



transport ● engineering ● placemaking

ACES National Conference 2022

2050: Path to Sustainable Communities

Connecting our communities

Phil Jones, Chairman PJA Group

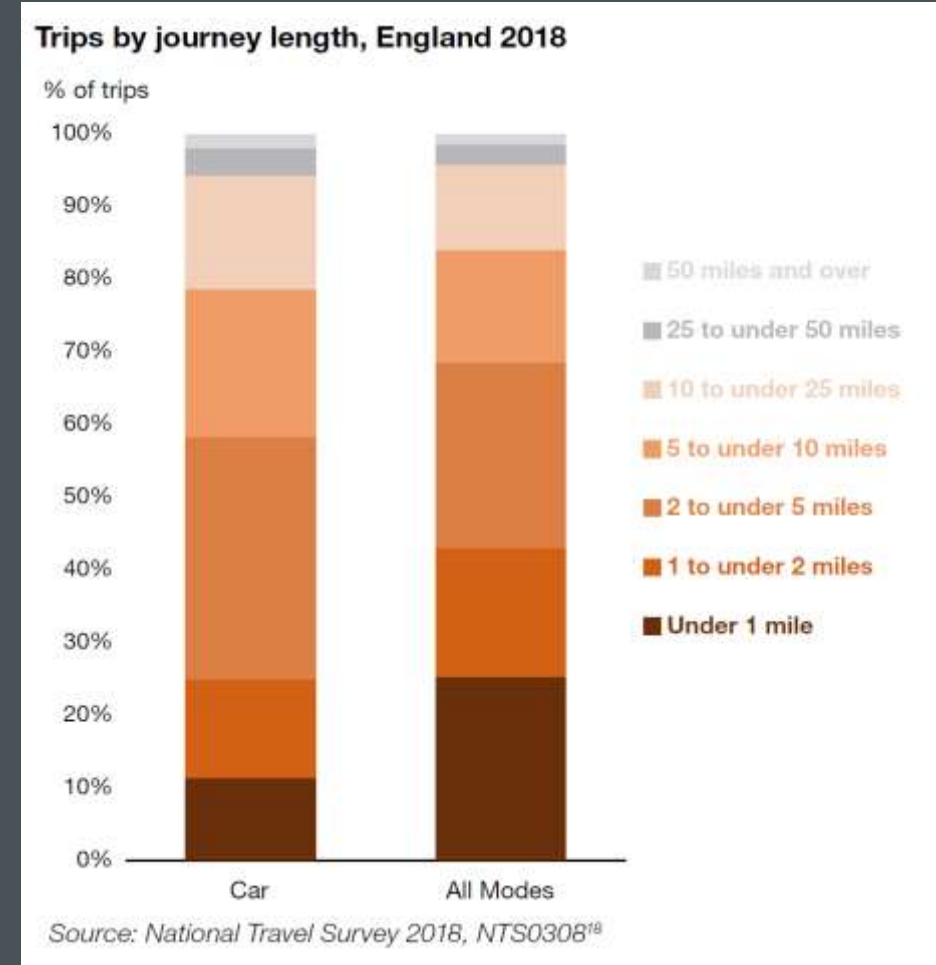
Challenge One - Carbon

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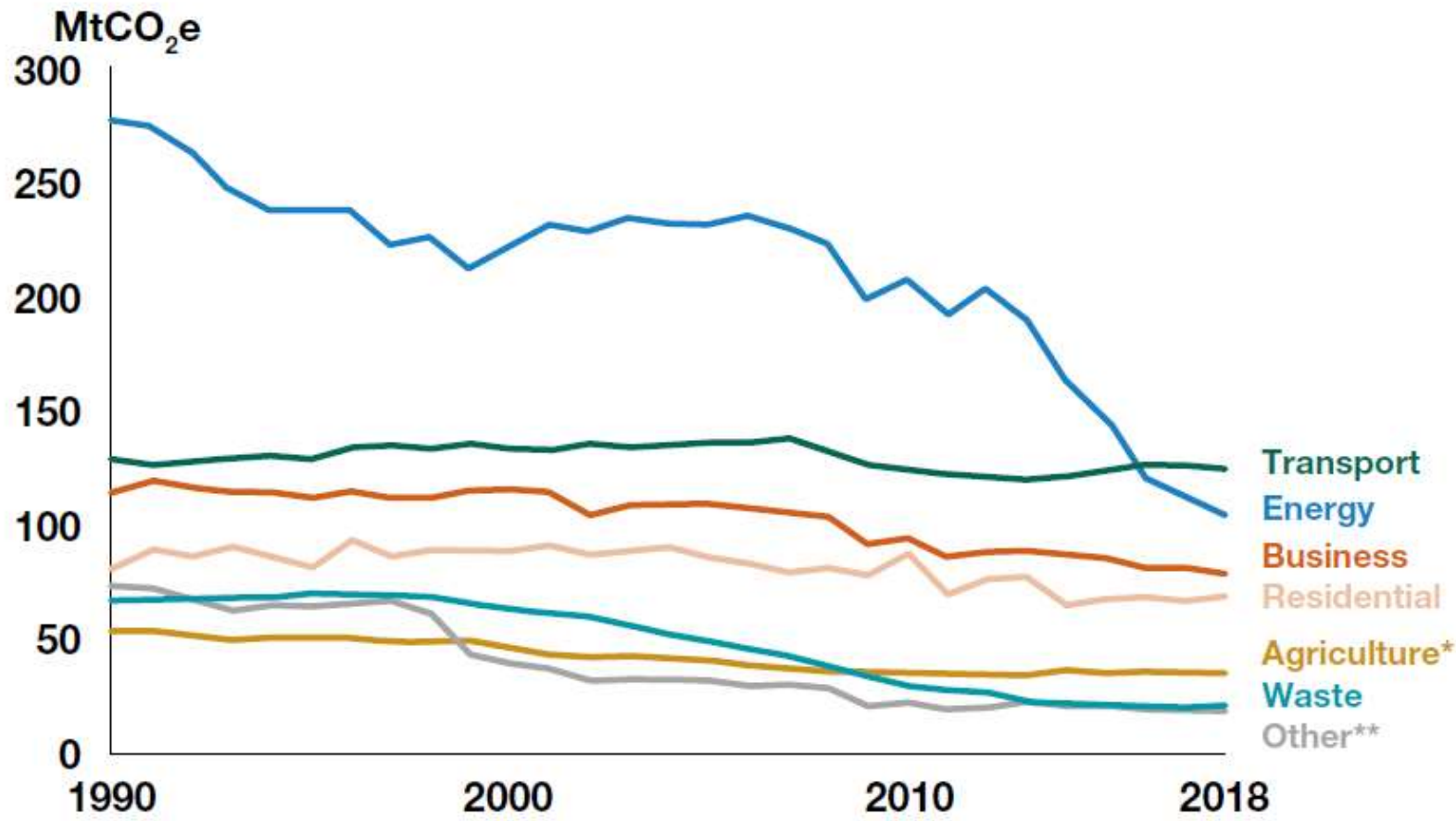
- **Transport - largest contributor to UK domestic Greenhouse Gases**
- 55% of transport emissions from cars
- ‘Decarbonising Transport’ published March 2020



Climate change is the most pressing environmental challenge of our time



Nearly 60% of Car Trips < 5 miles



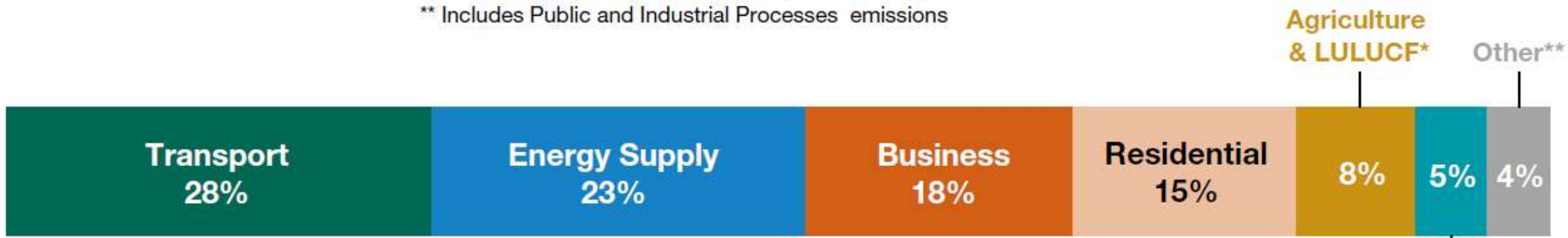
* Includes Land Use, Land Use Change and Forestry
 ** Includes Public and Industrial Processes emissions

Transport became the largest emitting sector of GHG emissions in 2016

This follows large decreases in energy emissions while transport emissions have remained relatively static.

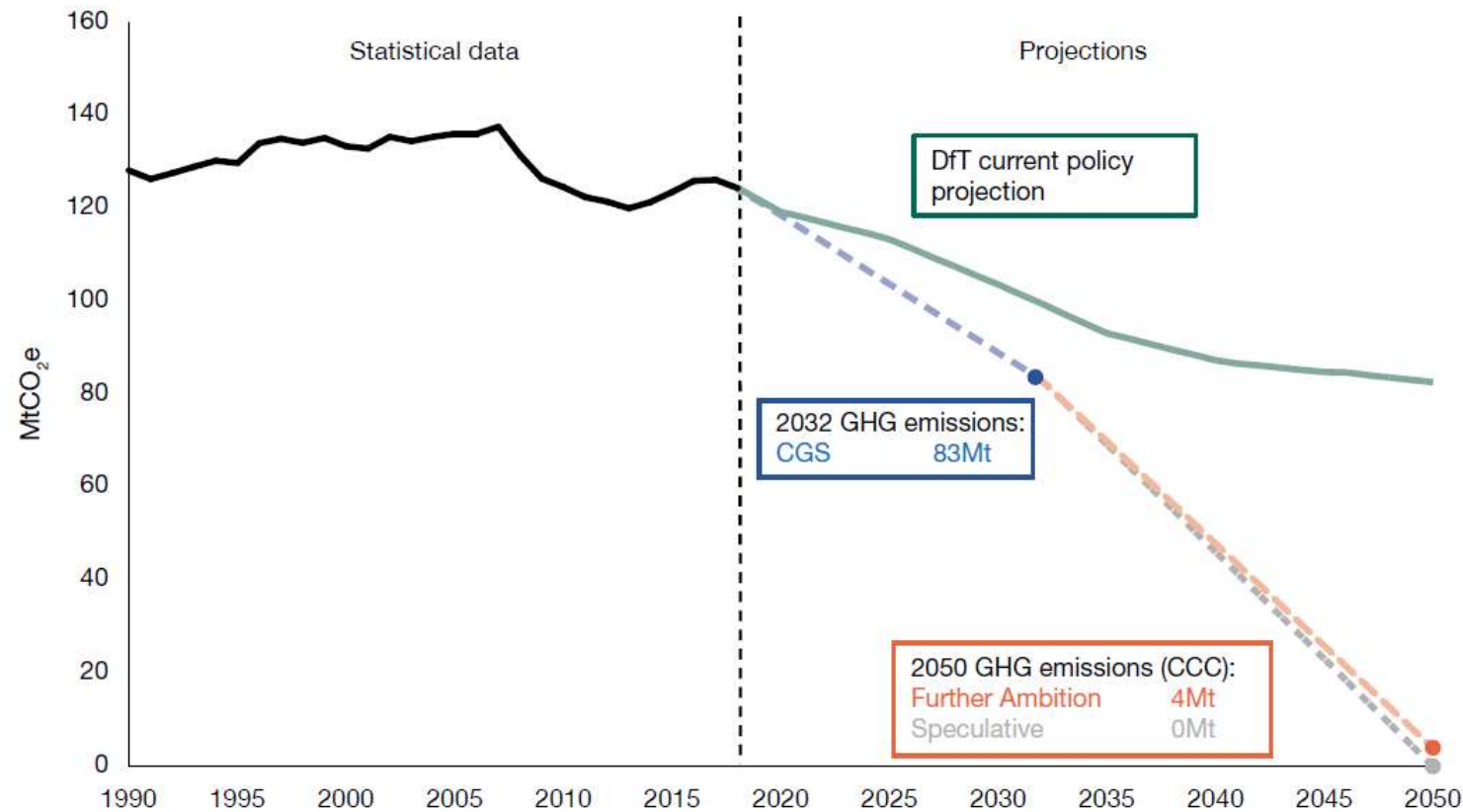
451 million tonnes of CO₂ equivalent (MtCO₂e)

is the total net domestic greenhouse gas emissions from all UK sectors in 2018, down 2.1% from 2017.



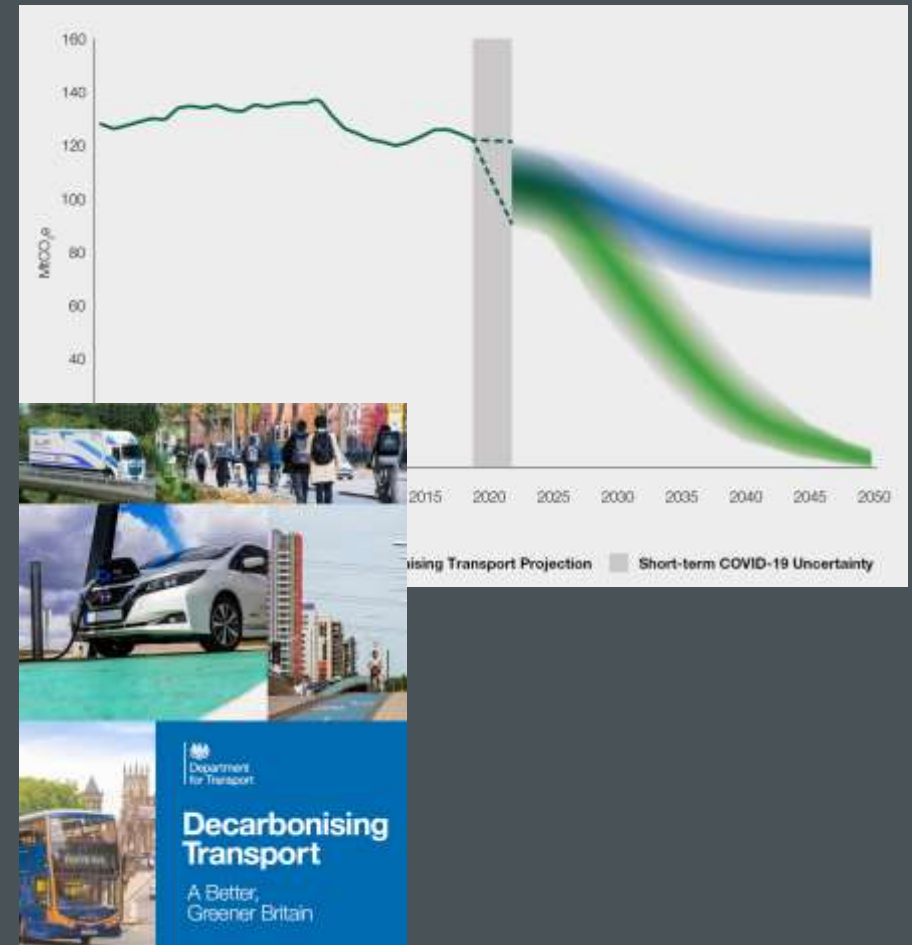
Current trajectory is not enough

Figure 18: DfT's latest domestic GHG emissions projections based on current policies, compared to Clean Growth Strategy (CGS) targets and CCC Net Zero 'Further Ambition' and 'Speculative' scenarios^m



The Actual Plan – July 2021

- Long list of commitments including:
 - *More walking and cycling*
 - *Zero emission buses*
 - *No diesel-only trains by 2040*
 - *Zero emission cars, motorcycles only from 2035*
 - *Non-zero HGVs only from 2040 (subject to consultation)*
 - *Consult on 'Jet Zero'*
 - *Carbon reductions quantified in Local Transport Planning/funding/transport business cases*
 - *Embed decarbonisation principles in spatial planning*
 - *Increase vehicle occupancy*
 - *Car clubs*
 - *Etc etc...*



Strategic Priorities

1. Accelerating modal shift to public and active transport



- Public transport and active travel will be the natural first choice for our daily activities.
- We will have a cohesive, widely available, net zero public transport network designed for the passenger
- We will use our cars differently and less often, with new technology helping reduce our carbon footprint

2. Decarbonising Road Transport



- We will phase out all new non-zero emission road vehicles, from motorbikes to HGVs, by 2040*
- Delivered by a world leading regulatory framework and support packages, leading the global race to zero emission road transport
- We will ensure infrastructure will not be a barrier to the zero emission transition

3. Decarbonising how we get our goods



- We will decarbonise our freight system, pioneering new zero emission technologies with mass scale demonstrators for HGVs
- Increasing amount of freight will shift from road and air to more sustainable modes, with digital solutions and data sharing optimising efficiency
- The last mile will be decarbonised and places will have the logistics solutions best suited to their specific needs

UK as a hub for green transport technology and innovation



- We will lead the modern industrial revolution through UK transport, becoming the internationally recognised leader in green technology, innovation, science and research
- We will harness the opportunities from green innovation and technology to drive UK productivity growth and create new jobs

Place-based solutions to emissions reduction



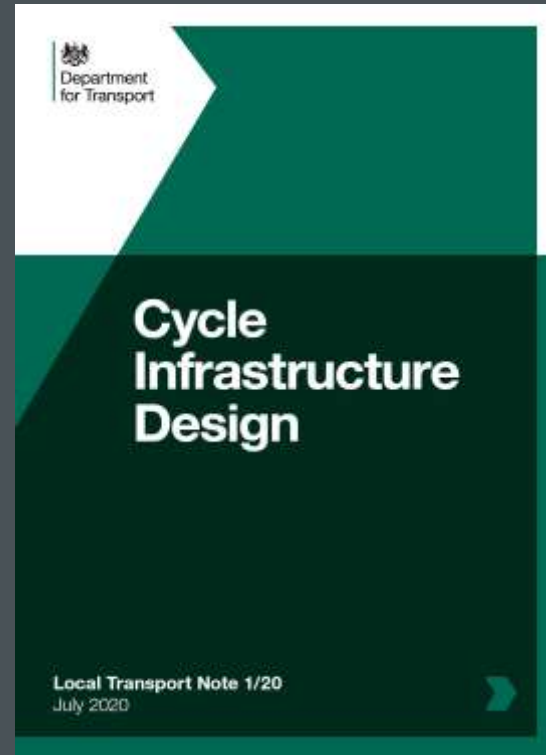
- By 2050 every place in the UK will have its own net zero transport network
- We will reform the way local transport infrastructure is funded to drive decarbonisation at a local level
- All places will have the ability to take bold action to decarbonise transport, to radically change how people travel and level up the UK

Reducing carbon in a global economy

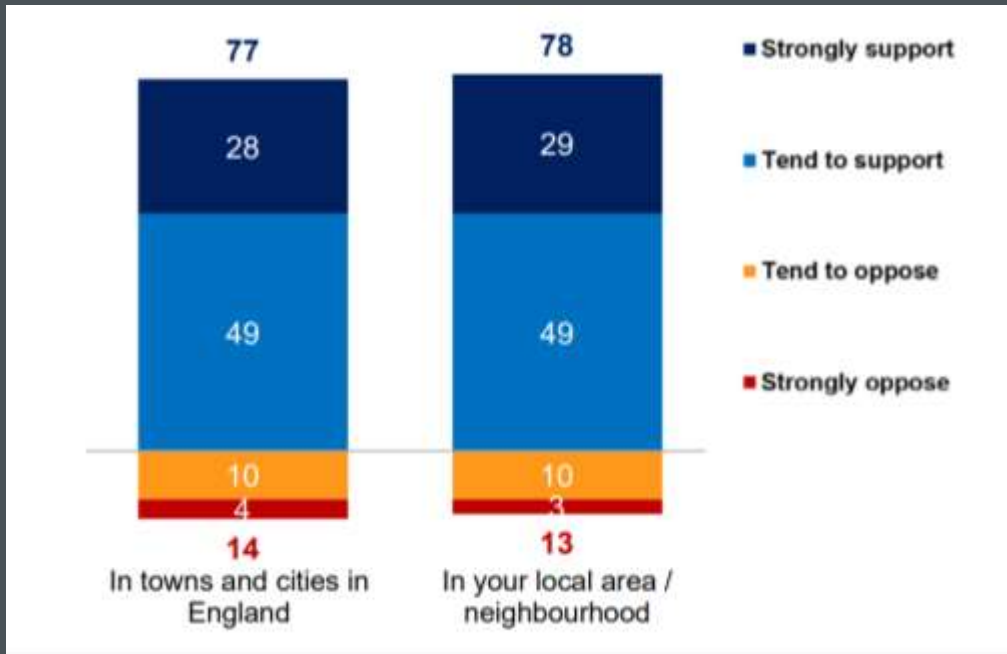


- UK aviation will meet net zero by 2040* and UK shipping by 2050
- We will ensure the impact of aviation on the environment is significantly reduced and by 2050, zero emission ships will be commonplace globally
- We will continue to lead international ambition, co-operation and collaboration

Supporting Government policies



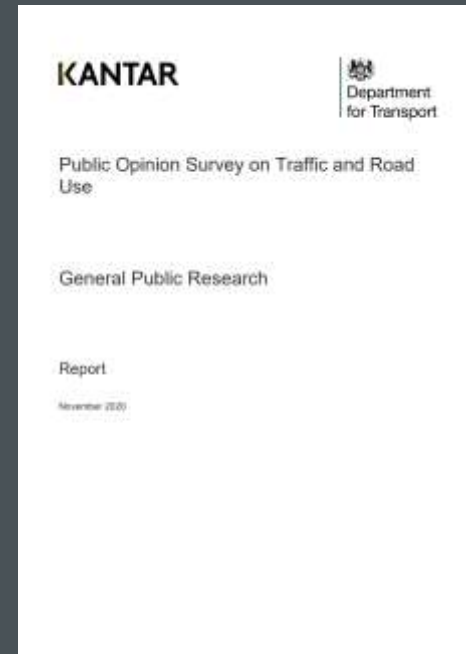
Public Support for Less Traffic/Road Space Reallocation (DfT)



Reduction in Road Traffic



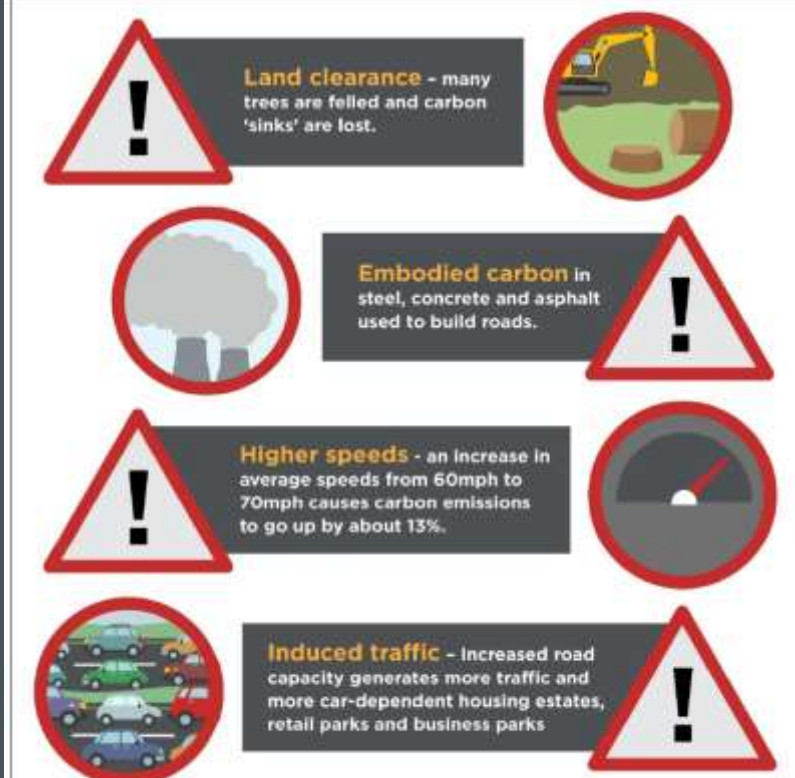
Reallocation of Road Space for Walking and Cycling



But is Government being wholly consistent?

- £24bn investment in national roads (RIS2)
- £14bn for new roads/capacity improvements
- (down from £27bn in Spending Review)
- RIS2 forecast to generate 20 MtCO₂
- New roads create more emissions:
 - *Embodied carbon*
 - *Faster, less efficient journeys*
 - *Induced traffic*
 - *Enabling more car-based development*

Road schemes increase carbon in multiple ways



Land clearance - many trees are felled and carbon 'sinks' are lost.

Embodied carbon in steel, concrete and asphalt used to build roads.

Higher speeds - an increase in average speeds from 60mph to 70mph causes carbon emissions to go up by about 13%.

Induced traffic - increased road capacity generates more traffic and more car-dependent housing estates, retail parks and business parks.

Illustrations by May Perkins
Source: Transport for Quality of Life

Challenge Two – Making Quality Places

Design Quality and Planning

“The creation of high quality, beautiful and sustainable buildings and places is fundamental to what the planning and development process should achieve.

Good design is a key aspect of sustainable development, creates better places in which to live and work and helps make development acceptable to communities.”

NPPF Para 126

contact@pja.co.uk



National housing quality audits, mid 2000s



HOUSING AUDIT **ASSESSING THE DESIGN QUALITY OF NEW HOMES**

London, the South East and the East of England

cabe

www.newcastle.co.uk Friday, November 18, 2005 The Journal

Poor housebuilding 'fuels brain drain'

By Guy Bassett
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guy.bassett@newcastle.co.uk

POOR housebuilding is fuelling a brain-drain from the North-East and severely hampering its economic competitiveness, it was claimed yesterday.

A survey of almost 100 recent developments found just six to be good or very good and almost one in three - 31% - were poor.

Consultants for Architecture and the Built Environment policy director, Mark Bell yesterday called on all local authorities to take a firmer stance with developers to ensure good design and the inclusion of any low-cost elements.

He said: "We are talking about access to facilities, having steps, ramps, and playgrounds for your children, but homes for people who can't drive and a decent layout."

"When you have these it makes a massive positive impact on your life, but what we have is a patchwork of bits by Merit, but most house building across the North."

The consultation examined 90 large developments across the North-East, North-West and Yorkshire and the Humber, from 2000 and 2001.

The North-East was rated the worst, with 31% of housing 'poor'. The North

West had 20% rated poor and Yorkshire and the Humber 18%.

Cabe repeatedly highlighted marketing factors, poor finishing, characterless houses and a shortage of parking.

The development ranked worst in the North-East was 144-Avenue, Villa Road Road, Gossett, built by Persimmon Homes. Gossett is a new 1000-unit development, designed by Geoffrey Thomas Interiors, and built by George Wimpey, came out top with innovative

community house-building. Mr Bell said: "The issue in the North-East is retaining skilled, professional people."

"There is a lot of migration and people want their own built-up areas because of the amenities and successful people are more in tune of their children in better neighbourhoods, not outside the city walls."

Proposed North-East projects include Persimmon Gossett and Villa Road Road. "The houses here in Gossett for the

development was the provision for family housing with gardens and parking, all in one that people could afford."

"We have got to have a balance that they regard as issues of cost, affordability and the planning system."

He said Persimmon had not worked for other North-East developments, including the 2000-unit Great North Park, Newcastle.

Development Council, which oversees the Gossett site, would not comment.

TOP AND BOTTOM: Repetitive Gossett houses, left, are highly praised. Villa Road Road, Gossett, right, are listed in a report.

Housing is grim up north, says Cabe

New housing audit of the North says more than 90% of new homes will suffer from poor to average design

PLANNING

Homes fail design quality inspection

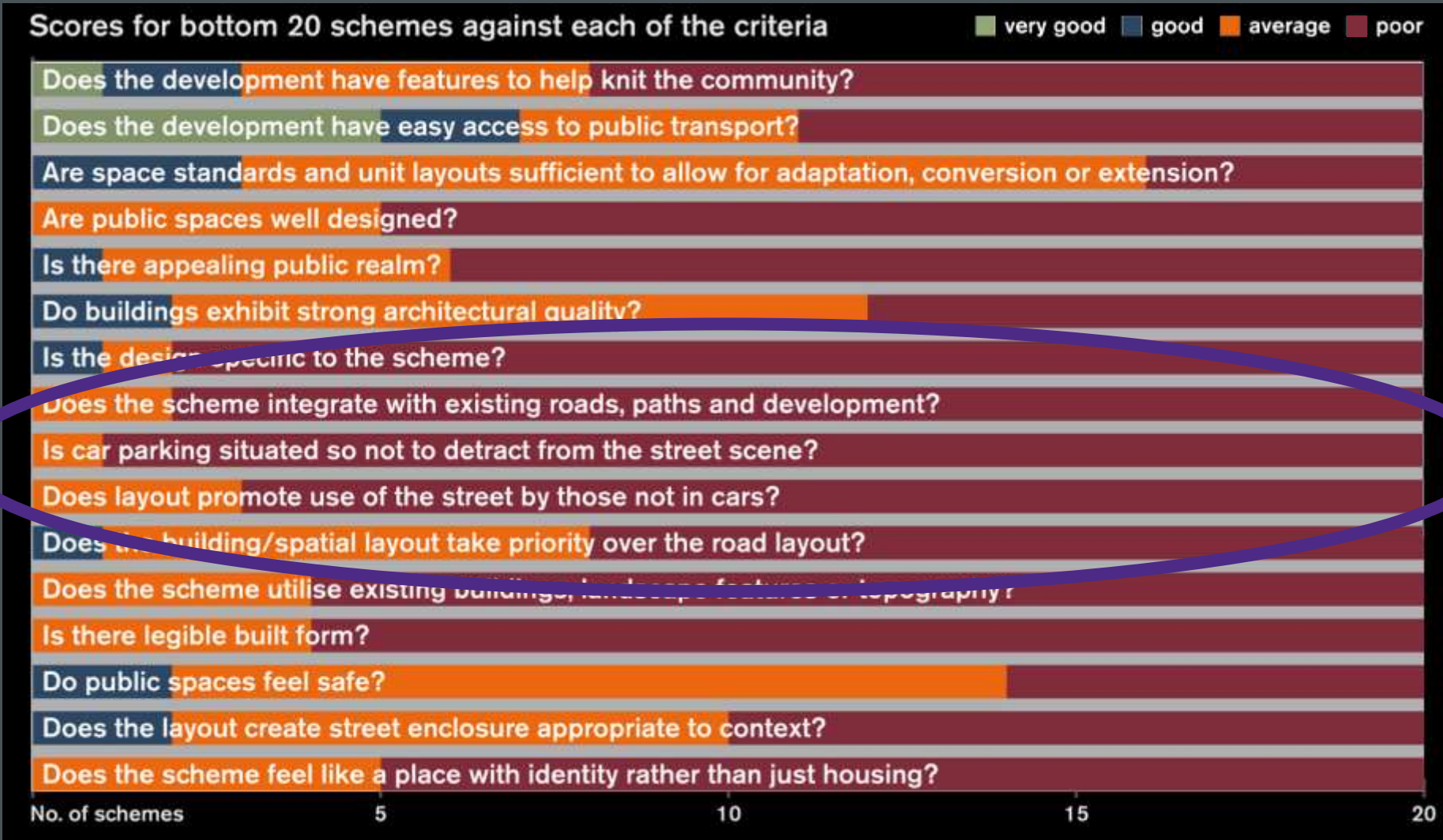
Developments more criticised in London bridge

Strategy and timetable for infrastructure

design contest

Nottingham reveals city centre outline

What was going wrong?



Still a Problem: Transport for New Homes – 2018

- Car-based living/traffic created by building in the wrong place
- Minimalist public realm dominated by the needs of the car
- Not properly connected for pedestrians, cyclists or buses

<http://www.transportfornewhomes.org.uk/>



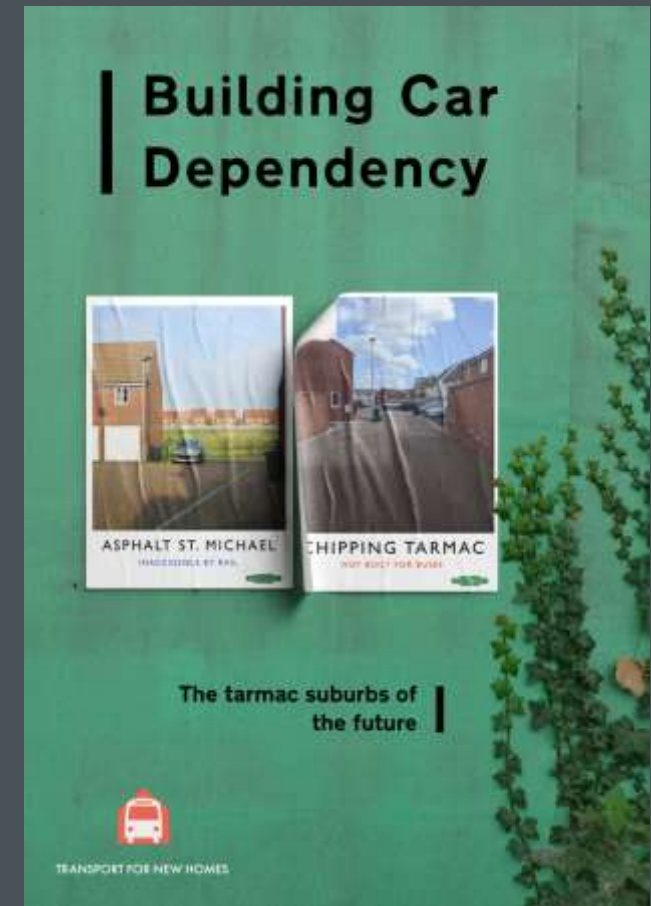


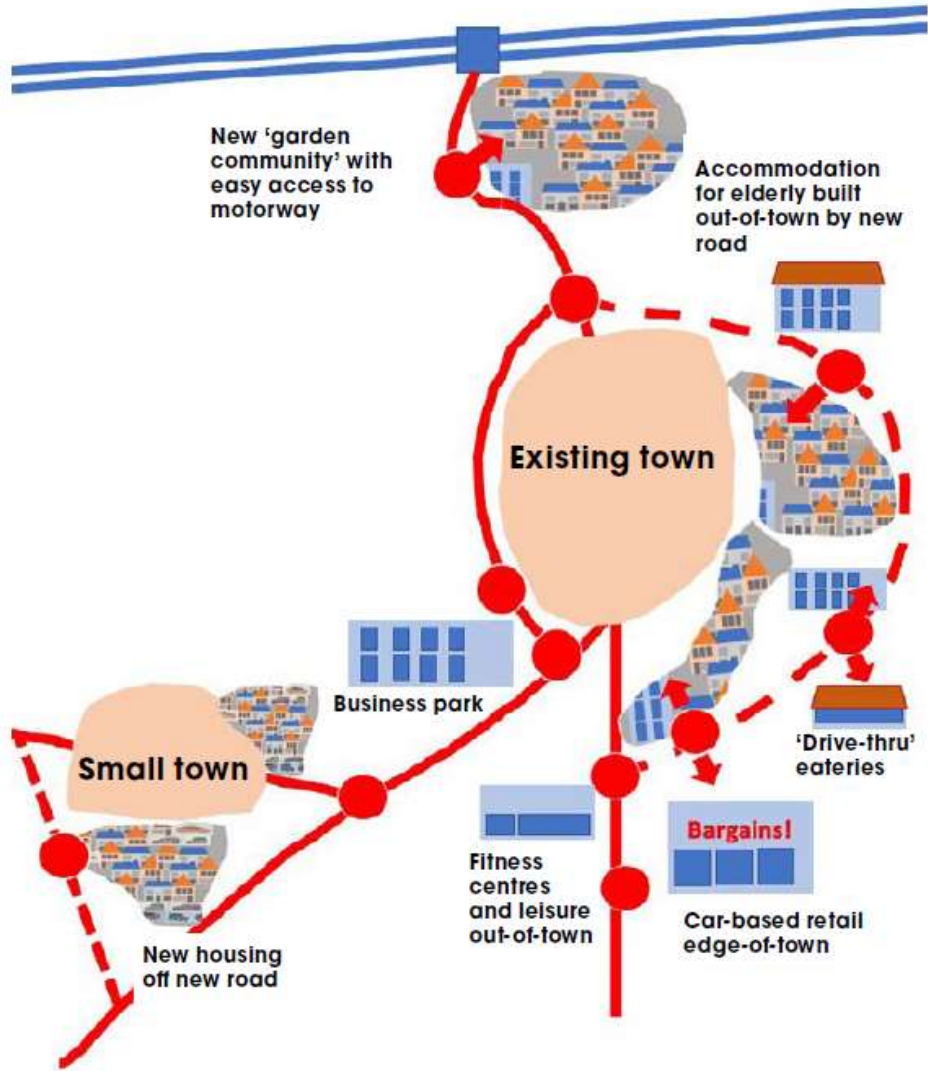
The Highways Authority emphasises safety aspects, while the local planning authority strives for good urban design.

These objectives can sometimes be contradictory

And things still aren't improving

- Transport for New Homes latest report – 2022
- *...housing developments on brownfield sites in our cities were generally far more suitable for those wanting to walk or cycle about their daily business, and for those wanting to use public transport. You didn't need to drive.*
- *By contrast the large greenfield sites that we saw were places that needed a car.*
- *the design and layout of the greenfield housing that we visited anticipated that residents would drive for nearly every journey they made*





“A common pattern of development seen on visits: new housing in car-based locations in combination with new roads and out of-town destinations, fuelling more car-based sprawl and more traffic, and meaning you have to drive. How would you serve this by bus, tram or metro?”



Building Car Dependency



The tarmac suburbs of the future |



FOR NEW HOMES







Please keep off the grass

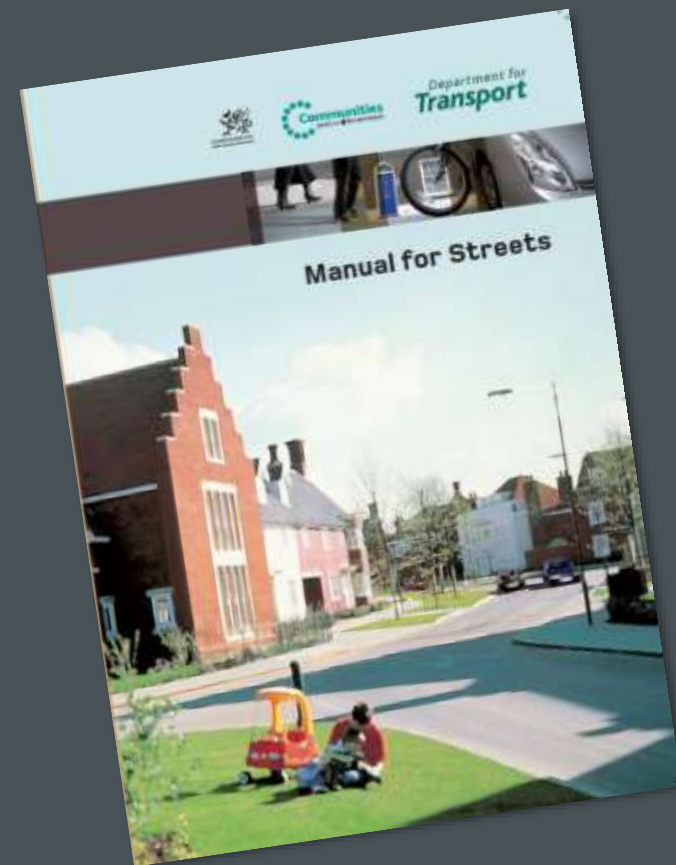
Please keep off the grass

So What to Do?

Manual for Streets (2007)

- Streets are the **arteries** of our communities
- However, streets are not just there to get people from A to B – they have many **other functions**.
- They form vital components of residential areas and greatly affect the overall **quality of life** for local people.

(MfS Foreword)



Hierarchy of Consideration

- Walking and cycling are easy to design out
- But they are the most important
- So think about them **first**

Table 3.2: User hierarchy

<p>Consider first</p>  <p>Consider last</p>	Pedestrians
	Cyclists
	Public transport users
	Specialist service vehicles (e.g. emergency services, waste, etc.)
	Other motor traffic



Developing a Movement Framework

- Where are the key desire lines?
- How can the development enhance the existing movement framework rather than disrupt or sever it?
- What points of connection and linkage can be achieved?
- How can we give priority to walking, cycling and public transport?



And soon...a new Manual for Streets



In the meantime...

- Building for a Healthy Life
- Latest version of Building for Life (2012, 2020)
- NPPF:
- *133. Local planning authorities should ensure that they have access to, and make appropriate use of, tools and processes for assessing and improving the design of development. These include ... assessment frameworks such as **Building for a Healthy Life**.*

<https://www.designforhomes.org/wp-content/uploads/2020/11/BFL-2020-Brochure.pdf>



Building for a Healthy Life

A Design Toolkit for neighbourhoods, streets, homes and public spaces



What's good, what's bad



What 'green' looks like

- ✔ Share street space fairly between pedestrians, cyclists and motor vehicles.
- ✔ Cycle friendly streets (see Local Transport Note 1/20) with pedestrian and cycle priority (and protection) with across junctions and side streets.
- ✔ Nudge people away from the car. Offer cycle (and cargo bike) parking closer to the entrance of commercial, leisure and community facilities than car parking spaces.
- ✔ Provide scooter and cycle parking at schools. Scooters can encourage younger children to get active on the way to school.
- ✔ Design out school runs dependent on cars.
- ✔ Start or contribute to the delivery of a Local Cycle and Walking Strategy Infrastructure Plan.
- ✔ Zebra, parallel and signalised crossing.
- ✔ Tight corner radii (<3m) at street junctions and side streets.
- ✔ Concentrate new development around existing or new transport hubs.
- ✔ Demand Responsive Transport⁶, car clubs and car shares.
- ✔ Short and direct walking and cycling connections that make public transport an easy choice to make.
- ✔ New or improved Park and Ride schemes.
- ✔ 20mph design speeds, designations and traffic calming.
- ✔ Protected cycle ways along busy streets.

 green = go ahead

⁶See Department of Transport (2018) Traffic Signs Manual: Chapter 6 (Section 17, p.108) assets.publishing.service.gov.uk/government/uploads/system/uploads/attachment_data/file/661488/traffic-signs-manual-chapter-6.pdf
⁷Also known as a demand transport.

What's good, what's bad



What 'red' looks like

- ✗ Travel Packs that fail to influence people's travel choices.
- ✗ White line or undivided shared pavement/cycle ways.
- ✗ Pedestrians and cyclists losing priority at side junctions.
- ✗ Oversized radii corners on streets that are principally residential that allow motor vehicles to travel around corners at high speeds.
- ✗ Streets that twist and turn unnaturally in an effort to control vehicle speed but make walking and cycling routes longer than they need to be.
- ✗ Streets principally designed around waste collection vehicles.
- ✗ Overwide carriageways² that reduce space for pedestrians and cyclists, making it more difficult for people to get around easily especially when social distancing restrictions are in place.³
- ✗ Serviced parcel developments where pedestrian and cycle connections between different phases of development are frustrated.

²See Manual for Streets

 **red = stop & rethink**

And now...Streets for a Healthy Life for Homes England



<https://www.gov.uk/government/publications/streets-for-a-healthy-life>

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pja.co.uk

What's good, what's bad

HOME ENGLAND

What does 'green' look like?






Castleward Boulevard, Derby

-  Contraflow cycling on one way street.
-  Integration of street trees helps to define the route and define unallocated parking bays.
-  Street is well defined on both sides by residential development.
-  Creation a level pedestrian crossing using contrasting materials on a key desire line.



One way street with contraflow cycling, Castleward Boulevard, Derby (photo courtesy of Stefan Kruczkowski)

Measham, Leicestershire

-  Landscape verge to one side of the street allows space for tree planting and adds interest to the streetscene.
-  Landscape areas also serve to guard against pavement parking.
-  Direct frontage access off secondary street.
-  Principal elevations to the street
-  Consistent building line and cohesion between building typologies.



Secondary Street, Measham, Leicestershire (photo courtesy of Stefan Kruczkowski)





HOME ENGLAND

What does 'red' look like?

-  Front doors face the street.
-  Frontage access for all homes.
-  Heavy reliance on tandem parking spaces has resulted in displaced parking. Narrow street width results in pavement parking.
-  Lack of a cohesive building line and blank gable ends projecting into the street.
-  Lacks any sense of local distinctiveness.
-  Up / down kerbs.
-  Weak threshold spaces (the space between the back of pavement and the face of the buildings).



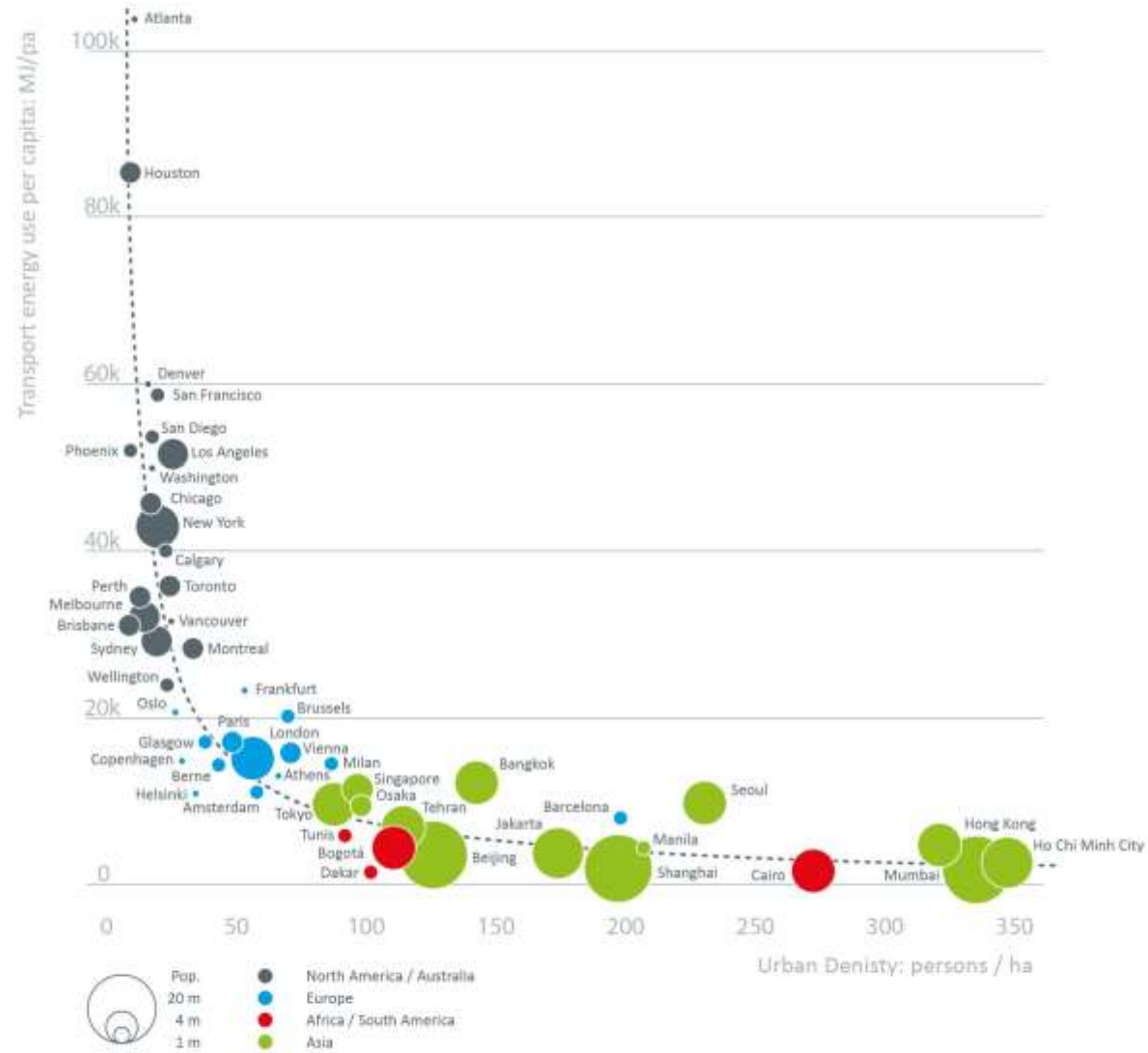
Secondary street with displaced / footway parking (photo courtesy of Stefan Kruczkowski)

-  Front doors face the street.
-  Frontage access for all homes.
-  Adoptable street with minimal adoption extents
-  Displaced parking due to reliance on large number of tandem parking spaces.
-  Lack of an structural landscaping.
-  Dropped kerbs (up/down for pedestrians)
-  Overly large corner radii
-  Lacks any sense of local distinctiveness.



Secondary street with lack of any structural landscape (photo courtesy of Stefan Kruczkowski)

Transport Energy and Population Density





Lower density, dispersed land uses...requires

Higher density and mixed use...enables

Shorter and more sustainable trips and fewer cars... leading to

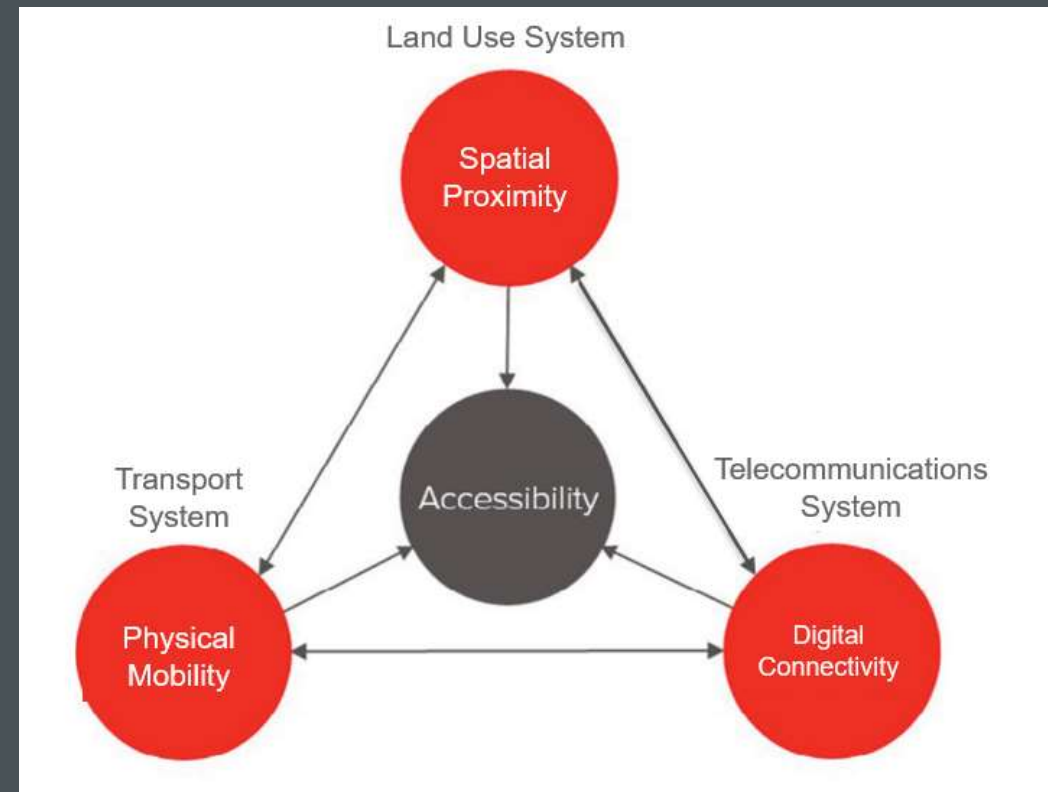
More car travel and more cars...leading to

Triple Access Planning

- Access to services and goods is the aim
- Not 'Transport'
- The greenest trip is the one not taken

Professor Glenn Lyons

<https://www.tapforuncertainty.eu/author/lyons/>



WALK TRIPS BY PURPOSE

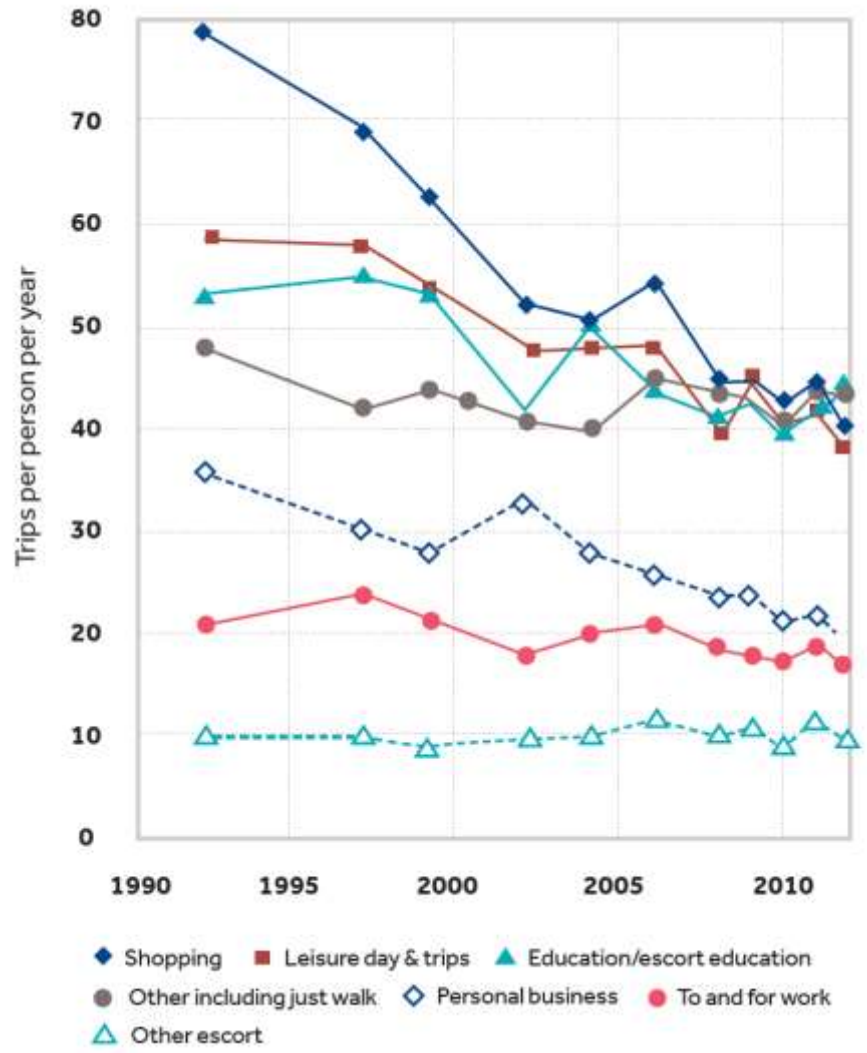
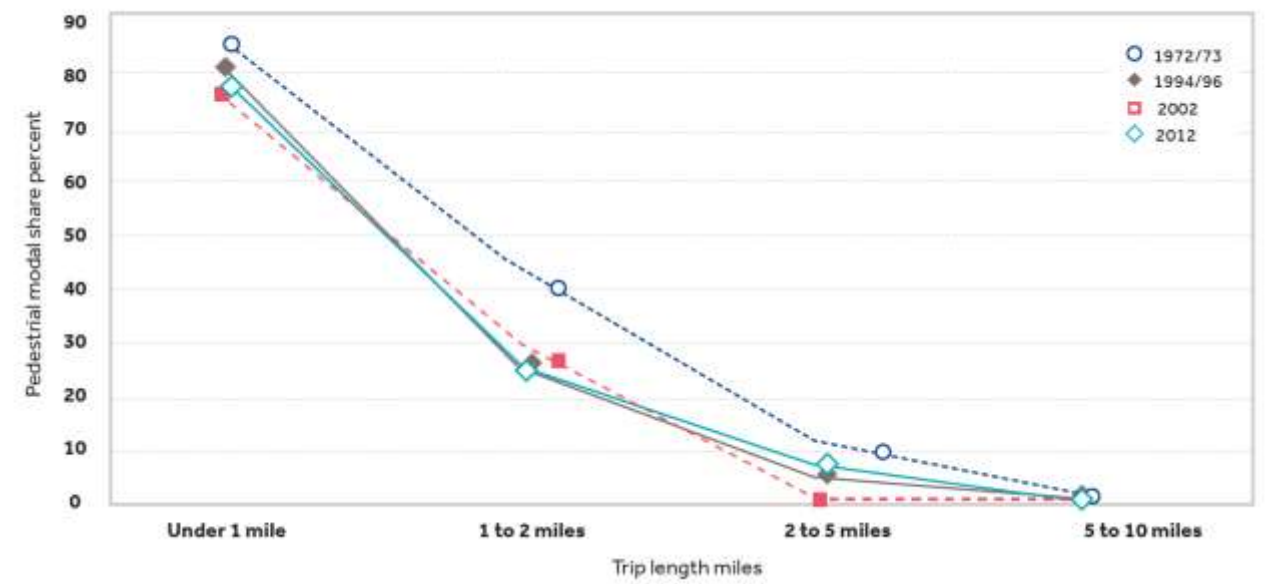
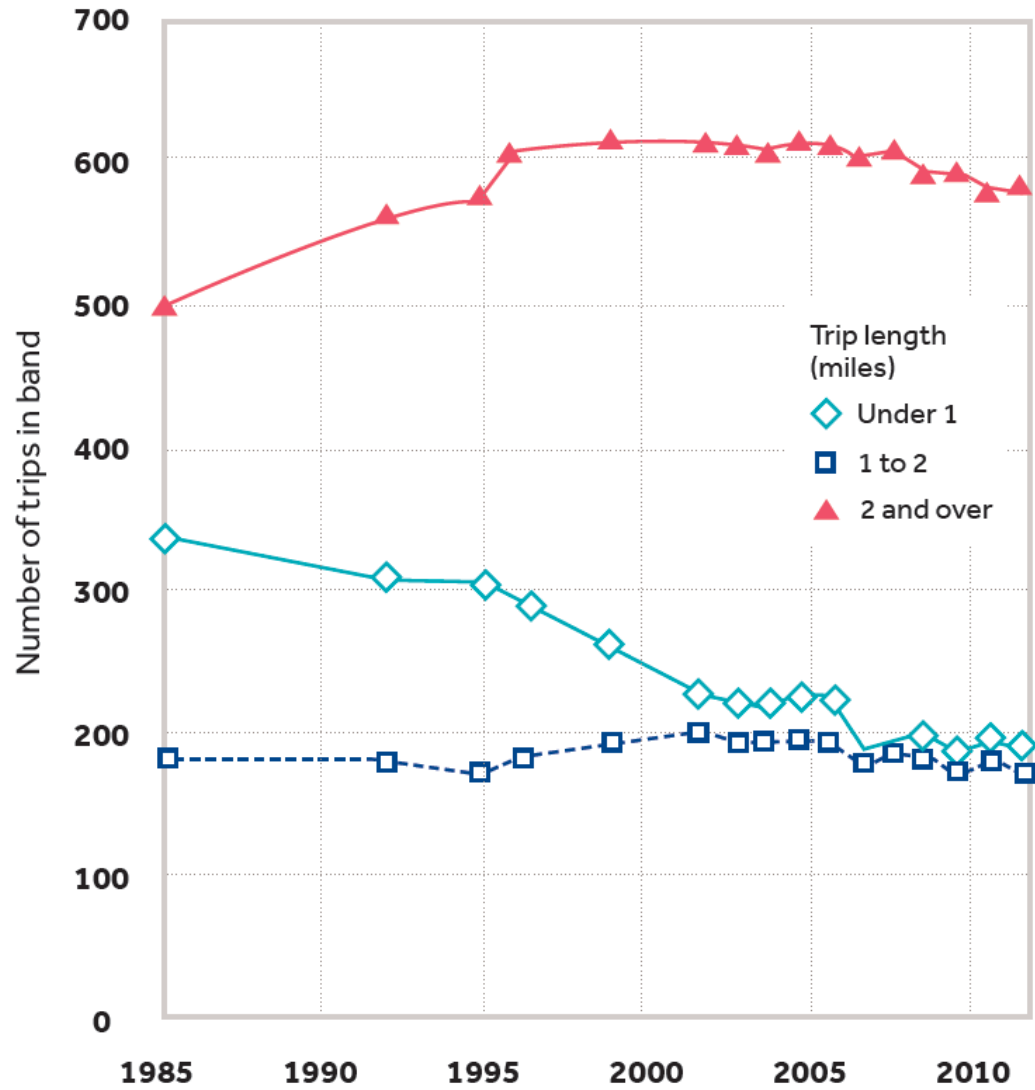


Figure 1: Percentage of journeys on foot 1972/73, 1994/96 and 2010 (National Travel Survey; DfT, annual)



TRIPS PER PERSON IN LENGTH BANDS



Mixed use and walkable destinations have a bigger impact on walking than the quality of the pedestrian environment itself.

Beautiful sidewalks with nowhere to go don't really cut it.

Barbara McCann, US DoT

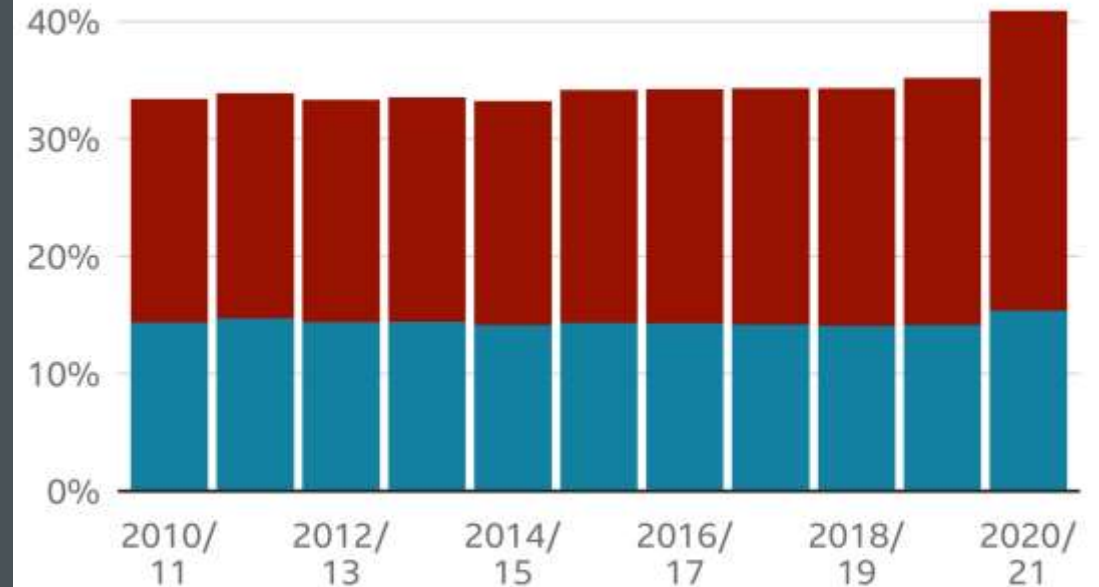


The 15 minute neighborhood revisited - 2009

Health Benefits

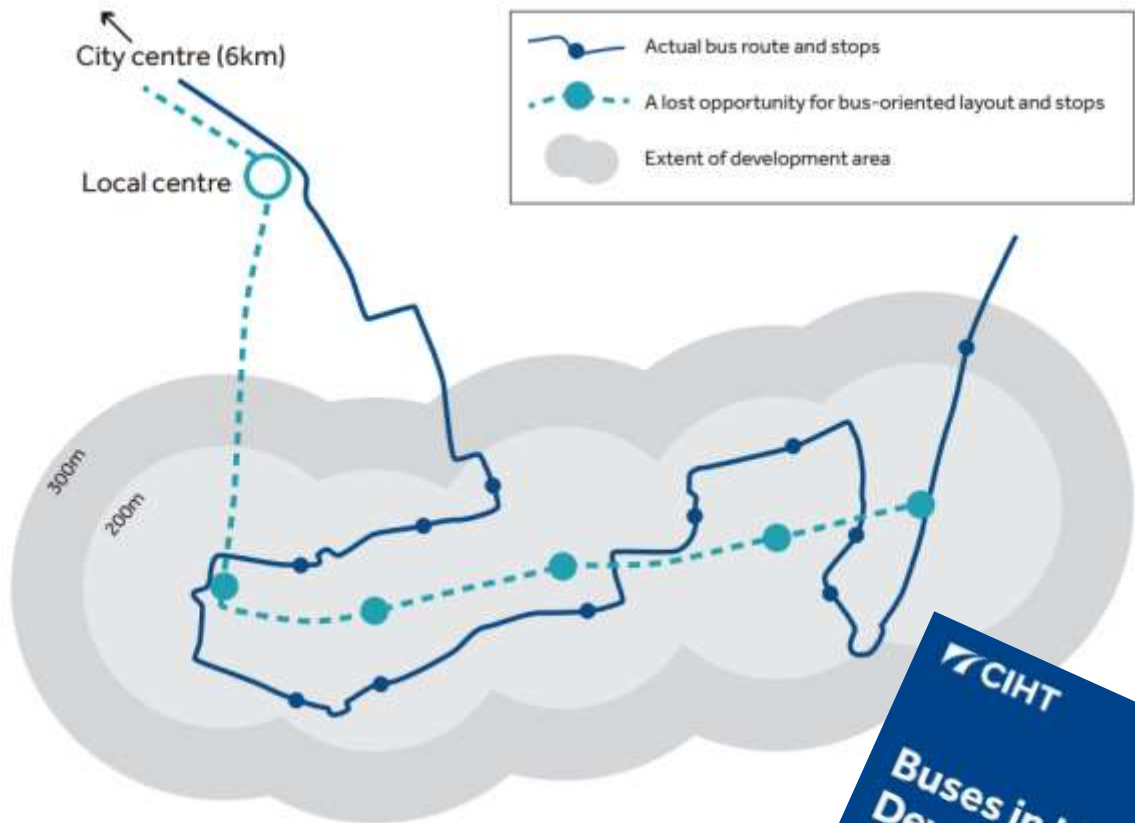
- Physical activity has a “strong dose-response relationship with health outcomes”
- In other words...
- Any increase in activity is good for you!
- Copenhagen study - people cycling to work; 28% reduction in mortality

Estimate of child obesity jumps during covid
 Proportion of **overweight** and **obese** children in their final year of primary school in England

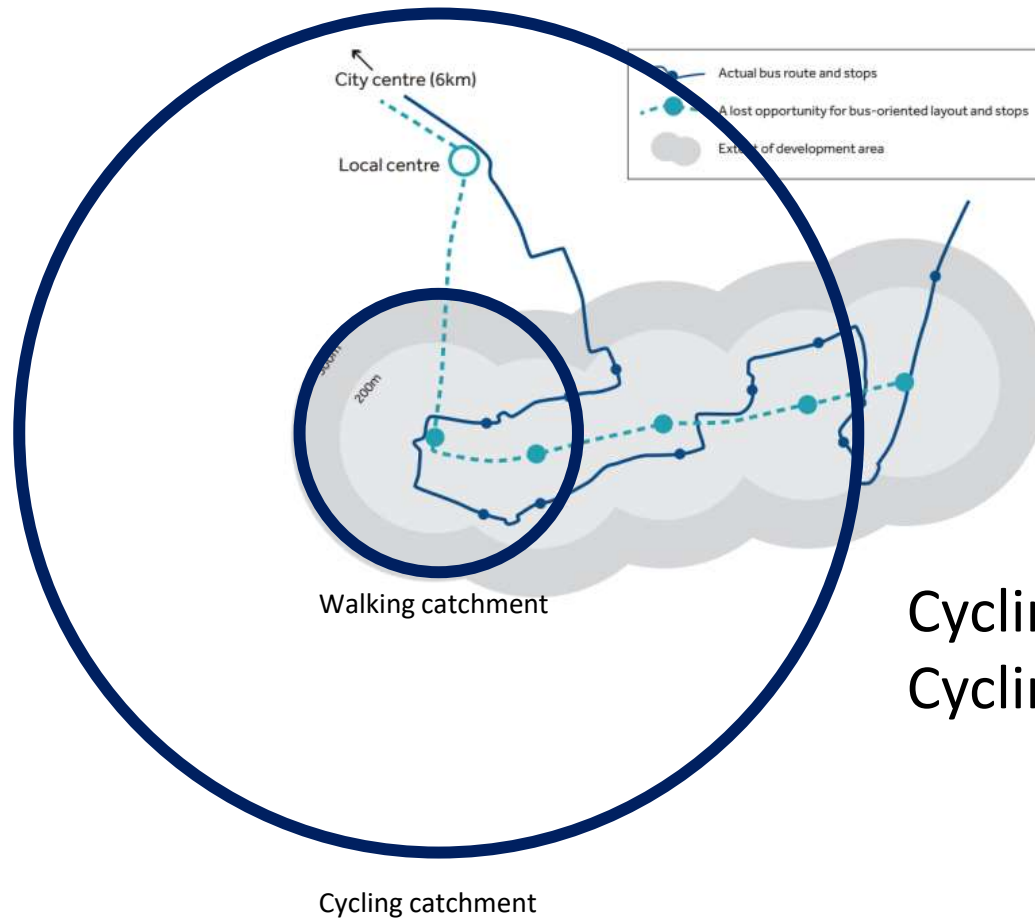


2020/21 estimate based on measurements from 24% of children rather than entire school year

Source: NHS Digital, National Child Measurement Programme in England **BBC**



Walking, Cycling and Public Transport




Cycling ~ 3 x the speed of walking
Cycling ~ 10 x the catchment of walking

Mobility Hubs? Or just cycle parking to start with...




Active Travel England


 Active Travel England

Cycling and Walking Investment Strategy 2 (CWIS 2)
Gear Change: a bold vision for cycling and walking
Active Travel England's framework document


Featured



28 June 2022 — News story
[Chris Boardman named permanent National Active Travel Commissioner alongside other senior Active Travel England appointments](#)
Active Travel England will be headed up permanently by Chris Boardman



22 January 2022 — News story
[Olympic gold medallist and cyclist Chris Boardman to lead government's new active travel body](#)
Active Travel England to create safer streets for cycling and walking to boost air quality and help improve



27 July 2020 — Policy paper
[Cycling and walking plan for England](#)
Sets out a vision for a travel revolution in England's streets, towns and communities.



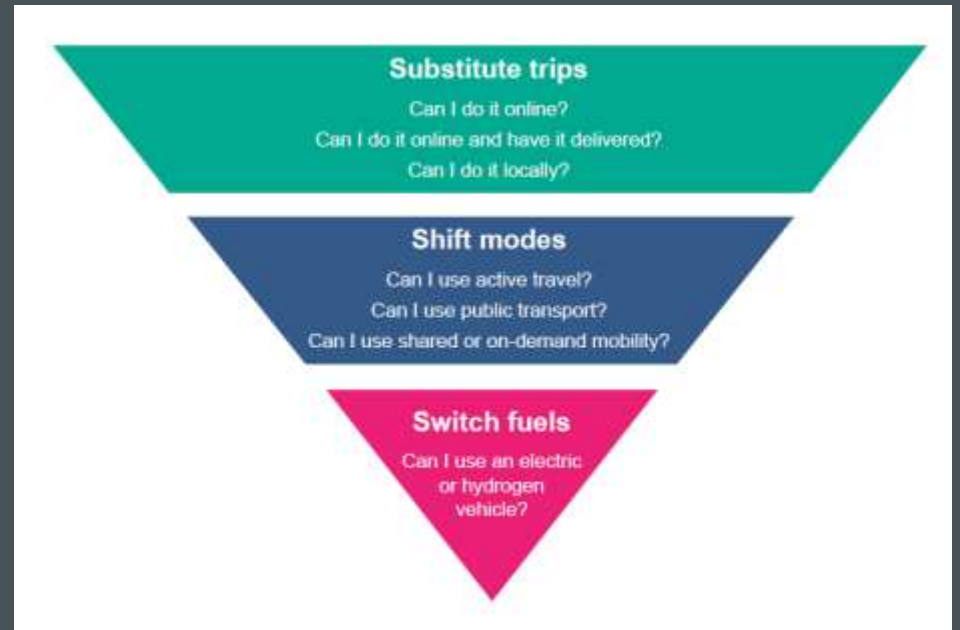
We want new developments to be easily and safely accessible and navigable by foot and bike, and to make existing cycling and walking provision better.

One of Active Travel England's functions will be as a statutory consultee within the planning system

RTPI – Net Zero Transport - 2021

The role of spatial planning and place-based solutions

- Place-first approach:
 - *Reduce the need to travel*
 - *Shift mode*
 - *Switch fuel*
- Just switching to cleaner fuels only achieves half the necessary emission reductions
- Move from Predict and Provide to
- Vision and Validate/Decide and Provide



Movement, Place and Carbon

		Movement		
		Avoid	Shift	Improve
		<p><i>Reduce the number and length of trips needed by improving land use planning, travel planning and levels of digital connectivity</i></p>	<p><i>Shift travel to more sustainable modes: public transport, walking, and cycling, away from car use.</i></p>	<p><i>Improve emissions intensity and energy efficiency of vehicles and operational efficiency of roads, through technology improvements</i></p>
Place	Home	<p>Home working space Superfast internet</p>	<p>Convenient cycle parking E bike charging E bike subsidy PT taster tickets</p>	<p>EV Charging</p>
	Neighbourhood	<p>Mixed Use: Local amenities/Local employment Co-working spaces Superfast internet</p>	<p>Cycling/Walking Infrastructure Filtered Permeability/ Low Traffic Neighbourhoods School Streets High quality public transport services AV Shuttles Mobility Hubs Car Parking Rental 20mph limits Micro-consolidation Centres</p>	<p>20mph limits Car Clubs Mobility Hubs Public EV Charging</p>
	Settlement	<p>Superfast internet Digital public services (eg GP online)</p>	<p>Cycling/Walking Infrastructure – off site Public Cycle Hire Park and Ride High quality public transport routes Road Space Reallocation Consolidation Centres Mobility As A Service (MaaS) Car Park Charging Workplace Parking Levy Congestion Charge</p>	<p>Lift Share 20mph limits Clean Air Zones Electric/Hydrogen Bus Fleets Public EV Charging Hydrogen Fuel Cell Charging</p>

And what about town centres?

What makes a good town centre?

Grimsey Reviews:

- *“The combination of great public spaces and diverse social and economic activity will create a place where people will want to come together” (2013)*
- *“Design should celebrate the historic character and local identity with high quality streets and public realm” (2018)*
- *“For generations our urban areas have been designed exclusively around the car. But...bold moves are being taken to make high streets more walkable and cycle friendly. In cities around the world the pandemic has been the catalyst to address this.” (2020)*



Shrewsbury

The Big Town Plan Vision (2018)

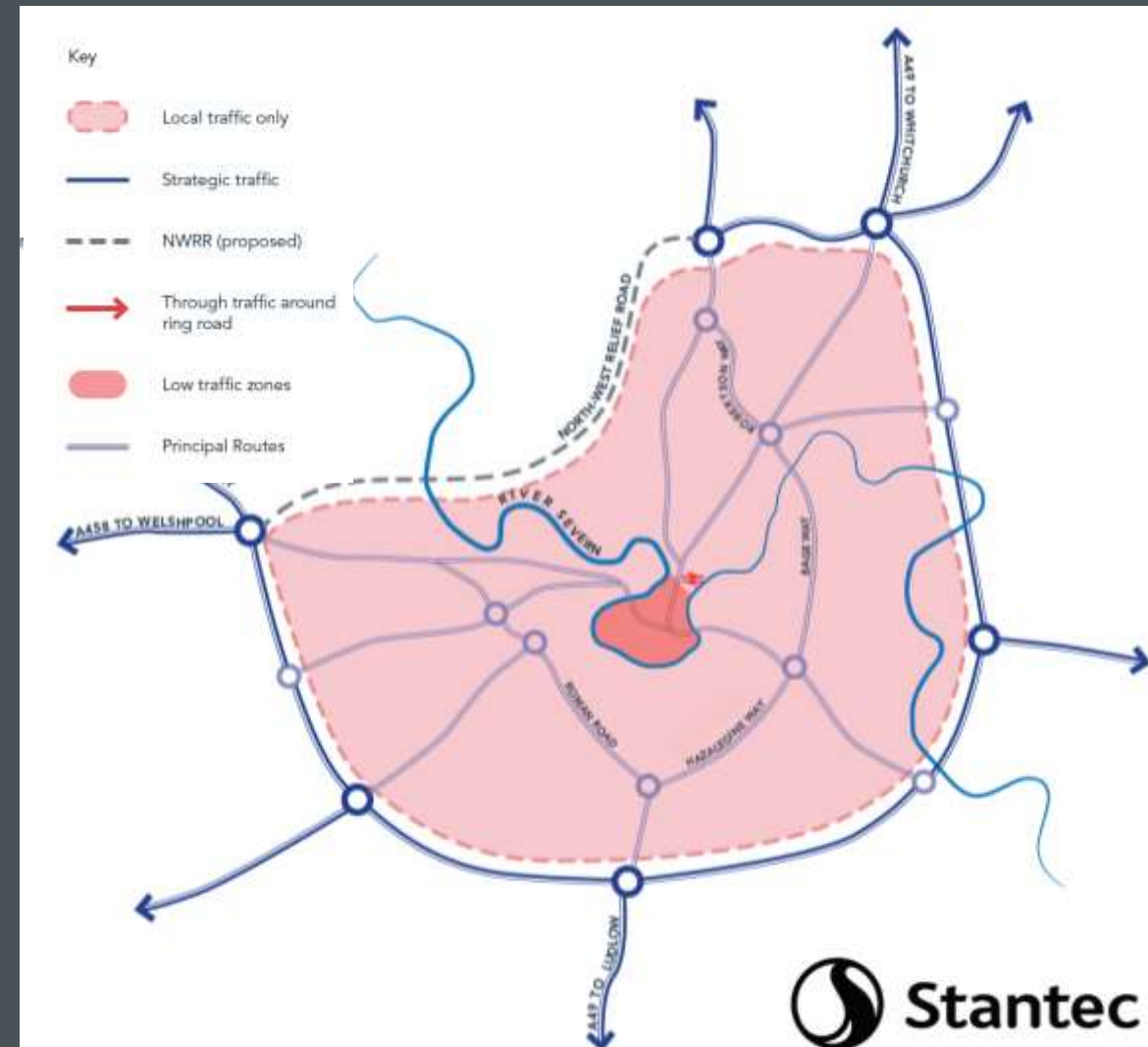
- *Traffic in the town centre is very light and slow-moving. Pedestrians and cyclists can walk and move wherever they want, making the streets their own*
- *The whole town is better connected by cycle or on foot, in a safe way, avoiding conflict with vehicular traffic. It is now possible to make your way across town by cycle or on foot.*



Shrewsbury

Movement Vision (2020)

- *Reduce town centre through traffic by creating Low Traffic Zones*
- *Improve Park & Ride*
- *Move main car parking out of the river loop*
- *Relocate the bus station*
- *Create priority bus and cycle corridors*
- *Second walk/cycle bridge connecting to the railway station*
- *20mph limit across the town centre*





Castle
← Library

Castle →





Thanks

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transport ● engineering ● placemaking