be achieved with low- or medium-rise buildings (3-6 storeys) in attractively designed developments, with a mix of homes and large amounts of green space^{10,11}.

Both **diversity**, with a mix of uses such as housing, work opportunities, schools, shops and services in an area, and **design** of the street network, with short blocks and many street interconnections, reduce the distances people need to travel and encourage more walking^{12,13,14}. Living within a short **distance of public transport** also increases the mode share and likelihood of public transport trips¹⁵.

To complement these approaches, **demand management measures** such as reducing levels of car parking in new developments and removing parking from urban centres (provided there is good public transport) discourage car travel¹⁶. These and other traffic restrictions in urban areas can help prevent congestion associated with densification¹⁷.

In combination, the effect of all these factors on carbon emissions can be very significant^{18,19}. To significantly reduce the amount of car travel from new developments over the next decade, we therefore need a model of ‘smart growth’ which concentrates high-density, diverse development in existing built-up areas (mainly on brownfield land), centred around high-quality public transport, with good walking and cycling infrastructure²⁰. We should be building *up* rather than sprawling *out* into the surrounding countryside²¹. By building up, and reducing the space for cars, more homes *and* more open space can be delivered in a given area than with low-density development. By facilitating improvements to public transport, walking and cycling this will also help to cut car travel by existing urban residents.

2.2 The vision

What would this look like in practice? People in compact, dense towns and cities will live in well designed, high-quality homes, the majority in 3-6 storey buildings, giving neighbourhoods a human scale²². There will be a varied mix of homes, work opportunities, schools, shops and services that meet the needs of the local community at all stages of life²³, and large amounts of connected, green open space. There will be housing to suit all needs, including families and low-income workers. Everything will be easily accessible by foot, bike or public transport, and streets will be designed for people, not cars. Local shops and businesses will thrive, with more people within easy reach and more activities at street level. Good public transport services and cycle superhighways will connect neighbourhoods and other towns in the region, though anyone wanting to use a car will have access to electric car-share schemes²⁴.

This type of development is common across Europe, and not just in large cities. Freiburg, Germany (population 228,000) has managed to reduce its car mileage by 7% over 16 years despite population growth and a booming economy²⁵. The city’s innovative land-use and transport plans prohibit car-dependent developments and actively support car-free neighbourhoods. For example, Vauban, a car-free, compact, dense Freiburg neighbourhood, mixing homes with diverse uses, was developed along a light rail route strengthening local centres²⁶. It achieves densities of 95 dph with mostly 3-4 storey dwellings and large amounts of green space²⁷.

There are a small but growing number of car-free developments in the UK, including in London²⁸ and Edinburgh²⁹. Another example is the Climate Innovation District in Leeds, a high-density (>100dph) development of 530 low-rise (3-5 storeys), low-carbon homes in Leeds city centre³⁰. It’s designed as a car-free environment that encourages walking, cycling and play, focused around parks and shared gardens³¹.

Concentrating development in urban areas will not only cut car travel by new residents. By enabling better public transport and making areas more walkable and cyclable, it can help cut car travel for existing residents too. Many European cities³², including London^{33,34}, Hamburg³⁵, Oslo³⁶, Madrid³⁷ and Barcelona^{38,39}, have ambitious plans to cut car travel to make the streets cleaner, healthier and more liveable for people, even when allowing for growth.

2.3 The benefits

Aside from the reduction in carbon emissions, the benefits are enormous in their own right, including:

- **Healthier people:** with towns and cities designed for more walking and cycling, people will be more active and much healthier. Children will spend more time outdoors, with benefits for their cognitive development and mental health⁴⁰. Air quality will be much improved.
- **Space for more housing:** increasing housing density by building upwards is a more efficient use of land and provides for more housing on a given site. Removing the requirement for off-street parking could nearly double the number of dwellings on a given site⁴¹.
- **Space for people:** car use is highly inefficient in terms of space. Parking in the UK takes up a land area at least the size of Birmingham⁴². This costly prime land could be put to better use, such as children's play areas (as in Barcelona) or public open space (as in Leicester)^{43,44}.
- **Space for growing food, trees and wildlife:** building at higher densities in existing urban areas significantly reduces the amount of greenfield land required. It's estimated land for settlements could increase from 8% to 12% by 2050⁴⁵. This is equivalent to nearly 1 million hectares, which could be used for growing food, trees (to sequester carbon) or as wildlife habitat, if housing was concentrated in urban areas⁴⁶.
- **Safer streets:** with urban streets planned for people, with lower speeds and traffic calming⁴⁷, the danger from cars and the number of road casualties will be greatly reduced⁴⁸.
- **Thriving local economies:** higher densities increase the diversity of activities, making urban areas more attractive places to live and work⁴⁹. More work opportunities in urban centres also benefit high-street retail due to increased weekday footfall⁵⁰.

2.4 The potential carbon savings for the UK

Based on the latest UK household projections, an extra 2.3 million homes could be needed by 2030^{51,52}. There's enough brownfield land within existing urban areas to accommodate all of these homes, particularly if they're built at high densities⁵³. Many of these sites are publicly owned and located where there's housing demand⁵⁴.

If these homes were concentrated in existing urban areas, rather than extending outwards or developing new settlements, car mileage for new residents could be halved. We estimate this could result in a reduction of around 1-3 million tonnes CO₂ emissions a year by 2030 for these new residents alone⁵⁵. This represents about 2-6% of the car CO₂ reductions necessary to be in line with the Paris Agreement⁵⁶. There will be additional reductions for existing residents through improvements in public transport, walking and cycling facilities⁵⁷.

But if these 2.3 million homes were built at existing housing densities and settlement patterns, not only would it increase car mileage and car dependency, it would also require an area of greenfield land 1.3 times the size of Birmingham⁵⁸.

3. The UK today – planning for more cars

Despite a wealth of evidence and good practice from overseas, there are few examples in the UK of high-quality, dense, diverse and accessible developments similar to those seen on the continent. The question has been asked “why isn’t Rotherham Freiburg?”⁵⁹ The reasons are complex, but the difference in planning systems and local authority powers plays a large part⁶⁰.

3.1 The current situation

The Foundation for Integrated Transport visited over 20 new housing developments in England to find out what’s being built in terms of transport⁶¹. It found these developments were predominantly in the wrong place, away from jobs, car-based, with astonishing amounts of space devoted to road access and parking. Homes were not connected by public transport, walking and cycling, and there were few examples of mixed uses, with most developments becoming dormitory suburbs. Even urban extensions close to town centres were rarely well connected, ending up as isolated bubbles⁶². Developer funding was used for new road capacity, rather than pedestrian, cycling and bus links. Local authorities even used new housing as a way to finance bypasses and link roads, with government co-funding⁶³.

Driven largely by planning policy and land speculation, this dismal pattern appears to be widespread across the country. Between 2012 and 2017 a majority of new homes given planning permission in England were outside existing built-up areas and over half were not within easy walking or cycling distance (<2 km) of a railway, metro or underground station^{64,65}.

As well as being built in the wrong location, the average density of new housing in England is also very low (32 dph)⁶⁶. These low densities could imply leafy suburban housing, but in reality they’re too often unimaginatively designed, closely packed houses, surrounded by parking and devoid of greenery and open space⁶⁷. It’s not just housing that’s being built in the wrong places. Although there are no official figures, it was estimated in 2013 that 76% of approved retail floorspace was located out of town⁶⁸. The creation of subsidised edge- or out-of-town Enterprise Zones⁶⁹ and business / science parks has also led to a growing shift of jobs from the centres of small and medium cities in recent years⁷⁰, exacerbated by the conversion of town centre offices into housing⁷¹. This dispersal of work opportunities in out-of-town locations leads to higher transport carbon emissions⁷².

Given all of this it’s perhaps unsurprising that the UK has some of the areas of highest sprawl in Europe⁷³. The expansion of road networks around towns and cities only leads to a vicious cycle of more settlements on the periphery, more roads, and further sprawl.

3.2 The NPPF, housing targets and car travel in England

So how did we end up here? The National Planning Policy Framework (NPPF) sets out the planning policy for England, which local plans must conform with⁷⁴. The planning systems in other parts of the UK have elements in common with England but are increasingly divergent⁷⁵. Some policies in the NPPF appear to promote reduced car travel through location and design⁷⁶. However, these lack real force, and in practice the drive for more housing trumps all other planning considerations. The 2018 revisions to the NPPF have been labelled “a speculative developers’ charter”⁷⁷. Although the NPPF

has “a presumption in favour of sustainable development”, in practice sustainable development is poorly defined⁷⁸ and this presumption is heavily weighted towards economic growth, regardless of environmental and social impacts⁷⁹.

The English planning system has been heavily deregulated since 2010 to accommodate more housing growth⁸⁰. Yet the UK government approach to housing targets is highly flawed, setting arbitrary, inflated targets, which result in additional sites being released in inappropriate locations^{81,82,83}. The 2018 NPPF has introduced a further hurdle in the form of a “housing delivery test”⁸⁴. Local authorities who fail to deliver sufficient houses or to demonstrate they can meet future housing targets will be under pressure to approve schemes in unsuitable, unsustainable locations and that conflict with their Local Plan⁸⁵. Due to the difficulty in meeting housing targets it’s estimated that over half of the new homes targeted in Local Plans in England could be built in areas not allocated in those plans for housing⁸⁶. This generally means sites in greenfield, edge- or out-of-town locations, making many areas vulnerable to yet more sprawl.

These undeliverable housing targets lead to inflated traffic growth forecasts and pressure for more road capacity which, in turn, justifies the houses^{87,88}. Economic growth targets further inflate the housing numbers and perpetuate the vicious cycle⁸⁹. To cap it all, the planning system is not only failing to direct housing to the right locations, it’s also failing to deliver housing of the right quality and type to meet local need. A recent report by Shelter highlighted that only 6,463 new social homes were built in England in the previous year⁹⁰. Other research by Shelter finds that new-build homes are unaffordable to 83% of renting families across England⁹¹. Homes built by the major housing developers are more expensive than existing housing stock⁹². England’s approach to housebuilding, dominated by the speculative model of development, is building too many ‘luxury’ properties (to low densities and in the wrong places) and far too few homes that are affordable to people on ordinary incomes.

There are many other problems with the NPPF, which undermine efforts to reduce car travel:

- A weak provision to ensure that new developments make the fullest use of public transport, walking and cycling, was removed in the 2018 revisions⁹³.
- There’s evidence that developers are finding it easy to bypass ‘town centre first’ rules which direct retail, leisure and office developments towards town centres^{94,95}.
- Developments can only be refused on transport grounds “if there would be an unacceptable impact on highway safety, or the residual cumulative impacts on the road network would be severe”⁹⁶. Although the new safety test provides a lower threshold for rejection, the lack of definition of what constitutes “severe” previously made councils reluctant to reject an application on transport grounds⁹⁷.
- Maximum parking limits for residential development have been removed^{98,99}.
- Developers can avoid making financial contributions towards essential travel infrastructure and services (discussed in the next section).

More positively, the 2018 NPPF has reintroduced a reference to minimum housing densities¹⁰⁰ as well as giving greater weight to brownfield development¹⁰¹ to make more effective use of land. However, without clear targets it's likely that developments will continue to be built at sub-optimal densities and on more profitable greenfield sites in preference¹⁰².

There's widespread agreement that England's planning system is not fit for purpose and is failing to deliver on many levels, not least climate change^{103,104}. Currently the system is underfunded, with conflicting policy objectives and multiple overlapping and ill-defined structures and agencies¹⁰⁵. There are growing calls to go back to fundamentals and focus on delivering development that's truly sustainable and in the long-term public interest¹⁰⁶.

3.3 Land values and planning gains

The planning system creates substantial planning gains for land owners, in the form of increased land values when planning permission is granted or new infrastructure (such as a tram line or railway station) is built. For example, agricultural land granted planning permission for housing could increase in value from £21,000 to £1.95 million per hectare¹⁰⁷. This excessive 'hope' value distorts land prices and encourages land speculation. These windfall gains accrue to landowners despite the benefits and additional value largely being created by public policy decisions such as planning permission or new infrastructure.

A fraction of this planning gain is recouped in the form of charges (Section 106 agreements and a Community Infrastructure Levy (CIL)), which are negotiated with or levied on developers and used to fund public benefits, such as affordable housing, walking and cycling infrastructure or bus services¹⁰⁸. However, there are many problems with these charges: they're not transparent, and are frequently gamed to reduce or avoid payments^{109,110}. In Europe a large part of the physical and social infrastructure that supports new developments is funded from increased land values following granting of planning permission. By contrast, in the UK almost all of the supporting and connecting transport infrastructure is funded from the public purse. Yet local authorities often lack the capacity and resources to provide even the most basic walking and cycling infrastructure, leaving many developments isolated and car-dependent¹¹¹. Given the substantial profits from development that are created as a result of publicly funded planning and infrastructure, it's only fair that more of these profits are captured and reinvested to ensure those developments are viable and sustainable.

4. What changes are needed?

4.1. Location, location, location

To significantly reduce car travel from new developments we need to stop urban sprawl and instead concentrate development in existing built-up areas, complemented by restrictions on parking. In contrast with much of Europe where there are strict laws to prevent sprawl¹¹², the UK planning system is much more discretionary.

The NPPF needs major revisions to ensure we build dense, high-quality developments in existing urban areas including:

- **Brownfield-first policy:** There's sufficient brownfield land to meet all of England's housing needs to 2030¹¹³. An effective brownfield-first policy subject to a sequential test should prioritise development of brownfield sites¹¹⁴. Very high targets for development on brownfield land (90% or higher) would ensure it was concentrated in urban areas.
- **Locate development around public transport:** Stronger guidance is needed to ensure that developments are *only* built where there's high-quality public transport, or required to *provide* new high-quality public transport, walking and cycling infrastructure where there's none¹¹⁵. For example, London and South Yorkshire have developed systems to steer new development to areas with good public transport¹¹⁶. Any new public or active travel transport infrastructure should be provided at the outset and developers should be required to demonstrate a high proportion of trips will be by public transport, walking and cycling.
- **Minimum densities:** Minimum housing densities should be around 100 dph (higher in urban centres), with clear design guidance to ensure housing quality, character, mix and sense of place are protected and enhanced¹¹⁷. London's Healthy Street Guidance should also be provided as part of national policy¹¹⁸.
- **Strengthen the 'town centre first' approach:** Current loopholes allowing out-of-town retail, leisure and office developments should be removed.
- **Restrict parking:** Maximum parking limits should be reintroduced. Planning policy should encourage car-free developments and in areas of poor air quality these should be mandatory¹¹⁹.
- **Cancel plans for new settlements:** The government is pushing ahead with plans for new towns and 'garden communities'¹²⁰ and has also changed the rules to make it easier to create New Town Development Corporations to deliver housing in new settlements¹²¹. However, the development of these greenfield, out-of-town sites will significantly increase the amount of car travel¹²². Development needs to be concentrated within existing settlements.

4.2. Deliver sustainable development not just housing

The current excessive weight given to housing development and economic growth in the NPPF is undermining all other planning considerations, including the urgent need to reduce CO₂ emissions. Planning policy needs to deliver genuine sustainable development, not just housing and infrastructure. There needs to be a clearer definition of sustainable development in the NPPF¹²³. Ideally it should be made a statutory purpose, similar to the Welsh law¹²⁴. This would ensure that other important objectives, such as CO₂ reduction, food growing and habitat protection, are given the same weight as housing, to create more balanced, equitable development and steer house-building towards brownfield urban areas.

Addressing climate change must be a priority of the planning system¹²⁵ and there need to be specific carbon reduction targets in the Local Plan¹²⁶. Local Plans could be required to show compliance with local or regional carbon budgets¹²⁷. Some leading councils,

such as Cambridge City Council and South Cambridgeshire District Council, are aiming to make their Local Plans zero carbon by 2050¹²⁸.

The current failed system of developing housing targets should be replaced with a system based on robust evidence¹²⁹. Local authorities should be allowed to set housing targets based on local need (particularly for genuinely affordable social homes) and deliverability^{130,131}. There should also be a requirement for local authorities to work together to create a regional plan, as well as rebalancing the economy¹³², to ensure a more equitable balance of housing and work opportunities across regions¹³³.

4.3. Capture more of the land-value increase

To make Rotherham more like Freiburg requires more of the uplift in land value to be captured when planning permission is granted¹³⁴. In Vauban for example, the uplift captured from selling or leasing public sites to developers covered much of the £95 million cost of providing schools, streets and public transport¹³⁵. Infrastructure, such as the tram, was built by the local authority in advance of plots being developed, with funds (from a state redevelopment fund) and loans, which were repaid by selling the building lots¹³⁶. It's only fair that the community should recoup a larger share of the profits from land development, to reinvest in public infrastructure and services¹³⁷.

There are a number of possible mechanisms for land-value capture¹³⁸, some of which have already been tried in the UK including London¹³⁹ and Milton Keynes¹⁴⁰ and which are being considered for Scotland¹⁴¹. A wider mechanism with cross-party political support is a Land Value Tax (LVT), an annual charge on land, based on its 'optimum' rather than current use¹⁴². A system of LVT would enable recovery of a proportion of increased land value (arising from designation of land for housing, or from provision of new transport infrastructure such as a tram line), providing a revenue stream that could be used by local authorities to fund high-quality public transport services, or walking and cycling infrastructure. LVT would also encourage development of vacant brownfield land in urban areas and deter speculative land-banking of agricultural land, making it easier to build homes where they're most needed and least car-dependent¹⁴³. Some other countries tax land in this way, and there have been calls to trial a LVT in London¹⁴⁴.

There are also significant amounts of publicly-owned brownfield land in urban areas¹⁴⁵. Rather than selling this off to the highest bidder, councils should retain land in public ownership and develop it for the long-term public benefit¹⁴⁶. Using it to build genuinely affordable housing can ensure housing needs are met, help to avoid gentrification of urban areas and rebalance the market in favour of smaller local builders and community-led schemes¹⁴⁷. By acting as master developers, councils can better integrate housing and transport and ensure the necessary infrastructure is in place at the outset. This requires greater borrowing powers to help finance the up-front costs (or other mechanisms discussed in the second and eighth papers in this series¹⁴⁸).

5. Conclusions

The following are 'must do' actions to enable the land-use planning system in England to significantly reduce car travel and carbon emissions from new developments:

- Revise the National Planning Policy Framework to require all new development to be compact, dense, high quality and within existing urban areas. As part of this:

- Adopt a brownfield first policy with a target of 90% (or higher) of new development on brownfield land.
- Require all development to be focussed around new or existing high-quality public transport.
- Require developers to demonstrate a high proportion of trips will be made by public transport, walking and cycling.
- Set minimum housing densities of 100 dph (or higher, eg 200 dph in city centres) accompanied by clear design guidance.
- Set an effective ‘town centre first’ approach for retail, office and leisure development, and remove loopholes.
- Reintroduce maximum parking limits and facilitate car-free developments, which should be mandatory in areas of poor air quality.
- Cancel plans and funding for new towns and low-density car-dependent ‘garden communities’.
- Develop a new Wellbeing Act with a clear, statutory purpose for planning to achieve sustainable development.
- Develop local or regional carbon budgets that form part of the Local Plan or require Local Plans to demonstrate they can meet zero-carbon targets.
- Replace the current system for developing housing targets with a system based on robust evidence, focussed on quality, type and need.
- Require local authorities to work together to create regional plans to ensure a more equitable balance of housing and work opportunities.
- Trial a Land Value Tax in London and if successful, devolve powers to other local authorities or the rest of England.
- Encourage local authorities to keep the freehold of sites in public or community ownership and enhance local authority borrowing powers, to enable them to develop urban public land with excellent transport infrastructure and high levels of affordable housing.

Acknowledgements

The authors (Lisa Hopkinson & Lynn Sloman) would like to thank the following for help with information for this paper (in alphabetical order):

Gavin Bland (SYPT), Flavio Coppola (C40), Steve Dawe (No Expressway Alliance), Maita Fernandez-Armesto (Ajuntament de Barcelona), Lucy Mahoney (C40), Matthew Reynolds (Rotherham Metropolitan Borough Council), Peter Schick (Stadt Freiburg Im Breisgau), Chris Thompson (Citu).

We would also like to thank Declan Allison, Jenny Bates, John Booth, Mike Childs, Chris Crean, Richard Dyer, Haf Elgar, Magnus Gallie, Kate Gordon and Gerald Kells of Friends of the Earth for their helpful comments and advice.

Thanks also to Mike Kennedy, Alastair Meikle and Isobel Mulligan for helpful advice.

References and end notes

- ¹ We estimate car mileage will need to be reduced in the order of 20-60% by 2030 compared with 2016 levels, depending on a range of factors such as the rate of uptake of electric cars, improvements in conventional car emissions, and rate of decarbonisation of the power grid. However, even if all new cars are electric by 2030, there will need to be significant reductions in mileage of all cars before then. Hopkinson L. and Sloman L. (2018) More than Electric Cars: Why we need to reduce traffic to reach carbon targets. Briefing for Friends of the Earth. January 2019.
- ² Newman P. and Kenworthy J. (1989) Cities and Automobile Dependence: An International Sourcebook. Gower, Aldershot, UK. This much cited study compared 32 cities and showed that population and size had less effect on car dependency than urban density. Although the findings have been challenged, there have been subsequent studies which show that these findings are still valid.
- ³ Ewing R. and Cervero R. (2010) Travel and the Built Environment. Journal of the American Planning Association, 76 (3), pp. 265-294. DOI: 10.1080/01944361003766766
- ⁴ RTPI (2018) [Settlement patterns, Urban Form & Sustainability](#). May 2018.
- ⁵ Reducing the distance to jobs and other attractions has been found to be strongly associated with vehicle mileage. The results of a meta-analysis of hundreds of studies found that destination accessibility, measured either in terms of distance to central areas, or the number of jobs and other attractions reachable in a given time, was the variable with the strongest association with vehicle mileage. Ewing R. and Cervero R. (2010) Travel and the Built Environment, Journal of the American Planning Association, 76 (3), pp. 265-294, DOI: 10.1080/01944361003766766
- ⁶ Zahabi S. A. H. et al. (2017) Impacts of built environment and emerging green technologies on daily transportation greenhouse gas emissions in Quebec cities: a disaggregate modelling approach. Transportation, 44, pp.159–180.
- ⁷ This holds true even accounting for socio-economic effects i.e. the fact that people who don't have cars tend to locate in dense areas. Brownstone D. and Cobb T. F. (2009) The impact of residential density on vehicle usage and energy consumption. Journal of Urban Economics, 65, pp. 91–98.
- ⁸ Increasing the housing density by the same level also tripled the odds of walking. Boulangea C. et al. (2017) Examining associations between urban design attributes and transport mode choice for walking, cycling, public transport and private motor vehicle trips. Journal of Transport and Health, 6, pp. 155-166. <https://doi.org/10.1016/j.jth.2017.07.007>
- ⁹ Taylor I. and Sloman L. (2008) [Masterplanning Checklist for Sustainable Transport in New Developments](#). September 2008.
- ¹⁰ There are many examples of developments that show how it's possible to build good-quality new homes at high densities while maintaining urban open space and reducing traffic congestion. While the public often negatively associate high density with 1960s and 1970s tower blocks, many desirable Georgian and Victorian three-storey streets and squares achieve densities of 80-100 dph. CPRE (2006) [Compact Sustainable Communities](#). 2nd edition, November 2006.
- ¹¹ Significantly higher densities can still be achieved while retaining suburban character. Maccormack R. (2011) [Planning: suburban housing density](#). Architects' Journal, 6 October 2011. Accessed 21.12.2018.
- ¹² Ewing and Cervero (2010) *op. cit.*
- ¹³ Wang Y. et al. (2016) A review on the effects of physical built environment attributes on enhancing walking and cycling activity levels within residential neighborhoods. Cities, 50, pp 1-5.
- ¹⁴ Knuiman M. W. (2014) [A Longitudinal Analysis of the Influence of the Neighborhood Built Environment on Walking for Transportation: The RESIDE Study](#). American Journal of Epidemiology, 180 (5), pp.453–461.
- ¹⁵ Ewing and Cervero (2010) *op. cit.*
- ¹⁶ Copenhagen's policy to remove 3% of parking every year and not build any new roads was thought to be a major contributor to the fact that there was zero traffic-growth in the old city for 15 years. Taylor I. and Sloman L. (2008) *op. cit.*
- ¹⁷ Without traffic restraints densification leads to more traffic congestion in central areas. Melia S., Parkhurst G. and Barton H. (2011) The paradox of intensification. Transport Policy, 18 (1). pp. 46-52. ISSN 0967-070X
- ¹⁸ Ewing and Cervero (2010) *op. cit.*
- ¹⁹ Zahabi S. A. H. et al. (2017) *op. cit.*
- ²⁰ The smart growth principles include: plan compact communities; strengthen and direct development towards existing communities; provide sustainable transport choices; protect the unbuilt environment; mix land uses. [Smart Growth UK \(2007\) Manifesto](#).
- ²¹ Victoria Transport Policy Institute and LSE Cities (2015) [Analysis of Public Policies That Unintentionally Encourage and Subsidize Urban Sprawl](#). Report for New Climate Economy. Lead Author: Todd Litman.

²² An article on Scottish tenements describes the neighbourliness of the dense districts with strong social networks, safety and a feeling of vitality offered by their design. Hoolachan A. (2014) [Scottish tenements, English Terraces](#). Article in Kings Review, 21 September 2014. Accessed 04.12.2018.

²³ The principle of ‘Lifetime Neighbourhoods’, places which meet the needs of local communities at all stages of life, was introduced in the London Plan in 2011. Just Space (2016) [Towards a Community-Led Plan for London. Policy directions and proposals](#).

²⁴ Public transport and cycle superhighways are addressed by separate papers (2 and 4) in this series.

²⁵ Between 1990 and 2006 Freiburg reduced car mileage by 7% on all roads and by 13% on residential roads while experiencing population and economic growth. Over a similar period, per capita transport CO₂ emissions fell by 13%. In 2006, transport carbon emissions were nearly 90% that of the German average. Buehler R. and Pucher J. (2011) Sustainable Transport in Freiburg: Lessons from Germany’s Environmental Capital. *International Journal of Sustainable Transportation*, 5, pp.43–70. Freiburg has also reduced its residents’ share of trips by car within the city from 39% in 1982 to 21% in 2016. Schick P., Stadt Freiburg, Personal communication by email 18.01.2019.

²⁶ The plans were developed with extensive citizen participation. There are laws restricting new development to areas immediately adjacent to already built-up areas. *Ibid*.

²⁷ Foletta N. and Field S. (2011) [Europe’s Vibrant New Low Car\(bon\) Communities](#). Report for Institution of Transport and Development Policy (ITDP). Accessed 27.11.2018.

²⁸ Many London boroughs have ‘car-free homes’ planning policies and the draft London Plan aims to make new housing and office developments car-free if they’re near large public transport links. Tower Hamlets introduced this policy in the 1990s to reduce congestion, manage parking and improve air quality. [Tower Hamlets Car Free Development](#) webpage. Accessed 19.11.2018.

²⁹ Slateford Green in Edinburgh consists of 120 Housing Association flats in West Edinburgh, with pedestrian/cycle routes, where car parking spaces are allocated for soft landscaping. Developed in 2000, only 25% of people on average own a car. <https://ogilviej.wordpress.com/a-car-free-environment/>, and <http://hackland-dore.com/projects/slateford-green-edinburgh>, accessed 19.11.2018.

³⁰ The [Climate Innovation district](#) is currently being developed by CITU. Accessed 30.11.2018.

³¹ It creates a car-free environment with underground, centralised car parking, with spaces allocated for a car club. Although required to provide a minimum number of parking spaces CITU do not expect them all to be used and are already looking for ways to repurpose some of them. Thompson C. (2018) Chris Thompson, CITU, Personal Communication by email, 30.11.2018.

³² The Mayors of twelve cities, including London, have signed a declaration to ensure that a major area of their city is zero emission by 2030. The Mayors have committed to increase rates of walking, cycling, public and shared transport, to accelerate the shift to zero emission vehicles and reduce vehicle miles in cities. C40 (2017) Mayors of 12 Pioneering Cities Commit to Create Green and Healthy Streets. Press release, 23 October 2017. www.c40.org/press_releases/mayors-of-12-pioneering-cities-commit-to-create-green-and-healthy-streets. Accessed 29.11.2018

³³ The Draft London Plan promotes car-free developments in areas well-connected by public transport and has no minimum car parking standards. Maximum residential parking standards take account of public transport access and housing density, and range from ‘car-free’ in most of central Inner London and major metropolitan and town centres, to 1.5 spaces per dwelling in parts of outer London without good public transport access. Mayor of London (2018) [Draft New London Plan showing Minor Suggested Changes](#). Accessed 29.11.2018

³⁴ London has developed a Healthy Streets Approach, a system of policies and strategies to reduce car use and promote walking, cycling and public transport. Using ten indicators of what makes streets attractive places, it’s applied at street, network and strategic levels to plan and design high-quality street environments. Mayor of London (2017) [Healthy Streets for London](#). Accessed 21.11.18

³⁵ Hamburg plans to reduce the number of cars by only allowing pedestrians and cyclists to enter a ‘green network’ of connected spaces, covering 40% of the city by 2035. www.hamburg.de/gruenes-netz/, accessed 14.11.2018

³⁶ Oslo plans to ban cars from its city centre by 2019 as well as double the bike’s mode share to at least 16% of all trips by 2025. Bliss, L. (2018) [The War on Cars, Norwegian Edition](#). Article for CityLab, 3 May 2018. Accessed 14.11.2018

³⁷ Madrid plans to ban cars from 500 acres of its centre by 2020, with redesign of 24 of the city’s busiest streets for walking, as part of a wider plan to reduce daily car usage. Garfield L. (2017) [12 major cities that are starting to go car-free](#). Article for Business Insider, 2 February 2017. Accessed 14.11.2018

³⁸ For example, Barcelona has plans for a number of ‘superblocks’, 40-acre sections of the street grid that are being transformed into pedestrian-first environments. Two have been implemented so far, recovering thousands of square metres of local space.. The plan aims to cut car trips by 21% by 2024 (assuming all the superblocks are implemented). <http://ajuntament.barcelona.cat/superilles/ca/noticies> and Fernandez-Armesto M. (2018) Personal Communication by email, 11.12.2018.

-
- ³⁹ A study of one superblock area found driving fell by 26% while walking increased by 10% and cycling by 30%. O Sullivan, F. (2017) [Barcelona's car-taming superblocks meet resistance](#). Article for Citylab, 20 January 2017. Accessed 14.11.2018.
- ⁴⁰ Bhosale, J. et al. (2015) A pilot study exploring the measurement of intergenerational differences in independent mobility. *Journal of Transport and Health*, 2, pp. 522-528.
- ⁴¹ Parking and car access is typically responsible for up to 40% of residential development. CPRE (2006) *op. cit.*
- ⁴² The British Parking Association (BPA) estimates there are 8-11.3 million car parking spaces in UK in total, equivalent to an area of 92-133 km², which can be doubled to include turning space/exits giving a total of 266 km². This compares to the area of Birmingham of 267 km². Note this includes regulated parking (car parks run by Local Authorities) but is likely to underestimate non-regulated parking (car parks run by retail, private sector, NHS Trust or universities). This non-regulated parking is the majority of parking in the UK. British Parking Association and SkyBlue Research 2013, [The size and shape of the UK parking profession](#).
- ⁴³ Leicester City Council. [Jubilee Square](#) webpage. Accessed 04.12.2018.
- ⁴⁴ University of Leicester. [Landscaped Space at the Heart of Campus](#) webpage. Accessed 04.12.2018.
- ⁴⁵ Committee on Climate Change (2018) [Land use: Reducing emissions and preparing for climate change](#). November 2018.
- ⁴⁶ In 2016-17, 16% of new housing was built on agricultural land. Ministry of Housing, Communities and Local Government (2018a) [Land Use Change Statistics in England: 2016-17](#). Statistical Release, 31 May 2018. Although it's often argued in planning enquiries that farmland is of low ecological value and not accessible to the public, and therefore acceptable for development, in a climate-constrained future, protection of farmland will become critically important for food security as well as carbon capture and storage.
- ⁴⁷ One of the 10 Healthy Streets Indicators developed by Transport for London is 'people feel safe' which means lower speed limits (20 mph), narrowing traffic lanes, windows overlooking streets and good lighting. Transport for London (2017). [Guide to the Healthy Streets Indicators](#).
- ⁴⁸ In 2017, 470 pedestrians were killed on the roads in Great Britain and a further 23,335 seriously or slightly injured, and 101 cyclists were killed with a further 18,220 seriously or slightly injured. A quarter of the pedestrians were children. Department for Transport (2018) [Reported Road Casualties in Great Britain: 2017 Annual Report](#). September 2018. There were a further 703 pedestrian casualties (176 killed or seriously injured) and 302 cyclist casualties (51 killed or seriously injured) in Northern Ireland. Police Service of Northern Ireland (2018) [Police Recorded Injury Road Traffic Collisions and Casualties Northern Ireland 2017/18](#). May 2018.
- ⁴⁹ Jacobs-Crisioni et al. (2014) Evaluating the impact of land-use density and mix on spatiotemporal urban activity patterns: An exploratory study using mobile phone data. *Environment Planning A*, 46 (11) 2769-2785.
- ⁵⁰ It's argued that sluggish high street retail is a symptom rather than a cause of an underperforming city centre. Retail is just one part of the economy and city centres need to function as effective business locations. This means increasing the skills of local residents and an effective public transport system to widen the pool of skilled labour available to city centre businesses. Swinney P. and Sivaev D. (2013) [Beyond the High Street: Why our city centres really matter](#). Report for Centre for Cities.
- ⁵¹ In the 2016-based projections, UK household numbers are expected to grow from 27.8 million in 2018 to 30.1 million by 2030. Office for National Statistics (2018) [Table 401. Household projections for UK](#). Accessed 04.12.2018.
- ⁵² The latest 2016-based household projections (equivalent to around 159,000 homes/year for England over 25 years) are lower than the previous 2014-based projections (equivalent to around 210,000 homes/year) which in turn are lower than the government targets (300,000 homes/year). However, the government continues to insist on the use of the higher 2014 figures for determining how much housing a Local Authority needs. Barton C. and Garton-Grimwood G. (2018) [Housing targets: Can we predict future need?](#) House of Commons Library Analysis, 2 October 2018.
- ⁵³ CPRE has estimated that there was at least 28,349 hectares of brownfield land on the Brownfield Land Register at the end of 2017. This did not include many small urban sites which are unrecorded or the 5% of local authorities whose registers were incomplete. It estimates that this would provide 1.1 million homes at an average density of 33dph or, 1.2 million homes at a density of 40dph (which for this report equates to roughly 3 million homes at a density of 100 dph). CPRE (2018a) [State of Brownfield](#). February 2018.
- ⁵⁴ There's a strong relationship between brownfield capacity and housing demand – South Cambridgeshire has an estimated 12 years' worth of housing supply on suitable and deliverable brownfield sites. *Ibid.*
- ⁵⁵ These estimates are based on the differences between the annual car mileage of an average resident of a large city versus a smaller settlement or rural/isolated settlement from three separate sources, emissions of an average conventional car and electric car in 2030, and assuming that electric cars form 50% of the new car market in 2030.

⁵⁶ Based on UK car CO₂ emissions of around 70 million tonnes in 2016 and an estimated target of around 17 million tonnes in 2030 for a 66% chance of keeping temperatures well below 2°C. See Paper 1 of this series for more details. Hopkinson and Sloman (2019) *op. cit.*

⁵⁷ To avoid double counting, the estimates of reductions from improved public transport, walking and cycling are estimated in other papers in this series.

⁵⁸ If 2.3 million homes were built at current housing densities of 32 dph, with 50% outside urban areas, this would require around 35,500 ha (355 km²) of greenfield land. This compares to the area of Birmingham of 267 km².

⁵⁹ Town and Country Planning Association (TCPA) (2018) [Planning 2020 – Final Report of the Raynsford Review of Planning in England](#). November 2018.

⁶⁰ There's also much more regulatory and policy stability, institutional clarity, more effective land taxation, and availability of local finance to fund infrastructure. *Ibid.*

⁶¹ These ranged from small developments to large greenfield developments and urban extensions. Foundation for Integrated Transport (2018) [Transport for New Homes](#). July 2018.

⁶² Development masterplans go up to the boundary and local authorities rarely have the funding or capacity to buy the land or fund the new walking and cycling links necessary, while existing large roads sever the connection. *Ibid.*

⁶³ *Ibid.*

⁶⁴ A study for the Royal Town Planning Institute (RTPI) found that more than half (54%) of planning permissions granted between 2012-2015 in twelve English city regions were located outside an existing built-up area. The twelve city regions comprised Cambridge, Brighton, Oxford, Bournemouth, Bristol, Plymouth, Coventry, Nottingham, Newcastle, Blackburn, Warrington, and Leeds. Bilfinger GVA (2016) [The Location of Development](#). Report for RTPI.

⁶⁵ An updated study for RTPI for the period 2015-2017 still found a third (32%) of all permissions for new homes were located outside an existing built-up area. Hatch (2018) [The Location of Development. Research for the Royal Town Planning Institute](#). Accessed 16.10.18

⁶⁶ Ministry of Housing, Communities and Local Government (2018a) *op. cit.* Unable to find analogous figures for Scotland, Wales and Northern Ireland.

⁶⁷ Foundation for Integrated Transport (2018) *op. cit.*

⁶⁸ A report by the Association of Convenience Stores (ACS) shows that in the year after the publication of the NPPF in 2012, 76% of all new gross retail floorspace approved in England following planning permission is located out of town, compounding the pressure on in-town retail. Although the government has challenged these figures, it has been unable to provide any official figures. Baldcock J. (2013) [Retail Planning Decisions under the NPPF](#). Report commissioned by the ACS. November 2013.

⁶⁹ All 38 Enterprise Zones (100% capital allowances on construction/extension of commercial/industrial buildings) created between 1981-1996 were in rural or urban fringe locations. All but 3 of the 25 areas given Enterprise Zone status by the Coalition Government were also in out-of-town locations. Swinney P. and Sivaev D. (2013) [Beyond the High Street: Why our city centres really matter](#). Report for Centre for Cities.

⁷⁰ Between 1998 and 2008, medium (600,000-2.5 million population) and small (<600,00) cities saw a 0.6% and 4.1% shift respectively in private sector jobs away from central areas. The reverse was true in London and large cities, which saw an increase in the number of jobs in central areas over the same period. Policies such as Enterprise Zones and business and science parks, which subsidised out-of-town employment sites and created an oversupply of office space, are thought to be partly responsible for this decentralisation. *Ibid.*

⁷¹ An increasing number of developments are given 'permitted development rights' which means they have automatic permission, bypassing requirements in the Local Plan and not subject to Section 106 agreements. These include conversion of B1 office stock into housing and conversion of agricultural buildings to residential use. Although there are no official figures, anecdotally this is thought to be leading to a shortage of town-centre office space in some areas.

⁷² For example, CO₂ emissions from transport were 1.3 tonnes per capita in Brighton, which has a strong concentration of private sector jobs in the city centre, compared with 2.2 tonnes per capita in Wakefield, which has a more dispersed pattern of economic activity including sites close to the M1 and M62. Swinney P. and Sivaev D. (2013) *op. cit.*

⁷³ European Environment Agency (EEA) and Swiss Federal Office for the Environment (FOEN) (2016) [Urban sprawl in Europe](#). Joint EEA-FOEN report. November 2016.

⁷⁴ The NPPF sets out key principles for new development with which local plans must conform. First published in 2012, it was revised for the first time in 2018. Planning Practice Guidance provides additional guidance but unlike NPPF can be changed without consultation. Ministry of Housing, Communities and Local Government (2018b) [National Planning Policy Framework](#). July 2018.

⁷⁵ It's outside the scope of this paper to explore all the differences between England and the devolved nations, but the planning systems in Scotland, Wales and Northern Ireland are also plan-led. Wales has Planning Policy Wales and Technical Advice Notes, and a National Development Framework (a spatial plan)

which are used to prepare Local Development Plans. <https://gov.wales/topics/planning/?lang=en> Scotland has a Scottish Planning Policy and National Planning Framework (a spatial strategy) which are used to guide preparation of local development plans. www.gov.scot/publications/scottish-planning-policy/ Northern Ireland has a Regional Development Strategy (a spatial strategy) which is used to guide preparation of local development plans. www.planningni.gov.uk/ There are strong differences between them. For example, in Northern Ireland there's a focus on economic growth, while in Wales, there's a statutory duty and presumption in favour of sustainable development defined as "the process of improving the economic, social, environmental and cultural well-being of Wales by taking action, in accordance with the sustainable development principle, aimed at achieving the well-being goals."

⁷⁶ For example: "Significant development should be focused on locations which are or can be made sustainable, through limiting the need to travel and offering a genuine choice of transport modes." [para 103, Section 9 on Sustainable Travel]; "New development should be planned for in ways that...can help to reduce greenhouse gas emissions, such as through its location, orientation and design." [paragraph 150, Section 14 on Climate Change]; Ministry of Housing, Communities and Local Government (2018b) [National Planning Policy Framework](#).

⁷⁷ CPRE (2018b) [New planning rulebook heavily criticised by CPRE](#). News item, 24 July 2018. Accessed 21.11.2018

⁷⁸ The NPPF has always had "a presumption in favour of sustainable development" (paragraph 11 of the 2018 version). In the 2012 version, sustainable development was seen as a "golden thread running through both plan-making and decision-taking" and it referred to the UN definition of sustainable development of "meeting the needs of the present without compromising the ability of future generations to meet their own needs" and five 'guiding principles' of sustainable development: "living within the planet's environmental limits; ensuring a strong, healthy and just society; achieving a sustainable economy; promoting good governance; and using sound science responsibly." The UN definition and reference to the "golden thread" were removed in the 2018 revision, which now states that policies should provide for housing and other development unless they affect areas of particular importance (eg Sites of Special Scientific Interest or National Parks) or where "any adverse impacts of doing so would significantly and demonstrably outweigh the benefits, when assessed against the policies in this Framework taken as a whole." Ministry of Housing, Communities and Local Government (2018b) *op. cit.*

⁷⁹ House of Commons Communities and Local Government Committee (2014). [Review of the operation of the National Planning Policy Framework \(NPPF\)](#). December 2014.

⁸⁰ TCPA (2018) *op. cit.*

⁸¹ CPRE (2018c) [Set up to fail: why housing targets based on flawed numbers threaten our countryside](#). November 2015.

⁸² While the housing targets developed by Local Authorities in England are based on household projections, the UK government has stated that the lower 2016-based household projections released in 2018 will not affect its target of 300,000 homes/year for England and that it is seeking to review the formula that determines local targets so it supports this target. Ministry of Housing, Communities and Local Government (2018) [Technical consultation on updates to national planning policy and guidance](#).

⁸³ While national policy allows for adjustment of household projections, in some cases these are replaced wholesale after provision is made for past delivery shortfalls, optimistic views about future economic growth, affordability and other factors. Thus the 2014 Oxfordshire Strategic Housing Market Assessment increased the housing target by 2.7 times the government projection, which was severely criticised by planning experts. Wenban Smith A. (2014) [Unsound & unsustainable - why the SHMA will increase greenfield use but not meet housing needs. A critique of GL Hearn's April 2014 Oxfordshire Strategic Housing Market Assessment \(SHMA\)](#). Report for CPRE Oxon.

⁸⁴ The Housing Delivery Test (HDT) measures the net homes delivered against the number of homes required, as set out in the relevant strategic plans and policies for the area, over a rolling three-year period. There's a presumption in favour of sustainable development where delivery is below 75% of the housing required from 2020.

⁸⁵ Under Paragraph 14 of the 2012 NPPF or paragraph 11 of the 2018 NPPF, where the development plan is absent, silent or relevant policies are out of date, permission is granted unless: "any adverse impacts of doing so would significantly and demonstrably outweigh the benefits". Out-of-date policies include where the local planning authority cannot demonstrate a 5-year supply of deliverable housing sites or where they don't meet the Housing Delivery Test. When schemes go to appeal, decided by a planning inspector, the presumption in favour of sustainable development means the planning 'balance' may tilt in favour of approval, because the benefit of delivering new homes is seen to outweigh any drawbacks, which might include a less sustainable location, or lack of infrastructure.

⁸⁶ Around 165,000 homes from 42% of Councils could bypass local plans due to the Housing Delivery Test. Local Government Association (2018) [Local Government Association response to the MHCLG consultation on the draft revised National Planning Policy Framework](#). 10 May 2018. Accessed 07.01.2019.

⁸⁷ While a Transport Assessment is carried out by local authorities to assess the transport implications of their local plan, too often this generates unrealistic estimates of traffic growth, resulting in over-investment in roads. For example, the Transport Assessment for the Leeds City Council draft development plan forecasts levels of traffic growth of 20% per decade, reversing the 10% reduction in traffic over the previous decade, which occurred during a growth period. Marsden G. et al. (2018) All Change? The future of travel demand and the implications for policy and planning. May 2018. [The First Report of the Commission on Travel Demand](#).

⁸⁸ The Cambridge-Oxford growth arc proposed by the National Infrastructure Commission includes plans for one million homes by 2050, mainly in new settlements on greenfield land, supported by a new motorway-standard road (the Oxford-Cambridge Expressway). The housing targets are a massive increase over and above the levels of housing growth already proposed in Local Plans. CPRE (2018d) [Cambridge-Milton Keynes-Oxford: A corridor of uncertainty for the countryside](#). Briefing, October 2018.

⁸⁹ For example, plans for housing and jobs in the Cambridge-Oxford growth arc are justified on economic grounds. National Infrastructure Commission (undated). [Partnering for Prosperity: A new deal for the Cambridge-Milton Keynes-Oxford Arc](#).

⁹⁰ Shelter (2019) [A vision for social housing: the final report of Shelter's commission on the future of social housing](#).

⁹¹ Jefferys P. and Lloyd T. (2017) [New civic housebuilding: rediscovering our tradition of building beautiful and affordable homes](#). Report for Shelter.

⁹² For example, the average price of new-build homes in the south east is £353,000, compared to £300,000 for existing homes. Ibid.

⁹³ Paragraph 17 of the 2012 NPPF stated “actively manage patterns of growth to make the fullest possible use of public transport, walking and cycling” This was removed in the 2018 revisions.

⁹⁴ The 2012 and 2018 NPPF adopts a ‘town centre first’ approach for retail, leisure and office development. Proposals for these developments that are not in an existing town centre must pass two key tests – the sequential test and the impact test. The sequential test identifies development that cannot be located in town centres, and which would then be subject to the impact test. The impact test determines whether there would be likely significant adverse impacts of locating main town centre development outside existing town centres. The 2012 NPPF removed a rule on disaggregation, which required local authorities to ask developers for evidence of flexibility as to whether a proposed retail development can be broken down into specific parts on separate sites. Without this developers could easily argue a development is too large for a town centre site. House of Commons Communities and Local Government Committee (2014) *op. cit.*

⁹⁵ In 2011 Friends of the Earth prophetically warned “The presumption in favour of development set out earlier in the NPPF will over-ride the policy intended to support town centre first and could lead to a new rush for unsustainable, car-dependent, out-of-town retail sites.” FoE (2011) [Written evidence to Communities and Local Government Committee](#) v. Accessed 27.11.2018.

⁹⁶ The 2012 NPPF, paragraph 32, stated “development should only be prevented or refused on transport grounds where the residual cumulative impacts of development are severe.” This was revised in the 2018 NPPF, paragraph 109 (quoted in the main text), to provide two separate tests rather than one, with the unacceptable safety impact a lower threshold for rejection.

⁹⁷ As one council officer noted: “with the government’s drive to provide new housing we are under pressure to allow new developments unless the impact is “SEVERE”. If there are 20 vehicles queuing to get through a junction and you add another 10 is this severe? Recent appeal decisions would suggest not.” Woodhall Spa Parish Council. [How Highways assess the traffic impact of a new development](#). Accessed 09.11.18.

⁹⁸ The government’s 2011 amendments to Planning Policy Guidance on transport (PPG13) deleted reference to maximum parking standards for off-street parking in residential developments, as well as reference to the use of parking charges to encourage alternative modes. Clark G. (2011) [Parking policy changes and electric vehicle charging points](#). Letter from Greg Clark, MP to Clive Betts, MP, 3 Jan 2011.

⁹⁹ Paragraph 106 of the 2018 revisions to the NPPF requires councils to have “clear and compelling justification” if they wish to limit parking in new developments.

¹⁰⁰ Before 2012, national planning policy set a minimum density of 30 dph for residential development through Planning Policy Guidance 3 (PPG3). The 2012 NPPF removed this and allowed councils to set their own housing densities. The 2018 NPPF has added reference to the need to avoid low density housing and that the use of minimum density standards should be considered, particularly “for city and town centres and other locations that are well served by public transport.” (Paragraph 123).

¹⁰¹ Paragraph 118 of the 2018 NPPF states: “Planning policies and decisions should...give substantial weight to the value of using suitable brownfield land within settlements for homes and other identified needs, and support appropriate opportunities to remediate despoiled, degraded, derelict, contaminated or unstable land.”

¹⁰² Pullinger R. (2018) [Brownfield in the 2018 NPPF](#). CPRE Briefing 5. August 2018. Accessed 21.11.2018

¹⁰³ TCPA (2018) *op. cit.*

¹⁰⁴ Friends of the Earth has launched a legal challenge to the NPPF on the basis that it should be required to undergo a Strategic Environmental Assessment. If successful this will likely involve further revisions to the NPPF. Friends of the Earth (2018) [Friends of the Earth challenges government planning rules in the High Court](#). News story, 17 December 2018.

¹⁰⁵ Many planning authorities are in a state of crisis due to cuts, while at the same time planners in England have had to deal with four different development plan frameworks in the last 15 years. As well as different local authorities (metropolitan, unitary, county, borough and district councils) involved in the English planning system, there are also the overlapping roles of Local Enterprise Partnerships, regional transport bodies and different government agencies (eg Homes England). TCPA (2018) *op. cit.*

¹⁰⁶ TCPA (2018) *op. cit.*

¹⁰⁷ Based on 2015 government statistics for England, outside London. House of Commons Housing, Communities and Local Government Committee (2018) [Land Value Capture](#). Report of Inquiry, 10 September 2018.

¹⁰⁸ Local Government Association. [Section 106 obligations overview](#). Accessed 04.12.2018.

¹⁰⁹ Section 106 Agreements and the CIL are generally related to development costs rather than values, involve lengthy negotiations, are not transparent, are limited in application (S106 cannot be applied to minor developments and permitted developments) and tend to reinforce spatial inequality by giving the highest returns in the highest value areas. TCPA (2018) *op. cit.*

¹¹⁰ Viability Assessments, introduced in 2012, allow developers to avoid providing community benefits through Section 106 Agreements, if they can show that these will make the development not commercially viable. There is evidence from Shelter and CPRE that this has significantly reduced the provision of affordable housing. Anecdotal evidence suggests this is reducing the willingness of local councils to even ask for contributions to walking and cycling infrastructure. Although the 2018 NPPF introduced reforms to the Section 106 viability process, so that the viability is now tested at the plan-making stage, the effects of this are still to be seen.

¹¹¹ Foundation for Integrated Transport (2018) *op. cit.*

¹¹² For example, Switzerland, Germany and the Netherlands have laws with strict limits on the extent of the built-up area. European Environment Agency (2016) *op. cit.*

¹¹³ CPRE (2018a) *op. cit.*

¹¹⁴ Pullinger R. (2018) *op. cit.*

¹¹⁵ Taylor I. and Sloman L. (2011) [Thriving Cities: Integrated land use and transport planning](#). Report for PTEG. July 2011.

¹¹⁶ London has developed a system to optimise housing density according to location and public transport provision, determined through a tool called Public Transport Accessibility Levels. Mayor of London (2018) [Draft London Plan](#). August 2018. Accessed 19.11.2018; the South Yorkshire Passenger Transport Executive (SYLTE) also has a simple traffic light system of grading sites by how public-transport-accessible they are, to identify the most suitable sites for housing growth. SYLTE (undated) [Land Use Planning & Public Transport. A Developer's Guide](#). Accessed 19.11.2018. Prior to the development of the Sheffield City Region Combined Authority, the SYLTE used the system to grade all potential development sites across 4 South Yorkshire planning authorities, with the most accessible sites prioritised for development in the various South Yorkshire Local Plans. Reynolds M., Rotherham Metropolitan Borough Council. Personal Communication by telephone, 18.01.2019. SYLTE also used the system to develop the business case for public transport investment near to major new developments. Bland G., SYLTE, Personal communication, 10.01.2019.

¹¹⁷ Between 2008 and 2011, most of London, Salford and Brighton & Hove achieved average densities of over 100 dph for new dwellings, while a further 13 authorities achieved densities of over 80 dph. Ministry of Housing, Communities and Local Government (2013) [Density of new dwellings built, by local authority. Table P232 Land Use Change: Density of new dwellings, by local authority, 1996-99 to 2008-11](#). Accessed 27.11.2018. This data is no longer collected. The latest plan for London proposes minimum housing densities of 110 to 405 units per hectare.

¹¹⁸ See endnotes 34 and 47.

¹¹⁹ Air quality concerns are relevant to planning and government advises that in local plan-making local authorities need to take account of Air Quality Management Areas (AQMA; areas exceeding air quality targets). Ministry of Housing Community and Local Government (2014) [Air Quality Guidance](#). Accessed 18.12.2018. However, much more can be done to address air quality concerns through the NPPF and Planning Practice Guidance. For example, within an AQMA there should be no additional parking allowed, unless the parking is for battery electric vehicles only.

¹²⁰ The location of 14 'garden towns and villages' was announced in 2017. Successful bids for a new programme will be announced in early 2019. Ministry of Housing, Communities and Local Government (2018) [Garden Communities prospectus](#). August 2018, Accessed 20.12.2018.

¹²¹ These New Town Development Corporations will be responsible for planning and master development. Ministry of Housing, Communities and Local Government (2018d) [New powers for councils to deliver homes for local families](#). News Release, 4 June 2018.

¹²² This includes 5 areas for new substantial settlements of one million people between Oxford and Cambridge. 5th Studio/SQW (2017) [Cambridge, Milton Keynes and Oxford Future Planning Options Project](#). Report for National Infrastructure Commission. The first wave of 14 ‘garden communities’ are largely greenfield, low density estates on the edge or out of town, adding to sprawl. Smart Growth UK (2018) [Garden Communities – Why Communities Say No](#).

¹²³ Many groups, including Friends of the Earth and the RTPI, have called for the NPPF to include a reference to the UN’s Sustainable Development goals which includes urgent action to reduce climate change, eg RTPI (2018) [NPPF 2018. Briefing note](#), July 2018.

¹²⁴ The Welsh Government has a statutory duty for sustainable development and a presumption in favour of sustainable development under the Wellbeing of Future Generations Act 2015. Welsh Government (2015) Planning Policy Wales. [Chapter 4 Planning for Sustainability](#).

¹²⁵ The TCPA have suggested a comprehensive Sustainable Development and Wellbeing Act, a consolidated piece of planning legislation which would have sustainable development as a statutory purpose and introduce other positive changes such as enhanced community participation and right of appeal, and development of regional plans. (TCPA) (2018) *op. cit.* However, there are concerns with its proposal to integrate land-use planning with Nationally Significant Infrastructure projects and make the National Infrastructure Commission responsible for preparing national policy statements, since sustainable development is much broader than just infrastructure and is better planned at a local and regional level, taking into account social and environmental factors over a long time horizon.

¹²⁶ The 2018 NPPF states that the planning system should help to “shape places in ways that contribute to radical reductions in greenhouse gas emissions”, but there is nothing to ensure this is measured or achieved.

¹²⁷ Friends of the Earth recommended a system of local carbon budgets as part of the then Energy Bill, which was supported by council leaders of all parties. Friends of the Earth Briefing Local Carbon Budgets. December 2010. IPPR has also recommended regional carbon budgets. IPPR (2017) [Net Zero North](#). Carbon budgets could be made strategic policies (under Section 3 Plan Making) as part of the Local Plan.

¹²⁸ Donnelly M. (2018) [Joint Cambridgeshire local plan to target zero carbon emissions by 2050](#). Planning Resource, 6 December 2018. Accessed 06.12.2018.

¹²⁹ CPRE (2018e) [Set up to fail: why housing targets based on flawed numbers threaten our countryside](#). November 2015.

¹³⁰ These would be checked by a Planning Inspector at an Inquiry. See Friends of the Earth’s Housing Position Paper for recommendations on how to increase the amount and quality of affordable housing, as well as using existing housing much more efficiently. Friends of the Earth (2014) [An environmental and socially just agenda for housing](#), October 2014.

¹³¹ TCPA (2018) *op. cit.*

¹³² Friends of the Earth has recommended reducing the over-heating of London and the South East through rebalancing the economy and developing the other regions. Friends of the Earth (2014) *op. cit.*

¹³³ Since the abolition of the regional tier of planning in 2012, there’s been a vacuum in strategic planning at a sub-national level. The emerging city regions can provide a degree of regional planning but these cover only a small part of England. The statutory ‘duty to cooperate’ on local authorities is not delivering strategy on a wider scale. This lack of regional planning leads to the persistence of regional inequalities. Local Authorities need to be empowered and better resourced to enable them to work together to develop regional plans.

¹³⁴ TCPA (2018) *op. cit.*

¹³⁵ *Ibid.*

¹³⁶ The way Vauban was developed was innovative in lots of other ways. The land sold could only be developed with low-energy buildings and land was allocated preferentially to small owner-cooperatives who wanted to develop/own houses and to small/local builders. This favoured more energy-efficient design than through speculative development, as well as creating more architectural diversity. Scottish Government (2010) [Case Study 8: Vauban, Freiburg, Germany](#). Accessed 06.12.2018.

¹³⁷ House of Commons Housing, Communities and Local Government Committee (2018) *op. cit.*

¹³⁸ Changes to the law allow all local authorities to dispose of their land with planning permission they granted themselves, allowing them to capture more of the uplift in land value. Ministry of Housing, Communities and Local Government (2018c) [Local authority development – effect of planning permission. Government response to consultation](#), February 2018.

¹³⁹ The Northern Line underground extension was partly financed with the use of incremental business rates generated and retained within a new Enterprise Zone across the wider Vauxhall Nine Elms Battersea Opportunity Area. [All Party Parliamentary Group on Land Value Capture](#) (2018) Inquiry into Land Value Capture, November 2018.

¹⁴⁰ In 2004, Milton Keynes set a building tariff, in which developers agreed to pay a standard contribution per residential dwelling or hectare of commercial land, using the legal framework of a Section 106 agreement. The city was then able to borrow money from the Homes and Communities Agency to forward-fund infrastructure against expected tariff receipts. Clarke E. et al (2014) [Delivering change: building homes where we need them](#). Article for Centre for Cities, 31 October 2014. Accessed 21.12.2018.

¹⁴¹ Land Value Capture has been added to a Scottish Planning Bill (being debated at the time this report was written) so that the amount councils pay to landowners in new 'masterplan consent areas' is not inflated by the prospect of development. The Scottish Land Commission is also investigating options for land value capture. Scottish Construction News (2018) [Land Value Capture measures added to Planning \(Scotland\) Bill](#). 25 October 2018. Accessed 21.12.2018.

¹⁴² A Land Value Tax would be levied on land, not buildings, based on the optimum permitted use of land. Thus a vacant piece of housing land would be valued at the same price as an adjacent occupied one. It would require the value of every piece of land to be assessed and would be levied on land owners rather than occupiers. It could replace Council Tax, business rates and Stamp Duty. [All Party Parliamentary Group on Land Value Capture](#) (2018) Inquiry into Land Value Capture, November 2018. See also Friends of the Earth's Housing Briefing which recommends a Land Value Tax. Friends of the Earth (2014) *op. cit.*

¹⁴³ All Party Parliamentary Group on Land Value Capture (2018) *op. cit.*

¹⁴⁴ An investigation for the Greater London Authority recommended that the London Mayor should request the powers from the government to trial a pilot Land Value Tax. London Assembly Planning Committee (2016) [Tax Trial. A Land Value Tax for London?](#)

¹⁴⁵ The CPRE brownfield register shows significant amounts of publicly owned brownfield land. For example, 34% (150,305) of identified housing capacity on brownfield land without planning permission or with planning permission pending is owned by public authorities. CPRE (2018a) *op. cit.* The New Economics Foundation have also published [a map of publicly owned land sold or up for sale](#). Accessed 21.12.2019.

¹⁴⁶ Working with pension funds and communities, councils can develop affordable housing directly or through community trusts. Martin A. (2018) [Making the Case for Affordable Housing on Public Land](#). Article for the TCPA by the New Economics Foundation. 31 July 2018.

¹⁴⁷ Birmingham City Council and the Greater London Authority have a small-sites scheme to retain land in public ownership which will favour small- and medium-sized builders and community-led schemes. *Ibid.*

¹⁴⁸ Sloman L. and Hopkinson L. (2019) Carbon and Urban Transport Project. Paper 2: Better and More Integrated Public Transport. Report for Friends of the Earth. A forthcoming Paper 8 will be on Funding.