Stepping off the Road to Nowhere:

How changing our transport modelling can deliver beautiful housing, sustainable transport and green growth

What we did and why

- Following our report into new housing and infrastructure ‘Computer Says Road’ we sought to demonstrate how, by embracing a new form of transport modelling, we could build the same number of homes, on less land that leads to a greener, more prosperous and happier place.
- We chose Chippenham due to how poor the existing masterplan was and how replicable we thought a demonstrator here could be across England.
- We must stress, this is a hypothetical plan and we have made no judgement as to the principle of new development. It is worth noting that development pressures have not, and likely, will not go away.

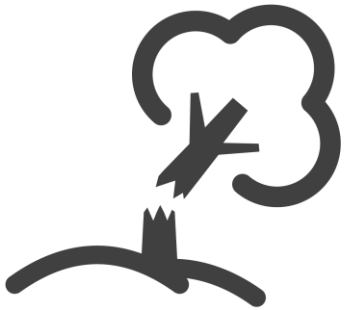
The Road to Nowhere: How transport modelling shaped the modern world

- We have a deep-rooted problem with new development and the way we grow our towns and provide new housing
- New development and urban extensions remain sprawling, car-dependent, without amenities and requiring new connecting roads, as well as lots of land
- It's bad for the environment, it's bad for people, and it's bad the towns and cities we love.

More roads = more problems

Worsening climate change and air pollution. The domestic transport sector in the UK emits 27 per cent of all our CO2 - more than any other sector

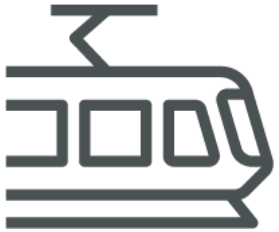
Draining public funds. The Government has set aside a £27bn road building budget in a five year period,



Eating into the countryside. Large new roads and low-density housing developments are very land-hungry.

Exacerbating inequality. Built-in car dependency exacerbates inequalities for those unable or less likely to drive,

Ever more congestion. Multiple studies have found that building new roads generates more journeys and more traffic.



Undermining the viability of public transport. Low density development is more expensive to serve with public transport,

Severing communities, social isolation and ill health. Fast, heavily-trafficked roads make it harder for residents to move around within their neighbourhoods,

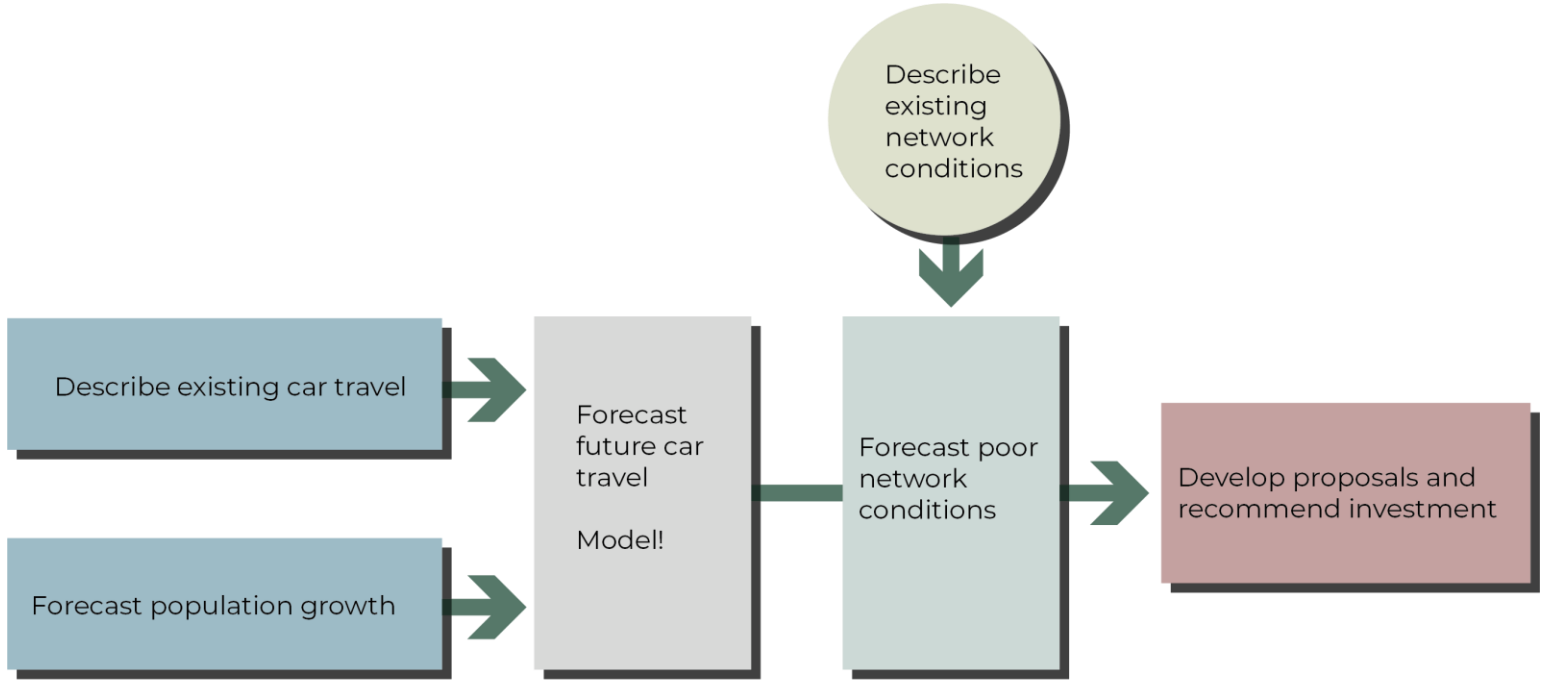
Unpopular places. People will also pay more for walkable, mixed-use neighbourhoods. Proximity to large roads lowers the value of homes.

The cause: 'Predict and provide' traffic modelling

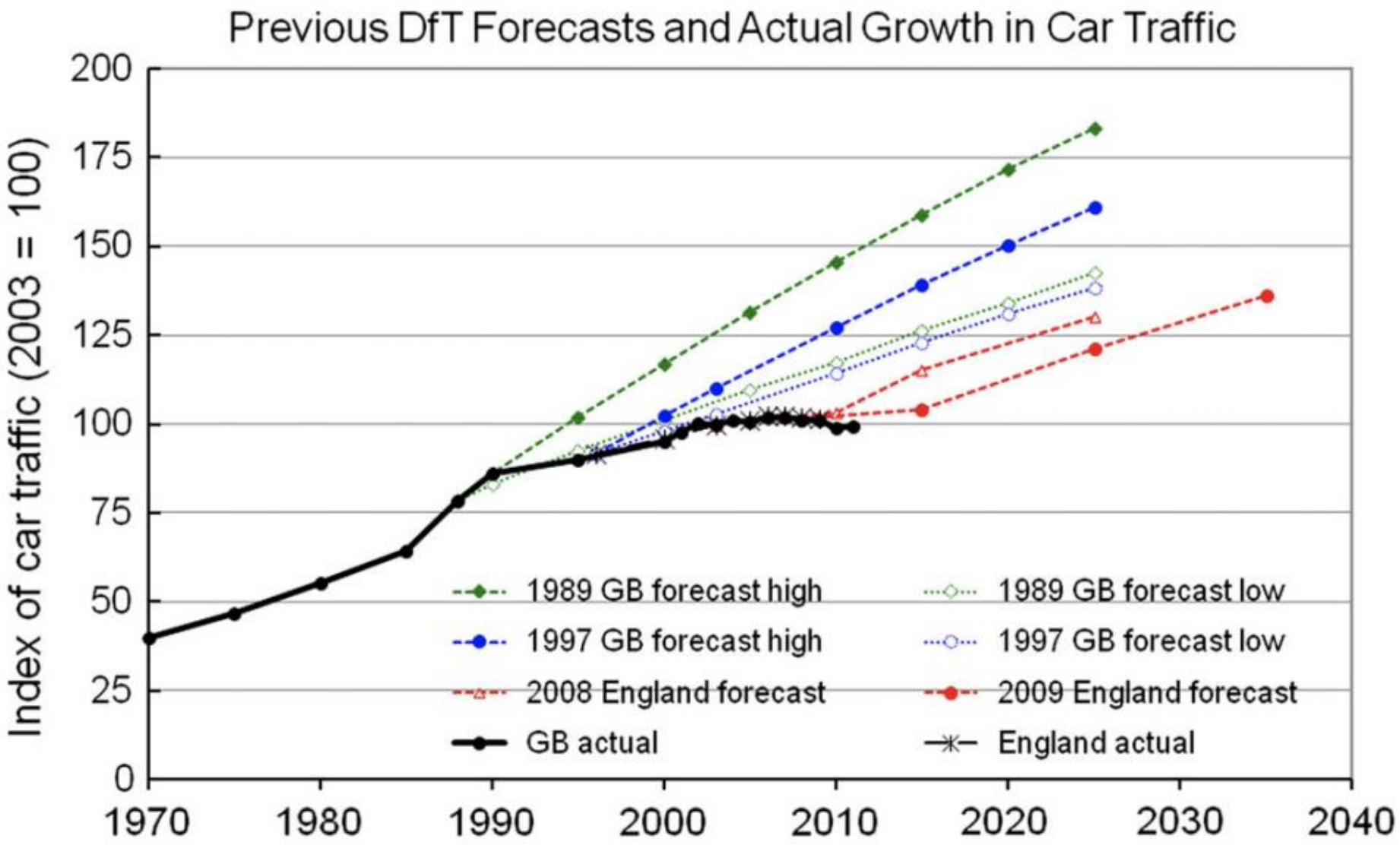
- The dominant paradigm of traffic modelling, known as 'predict and provide' is outdated, based on flawed assumptions, and prescribes oversimplified solutions.

- The output of 'predict and provide' modelling is usually that more, larger and faster roads are needed to accommodate the ever-increasing amount of driving that is predicted

- The term 'predict and provide' was originally intended as a criticism of the approach, coined by Stephen Plowden in his critique of post-war transport planning, *Towns Against Traffic.*

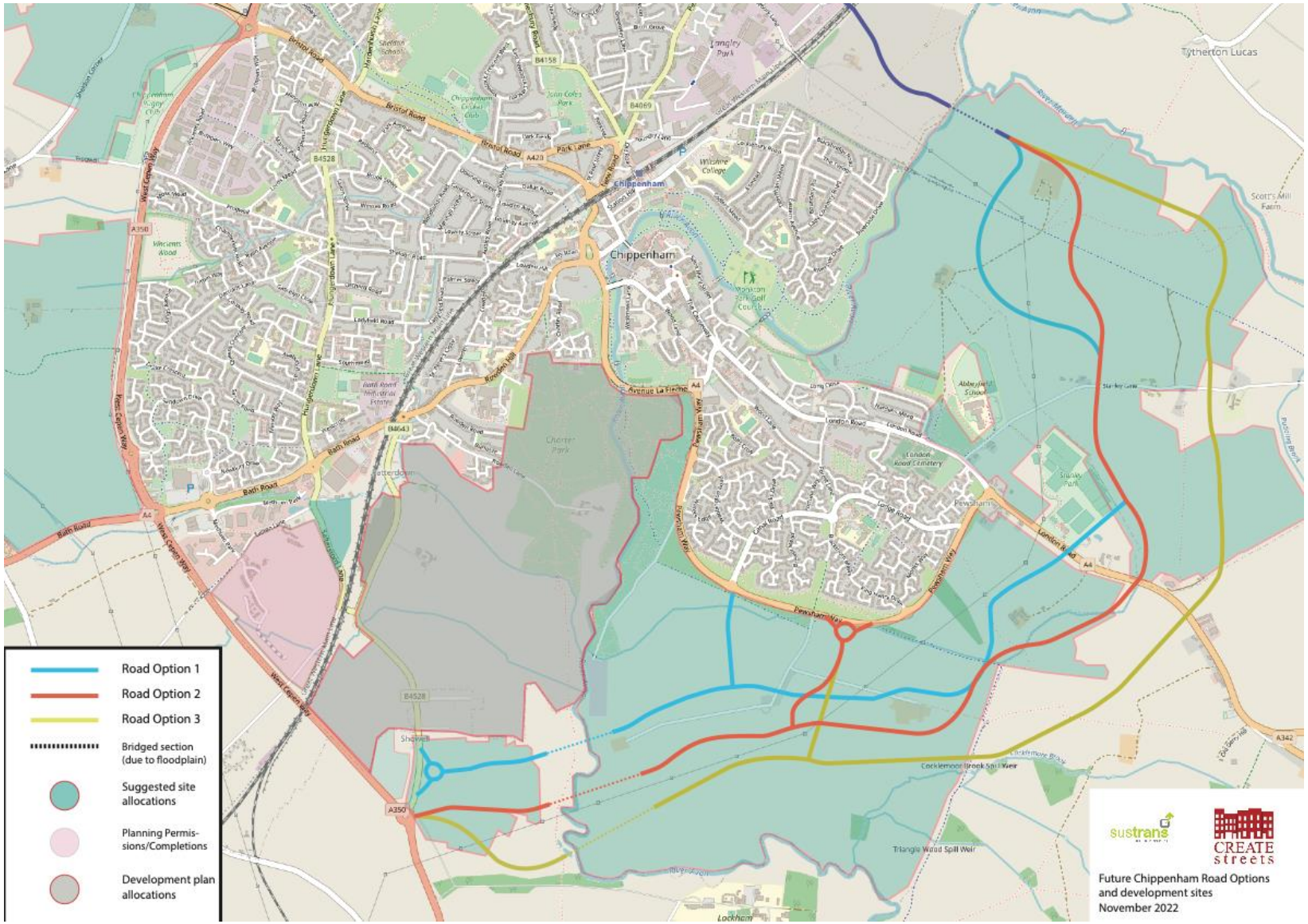


The cause: 'Predict and provide' traffic modelling



‘Predict and provide’ in action: Chippenham’s £75m HIF plan

- The ‘Future Chippenham’ scheme initially planned to deliver 7,500 new homes to the south-east of Chippenham
- A new distributor road was planned to unlock the sites, using £75m from Housing Infrastructure Fund
- The similarities with other market towns and urban extensions means that solutions identified for Chippenham were likely to be replicable elsewhere

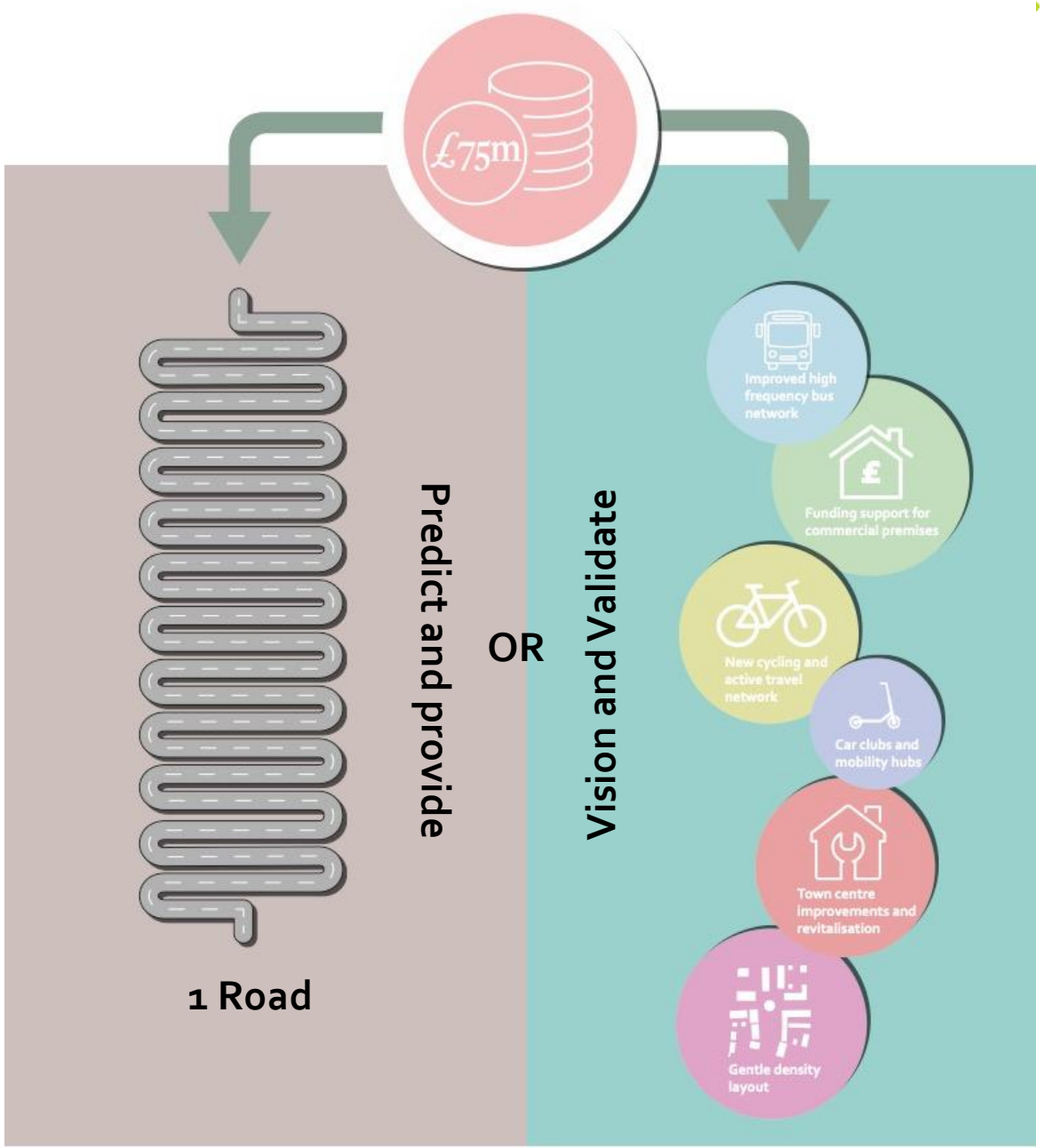


Applying 'vision - led' to Chippenham

The Vision: How do people actually want Chippenham to grow?

- Instead of putting £75m into one road, how can it be deployed to avoid car-dependent development and help achieve local residents' **vision** for their town and public infrastructure?

- How can better transport modelling **validate** that vision and show what is required to get there?



Applying 'vision - led' to Chippenham

The Vision: 'Big Moves'

- Based on discussions with local stakeholders on concerns and issues in Chippenham, we articulated the vision as a series of 'Big Moves', staying within the budget of the original £75m HIF scheme

	What	Cost	Impact
1	Intensify masterplan for gentle density design	**£0m**	Significantly reduced land take
2	Infill underused brownfield land with remediation and street votes	**£2.5m**	More homes within the existing town
3	A rail passing loop at Melksham	**£15m**	More trains at commuter frequency. Less congestion.
4	Improve streets within new development (down from initial £75m)	**£10m**	Accommodate expansion and road connectivity
5	Contribution to an improved high frequency bus network for 5 years.	**£7.5m**	More use of sustainable transport choices enabled. Less congestion.
6	Create car clubs and mobility hubs	**£3m**	Enable shifts to more sustainable transport choices
7	Support local businesses dur-ing development phase	**£6.25m**	Providision of more amenities for new residents within walking distance
8	Contribute to town centre revitalisation and improvements	**£10m**	Improved the town centre for exist-ing and new residents.
9	Protected cycle links from new developments to key locations in town	**£3.5m**	More active travel and less car use.
	Contingency / inflation or mon-ey returned to the government	**£17.25m**	
	Total	**£75m**	

Applying 'vision - led' to Chippenham

Big Move 1: Reducing a 350ha masterplan to a 120ha masterplan
Cost: £0

- **Less land.** Land take will be reduced from 350 hectares to 120 hectares, for the same 7,500 homes.
- **Easier to get to the station.** Almost all the new homes will be within 2.5km of Chippenham Station and half will be less than 1.5km away.
- **More shops.** 125 new shops and amenities will be supported from the beginning of the new development.
- **Easier access to nature.** The number of new and existing homes within 10-minute walk of countryside will almost double, from 6,420 (in the road-led masterplan) to 12,400 (in our 'gentle density' masterplan).
- **Less wasted space.** Due to a better transport offering the amount of land for car parking will reduce from 28ha to 11ha - enough for around 20 new small parks or 850 new homes.

Applying 'vision - led' to Chippenham

Big Move 1: Reducing a 350ha masterplan to a 120ha masterplan
Cost: £0

- The main Big Move is an alternative 'gentle density' masterplan
- This move is key to reducing land take, from 350ha to 120ha, with a density of 58 homes per hectare
- Gentle density masterplans move away from sprawling, detached-home, car-centric development, to create a walkable network of terraced, low and mid-rise housing that is well-connected to existing settlement
- It mirrors the plan and existing densities found in central Chippenham (40-60dph)

Applying 'vision - led' to Chippenham

Further Big Moves:

Big Move 2: Infill underused brownfield land with remediation and street votes
Cost: £2.5m

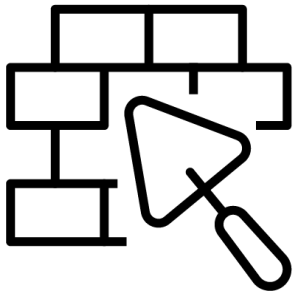
- More homes within existing town

Big Move 3: A rail passing loop at Melksham
Cost: £15m

- More trains at commuter frequency. Less congestion in Chippenham.

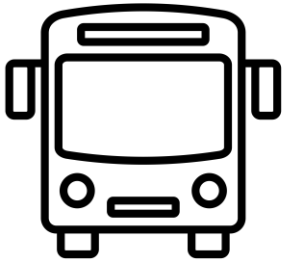
Applying 'vision - led' to Chippenham

Further Big Moves:



Big Move 4: Improve streets within new development (down from initial £75m).
Cost: £10m

- Accommodate expansion and road connectivity

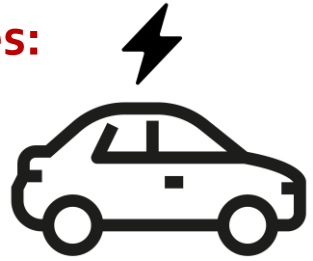


Big Move 5: Contribution to an improved bus network for 5 years.
Cost: £6.25

- More use of sustainable transport choices enabled. Less congestion.

Applying 'vision - led' to Chippenham

Further Big Moves:



Big Move 6: Create car clubs and mobility hubs
Cost: £3m

- Enabling shifts to sustainable transport

Big Move 7: Support local businesses during development phase
Cost: £6.25m

- Provision of amenities for new residents within walking distance

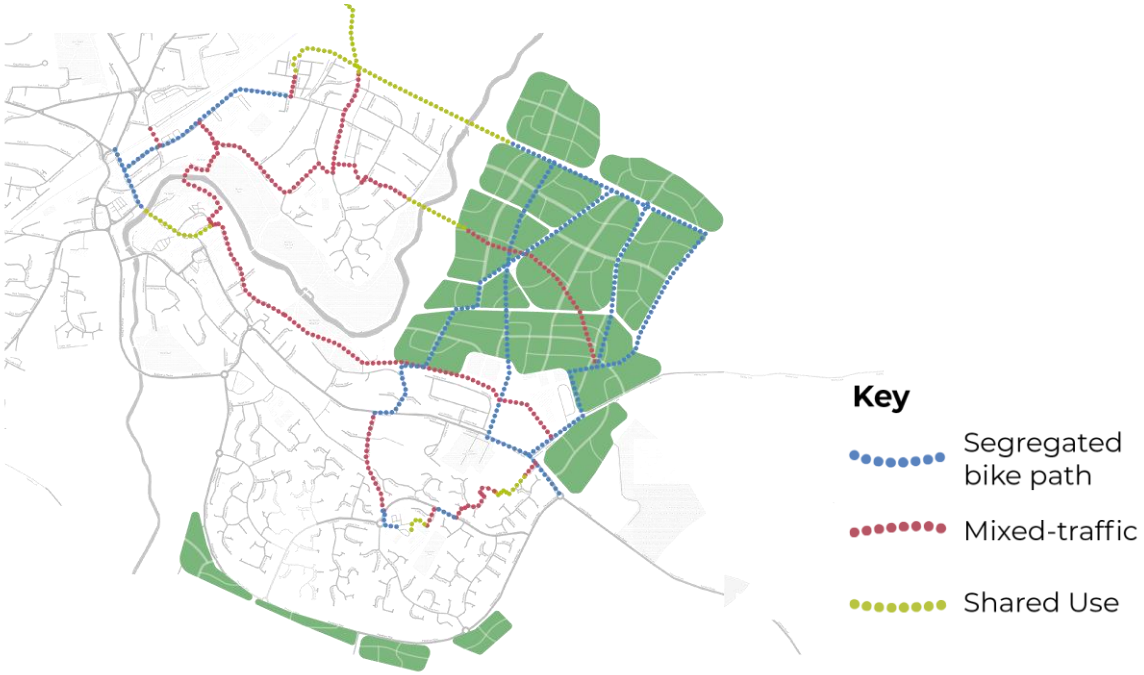
Big Move 8: Contribute to town centre revitalisation and improvements
Cost: £10m

- Improved place qualities in existing town centre for existing residents

Applying ‘vision - led’ to Chippenham

Big Move 9: Protected cycling links from development to key locations in town

- Embedding active travel from the start with ultra-convenient route design provides the platform for significant modal shift…



The Validate: calculating modal shift with leading transport planners ITP

- In a vision-led approach for new development, the total number of trips being made by people on any given day is likely to be broadly similar, but the way in which they make them (their travel mode) might reapportion to different modes.

- Use TRICS to calculate baseline (original masterplan) expected number of trips generated

- Then assess the quality of vision-led new development using the benchmark of four key measures:

  - **Frequent, reliable public transport networks,**
  - **Direct, convenient and safe walking and cycling**
  - **Traffic and parking demand management,**
  - **High quality placemaking, integrated with land use planning**

The Validate: calculating modal shift with leading transport planners ITP

- 30% of all trips are made inside the site (due to proximity of amenities)
- Improved active travel routes between Chippenham and site reduce overall Chippenham car use by 5%

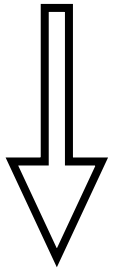
Key: Major impact | Medium impact | Minor impact | Neutral impact

	Percentage mode share			
Big Move	**Public transport**	**Walking and cycling**	**Demand management**	**Placemaking and planning**
Intensify masterplan for gentle density design	Will positively influence viability of public transport services, across a range of trip lengths	Will positively influence internal and short distance trips, by creating a walkable place	Some positive influence if walking and cycling to access services is easier because of shorter distances	Will positively influence internal and short distance trips by creating a more walkable place
Infill underused brownfield land	Will positively influence viability of public transport services, across a range of trip lengths	Will positively influence internal and short distance trips, by creating a walkable place	Neutral impact	Will positively influence internal and short distance trips by creating a more walkable place
A rail passing loop at Melksham	Will positively influence longer distance trips	Neutral impact	Neutral impact	Neutral impact
Protected cycle links	Could positively influence multi-stage, longer trips to public transport interchanges	Will positively influence active travel trips across all trip lengths	Creating more people-focussed streets, which prioritise walking and cycling, will reduce vehicle dominance	Will positively influence the look and feel of streets within the masterplan area, and could benefit the wider town
Contribution to an improved high frequency bus network	Will positively influence trips to and from Chippenham and potentially further afield	Could bring public transport closer to people, where it becomes more attractive to walk / cycle to a transport interchange	Creating corridors with bus priority, and friction created by buses, could reduce vehicle dominance	Reducing private vehicle dominance in favour of buses could improve streets and places

The Validate: key outcomes

- Compared to the original road-led masterplan, using ITP's calculations, our masterplan will result in:

12,000 **fewer car trips every day**

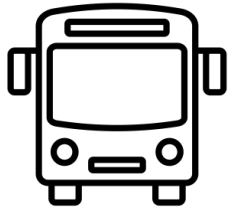


A mode share drop in car use from 72% to 46%

9,300 **more people walking and cycling everyday**

Decrease in background traffic between 5-10%

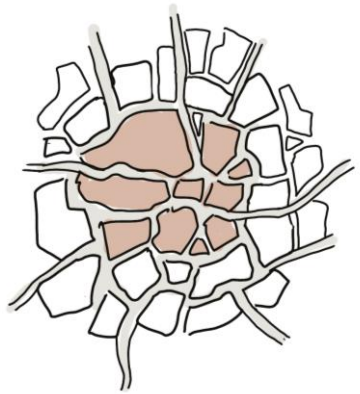
2000 **tonnes fewer carbon emissions**



3000 **more public transport users per day**

The road ahead: transforming how our towns grow

- Making ‘vision and validate’ the default transport planning model to stop a new generation of ‘road belts’…



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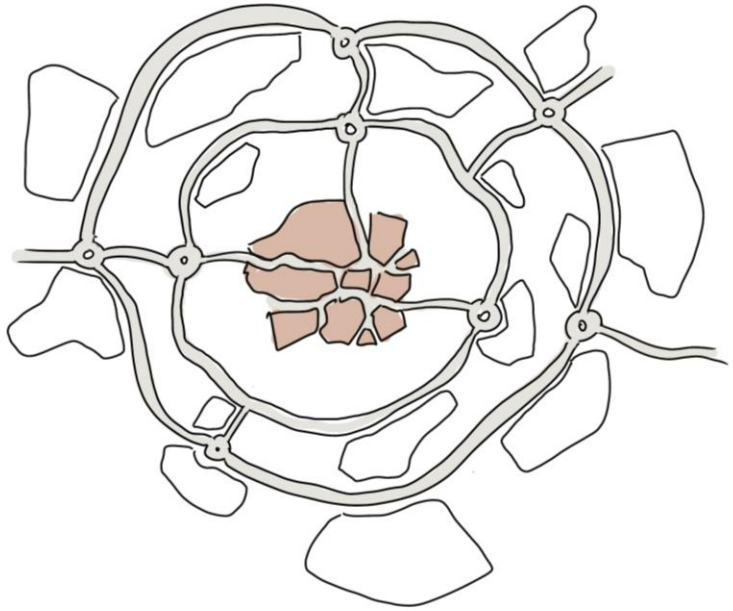

‘Vision and validate’: less new roads; walkable, organic growth connected and benefitting the existing settlement; polycentric; less land hungry

‘Predict and provide’: more roads for more cars; ribbon development disconnected to existing settlement; monocentric, or dormitory suburbs that drive to other towns; significantly more land hungry

Appendix

The road ahead: policy recommendations

For National Bodies	
1	The Department for Transport should issue guidance mandating that local transport plans (LTPs) and Transport Assessments (TA's) use the 'vision and validate' process for any transport modelling.
2	The DFT should provide a clear definition and technical guidance of what best practice 'vision and validate' looks like.
3	The DfT should create a role responsible for light rail (tram) within its Roads and Local Group division
4	The DFT should update Transport Analysis Guidance (TAG) to increase the share of costed benefits from broader social impact and reduce the dominance of 'time saving' as a costed benefit.
5	DLUHC to ensure Homes England prioritises financially supporting housing schemes using 'vision and validate' through a new Housing Infrastructure Fund (HIF) process that supports a more holistic package of financial support.
6	Homes England should conduct a rapid review existing HIF funded schemes that have a 'road only' component to investigate if alternate cheaper and more sustainable infrastructure can instead be provided.
7	Active Travel England should prioritise financially support housing schemes led by 'vision and validate'.
8	DLUHC should update the NPPF sustainable transport section 9 to require 'vision and validate' when modelling for new developments and to be updated to allow easier implementation of parking maximums to support car-lite development. For full NPPF text see appendix 1.
9	DLUHC should update the NPPF sustainable transport section 9 to require that 'the design of schemes and sustainable transport has been provided that ensures a sustainable transport trip share aligned with the targets set in the local transport plan.'[78]
10	Documents such as the Transport Decarbonisation Plan and Gear Change should become National Management Development Policies (NMDP's) with ministerial sign off. This would give them weight at a local level without having to repeat local policy.
11	The DFT should update section 16 of the Traffic Management Act 2004, which provides network management duty, to add in a placemaking and public health duty alongside expeditious movement duty.
12	The Road Traffic Reduction Act 1997, is in place and should be reviewed to update national targets.
13	DLUHC should adopt Manual for Streets as policy within the NPPF.

For local government and regional bodies	
14	All Local Transport Plans (LTPs) should mandate the 'vision and validate' process for any transport modelling.
15	Local planning authorities should allow reduced back-to-back distances (beyond the default 20 metres) to enable low-rise high-density urban extensions.
16	Local authorities should run a 12-hour transport model (ideally 24), instead of peak hour, for housing developments. Especially when developments are held up by accompanying highways works.

For Community groups and neighbourhood forums	
17	Visions created by neighbourhood forums through the Neighborhood Planning or Local Development Order mechanisms (2011 Localism Act) should be material considerations for any vision-based modelling carried out in the area.

The Validate: calculating modal shift

Mode	Baseline mode share (daily)	Mode shifts based on appraisal of Big Moves (against the themes)	Resultant mode share
Vehicles	72%	-26 percentage points	46%
Public transport users	3%	6 percentage points	9%
Walking and cycling	25%	20 percentage points	45%
Total	**100%**	-	**100%**

Mode	Baseline mode share (daily)	Mode shifts based on appraisal of Big Moves (against the themes)	Resultant mode share
Vehicles	37,700	-12,300	25,400
Public transport users	1,450	3,000	4,450
Walking and cycling	13,250	9,300	22,550
Total	**52,400**	--	**52,400**