The effects of removing traffic control regulations at busy urban road/street junctions

Shared Space Conference, Dublin 2010

Keith Firth – Director of Traffic Engineering
Background

- Formal controls ‘treat people like idiots’

- UK DfT advice encourages designers to apply ‘naked street’ principles, yet with little guidance on traffic management implications

- Increasing interest in application of ‘shared space’ designs in the UK and Republic of Ireland, yet with little or no appreciation of traffic management issues

- Conclusions from Colin Buchanan study for GLA of economic impact of traffic signals

- Risk aversion is limiting traffic management and streetscape design
Current advice

‘Some streets feature few, or no, signs or markings. This may be appropriate in lightly-trafficked environments...there is no statutory requirement for junction priority to be specified.’

‘As a starting point, there is no fundamental need to provide traffic signs or markings...there may be no need for traffic regulation orders’

‘Most of our streets remain badly designed. The car still dominates.

Streets that are designed to give all users more freedom in the way they use them are more civilised’
Is it safe?
DfT Shared Space Project
Stage 1: Appraisal of Shared Space

...there is no evidence that Shared Space schemes result in more casualties than traditional layouts at the types of flow at which they have been implemented in the UK.

...at the few UK schemes where exposure data are available there does appear to be a positive effect in reducing the number of casualties and the level of risk to pedestrians and cyclists.
Won’t we get sued?

- ‘A complete myth – there is not a single case of a highway authority being sued for street design’ Ben Hamilton-Baillie

- UK Road Traffic Act 1988
  - Duty of persons to observe Highway Code
  - No case law - difficult to establish a breach of duty of care arising from the RTA

- UK Traffic Management Act 2004
  - Traffic authorities have duty to 'manage their road network with a view to securing the expeditious movement of [all modes of] traffic', and
  - 'shall make arrangements as they consider appropriate' and 'consider any possible action' to mitigate problems.

- Highway Risk and Liability Claims (*UK Roads Board, ICE 2009*)
  - Overall presumption that road users are intelligent, able and expected to be responsible for their own safety and have a duty to take roads as they find them
  - Not necessary for design to take independence of judgement out of the hands of the road user
Pedestrian amenity and exclusion

Kent reviews ‘confusing’ courtesy crossings in pioneering shared space

Kent County Council is reviewing pedestrian crossings across the county with a view to changing them to “confusing” courtesy crossings. They are being investigated in line with a consultation exercise in the county.

The current crossings are “confusing” to drivers who expect the pedestrian to cross the road at a speed of between 3 to 4 miles per hour. The scheme is to be reviewed in order to ensure that pedestrians are aware of the rules of the road.

The current crossings are not visible to drivers who are approaching from a distance, and the pedestrian is expected to walk at a speed of between 3 to 4 miles per hour. The scheme is to be reviewed in order to ensure that pedestrians are aware of the rules of the road.

If you have any questions or concerns, please contact the council’s customer service team.

Boris: Say No
2000 Space Streets Discriminate Against Disabled People

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2000 Space Streets Discriminate Against Disabled People
Typical pedestrian compliance

Table 2: Pedestrian compliance with signal and use of central refuges

<table>
<thead>
<tr>
<th>Pedestrians</th>
<th>Red Man</th>
<th>Green Man</th>
<th>Blackout</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Before</td>
<td>After</td>
<td>% change</td>
</tr>
<tr>
<td>Starting crossing</td>
<td>6,039</td>
<td>6,875</td>
<td>13.8%*</td>
</tr>
<tr>
<td>Using Central Refuge</td>
<td>2,531</td>
<td>2,886</td>
<td>14.0%*</td>
</tr>
</tbody>
</table>

* Statistically significant change (p<0.01)

Source: The effect of re-timed invitation to cross periods on road user behaviour at signalised junctions in London
Design and behaviour

- Benefits over conventional priority control designs
  - Re-education of all road-users
  - Legislative change?
  - ‘Equal’ opportunity for all – consider buses for example
  - Public realm and sense of place
  - Low maintenance

- Application of current design guidance:
  - Manual for Streets (2)
  - LTN 1/08 Traffic Management and Streetscape
  - CABE and other documents

- Case studies and lessons learnt:
  - Continental Europe
  - Ashford, Kent
  - New Road, Brighton
  - Historic Core Zones
  - Mixed Priority Routes
Risk of traffic chaos
Economic impact of traffic signals

Figure 5.4: Impact of removing traffic signals at East Barnet junction

Figure 5.5: Impact of removing traffic signals at Norwood Road junction
Gossip Square, Skvallertorget, Sweden

14,000 vehicles per day

Over 800 pedestrians per hour
Cabstand Junction Trial, Portishead

Severn Estuary

Portishead

M5 Motorway

Bristol
Cabstand Junction Trial, Portishead

- A369 strategic route
- Modified 2005, mitigated accident problem
- Funded by s106 for housing development
- Mini-roundabouts considered
- Controlled pedestrian crossings at desire lines
- MOVA control leads to average cycle time of 130sec, maximum of 160sec
Let the trials commence

Run movie
Cabstand Junction Trial results  
*September - October 2009*

- **Traffic demand (PM peak)**
  - Before: 1690 pcu/hour
  - After: 2060 pcu/hour
  - **Transfer**: 22%

- **Vehicle delays**
  - Before: 1 min 36 sec
  - After: 48 sec
  - **Saving**: 50%

- **Vehicle queue lengths**
  - Before: 11
  - After: 3 – 5
  - **Reduction**: 55%

- **Economic benefits based on journey time**
  - £450k per annum
Cabstand Junction Trial results  
*September - October 2009*

- **Pedestrian volume**
  - Unchanged at 200-300 per hour in peaks

- **Pedestrian crossing times**
  - Reduced from 20sec to 19sec average, 90sec to 45sec maximum

- **Personal Injury Accidents**
  - Before (36 months): 2 slight
  - After (7 months): 0
  - Damage only: 2 known since switch-off
  - Saving: 0.06 pia/month = £54,000 saved so far

- **Energy consumption**
  - Daylight hours = 9,820.9 kWh per annum
  - Dimming hours = 4,311.2 kWh per annum
  - Total consumption saving = 14,132.1 kWh per annum
  - Carbon footprint benefit = 7.5889 tonnes CO₂ per annum
  - Typical household carbon footprint = 9.8 tonnes CO₂ per annum
  - Energy bill saving = £1,164.34 per annum
Bristol Traffic Signal Evaluation Trials

Run movie

UNION STREET / BROADMEAD
Bristol Traffic Signal Evaluation Trials

Run movie

BROAD QUAY / PRINCE STREET / MARSH STREET
Bristol Traffic Signal Evaluation Trials results

- Union Street/ Broadmead
  - Vehicles/hr 350-500
  - Buses/hr 80-100
  - Cyclists/hr <50
  - Pedestrians/hr 2500-3000

- Broad Quay/ Prince Street
  - Vehicles/hr 600
  - Buses/hr 80-100
  - Cyclists/hr 350-400
  - Pedestrians/hr 1300
Bristol Traffic Signal Evaluation Trials results

- Vehicle (including bus) delays reduced
- Pedestrian crossing times unaffected or reduced – recognised by majority of users
- No accidents or incidents
- 74% of users surveyed at Union Street wanted signals switched back on
- Over 50% of users surveyed at Broad Quay preferred switch-off (including 70% of cyclists) 60% felt safer
- Considerable opposition to lack of control from vulnerable, and visually and mobility impaired pedestrians
Traffic signal failure, Camden High Street

- Total traffic volumes
  - AM Peak = 1100 pcu/hr
  - PM Peak = 1150 pcu/hr

- Total pedestrian crossing movements
  - AM Peak = 680 per hr
  - PM Peak = 3250 per hr

- ‘Side’ roads tend to defer priority
- Pedestrians cross in gaps, similar to with control
- Reduced delays and queues
- No accidents or incidents
Bradford on Avon HCZ

Problems

- Heavy traffic demand and queues throughout the day, highest pollution levels in Wiltshire
- Streetscape dominated by needs of motorised traffic
- Insufficient footway space and pedestrians feel intimidated
- Lack of coherent design and too much clutter
- Mix of degraded road and footway materials
- Obscure traffic orders and associated signing & lining
- Lack of street public realm and civilised space

Run movie
What next?

- Currently applying modelling to schemes in Camden and Bexley
- St Margaret’s Road corridor, Cheltenham
- Cullompton, Devon
- At least 145 signal installations identified across London as having potential for complete removal - modernisation budget transferred to alternative schemes
- Spend to save
The risks of not removing traffic control regulations

- Failure to comply with Road Traffic Act 1988 - not considering deregulation as a measure to prevent accidents;
- Failure to comply with Traffic Management Act 2004 - not considering deregulation as a possible action to mitigate safety, congestion and journey time reliability problems;
- Failure to consider DfT design advice - missed opportunity for radical streetscape enhancement and creation of civilised places;
- Ignoring the potential to significantly reduce costs – implementation, operating, maintenance, road-user (journey time and accident) costs;
- Ignoring potential to smooth traffic flow and improve air quality;
- Perpetuate the myth that conventional design and control is the only answer to traffic management schemes in busy, urban environments in the UK and Republic of Ireland.
Final thought

...‘defensive design...has hampered innovation, improvement and necessary change, being both against the spirit of Best Value and the interests of the public’  UK Roads Board and ICE, (July 2009) Highway Risk and Liability
Bradford on Avon HCZ
Preferred Option

- Restricted parking zone, formalise loading
- Remove clutter, minimise signs and lines
- Replace street lighting
- Replace street furniture and improve wayfinding
- Clear Gateway features encourage change of road-user behaviour
- Widened footways, where minimal impact
- Consistent HCZ material palette
- Raised junction areas and courtesy crossings
- Remove junction controls

Remove junction controls

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