



Portsmouth
CITY COUNCIL

ATKINS

Department for
Transport

PORTSMOUTH CITY COUNCIL 20 mph scheme Interim Evaluation

Presented by

Duncan Price [DfT] &

Gideon Kamy-Lukoda [Atkins]

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Introduction

- Overview
- Evaluation Process
- Key Findings
- Comparison with 20 mph Zones
- Knowledge Transfer
- Conclusions
- Further work – Phase 2



Overview: 20 mph Implementation in England (AECOM Research)

- An estimated 2,150 20 mph Zones in England
- Nearly all include vertical measures
- 10% of 20 mph Limits signing only
- Rate of implementation fairly constant since 2000
- Barriers to implementation include resources, expertise and maintenance costs



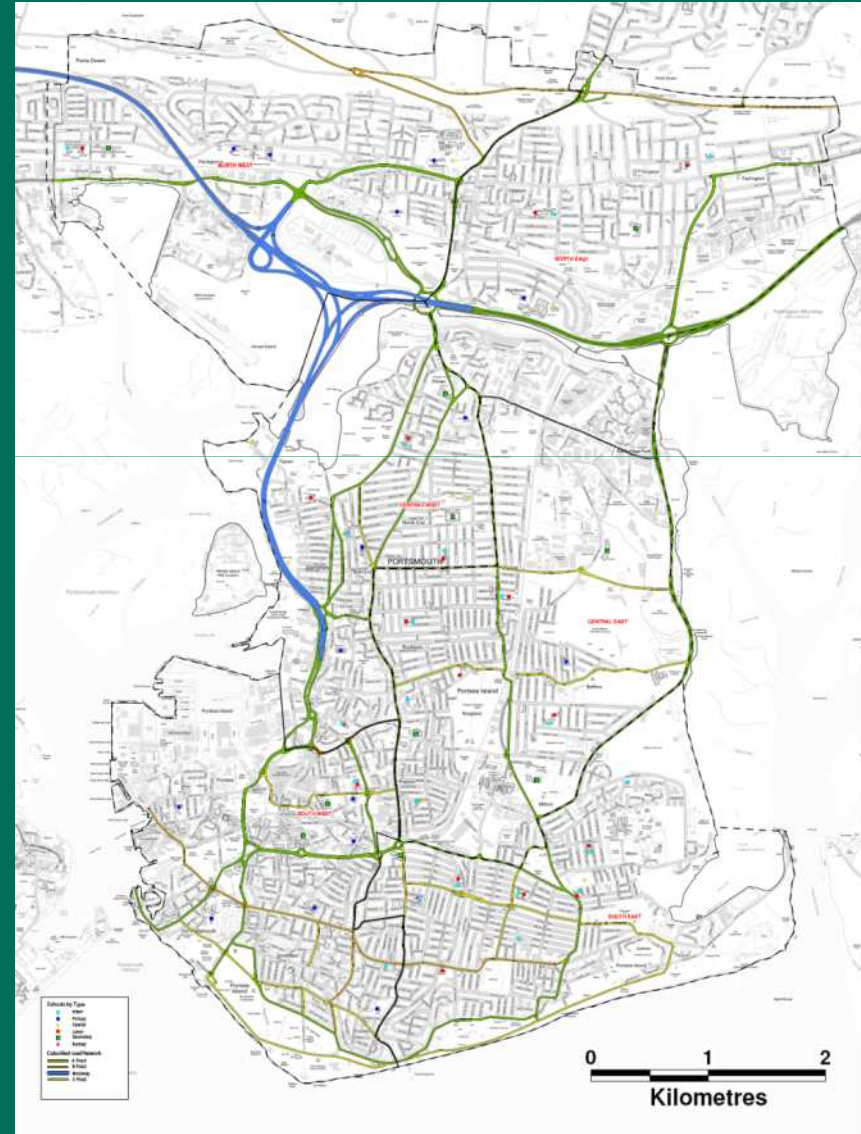
Overview: Knowledge to Date

- 20 mph Zones: known casualty and speed reduction
- 20 mph Limits: known casualty and speed reduction if consistent with speed limit circular
- Casualty and speed effects of wider limits or where initial speeds higher – Portsmouth information important
- Mode split impacts – planned research area



Overview

- 20 mph Limit scheme using signing alone – Repeater & Terminal signs
- City subdivided into 6 sectors
 - Central East, Central West, South East, South West, North East and North West.
 - Varied implementation dates: The first sector (South East) went live in June 2007 and the last sector (South West) went live in March 2008.





Overview

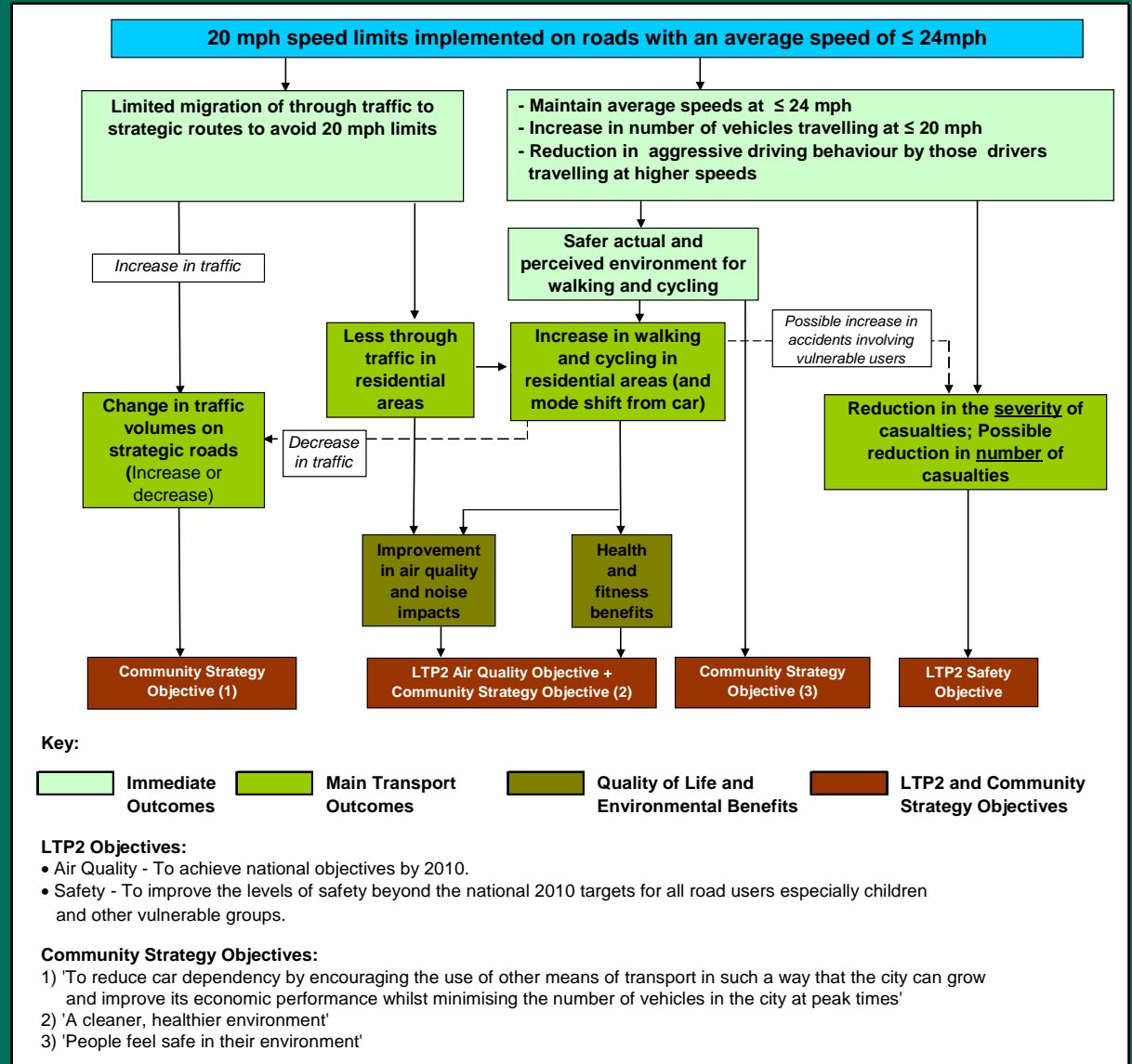
- Interim Evaluation:
 - To present early findings of scheme impact based on available data
- Monitored changes:
 - Traffic Speeds
 - Traffic Volume
 - Accident & Casualty numbers





Evaluation Process

- Postulated causal chain of impacts:
 - Reduction in aggressive driving behaviour
 - Limited traffic migration to strategic routes
 - Increase in no. of vehicles travelling at ≤ 20 mph
 - Maintain average speeds at ≤ 24 mph





Evaluation Process

- Traffic Data:
 - Average “Before” and “After” data collected
 - Monitored sites:
 - 60 monitored sites in the South East sector
 - 52 in the Central East sector
 - 47 in the Central West sector
 - 159 monitored sites in total
 - Data collected from 0600 to 2200 hours for the “Before” and “After” periods on the same day of the week (Tuesday/Thursday) in July to eliminate seasonal variations in traffic flows



Evaluation Process

- Traffic Data:
 - Traffic Volume
 - Classified vehicle counts
 - Cordon road traffic data provided (5 cordon roads – strategic roads)
 - Traffic Speeds
 - Spot speed
 - Data available for South East, Central East and Central West sectors



Evaluation Process

- Accident & Casualty numbers
 - “Before” and “After” data for all six sectors
 - “Before” period was 36 months
 - “After” period covered only 12 months
 - There was no gap in the accident data to separate the implementation period; consequently the implementation period was included in the “Before” study period



Evaluation Process

- Accident & Casualty numbers
 - The data included the following accident parameters:
 - accident reference; date; location of accident; accident description; grid reference; severity; vehicle type; casualty class and casualty age
 - Given that only one year of “After” data was available, the “Before” data for the three years was averaged to provide a comparative one year baseline period



Key Findings

- Traffic Speed:
 - The average speed after the 20 mph speed limits were imposed was 0.9 miles per hour lower than the average speed before the speed limits were imposed
 - This change is not statistically significant

Sector	Average Before Speed (mph)	Average After Speed (mph)	Speed Change (mph)
Central West	20.2	19.1	-1.1
South East	19.6	18.6	-1.0
Central East	18.5	17.9	-0.6
All Sectors	19.4	18.5	-0.9



Key Findings

- Traffic Speed:
 - At sites where the average “Before” speed was greater than 24 mph the average speed reduced by 7 mph
 - This change is statistically significant
 - Despite a reduction in the number of sites with average speeds above 24 mph (21 sites before scheme implementation), 14 sites were found to still have average speeds between 24 mph and 29 mph after the scheme was implemented



Key Findings

- Traffic Speed:

Number of monitored sites by specified average speed range

Sector	'Before' Average Speed	'After' Average Speeds			
		≤20 mph	21 to 24 mph	>24 mph	Total
All 3 Sectors	≤20 mph	87	13	2	102
	21 to 24 mph	15	16	5	36
	>24 mph	9	5	7	21
	Total	111	34	14	159



Key Findings

- Traffic Volume:
 - Due to the limited amount of data available at this stage, it has not been possible to determine if the scheme has had an effect on traffic migration or vehicle composition
 - No Origin-Destination data



Key Findings

- Safety:
 - The analysis showed the total accident reduction was 13% and the number of casualties fell by 15%
 - KSI casualty numbers stayed the same whilst KSI accident numbers increased by 2%
 - None of these results were statistically significant when compared against national trends
 - There were wide variations between the six sectors

Key Findings

- Safety:

Casualty Class	Casualty age	Before (Average of 3 year data)			After			%change	
		Slight	KSI	Total	Slight	KSI	Total	KSI	Total
Pedestrian	0 - 15	20.0	5.0	25.0	21.0	3.0	24.0	-40%	-4%
	16 - 19	2.7	0.3	3.0	1.0	0.0	1.0	-100%	-67%
	20 - 69	14.3	0.7	15.0	11.0	5.0	16.0	650%	7%
	70+	2.0	0.7	2.7	1.0	1.0	2.0	50%	-25%
	Total	39.0	6.7	45.7	34.0	9.0	43.0	35%	-6%
Passenger	0 - 15	7.0	0.7	7.7	6.0	0.0	6.0	-100%	-22%
	16 - 19	2.3	0.3	2.7	4.0	0.0	4.0	-100%	50%
	20 - 69	14.7	0.0	14.7	5.0	0.0	5.0	N/A	-66%
	70+	1.3	0.0	1.3	1.0	0.0	1.0	N/A	-25%
	Total	25.3	1.0	26.3	16.0	0.0	16.0	-100%	-39%
Driver/Rider	0 - 15	13.0	2.3	15.3	14.0	0.0	14.0	-100%	-9%
	16 - 19	19.7	3.3	23.0	19.0	3.0	22.0	-10%	-4%
	20 - 69	64.7	5.0	69.7	54.0	5.0	59.0	0%	-15%
	70+	4.3	0.3	4.7	1.0	2.0	3.0	500%	-36%
	Total	101.7	11.0	112.7	88.0	10.0	98.0	-9%	-13%
All casualties	0 - 15	40.0	8.0	48.0	41.0	3.0	44.0	-63%	-8%
	16 - 19	24.7	4.0	28.7	24.0	3.0	27.0	-25%	-6%
	20 - 69	93.7	5.7	99.3	70.0	10.0	80.0	76%	-19%
	70+	7.7	1.0	8.7	3.0	3.0	6.0	200%	-31%
	Total	166.0	18.7	184.7	138.0	19.0	157.0	2%	-15%

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Key Findings

- Safety:
 - Vehicle involvement in collisions

Sector	Vehicle Type	Before (Average of 3 year data)			After (1 year data)			%change	
		Slight	KSI	Total	Slight	KSI	Total	KSI	Total
All Sectors	Pedal Cycle	34.7	5.0	39.7	40.0	4.0	44.0	-20%	11%
	PTW	21.7	5.3	27.0	19.0	5.0	24.0	-6%	-11%
	Car/Taxi	181.0	18.7	199.7	146.0	17.0	163.0	-9%	-18%
	Other	23.7	1.0	24.7	18.0	2.0	20.0	100%	-19%
	Total	261.0	30.0	291.0	223.0	28.0	251.0	-7%	-14%

'Other' represents all buses, minibuses, goods vehicles, other motor vehicles, other non-motor vehicles and unknown vehicle types.



Comparison with 20 mph Zones

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	TfL 20 mph Zone	Hull 20 mph Zone	PCC 20 mph Speed Limit
Source of Funding	TfL (£10m/year)	LTP (£0.75m/year) + small contributions from local ward funds	LTP (£0.57m)
Funding criteria	>100% FYRR – special consideration given to deprived areas	4 PIAs in 3 years or 3 PIAs in 1 year & speed is main cause	Public requests
Speeds before implementation	>25 mph	29 -33 mph	≤24mph
Speeds after implementation	17 mph	17 -21 mph	19 mph
Public support	Yes but some opposition from emergency services	Yes but some opposition from bus operators	Yes
Areas of application	Residential areas – majority containing schools	Residential areas, mainly council estates. Recent applications relate to safer routes to school initiatives	Residential areas



Comparison with 20 mph Zones

	TfL 20 mph Zone	Hull 20 mph Zone	PCC 20 mph Speed Limit
Change in traffic speeds	-9 mph	-10.5 mph	-0.9 mph*
Change in injury accidents	-43%	-56%	-13%
Change in KSI accidents	-56%	-90%	+2%
Change in casualties	-45%	-	-15%
Change in KSI casualties	-54%	-	0%
Change in pedestrian casualties	-36%	-54%	-6%
Change in pedestrian KSI casualties	-39%	-	+35%
Change in child casualties	-42%	-64%	-8%
Change in child pedestrian casualties	-45%	-74%	-4%

* 3 Sectors (Central East, Central West and South East)



Knowledge Transfer: From Portsmouth and Some Other Areas

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- Each road needs to be considered by staff aware of the relevant legislation
- Need for post-implementation signs review to ensure legality
- Use of secure torque bolts to fix signs in position and maintain legality
- Risks of sign clutter and legal challenges



Knowledge Transfer: Success Factors

- Project/stakeholder board from inception
- Sustained stakeholder engagement (including bus operators and emergency services)
- Publicity critical
- Plan ahead for post-implementation feedback for limit-only roads where initial speeds high
- Robust justification / casualty information for engineering schemes



Conclusions

- Engineered zones achieve larger speed reductions than signs alone
- Within an area-wide application of 20mph sign only limits, those roads with average speeds higher than 24 mph may benefit from significant speed reductions, but not to the extent that the 20mph speed limit is self enforcing
- A longer (than 1 year) after period is needed to establish whether the casualty reductions significantly exceed the national reduction
- The evaluation of area-wide schemes relies on good quality data and an appropriate evaluation design



Further Work

- Planned Phase 2 work to include:
 - Highway satisfaction surveys – focus on mode split
 - An analysis of available travel to school data
 - Detailed accident study
 - Traffic speed data for the remaining three PCC sectors
- 3 years of 'After' data study to monitor the longer-term impacts