

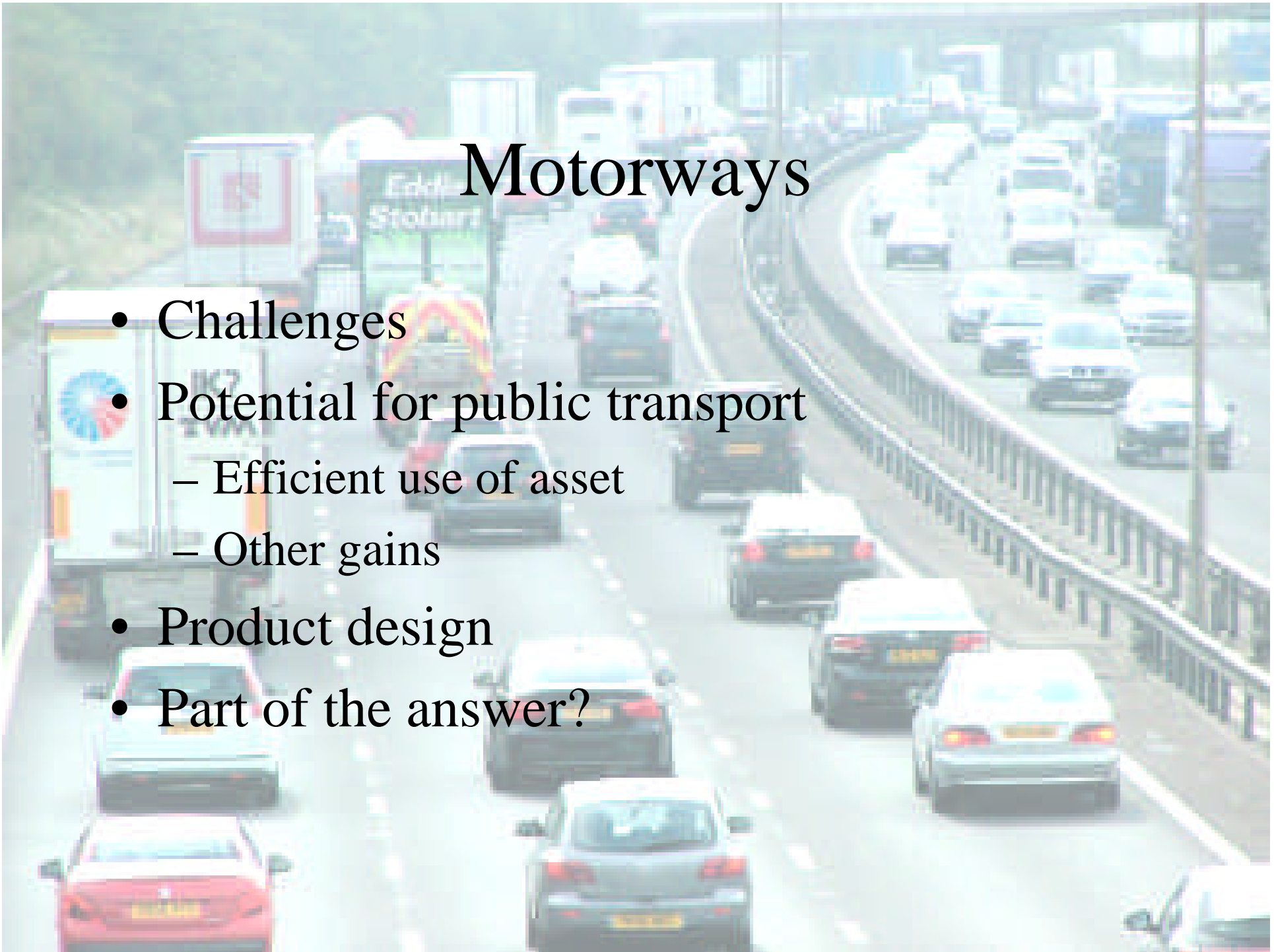


All Change?

Simon Bowers, Daventry DC

# Motorways

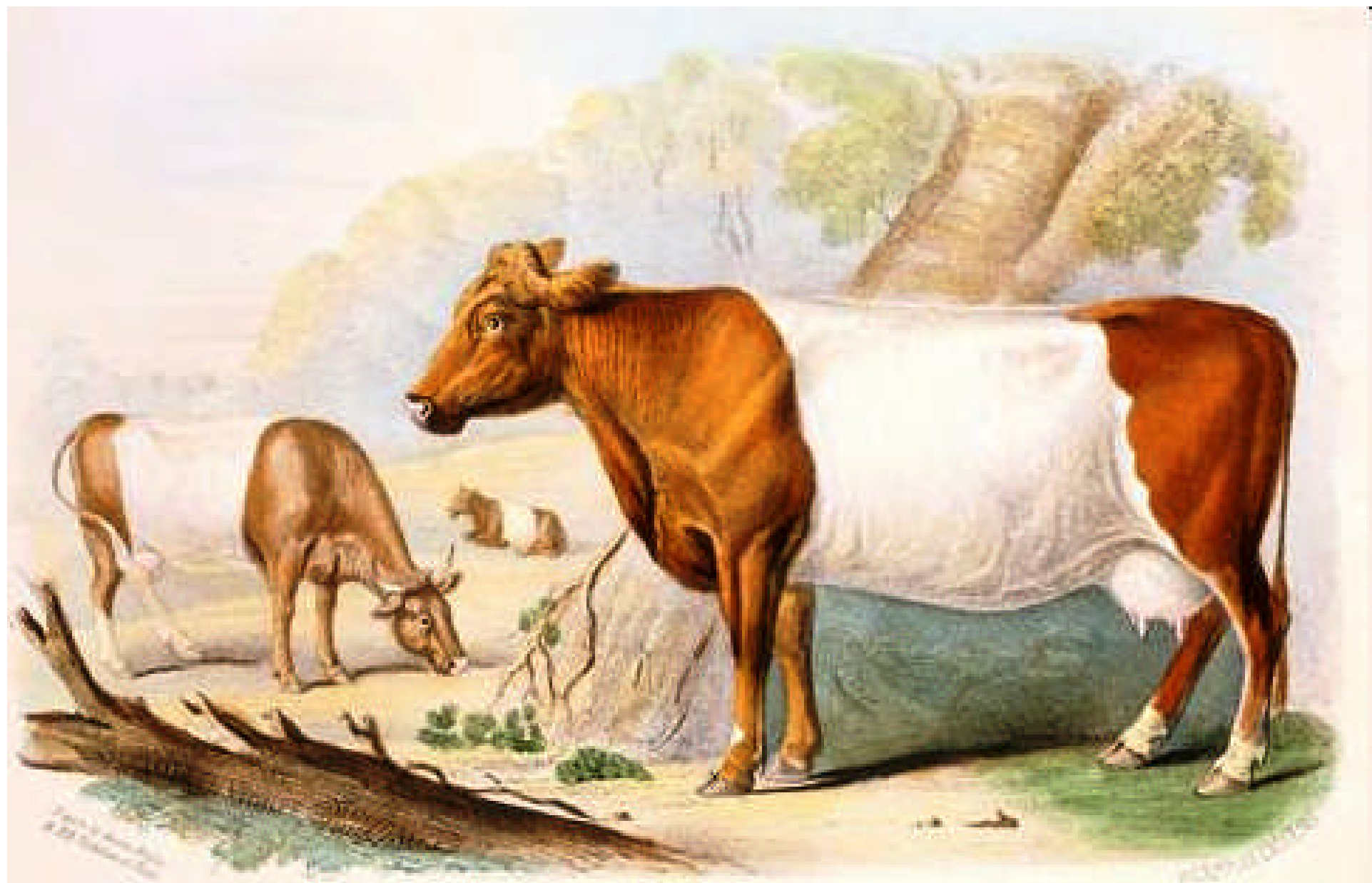
- Challenges
- Potential for public transport
  - Efficient use of asset
  - Other gains
- Product design
- Part of the answer?



# Motorways



- Exist
  - M6 Preston bypass, 1958
  - M1, 1959
- Important economically
- But problems
  - Environmental
  - And...



Race à ceinture, du Souverain.

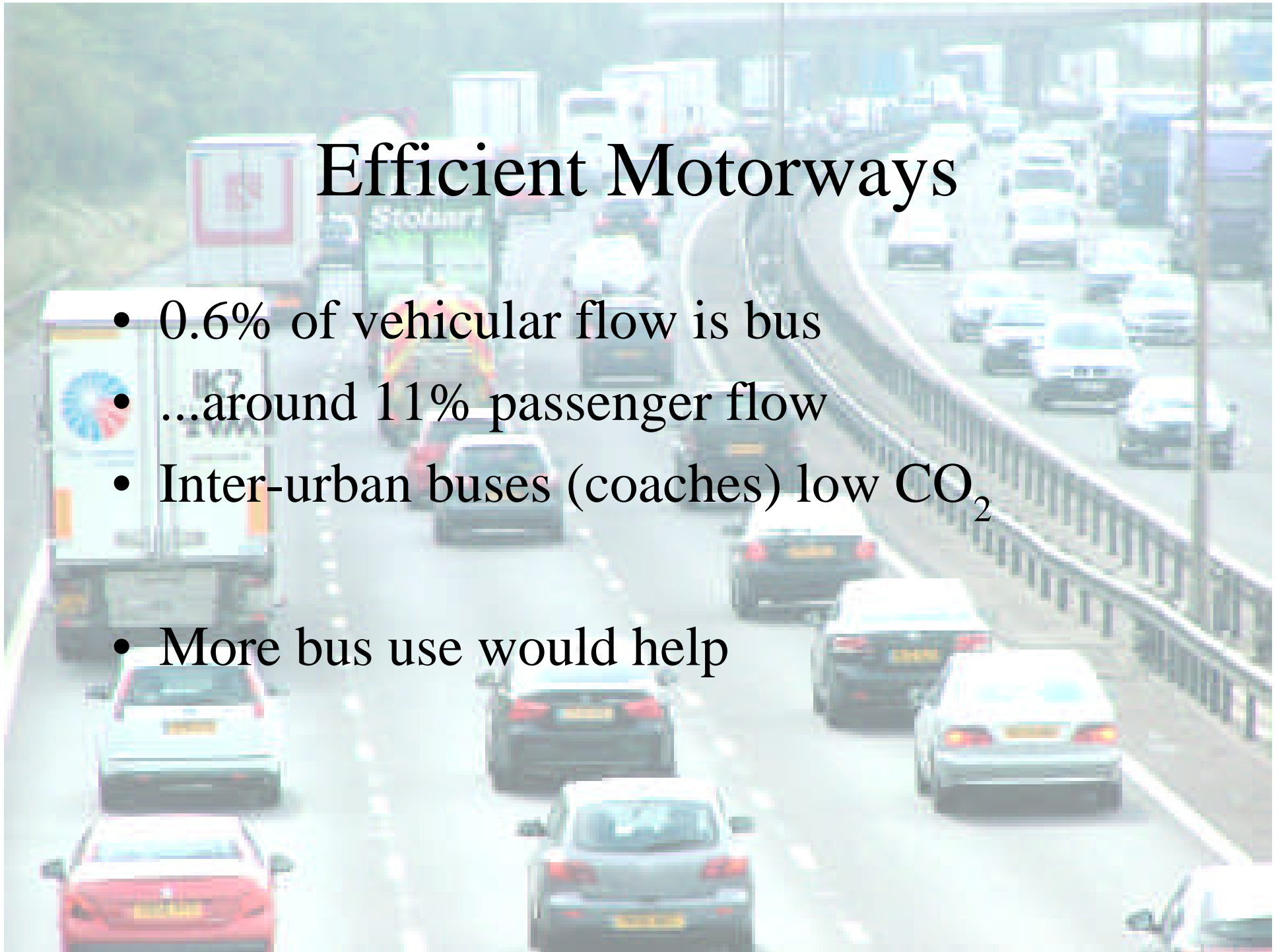
Le taureau de 5 ans de la variété avec cornes appartenant à M. John West, de West Hill, (Comté de Somerset)  
Le taureau de 5 ans de la variété avec cornes du troupeau de feu Sir John Philipps, à Montacute House

# Approaches

- Build more ... lanes, roads, etc.
  - Discourage use ... charging,
  - Make alternatives more attractive
- ‘wherever possible, to look for alternatives to building new roads by ... making smarter journey choices easier’ (DfT Circular 2/07)*
- Keep it cheap
  - How to do this...?

# Efficient Motorways

- 0.6% of vehicular flow is bus
- ...around 11% passenger flow
- Inter-urban buses (coaches) low CO<sub>2</sub>
- More bus use would help





# Good Public Transport

- High service frequencies
- Direct routes – competitive journey times
- Good quality travelling experience
- Promotion and marketing
- 'Legible' network of services

(Sloman, 2007)

# Lionel Tiger – Four Pleasures

- Physio-pleasure
- Socio-pleasure
- Psycο-pleasure
- Ideo-pleasure



# Physio-pleasure

“positive feedback from sensory organs”





# Physio-pleasure

“positive feedback from sensory organs”

- Comfortable seats
- Pleasant smells
- Refined noises

# Socio-pleasure

“is drawn from aspects of products which confer social, material or cultural status”





# Socio-pleasure

“is drawn from aspects of products which confer social, material or cultural status”

- Priority lanes
- Business Class
- High visibility
- Appearance of expense

# Psyco-pleasure

“drawn from products that give emotionally satisfying results from cognitive interaction”



*“products enable users to complete complex tasks with little cognitive demand”*



# Psycho-pleasure

“drawn from products that give emotionally satisfying results from cognitive interaction”

- Simple timetables
- No interchange worries
- High system visibility
- Obvious ways around

# Ideo-pleasure

“relates to people's values – from aesthetics to ethics”





# Ideo-pleasure

“relates to people's values – from aesthetics to ethics”

- Believable environmental claims
- Attractive design
- Minimising adverse effects on others

# The Perfect Product

- Looks expensive
- Feels expensive
- Satisfies the user
- Costs almost nothing to make

EST 1857  
SMYTHSON  
OF BOND ST

# Creating the Product

- Meet Sloman's list
- Provide Tiger's pleasures



# Headways

- Quite a few buses out there (M1, one hour):

|           | S'bound | N'bound | Total |
|-----------|---------|---------|-------|
| Scheduled | 4       | 5       | 9     |
| Other     | 7       | 10      | 17    |
| Total     | 9       | 15      | 26    |

- Can we access them?



# Speed

## Fixed

- 100km/hr (62mph)  
EU speed limit
- Limited benefits  
from priority  
measures

## Changeable

- Stop time
- Interchange time
- Make time in  
transit useful

# Good Quality Experience

- Vehicles
- Waiting areas
- Interchange facilities
- Parking
- ...whole system





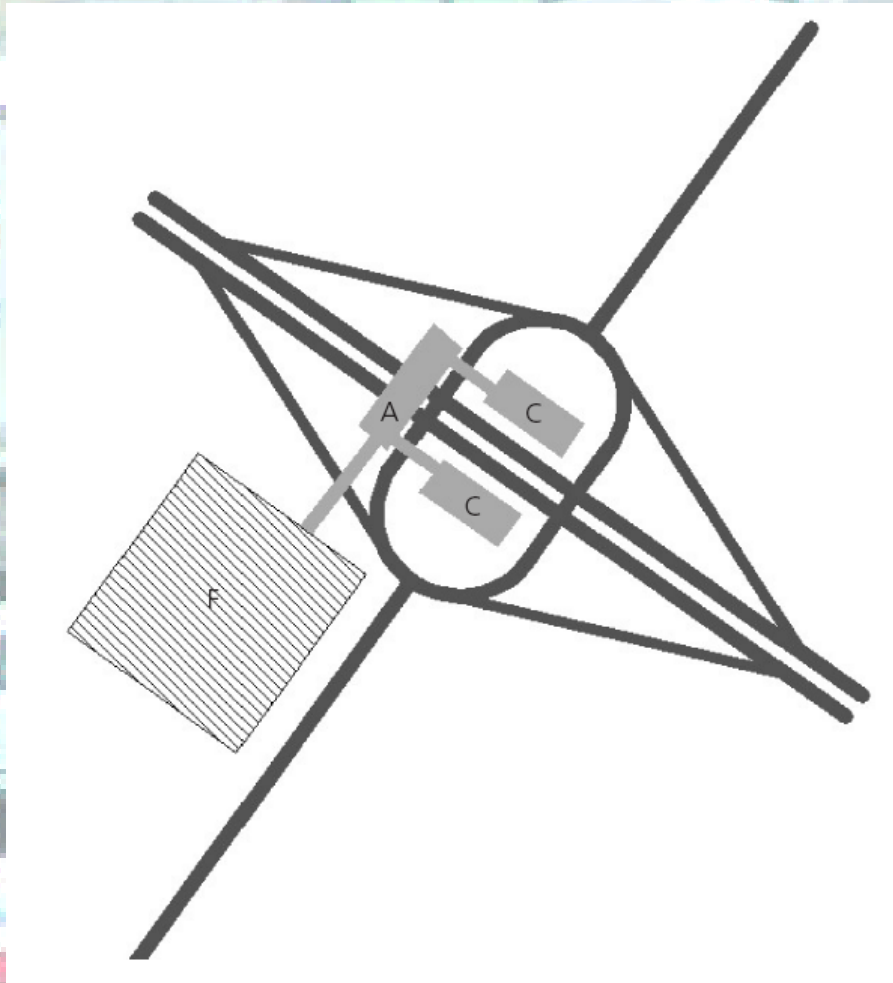
# A Necessary Condition

- Need to leave the motorway slows trips significantly
- Accessing local public transport is difficult or slow

*however*

- Most local public transport follows local road corridors

# A Necessary Condition



- A – Local buses
- C – Coaches
- F – car parking/hire



# Features

- Quality feel
- Sound excluded
- Enclosed waiting and connections
- Travelators?
- Facilities
- 'Business Class' areas
- £9-13 million

# Quality Feel



# Quality Feel

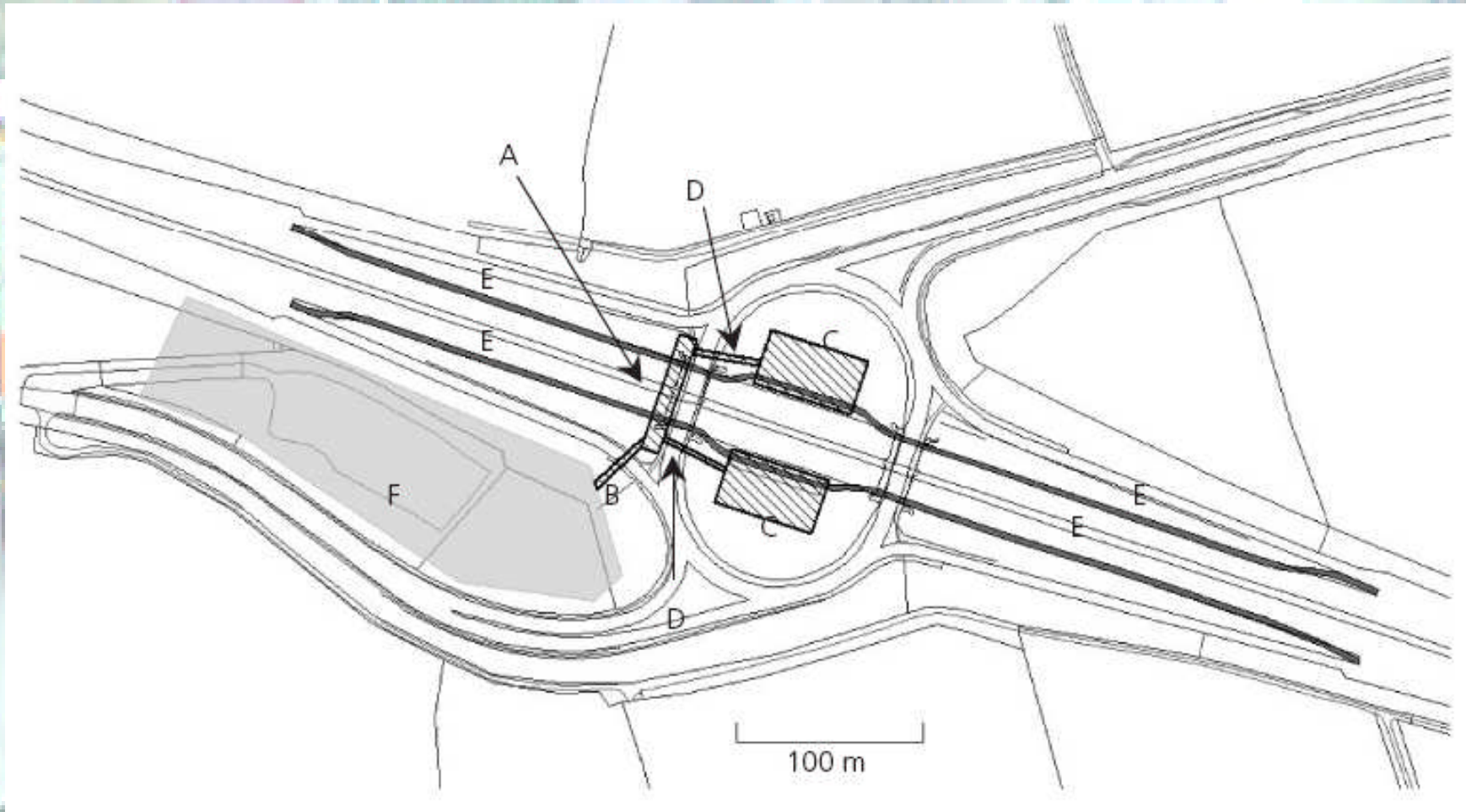




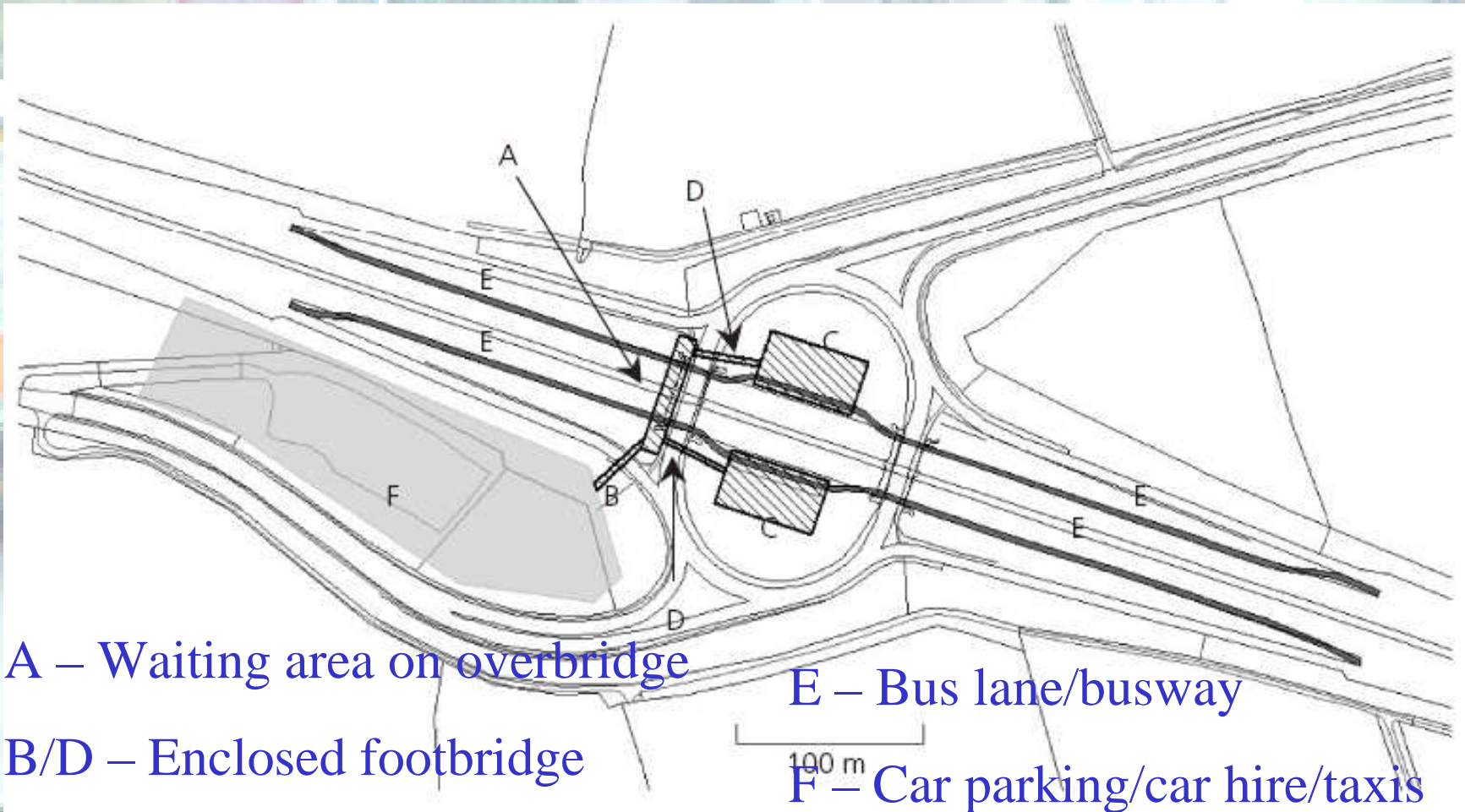
# Gains

- Reduced overall journey times
- Greater confidence in connections
- Greater range of places accessible
- High/very high visibility
- User flexibility – car parking and potentially hire
- Status gain (socio-pleasure)

# Case Study: M1 J16



# Case Study: M1 J16



A – Waiting area on overbridge

B/D – Enclosed footbridge

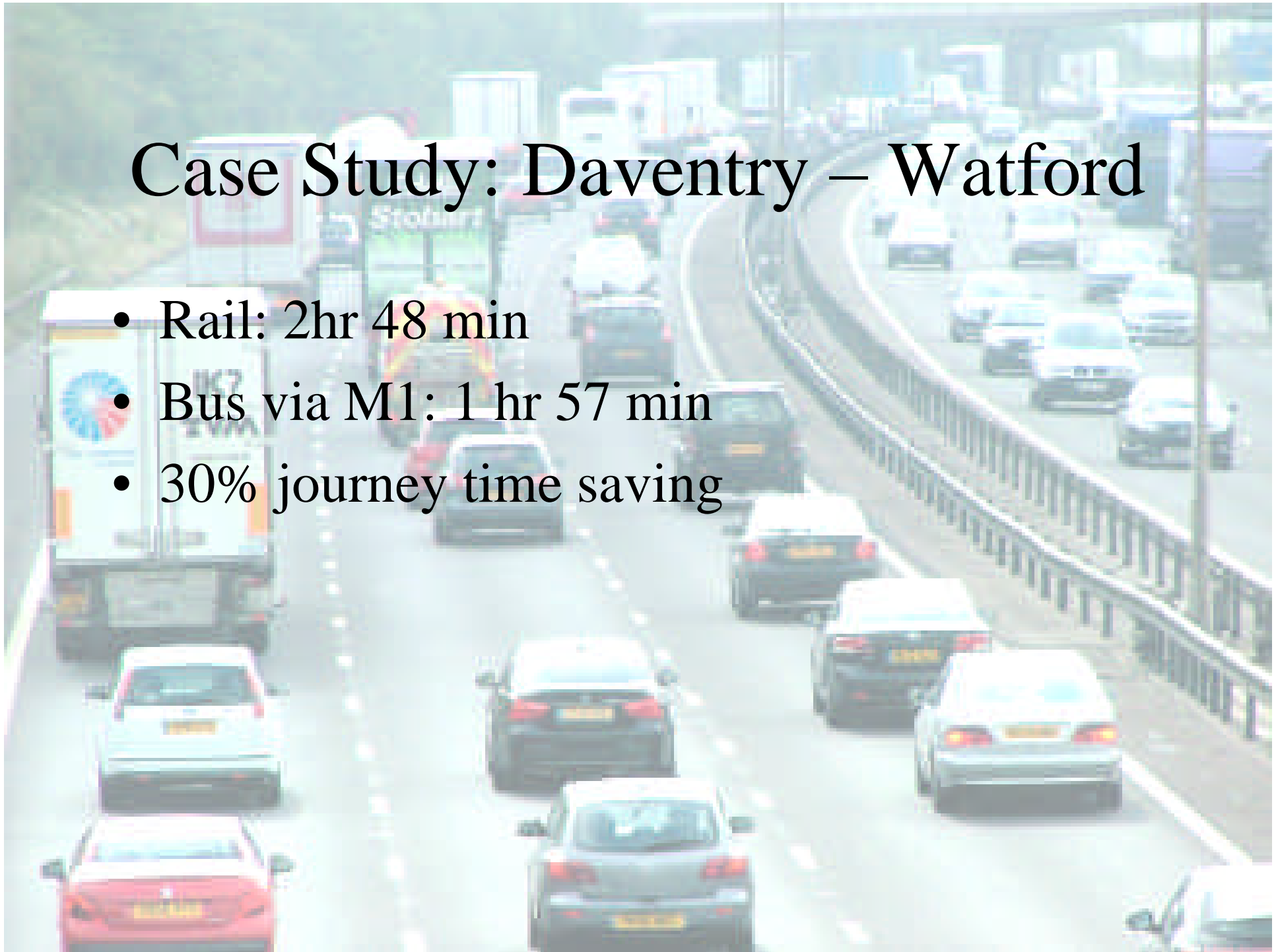
C – Waiting area (on-line)

E – Bus lane/busway

F – Car parking/car hire/taxis

# Case Study: Daventry – Watford

- Rail: 2hr 48 min
- Bus via M1: 1 hr 57 min
- 30% journey time saving



# Value for Money

- Theoretical D3 motorway at capacity (67 000 AADT)
- Double bus passenger flow and number of buses (0.6% to 1.2%)
- AADT flow falls 5198 (7.8%)
- Equivalent to ~8 years traffic growth

# Value for Money

- Interchange cost per km – £0.8 to £1.3m
- Widening per km – £12.5m
- HSR per km – £5.6m
- NPV of deferral of widening for eight years, per km – £3.1m
- NPV of deferral of HSR for eight years, per km – £1.4m



# Value for Money

- Lots of assumptions
- But the ballpark looks right
- Worth testing
- Other benefits:
  - CO<sub>2</sub>
  - Land take
  - Visual intrusion
  - Noise

# Conclusions

- Systems approach needed
- Motorway Interchanges only part of the story – but may be critical part
- Multiple benefits, limited adverse effects
- Airport links may be a place to start
- Volunteers?



Questions?

*for the full story...*

<http://dx.doi.org/10.1680/tran.9.00027>