

APPENDIX 4A: ENVIRONMENTAL HEALTH PRESENTATION: 19/01/2010

Samuel Rouse
Senior Technical Advisor Air Quality

Presentation to Scrutiny Panel Meeting
on 20 mph limits

17th January 2009

Environmental Protection Team
<http://www.brighton-hove.gov.uk/airquality>



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Government Priorities

- Department of Transport (DfT) is on track to exceed targets for road safety (2008)
- Department of the Environment (Defra) has failed to meet targets for outdoor air quality (2008)
- Government CO₂ reduction targets very challenging

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Whom is Responsible for Air Quality?



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Part IV states

Section 83: as a result of an air quality review it appears that any of the Air Quality standards are not being achieved the local authority shall by order designate an Air Quality Management Area AQMA

If in any part of the designated area standards for the protection of human health may not be achieved within the relevant period

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GB AQMAs

- To date >235 authorities have declared AQMAs in UK and N Ireland including:
 - >200 for Nitrogen Dioxide
 - 72 for Particulates (PM₁₀)
 - 11 for Sulphur Dioxide
 - 1 for benzene
- Adur/Chichester/Lewes/Hastings
- Bournemouth/Blackpool/Bristol/Salisbury
- Norwich/Reading/York/Oxford/Cambridge
- New Forest/Fenland DC/North Cornwall/West Dorset

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Brighton & Hove 2008-AQMA for NO₂



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Reporting to Defra

Brighton and Hove City Council - England



2009 Air Quality Updating and Screening Assessment for Brighton and Hove City Council

In fulfillment of Part IV of the Environment Act 1995 Local Air Quality Management

April 2009



Updating and Screening Assessment

April 2009

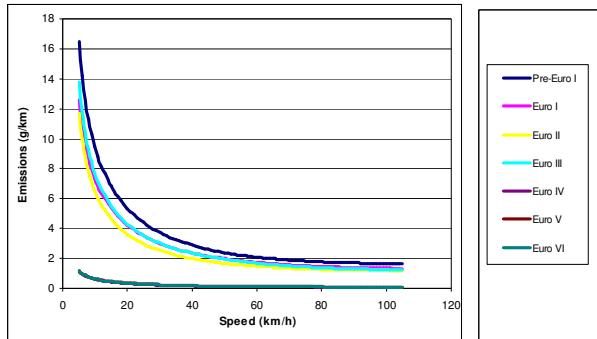
- Detailed Assessment – Done
- Progress Report - Done
- Updating Screening Assessment - Done
- Further Assessment – In Progress
- Action Plan – Ongoing

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Driving Style

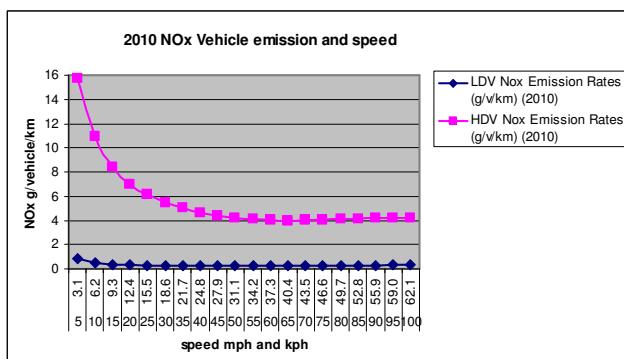
- 1500 to 2500 rpm minute = optimum efficiency for diesel cars
- Optimum efficiency = highest MPG = lowest emissions
- Gentle breaking loses less momentum
- Changing into top gear earlier consumes less fuel
- Accelerating hard increases rpm, fuel consumption and emission rate
- Speed is used to calculate vehicle emission rates
- Dispersion of emissions is less effective at roadside when traffic is moving slowly
- At 30 mph a vehicle takes 20 minutes to travel ten miles at 20 mph the same journey takes half an hour & the engine is running for 50% longer

Emissions vs speed



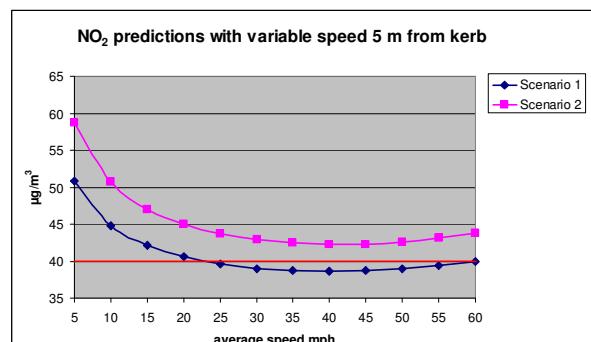
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Average emissions



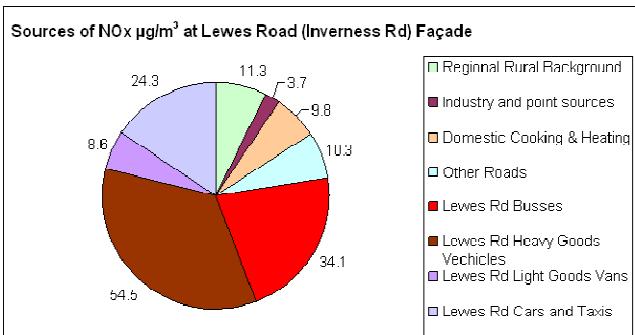
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Model Predictions



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Sources of pollution in Brighton



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Low emission strategy

- Sussex air quality steering group this week won funding for low emission strategy; 1 of 3 UK champions
- Brighton has one of the newest bus fleets in Britain
- Freight partnership for the city center
- Electrical vehicles suitable below 30 mph
- Electrical vehicle plugs-ins in Brighton city center
- City car club operating within AQMA
- Pedestrianised streets are best case scenario for shopping centers and city-center street canyons

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Conclusions

- Significant improvements in air quality recorded in recent years
- Priority area reducing in size
- Petrol and diesel engines not as efficient when moving slowly in lower gears especially for heavy vehicles
- Increased fuel consumption per km travelled increases emissions and inhibits effective dispersion of emissions
- Electrical vehicles fit for purpose below 30 mph
- Pedestrian streets best case for town centers
- Failure to comply with EU air quality objectives will not lead to fines on councils – but is likely to cost national governments and health services

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APPENDIX 4B: UK NOISE ASSOCIATION PRESENTATION: 19/01/2010

Noise and Speed

John Stewart

Extent of the Problem

- 12 million people are "moderately or extremely" disturbed by traffic noise in the UK BRE Survey 2001
- Traffic noise costs the EU 40bn Euros a year

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Noise and Speed

- There is a measurable link between noise and speed
- Reducing speeds of between 20 and 35mph by 6mph would cut noise levels by up to 40%.

How other measures compare

- Traffic levels would need to fall by 75% to get a 6db reduction in noise
- Quieter road surfaces can cut noise by 4 – 8 db

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An Equity Issue

- Cutting speed is probably the fastest and most equitable way of reducing traffic noise
- It could have particular benefits for low-income communities, many of whom live on main roads

How to Reduce Speed

- 'Time-over-distance' speed cameras
- Traffic-calming, carefully designed
- In-car speed limiters

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Recommended Limits

- Motorways, inter-urban roads, 44-56mph
- Urban main roads, 19-37mph
- Urban residential roads, 19mph
- Recommendations from the ECMT/OECD take into account all environmental impacts of speed

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APPENDIX 4C: LIVING STREETS: 26/01/2010

20 mph: Bringing Streets to Life



Stephen Young
s.young@brighton.ac.uk

Presentation to BHCC Scrutiny
Panel on 20mph default: 26.1.10



Stephen Young: Biography

- Local supporter, Living Streets.
- Member of BHCC's Sustainable Transport Partnership.
- Member of the Transport Group, Transition Brighton and Hove.
- Senior Lecturer in Economics in the University of Brighton's Business School, teaching courses in micro, macro and behavioural economics. Research area: behavioural economics.
- Senior Telecom Expert to the International Telecommunication Union (ITU), the specialized agency of the United Nations for ICTs.
- Background: public policy, regulation and strategy in energy and ICTs.
- Long term interest in sustainability, focusing on the behavioural changes necessary for moving to a low carbon economy - see
 - www.ictandclimatechange.com.

Stephen Young
s.young@brighton.ac.uk

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About Living Streets

- Living Streets is the national charity that stands up for pedestrians.
- Working with its supporters, Living Streets campaigns to create safe, attractive and enjoyable streets, where people want to walk.
- Formerly known as the Pedestrian's Association, Living Streets has been the national voice for pedestrians for over 80 years.
- Campaigns have led to the introduction of the driving test, pedestrian crossings and 30mph speed limits.
- Living Streets has a network of 100 branches and affiliated groups, 28 local authority members and a growing number of corporate supporters.
- As well as working to influence policy on a national and local level, Living Streets carries out practical work:
 - training professionals in good street design.
 - enabling local communities to improve their own neighbourhoods.
 - running high profile campaigns such as Walk to School and Walking Works.
 - encouraging people to walk more and enjoy their vibrant, living streets and public spaces.
 - provides specialist consultancy services to help reduce congestion and carbon emissions.

Stephen Young
s.young@brighton.ac.uk

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Agenda: Re-framing 20mph

1. Overview
2. Collisions and casualties
3. Other benefits
4. Potential consequences
5. Zones vs Defaults: 20mph
6. Drivers and 20mph
7. Support for 20mph
8. Summary and Recommendations



It's road safety....and a lot more



Stephen Young
s.young@brighton.ac.uk

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1. Overview

- The 30 mph speed limit was introduced in 1934 when there were 2 million cars in the UK: today there are over 28 million cars in Britain.
- When it comes to sharing our roads for vulnerable road users:
 - UK has the poorest record in Western Europe.
 - We have failed to engineer our roads for cyclists or pedestrians.
 - We maintain speed limits in residential and urban roads 60% higher than our neighbours in N. Europe.
 - We are failing to produce conditions for modal shift.
 - Vehicle speeds and volume cited by parents for not allowing children to walk or cycle.

Stephen Young
s.young@brighton.ac.uk

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2.1 Collisions and casualties

What if we were to treat death by Road Transport as a disease?

Atlas of Mortality based on 1981-2004 Office for Nat Stats from 99 categories

Age	Most Common Cause of Death
0	Conditions of the perinatal period
1-4	Congenital heart defects
5-9	Pedestrian hit by vehicle
10-14	Pedestrian hit by vehicle
15-19	Motor vehicle accidents
20-24	Motor vehicle accidents
25-30	Motor vehicle accidents
30-35	Motor vehicle accidents
35-39	Heart attack and chronic heart disease
40+	Heart attack and chronic heart disease

Stephen Young
s.young@brighton.ac.uk

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2.2 Collisions and casualties



Stephen Young
s.young@brighton.ac.uk

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2.3 Collisions and casualties

- 49% of drivers admit to regularly “driving significantly above” the current 30mph speed limit in built-up areas.
- A pedestrian hit by a car at 35mph has a 50% probability of death.
- A pedestrian hit by a car at 20mph, has a 97% probability of survival
- Children are the most vulnerable pedestrians: a 20mph limit brings a 70% cut in child pedestrian deaths, and an overall reduction in collisions and fatal injuries (e.g. see Hull City Council, London).
- Hull City Council: 20mph zones on a quarter of Hull’s roads. Figs. for three years before vs three years after the speed limit was changed show:
 - 74% cut in the number of crashes involving child pedestrians.
 - 69% reduction in child cyclist crashes.
 - overall number of collisions cut by 56%.
 - serious or fatal injury collisions cut by 90%.

Stephen Young
s.young@brighton.ac.uk

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2.4 Collisions and casualties

- A London School of Hygiene and Tropical Medicine study estimates 20mph zones have the potential to prevent up to 700 casualties in London alone.
- At 20mph, it is estimated only one in 40 pedestrians is killed in a crash. This compares with a one in five chance for someone hit at 30mph.
- The researchers compared data on road collisions, injuries and deaths in London between 1986 and 2006, with speed limits on roads.
- After adjusting for a general reduction in road injuries in recent years, they found that the introduction of 20mph zones were associated with a 41.9% drop in casualties.
- The greatest reduction was seen in children under the age of 11 years and in the numbers of all ages killed or seriously injured.
- Cyclist injuries fell by 17% once 20mph zones came in, and injuries to pedestrians have been cut by almost a third.

– “20mph speed zones cut road injuries by 40%, study says”, BBC News Channel, 11.12.09
• <http://news.bbc.co.uk/1/hi/health/8406569.stm>

Stephen Young
s.young@brighton.ac.uk

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2.5 Collisions and casualties

“This evidence supports the rationale for 20mph zones, not just in major cities in Britain, but also in similar metropolitan areas elsewhere. Indeed, even within London, there is a case for extending the currently limited provision of such zones to other high casualty roads.”

Study leader Dr Chris Grundy,
lecturer at the London School of
Hygiene and Tropical Medicine,

“This research confirms that one of the most effective ways of protecting vulnerable road users, especially children, is the introduction of 20mph zones. It lends weight to calls for an expansion of 20mph zones, which RoSPA strongly supports and which we hope will become a crucial part of the new road safety strategy for the next 10 years.”

Kevin Clinton, head of road
safety, Royal Society for the
Prevention of Accidents



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3.1 Other benefits: overview

- 20mph brings
 - better health
 - increased sociability
 - less noise
 - better walking and cycling conditions, hence more “active travel”
- Because safe mixing of motorised and non-motorised modes of transport means local journeys become more enjoyable for all pedestrians and cyclists.



Stephen Young
s.young@brighton.ac.uk

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3.2 Other benefits: sociability

Heavy traffic (speed + density) damages communities

- where cities have 20mph speed limits covering between 65% and 85% of the street network, they are transformed “from being noisy, polluted places into vibrant, people-centred environments.”

Commission for Integrated Transport study, 2001:

Sociability of streets:

At 20mph even heavily-trafficked streets become easier to cross, less noisy and more sociable.

- Research from Basel in Switzerland shown that the sociability of streets increases as traffic speeds decrease, e.g. the number of people saying they “linger” in their street increases from 24% in a 50kph (31mph) street to 37% in a 30kph (19mph) street.
- Research from Bristol shows that residents on busy streets have less than a quarter the local friends than those living on similar streets with little traffic. Even a heavily-trafficked street becomes less noisy, easier to cross, and more sociable at 20mph, especially for the elderly and more vulnerable members of the community.

– Hart, Joshua (2008) *Driven to Excess: Impacts Of Motor Vehicle Traffic on Residential Quality Of Life In Bristol, UK*. London: Living Streets
• <http://driventoexcess.org>

Stephen Young
s.young@brighton.ac.uk

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3.3 Other benefits: less noise

- Noise pollution is a major factor in the quality of life. Lower speeds always result in lower noise levels. Major benefits come from smoother flows gained from lower speeds: most noise is generated through acceleration.
- Research by the World Health Organisation estimates that 3% of deaths from heart disease can be traced back to stress of long term exposure to noise from traffic. This equates to almost 3,030 deaths a year in the UK.
- Sources:
 - Framework for assessing the effects of speed, Veli-Pekka Kallberg & Sami Toivonen, 1997
 - WHO working group on the Noise Environmental Burden on Disease, set up in Sept 2003

Stephen Young
s.young@brighton.ac.uk

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3.4 Other benefits: active travel

- A 20 mph speed limit in built-up areas allows for the safer mixing of motorised and non-motorised modes of transport, and makes it easier for pedestrians and cyclists to enjoy the same direct and safe routes for their journeys as motorists.
- Research into traffic calming in Glasgow found that walking levels increased in traffic-calmed neighbourhoods.
- 20 mph approach increasingly adopted in European countries where rates of walking and cycling are much higher, and casualty rates much lower than in the UK:
 - 30 kph (19 mph) speed limits for roads in residential, shopping and other "mixed use" areas is nearly universal in Germany
 - Munich: a "pedestrian friendly city" policy, and 80% of the road network has a 30 kph limit. Some residential areas have even lower limits. Munich also has very low casualty rates for vulnerable road users.
 - Graz, Austria: over 80% of the road network has 30 kph limits. Cycle usage increased by 17%, cycling casualties fell.
- Graz and Munich exemplify best practice because they have stabilised or reduced the use of the car, despite increasing levels of car ownership.

Stephen Young
s.young@brighton.ac.uk

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3.5 Other benefits: active travel

- Hilden, Germany: a town of 50,000 people. 30kph default over most of the road network. Avoids the expense of providing a comprehensive network of cycle lanes. Result: 60% of trips to the town centre now made on foot or by bicycle.
- Britain's default speed limit of 30 mph is 60% higher than most Northern European towns where far more citizens enjoy the opportunity to walk and cycle in greater safety. Cities like Barcelona and Amsterdam are proposing limiting entire tracts of the city to 30 kph (18.6 mph)



Stephen Young
s.young@brighton.ac.uk

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4.1 Potential consequences

- Emissions:
 - research in Germany shows that driving at steady 19mph (30kph) reduces vehicle emissions as braking and accelerating between junctions and obstacles increases. When 30 kph zones were introduced in Germany, car drivers on average had to change gear 12% less often, use their brakes 14% less often and require 12% less fuel.
 - Reduces particulates. Removes all 20-30 mph acceleration. Modal shift reduces emissions when walking or cycling
 - "In short-distance travel with lots of starting and stopping, the energy mainly goes into speeding up the vehicle and its contents. Key strategies for consuming less in this sort of transport are therefore to weigh less, and to go further between stops. In addition, it helps to move slower, and to move less." (MacKay)
- Traffic flow:
 - smoothed by reducing the "bunching" effect at junctions. Some local authorities – e.g. Camden have pioneered this approach to traffic management.
- Displacement:
 - Casualties elsewhere: "There was also no evidence of a higher rate of casualties in areas bordering the 20mph zones, as in areas adjacent to 20mph zones casualties fell by an average of 6%." London School of Hygiene study
 - Sources:
 - Emissions: An illustrated guide to traffic calming, Dr Carmen Hass-Klau, 1999
 - David MacKay: Sustainable Energy: Without the Hot Air, 2009 (Chief Scientific Advisor to Department of Energy and Climate Change)
 - Casualties: London School of Hygiene study, 2009

Stephen Young
s.young@brighton.ac.uk

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4.2 Potential consequences

- Urban journeys times determined by stops not speed
- Maximum increase is just 40 seconds
 - Most houses within 1/3 mile of arterial route
 - 1/3 mile at 30 mph = 40 seconds
 - 1/3 mile at 20 mph = 60 seconds
 - Difference is just 20 seconds
- Changed perceptions
 - Normal speed is 20 mph around people
 - Hence "20's Plenty where people live"
 - Speed up to 30 mph where safe

Stephen Young
s.young@brighton.ac.uk

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5.1 Zones vs Defaults: 20mph

- Old: Zones**
- Some benefits and effectiveness
 - Piecemeal
 - Time consuming and expensive
 - If poorly designed, cause discomfort to cyclists/bus users
 - Slow progress
 - Most child pedestrian accidents happen closer to home than school
 - Confusing for motorists
 - Little public understanding of the benefits
 - Doesn't encourage walking and cycling
- New: 20mph default**
- It's just signs: no speed humps, no additional fixed cameras – just 20mph signs
 - Cheap and easy to install
 - Clearer: 20mph becomes the accepted default speed rather than a relatively rare occasional speed limit
 - Encourages cycling and walking
 - Most importantly it benefits everyone (children, elderly, cyclists, pedestrians, motorists)
 - Previous Government guidance said only when existing speeds below 24 mph
 - Proposed new guidance removes this requirement, thanks to Portsmouth success

Stephen Young
s.young@brighton.ac.uk

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5.2 Zones vs Defaults: 20mph

• Portsmouth

- Decision to implement 20mph across the city in 2007
- Completion: 9 months
- Cost: £333 per street
- Created a collective community commitment to road safety
- No Secretary of State approval required

Stephen Young
s.young@brighton.ac.uk

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6.1 Drivers and 20mph

- establishes "sensible" sharing of roads
- removes pace and sprinting
- eases fluidity at junctions
- provides more time for collision avoidance
- compliance becomes a lifestyle decision: 20 mph where people live, or shop, or walk, or cycle
- minimal effect on journey times
- maximises "family" benefit for drivers.
- increases engagement with community
- 72% of drivers in agreement

– Source: 20'sPlenty

Stephen Young
s.young@brighton.ac.uk

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7.1 Support for 20mph

- The Great and the Good
 - Research & expert support for 20mph:
 - PACTS
 - NAO
 - DfT
 - ADP
 - Transport Select Committee, etc



Stephen Young
s.young@brighton.ac.uk

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8.1 Summary

- Streets should be safe, attractive and enjoyable places for everyone:
 - streets are social spaces, not just corridors for traffic.
 - we are all pedestrians at some point during the day, and all of us want to feel safe moving about our streets.
 - it is not possible to have a comfortable, encouraging, rewarding walking and cycling environment with fast traffic.
 - traffic speed is the major factor in serious injuries and deaths.
 - 20mph leads to reduced harms, increased benefits
 - the evidence is clear.....

Stephen Young
s.young@brighton.ac.uk

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8.2 Summary

It is hard to envisage any other single policy measure that is within BHCC's power to implement that would create:

- a dramatic cut in death and injury
- modal shift towards active travel, ie cycling and walking
- improved health
- reduced obesity
- reduced pollution and noise, especially greenhouse gas emissions
- and a better quality of life

- without constraining individual choice

- without costing huge sums of money

- and which would make Brighton and Hove a better place for everyone who lives, works or plays here

A city-wide 20mph default speed limit is the closest thing in policy terms to a silver bullet.



Stephen Young
s.young@brighton.ac.uk

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8.3 Recommendation

- A framework now exists for local authorities to implement 20mph local limits cheaply and easily (and a review of speed limits on all locally-controlled A and B roads is set to be completed by 2011).
- Resistance to 20mph often focuses on claims that it is either unenforceable or too costly: Portsmouth shows that these arguments don't hold water.
- Brighton and Hove is rightly proud of being a pioneer
- it's time for the city to join with other towns and cities which are switching to a 20mph default: a list which now includes Oxford, Norwich, Leicester, Newcastle-upon-Tyne, Islington, Hackney, Bristol (piloting) and Warrington (piloting).
- **Brighton and Hove City Council should adopt a city-wide default speed limit of 20mph.**

Stephen Young
s.young@brighton.ac.uk

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Thank You

Sources:

- As indicated, plus
 - www.livingstreets.org
 - <http://www.roadpeace.org/>
 - www.20splentyforus.org.uk
- See also:
 - Living Streets. *Dispelling Myths About 20mph. Policy Briefing*
 - Living Streets. *20 mph brings streets to life: How reducing the default speed limit to 20 mph in built-up areas will improve streets for everybody.* Policy Briefing June 2009
- Contact:
 - s.young@brighton.ac.uk



LIVING STREETS
MOVING PEOPLE FIRST

Stephen Young
s.young@brighton.ac.uk

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APPENDIX 4D: ROAD SAFETY TEAM: BRIEFING NOTE: 26/01/2010

The Environment and Community Safety Overview and Scrutiny Committee (ECSOSC) 20 mph Limits/Zones Briefing Note 29th January 2010

Introduction

This briefing note is based upon addressing the points arising from the inaugural ECSOSC meeting on 1st December 2009. The age of some of the 20mph zones already introduced within the City, coupled with the staged approach to their implementation, means that there is a lack of consistent and readily accessible data. However, I have sought to provide typical examples of schemes which will illustrate the processes involved and the general outcomes achieved, without looking at every scheme that has been introduced.

Point 1 - average speeds in the city – information and data (if available) i.e. – do vehicles manage to hit speeds of 30 mph on roads in the city/residential areas currently?

1.1 The answer is yes in certain places. Checks undertaken by members of the Road Safety Team in response to complaints by residents and Councillors have shown that in places speeds of, or in excess of 30mph, are achieved in some residential streets etc. However, it must be emphasised that the ability to do this is entirely dependant upon the nature of the road and prevailing conditions, including density of traffic etc. Clearly, there are some residential streets where such speeds are unlikely to be reached, even without the presence of traffic calming measures or changes in speed limit. 30mph is the normal speed limit on most of the arterial routes across the City, some of which have enforcement by way of police directed activity or safety cameras, which in itself is an indication that speeds in excess of 30mph are achieved on some of the City's roads, but these are not generally what would be described as 'residential' in nature, albeit there may be residences adjacent.

1.2 An example of a speed survey can be seen from the **Poets Corner** scheme. This clearly shows the levels of speed prior to and after the scheme was implemented, with some speeds above the original 30mph limit:

		Average Weekday Percentage travelling less than 21mph		Average Weekday Percentage travelling more than 30mph	
		Before	After	Before	After
Coleridge St (East End)	E	18.5	65.5	11.8	1.5
	W	31.8	70.1	3.5	0.6
Byron St	E	45.7	76.9	0.8	0.5
	W	44.7	98.6	1.6	0.1
Montgomery St	E	50.4	72.4	0.3	0.2

	W	55.7	86.2		0.5	0.2
Wordsworth St	E	49.1	78.2		0.4	0.4
	W	45.0	88.9		0.5	0.3
Cowper St	E	41.9	77.3		1.3	0.2
	W	51.7	88.5		0.5	0.2
Westbourne St (South End)	N	89.7	93.9		0.2	0.3
	S	91.3	95.5		0.2	0.2
Rutland Rd	N	50.9	83.9		0.5	0.4
	S	55.4	96.7		1.0	0.2
Shelley Rd	N	64.3	66.0		2.0	1.9
	S	65.6	71.5		1.1	0.3
Tamworth Rd	N	76.1	82.5		0.2	0.3
	S	69.8	82.4		0.1	0.4
Stoneham Rd	E	-	97.2		-	0.6
	W	85.6	97.7		0.0	0.3
Coleridge St (West End)	E	42.3	82.6		1.7	0.3
	W	46.7	85.3		1.8	0.3
Westbourne St (North End)	N	-	66.0		-	1.3
	S	-	73.9		-	0.7

Point 2 - more information about the PBA speed limit review (timetable, objectives, methodology, outcomes etc)

2.1 On 15th December 2005 the Secretary of State for Transport required all local authorities to conduct a review of speed limits on their 'A' and 'B' class roads, with any implementation of changes to be completed by 2011. That review has now been completed and the recommendations are being considered. As part of Brighton & Hove City Council's Local Transport Plan (2006/7 – 2010/11), the Council has stated an intention to conduct a review of all speed limits on other roads within the City by 2011. That work has just started and is expected to take approximately a year. The objective is to assess the suitability of the current speed limits, in the context of DfT guidance on the setting of speed limits, and where appropriate to make recommendations for change.

2.2 The original methodology for this work has been slightly altered. A revised cluster map has been produced to enlarge the individual cluster areas and reduce their number from 81 to 22. Collision data was overlaid onto the cluster map in order to rank each cluster and prioritise the order in which the study was carried out. Slight, serious and fatal collisions were given a weighting and totals for each cluster added together. This then produced a ranking for all clusters.

2.3 Study

It is proposed that the above methodology is used within the study to ensure that key areas with high collision rates are reviewed more quickly.

2.4 Collision Data & Sample Roads

A brief review of collision data within each cluster will be carried out, this will give a better indication which roads will be used as 'sample roads' for the site survey. Schools will be added onto the cluster map, which will have a particular influence on the sample roads. Liaison with the BHCC Road Safety Team will be necessary at this point in case certain other roads need to be considered due to specific local issues. The sample roads will then be agreed with BHCC.

2.5 Data Collection

Each cluster study will include a desktop data collection; for example nationally gathered data will be used as a method for gaining specific information (e.g. speed) about the roads within the cluster area. Aerial mapping will be used to establish the adjacent land uses and road layouts. The sample roads will be surveyed and observations taken. A pre-determined checklist was put together for the A and B roads City Speed Limit Review. A similar checklist will be used for this extension of the study.

2.6 Analysis

We will be able to use Navteq, which will give us a rough indication of the speed of vehicles in the area. However, sample speed survey data will be used to give a more accurate interpretation of speeds (where available from BHCC) or via new site sample surveys. From the data collection, a review of existing speed limits will take place and a proposed speed limit will be recommended (where appropriate) in conjunction with guidelines from the DfT circular 01/2006 ('Setting local speed limits'). Possible new guidance may be available in summer 2010 in relation to 20mph limit zones, which could also be used.

2.7 Design

Once our recommended speed limits have been discussed and approved by BHCC, a signage scheme can be designed and a drawing produced. This will include the gateway signs and the speed limit repeater signs marked up at appropriate intervals. This design will be verified by a site visit.

2.8 Programme

A programme has been produced for BHCC approval. Each cluster will be reviewed individually however due to time constraints on the project duration it is likely that overlapping studies will be required (assuming adjacent clusters are ranked similarly).

2.9 Consultation

The initial part of the implementation stage will be consultation. This can either be a local consultation or through the Traffic Regulation Order process. The latter of these two options is preferable as it will have to be carried out regardless. This will be followed by an analysis and report on the potential

responses from the consultation period. The scheme will then be modified as appropriate and the final design drawings produced.

2.10 Implementation

The final stage of the process will be the implementation.

2.11 Setting of Speed Limits

Average speed is the tool that has been used in Sussex for a considerable time and has proved to be reliable in judging the level of compliance for a proposed speed limit.

Speed Limit	60	50	40	30	20
Average Speed to be below	62	52	42	33	24

As can be seen from the table a 20mph limit with no supporting engineering measures would be considered potentially effective where average speeds are already less than 24mph. It was recognised that Circular Roads 1/2006 may generate an increase in demand for 20mph speed limits and zones, because the DfT changed the speed assessment criteria from the 85th percentile to the average speed.

Point 3 - what the current approach is towards resolving and listening to demands from residents for calming/lower speeds, especially beyond the Safer Routes to School Programme (i.e. current protocols and feedback mechanisms etc)

3.1 Requests are received from the public and elected members, often by way of petitions. The policy contained in **Appendix A** is applied in principle with the relevant assessments undertaken. However, it is necessary to carry out an ongoing review of collision data in response to any pattern or trend that might affect a priority list. This means that generally the collision data in relation to a road/area subject of a request is already known and will have been assessed, prior to any complaint/request, to identify whether there is a need for any action. In reality this means that many requests result in a negative response on the basis that the relevant criteria for action have not been met, or do not exceed those areas already on the existing priority list (please see Appendix E and Point 5). Of course in some instances the road/area in question is already on the list.

3.2 It is also often the case that perceptions are not reality and some requests, although well intentioned and submitted in an honest belief that a particular problem exists, reveal that either there is no problem, or the problem is different to that perceived.

Examples of this is:

St Pauls C of E Primary – parents requested 20mph on St Nicholas Road

Site visits identified:

Low traffic volumes – no cars going above 18mph

Hangleton and Knoll Schools

Hangleton Way - AM survey – Average speed 16mph
PM Survey – Average speed 16mph

The main issue identified by officers undertaking site visits/surveys was congestion and inconsiderate parking by parents that led to an impression of speed/chaos.

Point 4 - historical information on existing 20 mph zones in the city (how effective have they been, what were the reasons for introducing them in the first place, costs, the effect on traffic displacement and traffic flows and rat running, if cycling/walking have increased in the area)

4.1 Please see **Appendix B** for an example of a ‘before and after study’ in respect of the **Hartington Road Traffic Calming Scheme** and **Appendix C** for an example of the criteria and method for determining priority locations for implementation.

4.2 The Hartington Road scheme was introduced to ‘improve road safety in the area for vehicular traffic and pedestrians by reducing the speed of vehicles..... to below 20mph’. Unfortunately the before and after collision data is not included in the report and is not available, but the speed comparison and traffic flow data is. The average weekday 12 hr traffic flow reduced by approx 16% with a weekend reduction of 11% and an average overall speed reduction of 2.4mph (4.8 mph between the humps).

4.3 The Poets Corner scheme resulted in an average speed reduction of 2mph and peak-time traffic flow reductions of 7.7% in the morning and 2.7% in the evening (5.2% overall average).

4.4 The before and after collision data for the various schemes introduced across the City are shown (where available) in **Appendix D**. The lack of available data or comparable time periods makes the use of collision data in respect of older schemes an unreliable method to gauge effectiveness. It should also be borne in mind that these schemes were not just implemented for casualty reduction reasons, but also to alter traffic flow and improve the quality of life for local residents and other road users, including the promotion of more sustainable transport modes such as walking and cycling.

4.5 This is an extract from the ‘**Before and After Study of the Poets Corner Scheme**’:

In August 2000 Brighton & Hove Council commissioned Owen Williams Consultants to design and supervise the implementation of the Poets Corner Traffic Calming Scheme, and to undertake a Before and After Study of traffic flows and speeds. This report discusses the results of the study and the success of the measures in meeting the objectives of the scheme, and comments on the benefits of proceeding with Phase 2 of the project.

Automatic Traffic Counters (ATC) were installed at various locations within the study area before and after implementation of the scheme to obtain seven consecutive days' data. Analysis of the data indicates approximately an 11% reduction in the total number of daily traffic movements measured within the area when averaged over the weekdays, i.e. 1,914 vehicles, and a 7% reduction when averaged over the weekend, i.e. 815 vehicles. However, reductions in peak hour flows were less with a fall of 7% (159 vehicles) in the morning peak and 2.7% (46 vehicles) in the evening.

The results of the surveys suggest that 12 hour average weekday vehicle speeds have reduced by approximately 2mph to 18.4mph since the introduction of the traffic calming measures. There has also been a significant increase in the proportion of vehicles travelling less than 21mph. The survey data also indicates that vehicle speeds have become more consistent through the area since the scheme was implemented, rather than faster vehicles favouring certain routes.

As vehicle speeds have fallen since the implementation of the traffic calming measures, it is recommended that consideration should be given to fulfilling the Poets Corner Residents' Society's request for a 20mph zone across the area. It appears that this could be implemented largely without the need for further physical measures, although further examination of the survey data should be undertaken to confirm this.

Phase 2 of the scheme proposes raised table entry treatments and associated footway widening at the junction of each of the roads within Poets Corner with Sackville Road and Portland Road. It is recommended that these features should be introduced to raise drivers' awareness of the residential nature of the area, and form gateways around the 20mph zone if it is introduced. In addition they would benefit pedestrians, wheelchair, and pushchair users in Portland Road and Sackville Road crossing at these junctions.

Although the installation of entry treatments should reduce vehicle speeds near the junctions, it is unlikely that they will result in any significant further reduction in speeds within the Poets Corner area. It is not possible to determine whether the combination of raised tables and associated footway widening at the junction of each of the side roads within Poets Corner with Sackville Road and Portland Road will encourage a significant number of drivers to seek alternative routes.

According to the before and after study documents for Poets Corner , walking and cycling data has been collected from observations during traffic speed and flow surveys, over 2 hour snapshots, so is not definitive.

Point 5 - the scope of implementation of 20 mph zones in Brighton and Hove currently (information about the timetable, funding and availability etc)

5.1 Currently there is no traffic calming implementation programme as such, but there is a priority list of engineering sites that are being assessed with a view to reducing casualties. Some of the measures adopted to address the issues identified might involve traffic calming measures, but such schemes

are not necessarily the remedy to all casualty problems. See Appendix E. This work is currently funded by the Sustainable Transport (Transport Planning) Capital Budget.

Point 6 - any information which you have on the costs of implementing traffic calming, signage, speed cameras etc so the Panel can get a feel for the types of costs involved in undertaking various 20 mph options

6. Approximate Costs of Engineering Elements:

6.1

Single Build-out - £6600

Speed Hump - £5800

Speed Cushion - £2500

Signs per average street - £1500

Traffic Regulation Order - £1500

6.2 Approximate costs of past schemes:

Coombe Road July 1996 £225,000

Hartington Road March 1997 - £190,000

Ditchling Road 2005 - series of build outs including accessible bus stops and road markings and cycle lanes £450,000

Vale Road 2005 - Series of cushions, build-outs, hump zebra crossing, accessible bus stops £650,000

It should be remembered that each street/scheme would require several elements listed above and multiples of some according the nature and scope of the scheme. These figures include an element to allow for traffic management where required.

6.3 Safety Cameras:

The current approximate costs of Speed Camera installation are:

Gatso camera housing incl dummy flash etc, signing, telemetry, power supply, and BT for single carriageway £27,000.00

Gatso camera housing incl dummy flash etc, signing, telemetry, power supply, and BT for dual carriageway £35,000.00 (dual carriageway)

Gatso digital camera £25,000 (to keep the same camera / housing ratio we would need 1 camera for every 3 housings)

N.B. prospective sites MUST meet the agreed criteria (see Appendix F).

7.0 Summary:

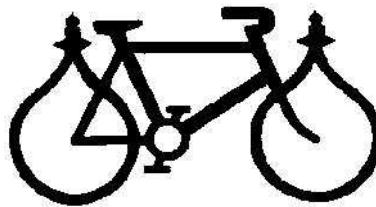
7.1 The evidence suggests that 20mph zones with appropriate engineering measures are an effective way to reduce average vehicle speeds by between 2 and 5 mph as well as traffic flow and casualties in a particular area. However, the evidence to suggest that such measures increase walking and cycling is unreliable having been based on 'snap shot' surveys. Cycling has increased significantly in the City over the last few years (perhaps as much as 27% over 5 years), but there may be many reasons for this and the link with 20mph zones has not been definitively established. It should also be remembered that the benefits derived in one area might be countered by the displacement effect on others e.g. increased traffic flow, congestion and potentially road safety issues.

Phil Clarke

Road Safety Manager

15th January 2010

APPENDIX 4E: BRICYCLES LETTER: 29/01/2010



2 Glovers Yard
121 – 123 Havelock Road
Brighton
BN1 6GN

Bricycles
Brighton, Hove and District Cycling Group
www.bricycles.org.uk

29 January 2010

Speed Reduction Review
Scrutiny Team
Room 128
Room 128
King's House
Grand Avenue
Hove, BN3 2LS

Thank you for the opportunity of responding on this consultation on reducing the speed limit in areas of the City to 20 mph. I am writing on behalf of Bricycles, (the Brighton, Hove and District Cycling Group) and Brighton and Hove CTC.

Bricycles strongly supports the reduction of traffic speed to a city-wide default maximum of 20 mph, and we have been campaigning for this for many years.

Our campaign on reduced speed is shared with many other sustainable transport groups including the UK's national cyclist organisation, CTC, Living Streets and the Campaign for Better Transport. Some of the evidence that supports our view is included below.

The speed at which vehicles travel and the severity of injuries sustained when a crash occurs are directly related. This is a pressing reason to reduce speed limits in places where people are.

The Transport Research Laboratory report on collisions involving cyclists on Britain's roads found that casualty severity increased with the posted speed limit.¹

British Medical Journal published evidence shows that 20mph zones in London have reduced cycle casualties by 17% and fatal and serious cycle

¹ J Knowles, S Adams, R Cuerden, T Savill, S Reid and M Tight, *Collisions involving pedal cyclists on Britain's roads: establishing the causes*, Transport Research Laboratory, October 2009, p vi

casualties by 38%. Overall casualties were reduced by 41.9%. The percentage reduction was greatest in younger children and greater for the category of killed or seriously injured casualties than for minor injuries. There was no evidence of casualty migration to areas adjacent to 20 mph zones, where casualties also fell slightly by an average of 8.0%. The authors conclude that: "20 mph zones are effective measures for reducing road injuries and deaths."²

Fast traffic is a powerful disincentive to walking and cycling, and is counter-productive to the objectives of a Cycling Town which aims to encourage cycling.

By reducing motorised traffic speed to the 20 mph limit, there is less incentive for motor vehicles to constantly attempt to overtake cyclists with the accompanying risks due to poor judgment of conditions. 20 mph should be the default speed limit in urban areas.

Experience from continental Europe (e.g. in Hilden, Germany and in Graz, Austria where 30kmh speed limits cover 76% of the road network) show that 20mph speed limits have clear road safety benefits, particularly for non-motorised road users and children.^{3 4 5}

In March 2008, Portsmouth adopted a speed limit of 20 mph for residential streets without the use of traffic calming. Initial results announced at "Portsmouth - Britain's First 20 mph City" Conference, on 29/9/09 are extremely positive with. Total road casualties have fallen by 15% and total accidents have fallen by 13%. Groups who have particularly benefited are children under 15 travelling in vehicles (child vehicle passenger casualties down by 22%) and the elderly (road casualties aged 70 or over, down by 31%). More data needs to be collected, but this pattern is reflected by other 20 mph adopters, like Hull, where child casualties have fallen by 74%. 20 mph limits make sense for all road users.

Making 20 mph limits the norm for most urban streets would have huge road safety benefits for everyone. It would encourage more people to walk and cycle, and allow their children to do so. The evidence also suggests it has strong benefits for local economies and people's quality of life and that they attract 75% support from the public. Many Brighton and Hove residents would like to see a 20 mph limit outside their front door.

The Commission for Integrated Transport has found that lower speed limits have wider benefits beyond road safety. They found that cities which apply

² Chris Grundy et al, *Effect of 20 mph traffic speed zones on road injuries in London, 1986-2006: controlled interrupted time series analysis*, December 2009, BMJ 2009;339:b4469

³ Mayo A. *Traffic calming*. Presentation to CTC/CCN conference 2006.

⁴ Lutz Groll (traffic planner, Hilden, Germany). *Traffic calming as a fundamental element for successful cycling promotion*. Presentation to CTC/CCN conference 2005.

⁵ Hoenig M. *The Graz traffic calming model and its consequences for cyclists*. Paper presented to Velo-Mondial Conference, Amsterdam, 2000.

30kmh limits extensively (typically between 65% and 85% of the road network) are “transformed ... from being noisy, polluted places into vibrant, people-centred environments as well as facilitating the widespread re-allocation of street space to PT, cycling and walking to meet increased demand.”⁶

Pedestrians and cyclists would then also benefit from the “safety in numbers” effect, that the more of them there are, the safer the activity becomes.⁷

We note the change in DfT guidance in *Circular 1/06 Setting local speed limits*,

<http://www.dft.gov.uk/pgr/roadsafety/speedmanagement/dftcircular106/dftcircular106.pdf>

which endorses the implementation of 20 mph limits and zones without the need for accompanying traffic calming measures. The new guidance says that the wider benefits of 20 mph limits include “quality of life and community benefits, and encouragement of healthier and more sustainable transport modes such as walking and cycling.”

Highest priority for speed reduction is residential roads, but a lot of cycling takes place on “arterial” roads such as the A270, A23, so we would support speed reduction to 20 mph on those as well.

We would favour the introduction of a city wide speed limit in Brighton and Hove using signage, backed up by an adequate level of enforcement by employing speed cameras where necessary, thus reducing the need for expensive and often unpopular road humps and other engineering measures. Traffic calming was not used in Portsmouth for their 20 mph limits.

Speed reduction can also be facilitated by using designs from the Manual for Streets (MfS), such as the removal of centre-lines and ‘shared space’ street designs.⁸ The scope of MfS should be extended from new-build residential developments to encompass all streets.

Slower speeds would reduce traffic noise which disturbs the residents of busy roads. Reduced traffic noise would also assist social interaction close to roads. 20 mph limits have been shown to produce an overall reduction in noise, including night time noise in research by the DfT, (Traffic Advisory Leaflet, 12/00).⁹

⁶ WS Atkins, *Study of European best practice in the delivery of integrated transport: key findings* (see Chapter 4). Commission for integrated Transport, 2001 (see www.cfit.gov.uk/docs/2001/ebp/ebp/key/index.htm).

⁷ Jacobsen P. *Safety in numbers: more walkers and bicyclists, safer walking and bicycling*. Injury Prevention vol. 9 pp 205-209, 2003 (see <http://ip.bmjjournals.com/cgi/reprint/9/3/205>).

⁸ DCLG. *Manual for Streets*. 2007. Chapter 9

⁹ DfT, Traffic Advisory Leaflet 12/00 December 2000, Urban Street Activity in 20 mph zones,

http://www.dft.gov.uk/adobepdf/165240/244921/244924/1200_Urban_street_activity_1.pdf

Changes in concentration of Nitrogen dioxide were not regarded as significant following introduction of 20 mph zones in the DfT's Traffic Advisory Leaflet, 12/00 referenced above. A monitoring study of Air Quality impacts of six 20 mph zones in NW England measured the concentration of nitrogen dioxide (NO₂) and benzene did not show any significant impacts after implementation of the 20 mph zones.¹⁰

The London Assembly transport committee's research casts doubt on claims that cars travelling steadily at 20mph consume more fuel than cars doing 30mph. The report said: "*Generally, the evidence suggests that 20mph limits with traffic calming measures have a positive impact on emissions because they improve traffic flow ... drivers travel at a more constant speed, they accelerate and decelerate less frequently and spend less time stationary, using less fuel.*"¹¹

The DfT guidance also includes revised advice on reviewing **rural single carriageway speed limits**. We also want to see substantial reductions of speed on rural roads such as Devils Dyke Road, Saddlescombe Road, Ditchling Road, the Falmer-Rottingdean road, the A259, the A23, A26, A27 whether within Brighton and Hove City Council boundaries or within another highway authority's. A disproportionate number of deaths and serious injuries occur on rural roads. Whereas by 2006 built up roads have seen a 15% fall in fatalities over the 1994-98 average, non-built up roads have seen a fall of just 10%.¹² Speed limits on rural, unclassified roads must be reduced, with 40 mph default, reduced to 30 mph in villages. Enforcement cameras would also be required at certain points.

Yours sincerely,



Bricycles Campaigns Officer and Newsletter Editor - www.bricycles.org.uk
CTC Right to Ride Representative, Brighton and Hove
www.communicate.co.uk/sussex/ctcbrighton

CC

Jenny Rowland, Director of Environment, Brighton and Hove City Council
Phil Clarke, Road Safety Manager, Brighton and Hove City Council
Geoffrey Theobald, Cabinet Member for Environment, Brighton and Hove City Council

¹⁰ Air quality impacts of speed-restriction zones for road traffic, 2003, Bethan Owen, Department of Environmental and Geographical Sciences, Manchester Metropolitan University, Chester Street, Manchester M1 5GD

¹¹ Guardian, 16/4/09, <http://www.guardian.co.uk/politics/2009/apr/16/boris-johnson-20mph-speed-limits>

¹² DfT. RCGB 2006. 2007, Table 5c.

APPENDIX 5: SUMMARY OF THOSE WHO GAVE EVIDENCE

Witness	Organisation	Type of information
Mark Dunn, Traffic Management, Road Policing Unit	Sussex Police	Verbal at public meeting: 19/01/2010
Sam Rouse, Senior Technical Officer, Air Quality	Brighton and Hove City Council	Verbal at public meeting: 19/01/2010
Tim Nichols, Head of Licensing and Environmental Health		
John Stewart, Chair of UKNA	UK Noise Association (UKNA)	Verbal at public meeting: 19/01/2010
Roger French, Managing Director	Brighton and Hove Bus Company	Verbal at public meeting: 26/01/2010
Peter Salvage, Operations Manager		
Phil Clarke, Road Safety Manager	Brighton and Hove City Council	Verbal at public meeting: 26/01/2010
Stephen Young, Local Representative of Living Streets	Living Streets	Verbal at public meeting: 26/01/2010
Chris Grundy, Lecturer and author of report on 20 mph zones	London School of Hygiene and Tropical Medicine (LSHTM)	Verbal at public meeting: 11/02/2010
Jack Hazelgrove, Chair of Older People's Council	Older People's Council	Verbal at public meeting: 11/02/2010
Tony Green	Bricycles	Verbal at public meeting: 11/02/2010
Cllr Geoffrey Theobald, Cabinet Member for Environment	Brighton and Hove City Council	Verbal at public meeting: 23/02/2010
Cllr Ian Davey, Proposer of Notice of Motion	Brighton and Hove City Council	Verbal at public meeting: 23/02/2010
Christina Summers	London Road Area Local Action Team	Verbal at public meeting: 23/02/2010
Mike Birri	Lansdowne Area Resident Association	Verbal at public meeting: 23/02/2010
Cllr David Smart	Representing Hangleton and Knoll Ward	Verbal at public meeting: 23/02/2010
Cllr Melanie Davis	Representing Goldsmid Ward	Verbal at public meeting: 23/02/2010
Cllr Denise Cobb	Representing Westbourne Ward	Verbal at public meeting: 23/02/2010
Larry Halley	Woodingdean Speedwatch Group	Verbal at public meeting: 23/02/2010
Mag Morris	Friends of Queens	Verbal at public

	Park/Queens Park Local Action Team	meeting: 23/02/2010
Heike Feldpausch	Lewes Road for Clean Air Group	Verbal at public meeting: 23/02/2010
Tourism and Venues	Brighton and Hove City Council	Email
Culture and Economy	Brighton and Hove City Council	Email
Economic Partnership and the Brighton and Hove Business Forum		Email
North Laine Traders Association (NLTA)		Email
City Clean	Brighton and Hove City Council	Email
Taxi Forum		Meeting of the Taxi Forum: 24/03/2010
Tom Druitt,	Big Lemon Bus Company	Email
Keith Ring, QFSM, Area Manager, City Borough Commander	East Sussex Fire and Rescue Service (ESFRS)	Written statement, 08/02/2010
James Pavey, Senior Operations Manager Andy Cashman, Assistant Director of Business Geraldine Desmoulins	South East Coast Ambulance Service (SECAmb)	Written Statement, 17/02/2010
Ed Dearnley, Policy Officer Miranda Scambler, Public Health Information Specialist Dr. Tom Scanlon, Director of Public Health Rod King	Brighton and Hove Federation of Disabled People Environmental Protection UK Public Health, NHS Brighton and Hove, Brighton and Hove City Council	Email Written Statement, 12/02/2010
Kevin Clinton, Head of Road Safety	20s Plenty Royal Society of Prevention of Accidents (ROSPA) Residents, residents' associations, local action teams, councillors Schools	Written Statement, 22/02/2010 Written Statement, 25/03/2010 Comments by email and letters
School Headteachers/Governors		Comments by email and letters

**APPENDIX 6A: SELECTION OF WRITTEN EVIDENCE: PUBLIC HEALTH,
12/02/2010**

SCOPING PAPER – Health Impacts of 20mph speed limits

Introduction

Following a meeting on the 9 November 2009 the Environment and Community Safety Overview and Scrutiny Committee (ECSOSC) agreed to set up a Scrutiny Panel to look at the issue of 20 mph speed limits/zones in the city and to undertake a review which will investigate the effects of reducing the speed limit in some residential and built-up areas of Brighton and Hove to 20 mph. Brighton and Hove currently has a number of 20 mph zones within the city, although no 20 mph signs only speed limits. Current policy within Brighton and Hove is to tackle areas where a number of accidents have occurred in a particular area. This paper will outline the main evidence of the health effects of introducing a 20mph speed limit in some areas of the city for consideration by the scrutiny panel. The structure of this report will be:

- The Brighton and Hove Scrutiny Panel
- 20mph speed limits and zones
- Evidence of the public health effects of introducing a 20mph speed limit
 - Restricted speed limits and carbon emissions
 - Restricted speed limits and road traffic accidents
 - Potential physical health effects of speed restriction zones
 - Potential mental health effects of speed restriction zones
- Groups at higher risks of damaging health effects of road traffic injury
- Existing Schemes in the UK
- Conclusions

This report is focussing specifically on the direct health impact of 20mph speed limits on the population although will refer to wider health and quality of life factors such as access to services, social networks and social isolation and health inequalities (HDA, 2005) which should also be considered as factors which could be influenced by speed restrictions.

Brighton and Hove Scrutiny Panel

Councillor Pete West is chairing a scrutiny panel to look at:

- evidence on the effect of 20 mph speed limits and 20 mph zones on road safety, and the consequences of speed reductions on traffic movement and displacement.
- The environmental consequences of 20 mph speed limits on the city's air quality, carbon emissions, and noise levels,
- increases in public health,
- stronger community relations and,
- better walking and cycling conditions.

Potential speed restrictions could include creating 20mph zones through road redesign, traffic calming measures or reduction of default speed limits. This panel will make recommendations on the development of council policy on appropriate vehicle speeds in the city. The panel is holding public meetings in

January and February 2010 for residents, community groups and local organisations. A draft report is expected in March 2010 with the final report in April 2010.

20mph speed limits and zones

There are an estimated 2000+ schemes in operation in England, the majority of which are 20mph zones. Evidence from the Department of Transport shows that the introduction of 20mph speed zones generally reduce traffic speeds to a greater extent than signed-only 20mph limits. 20mph zones are predominantly used in urban areas including town centres, residential areas and in the vicinity of schools, as well as around other areas where concentrations of pedestrians and cyclists are likely such as shops, pedestrian areas and playgrounds. 20mph zones are generally recommended for use over an area consisting of several roads but which does not include major roads and statutory provisions dictate that no point within a zone should be more than 50 metres from a traffic calming feature, although additional signs are not required as these are implicit in the main entrance and exit 20mph zone signs. Traffic calming measures refer to the installation of specific physical measures to encourage lower traffic speeds such as road humps, road narrowing measures, including e.g. chicanes, pinch-points or overrun areas, gateways, road markings or rumble devices (DfT, 2009).

Evidence of the health effects of introducing a 20mph speed limit

Road traffic speed has a direct impact on health as it is a major cause of crashes, and the seriousness of accidents is related to speed. Road traffic speed also has important indirect benefits on health such as perception of road danger discouraging walking and cycling, two of the most important kinds of physical activity. This perception restricts social interactions, affects the quality of life, and can induce feelings of stress, particularly among older people (Crombie, 2002). Road traffic has grown by 84% in Great Britain over the last 30 years and over two thirds of all road casualties occur on built-up roads (DfT, 2007). A 1.1km per hour reduction in average speed results in a 3% reduction in the number of accidents, but also a reduction in the severity of accidents, particularly for vulnerable road users such as pedestrians and cyclists (WHO, 2000). Pedestrians have a 95% chance of surviving crashes at 20 mph (32 km/h) or less but less than a 50% chance of surviving a crash at speeds around 30 mph (48 km/h) (Breen, 2004; Watkins, 2009; RoadPeace, Accessed 2010). Dr Watkins (2009) stated at the UK Public Health Annual conference that children are being killed on the road by cars travelling at a speed which would only save them three minutes travel time but which significantly increases the chances of death for a child. This is based on the calculation that relatively few places are more than a mile from a main road so few journeys would involve more than two miles on a side road (one mile at each end of the journey). Two miles at 20mph takes six minutes, at 30mph takes 4 minutes and at 50mph takes 3 minutes. Analysis of the effect of 20mph speed restrictions in high risk areas in London between 1986 and 2006 showed a correlation between the introduction of 20mph traffic speed zones and a reduction in road casualties (Grundy et al, 2009). Breen also states that the wider introduction of 20 mph speed limits in high risk residential areas (where there is a dangerous combination of fast moving traffic, cyclists,

and pedestrians) is key to the reduction of road deaths and injuries. The effects of road injuries on wider public health burdens is expected to become increasingly important in coming years as the transport infrastructure is further developed.

The diagram below illustrates the potential health-related outcomes from policy interventions:

Policy intervention	Potential health-related outcomes							
	Promoting physical activity	Reducing crashes and road traffic injury	Reducing air pollution	Reducing noise pollution	Reducing greenhouse gas emissions	Increasing social inclusion	Improving access	
Promotion of safe walking and cycling	+	+	+	+	+	+	+	+
Investment in infrastructure for safer walking and cycling	+	+	+	+	+	+	+	+
Travel planning and accessibility planning	+	+	+	+	+	+	+	+
Traffic-calming and speed reduction in residential areas	+	+	+	+	+	+	+	+
Enforcement of speed limits/ speed management	+	+	+	+	+	+	+	+
Reducing transport demand (e.g. promoting telecommunication)	+	+	+	+	+	+	+	+
Congestion charging (road pricing) and parking charges	+	+	+	+	+	+	+	+
Cleaner fuels and more efficient vehicles	○	○	+	○	+	+	+	○
Noise reduction	○	○	○	+	○	+	+	○
Safer cars (including safety for pedestrians)	+	+	○	○	○	+	○	
Enforcement (e.g. seatbelts/child restraints)	+	+	○	○	○	+	○	

+ Policy intervention likely to lead to positive health-related outcome

○ Policy intervention not likely to lead to health-related outcome

(Source: SEPHO, 2008, adapted from Racioppi et al 2004)

Restricted speed limits and carbon emissions

Transport-related air pollution increases the risk of mortality, particularly from cardio-pulmonary causes. It also affects health through non-allergic respiratory disease; allergic illness and symptoms (such as asthma); cardiovascular morbidity; cancer; pregnancy; birth outcomes; and male fertility. Evidence from WHO, 2009, show the effects of air pollution on mortality as well as on respiratory and cardiovascular disease to be:

- About 100 000 premature adult deaths attributable to air pollution each year in Europe.
- Approximately 40 million people in the 115 largest cities in the European Union exposed to air exceeding WHO air quality guideline values for at least one pollutant.
- Children living near roads with heavy duty vehicle traffic have double the risk of suffering respiratory problems as those living near less congested streets.

Transport is the largest contributor to climate change as it is the fastest growing source of fossil-fuel CO₂ emissions. Transport accounts for about 35% of total energy consumption in the European Union, causing a 20% net increase of greenhouse gas emissions over the past decade (WHO, 2009). In the UK, air pollution is currently estimated to reduce the life expectancy by 7–8 months with estimated health costs of up to £20 billion each year (DfT, 2008c). The South East region shows a slight decrease in air pollution over the last 7 years, but road traffic still accounts for 34% of CO₂ emissions in the region (SEPHO, 2008)

The limited research that has been done on 20mph speed limits and car emissions has been largely inconclusive although arguments are slightly more persuasive of the positive impact of 20mph limits on car emissions. One study which was conducted under test conditions suggests that cars travelling steadily at 20mph consumed more fuel than cars travelling at 30mph (Archer et al, 2008). However, other research which was conducted on streets under normal driving conditions suggests that 20mph limits alongside traffic calming measures improve traffic flow which positively impacts on carbon emissions. Drivers travel at a more constant speed, accelerate and decelerate less frequently and spend less time stationary which all reduce fuel usage (London Assembly, 2009; Department for Transport, 2009). A HIA of the 'Clean Accessible Transport for Community Health' project in Liverpool in 2004 went further than this in suggesting that at very low levels of speed the vehicle produces a lot of pollution whereby at 20-30mph there is the lowest level of pollution and thus 20mph speed limits in the city centre should be promoted (Abrahams et al, 2004).

Restricted speed limits and road traffic accidents

There is evidence that 20mph could have a significant contribution to reducing road casualties (Grundy et al, 2009). In a study of 20mph zones and road safety in London, Grundy et al found a significant reduction in road traffic casualties for all road user types as illustrated in the table below:

Road user	Reduction in casualties	Reduction in killed and seriously injured casualties
All road users	42%	46%
Children	49%	50%
Pedestrians	32%	35%
Pedal cyclists	17%	38%
Powered two wheelers	33%	39%
Car occupants	53%	62%

(Source: Grundy et al, 2009)

From their research of 20mph limits in London, Grundy et al estimate that 20mph zones in the city prevent 203 casualties a year, and if extended to all

other minor roads and residential roads where there have been ≥ 0.7 casualties per km per year between 2004 and 2006, there could be a potential for a further reduction of 692 casualties (Grundy et al, 2009).

This could have a major effect on hospital admissions following a road traffic accident which are increasing across England as a whole, including the South East region. In the South East of England 6,538 people were admitted to hospital following road traffic accidents between 2006 and 2007 which is the fourth lowest rate of all government office regions. Conversely the region has the third highest level of 17-24 year olds killed or seriously injured on the road. Pedestrians from two age groups are particularly at risk of death or injury on the road in the South East: young people aged 12–19, and older people aged 70 and over (SEPHO, 2008). Research by the Health Development Agency in 2003 found that there would be a 67% reduction in child deaths and injuries a year if speed limits were reduced to 20mph.

Alternatively, SEPHO (2008) suggests that while road humps and differential speed limits may reduce road accidents in the local vicinity, these measures may also have a knock-on effect in increasing accidents in surrounding areas. This evidence is refuted in research by Grundy et al (2009) who found that casualty numbers in adjacent areas to 20mph zones in London also fell slightly in the period of their research. In addition to this a study of 72 schemes to reduce traffic speeds to [is less than or equal to] 20 mph by the Transport Research Laboratory described impact on accidents on surrounding roads and found overall no significant change occurred on the 40 sites for which there was information (DETR, 1996).

Potential Physical health effects of speed restriction zones

In addition to a reduction in injuries attributed to road traffic accidents, there is some research to suggest that 20mph limits may positively contribute to increases in walking and cycling. The 2010 Marmot report "Fair Society, Healthy Lives" states that Lowering speed limits improves quality and access for active travel and improves safety for pedestrians and cyclists. Findings from a survey in Newham, London supports this by finding that 20mph limits may increase cycling through making the roads safer and more accessible to cyclists (London Assembly, 2009). The main benefits of walking or cycling are the reduction of noise, air pollution and accidents rates associated with motorised transport alternatives, and the benefits to health of regular physical exercise (WHO, 2000). Physical activity helps to reduce obesity and reduces the risk of long term conditions such as diabetes, stroke, and heart disease. According to the WHO adults who are physically active have 20–30% reduced risk of premature death and up to 50% reduced risk of developing major chronic diseases such as coronary heart disease, stroke, diabetes and cancers (WHO, 2000). There are also health risks associated with walking and cycling, most notably accidents involving cars, yet preliminary research shows that the benefits to life expectancy for those who cycle are 20 times greater than the risks of injury as a cyclist (WHO, 2000). One of the main deterrents to cycling expressed by non-cyclists is fear of motor traffic and the speed of vehicles is the main reason for this fear (Carnall, 2000, cited by Crombie, 2002). A survey by MORI for the Commission for Integrated

Transport in 2001 found that 47% of people said they would cycle more if traffic problems were addressed, and 65% would walk more.

Road traffic is the main source of exposure to noise in the community (WHO, 2009). Noise can disrupt communication, impair hearing, and reduce sleep quality, increase fatigue and decrease cognitive performance. Children chronically exposed to high noise levels show impairments in acquiring reading skills, as well as attention deficits and impaired problem solving ability (WHO, 2009). Prolonged or excessive exposure to noise can cause chronic medical conditions, such as hypertension and Ischaemic heart disease (Gwilliam, Kojima & Johnson, 2005) and SEPHO estimated that in excess of 10% of people in the South East region of the UK are exposed to such noise conditions (SEPHO, 2008). The World Health Organisation suggests that controls on speed through the establishment of speed limits and traffic calming measures are one way to control noise emissions at source (WHO, 2000).

Potential Mental health effects of speed restriction zones

One of the major mental health benefits of speed restriction zones would be related to the resulting decreases in road traffic injuries. The WHO states that post-traumatic stress from motor vehicle accidents is an under-reported mental health effect of transport, particularly in relation to long-term psychological effects. Studies have found that 14% of survivors have diagnosable posttraumatic stress disorder and 25% have psychiatric problems one year after an accident, and one third have clinically significant symptoms at follow-up 18 months after an accident. A UK study found that one in three children involved in road traffic accidents suffered from posttraumatic stress disorder when interviewed 22 and 79 days afterwards, while only 3% of children from the general population (studied in a similar way) were found to have the disorder (WHO, 2000). Other mental health benefits of 20mph zones could include greater independence for older people, calmer driving conditions and a greater sense of community wellbeing (Bristol Streets, 2010).

Groups at higher risks of damaging health effects of road traffic injury

Speed is a major risk factor for road traffic collisions and the likelihood of severe injury is increased in relation to the speed of the traffic, with the statistics from the Department of Transport suggesting that excessive speed contributes to 12% of all injury collisions (SEPHO, 2008). Road traffic injury is the leading cause of death in children and young people in Europe (WHO, 2007). Children are a particularly vulnerable group in relation to transport for several reasons. In many European countries traffic-related injuries are the most common cause of hospital admission amongst 5-15 year olds, with one in every three road traffic accidents involving a person under the age of 25 (WHO, 2000). In relation to road users generally, pedestrians and cyclists are amongst the most vulnerable with cyclists and pedestrians being disproportionately involved in crashes, given both the amount of time they spend on the road and the relatively short distances they travel. Pedestrians and cyclists account for 45% of all road deaths in the United Kingdom which is substantially higher than in other western European countries (WHO, 2000). RoadPeace UK state that nearly half of the casualties on built-up roads are

pedestrians and cyclists, and these groups are disproportionately represented in the more serious casualty statistics and a 20mph limit would significantly reduce these risks (RoadPeace, accessed 2010). Across Europe road traffic casualties are known to be higher amongst manual workers and their children and the unemployed than for those in professional occupations. In the UK this amounts to a pedestrian death rate in unskilled workers children of over five times that in children of professional workers (WHO, 2000).

Across Europe road traffic casualties are known to be higher amongst manual workers and their children and the unemployed than for those in professional occupations. In the UK this amounts to a pedestrian death rate in unskilled workers children of over five times that in children of professional workers (WHO, 2000). Heavy road traffic can also have indirect health effects for those on low incomes. Busy roads in towns can cut through communities as cars replace people in priorities. This not only increases noise, traffic and speed, but also creates a physical barrier to community life. As the prevalence of motorised transport increases the effects on those unable to afford transport also increase. (DfT, 1998). Lower speed restrictions are often targeted in collision areas, but should not only be limited to these areas as targeting zones in deprived residential areas would help lead to reductions in health inequalities (Marmot, 2010).

Existing Schemes in the UK

According to the 20s Plenty For Us campaign, the following towns and cities in the UK are implementing or have implemented 20mph speed limit schemes:

Towns doing 20 mph as a default with populations	
Portsmouth	197,700
Oxford	151,000
Norwich	132,200
Leicester	292,600
Newcastle-upon-Tyne	189,000
Islington	187,000
Hackney	209,700
Bristol*	416,000
Warrington*	192,000
TOTAL	1,967,200
*piloting	

(Source: 20plentyforus, 2010)

Portsmouth City Council was the first in the UK to implement an area-wide 20mph speed limit scheme covering the majority of residential roads using speed limit signing only between June 2007 and March 2008. This was introduced to support low driving speeds and to encourage less aggressive driving behaviour from those travelling at inappropriate speeds. A Department for Transport interim evaluation of the scheme was carried out one year after implementation and concentrated on impact on traffic speed, traffic volume, safety, and comparison of 20mph signposting and 20mph zones. The evaluation found that there was an average reduction of 7mph in some areas

where the “before” speed exceeded 24mph. Average speed reduction was 0.9% overall was. It was too early in the process for traffic volume to be studied. Analysis showed that in terms of safety, the total accident reduction was 13% in these areas although Killed or seriously injured (KSI) casualties remained the same and KSI injuries rose by 2%, although these were not statistically significant findings. When compared with the effects of 20mph with traffic calming measures, the 20mph limit schemes (without traffic calming measures) were less effective in terms of casualty and speed reduction. There is a planned 3 year “after” study to monitor longer-term impacts (Atkins, 2009).

In Hull, a 20 mph limit has been rolled out in 118 zones (a quarter of its roads) between 2003 and 2008 and overall injuries have declined by 60%, while child pedestrian injuries have declined by 74% with a 69% reduction in child cyclist crashes. The overall number of crashes in Hull has been reduced by 56%, and there has been a 90% reduction in serious or fatal injury collisions (House of Commons Transport Committee, 2008). The House of Commons Transport Committee refers to the example of Hull in its recommendation that local authorities be given powers and resources to introduce 20mph limits much more widely.

Approximately half the residents of Edinburgh are currently within a 20mph zone in the city as installed through either residential or school programmes. Areas were prioritised by collision rate, collision type and pedestrian generators. A 2009 update report concluded that the installation of vertical traffic calming features through targeted use has improved road and traffic safety in a number of residential areas in the city with no adverse environmental impacts being shown (Anderson, 2009).

Conclusions

The National Institute for Health and Clinical Excellence (NICE) suggests that there are a number of potential approaches for tackling the harmful effects of road transport, with two of the main recommendations being to:

- Make active travel safer, including area-wide traffic-calming in towns and cities; speed limit zones; public lighting; community-based interventions; education and training programmes;
- Make changes to the transport environment including traffic-calming; building walking/ cycling trails; closing or restricting use of roads; establishing road user charging; improving cycle infrastructure; establishing safe routes to school. (NICE, 2006).

In a Health Impact Assessment of the London Mayors Draft Transport Strategy, the London Health Commission also recommended that 20 mph speed limits should be introduced in “home zones” and near schools (London Health Commission, 2001) while Research by Mindell et al (2003) and Research by SEPHO supports this and concludes the specific action of advocating the planning of “home zones” and traffic calming including mandatory 20mph limits (SEPHO, 2008). The evidence presented suggests that speed limit zones are effective both in the reduction of personal accidents and in the reduction of material damage. One limitation of the research presented above is that the effects of 20mph zones have not been analysed

in relation to alternative traffic controlling measures and further research is needed on the future gains of these measures, although the Department of Transport is currently carrying out such research. Breen (2004) neatly summarises the main health benefits of road injury prevention schemes such as 20mph zones/limits:

The health sector bears a large part of the socioeconomic burden of road injury. It would benefit from better road injury prevention in terms of fewer hospital admissions, reduced severity of injuries and, in the event of safer conditions for pedestrians and cyclists, health benefits from more walking and cycling.

(Breen,
2004)

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**APPENDIX 6B: SELECTION OF WRITTEN EVIDENCE: ROSPA,
RECEIVED, 25/03/2010**

Brighton and Hove Council Review of 20 mph Limits and 20 mph Zones

Introduction

Brighton and Hove Council invited RoSPA contribute to its review of 20 mph speed limits and 20 mph zones. The purpose of the review is to investigate the effects of reducing the speed limit in some residential and built-up areas of the city to 20 mph. Speed reduction could include creating 20 mph zones through redesigning roads within the city to include traffic calming measures, or reducing the default speed limit on roads to 20 mph through the use of signs only. Such initiatives are unlikely to be used on main arterial roads in and around the city, but could be used in predominately residential areas to reduce road casualties.

The panel is looking at the evidence available on the effect of 20 mph speed limits and 20 mph zones on road safety, and the consequences of speed reductions on traffic movement and displacement. The panel will seek to address the environmental consequences of 20 mph speed limits on the city's air quality, carbon emissions and noise levels. It will also investigate the other benefits that 20 mph speed limits may bring, such as increases in public health, stronger community relations and better walking and cycling conditions. The Panel will make recommendations on the future development of council policy on appropriate vehicle speeds in the city.

RoSPA thanks Brighton and Hove Council for the invitation to contribute to its review.

Casualty Data

Great Britain has made tremendous progress in reducing death and injury on our roads over the last 20 years, despite massive increases in traffic. There are many reasons for this success, one of the most important of which has been improvements in road design, most especially speed management and local safety schemes, such as traffic calming and 20 mph zones.

However, there are still a high number of casualties on urban roads in Great Britain. In 2008, there were 771 fatalities and 92,714 injuries reported on built up roads (defined as 'roads with speed limits (ignoring temporary limits) of 40 mph or less'), a large proportion of which occurred on residential roads, with 116 fatalities on B roads and 289 fatalities on other minor C and unclassified roads.¹³

The majority of pedestrian casualties occur in built up areas. In 2008, 48 children and 381 adults were killed, and 27,394 pedestrians were injured in

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¹³ Reported Road Casualties Great Britain 2008, Department of Transport

built-up areas. Pedal cyclists are also vulnerable in built up areas; 58 cyclists were killed and 15,014 were injured on built-up roads.

Speed significantly increases the chance of being injured in a collision. Studies which compare injury severity with vehicle speed show that accidents at speeds above 20mph are more likely to result in severe injuries, rather than slight injuries¹⁴. The risk of being fatally injured increases too, and a UK study of accidents found that at 20mph there was a 2.5% chance of being fatally injured, compared to a 20% chance at 30mph¹⁵. Similarly a study in Sweden¹⁶ concluded that the risk of fatality injury at 50km/h is twice as high as at 40km/h and five times as high as 30km/h¹⁷.

Speed management including the use and enforcement of speed limits is a practical and established way of reducing injuries¹⁸, and therefore urban 20m zones present a way of significantly reducing the likelihood of a serious injury.

History of 20 mph speed limits in the UK

In December 1990, the Department of Transport issued Circular Roads 4/90 which set out guidelines for the introduction of 20mph speed limits. Local Authorities had to apply for consent from the Secretary of State to introduce a 20mph zone.

The initiative followed international experience which had demonstrated that lower speed limits could have safety benefits when combined with traffic calming measures to ensure that vehicles maintained low speeds through the zone. Road safety publicity campaigns at the time, such as the “Kill Your Speed, Not a Child” campaign, highlighted 20mph speeds as crucial to reducing the risks of injury in an accident.

¹⁴ Pedestrians and their Survivability at Different Impact Speeds, Richard Cuerden, David Richards, and Julian Hill Paper Number 07-0440, presented at the 20th ESV conference, 2007

¹⁵ Some Characteristics of the Population Who Suffer Trauma as Pedestrians When Hit by Cars and Some Resulting Implications, Ashton S J and Mackay G M 4th IRCOBI International Conference, Gothenborg. 1979

¹⁶ Pedestrian Fatality Risk as a Function of Car Impact Speed, Erik Rosén, and Ulrich Sander

Accident Analysis & Prevention Volume 41, Issue 3, May 2009, Pages 536-542

¹⁷ The difference between 30km/h and 50km/h is the closest rounded approximation to 20mph and 30mph. 30km/h = 18.6 mph, 40km/h = 24.9mph, 50km/h = 31.1mph

¹⁸ Speed management : A road safety manual for decision-makers and practitioners

http://www.who.int/roadsafety/projects/manuals/speed_manual/en/

The first 20 mph limit was in Tinsley, Sheffield on the junction between Raby Street and Sheffield Road. Kingston upon Thames and Norwich introduced 20mph zones shortly after, and between 1991 and 1999, around 450 20mph speed limits were introduced across the country.

In 1999, the Road Traffic Regulation Act (Amendment) Order 1999 gave Highways Authorities more flexibility in that they no longer had to apply for permission to introduce a 20 mph zone. The updated legislation defined two distinct types of 20 mph speed limit areas:

- 20mph limits, which consist of just a speed limit change to 20mph which is indicated by the speed limit (and repeater) signage, and
- 20mph zones, which were designed to be “self-enforcing” through the use of traffic calming measures.

The Department for Transport’s current guidance is set out in DfT Circular 01/2006 which encourages and supports Local Authorities to implement 20 mph limits and zones in situations where there is a particular risk to vulnerable road users¹⁹. The guidance states that the purpose of 20 mph areas is to create conditions in which drivers naturally drive at around 20 mph as a result of traffic calming measures or the general nature of the location.

It, therefore, suggests that 20 mph limits are appropriate for roads where average speeds are already low (below 24 mph) or where traffic calming measures are put in place. Ultimately, the Local Authority is responsible for deciding which of these was the most appropriate for their roads.

The latest figures²⁰ are that there are an estimated 2,148 20mph zones in England, of which 399 are in London.

In a recent consultation²¹, the Department for Transport set out its plans to *encourage highway authorities to introduce, over time, 20 mph zones or limits into streets which are primarily residential in nature and into town or city streets where pedestrian and cyclist movements are high, such as around schools, shops, markets, playgrounds and other areas, where these are not part of any major through route.*

¹⁹ DfT Circular 01/2006 Setting Local Speed Limits
<http://www.dft.gov.uk/pgr/roadsafety/speedmanagement/dftcircular106/dftcircular106.pdf>

²⁰ Review of 20 mph Zone and Limit Implementation in England, DfT 2009
<http://www.dft.gov.uk/pgr/roadsafety/research/rsrr/theme4/20mphzoneresearch.pdf>

²¹ Call for Comments on Revision of DfT’s Speed Limit Circular, December 2009
<http://www.dft.gov.uk/pgr/roadsafety/speed-limits/pdf/guidance.pdf>

Characteristics of 20mph Zones

The Department for Transport commissioned research in 2009 to estimate some of the characteristics of 20mph zones in England²². It found that zones typically covered between 1 km and 25 km of roads.

The study found a correlation between 20 mph zones and schools, with over half of the zones being next to a school. There was no correlation between zones and hospitals, which the report also notes are a significant destination in urban areas.

The research also examined the relationship between 20mph zones and the Indices of Multiple Deprivation data in several Local Highway Authorities. This showed that:

- 33% of these LHAs had implemented the majority of 20 mph zones in the most deprived areas
- 33% of these LHAs had implemented the majority of 20 mph zones in the least deprived areas
- 33% of these LHAs had implemented 20 mph zones in a relatively even mix between areas of least and most deprivation.

A more recent study²³ used high-resolution map data to study the distribution of traffic calming to determine how the distribution of traffic calming varied by deprivation across small areas. It found that traffic calming measures were most likely to be found in the most deprived areas.

This is important as there is a well established link between socio-economic status and the risk of being injured in road traffic accidents. A report in 2003²⁴ found that children from the lowest social class in England are five times more likely to die in road accidents than those from the highest social class, and that more than a quarter of child pedestrian casualties happen in the most deprived 10% of wards.

The Effectiveness of 20 mph Zones

²² Review of 20 mph Zone and Limit Implementation in England, DfT Road Safety Research Report Findings, 2009

<http://www.dft.gov.uk/pgr/roadsafety/research/rsrr/theme4/20mphzoneresearch.pdf>

²³ Using Geographical Information Systems to Assess the Equitable Distribution of Traffic-Calming Measures: Translational Research, Sarah E Rodgers, Sarah J Jones, Steven M Macey, et al., Injury Prevention 2010 16: 7-11

²⁴ Making the Connections: Final Report on Transport and Social Exclusion, Social Exclusion Unit, February 2003

The road engineering measures that are most effective in reducing vehicle speeds, and thereby reducing road death and injury are area-wide traffic calming schemes and 20 mph zones.

The first widespread evaluation of 20mph zones in the UK was carried out by TRL in 1996²⁵. This reviewed the accident data in seventy-two 20 mph zones and found that average mean speeds were reduced by 9 mph, from 25 mph to 16 mph in the zones. On average, for every 1 mph speed reduction, there was a 6.2% accident reduction.

All road accidents in the zones fell by 61%, and there was no evidence of accident migration onto surrounding roads. Traffic flows in the zones reduced by 27%. The effects were particularly significant for the most vulnerable road users:

- All pedestrian accidents down by 63%
- All cyclist accidents down by 29%
- Motorcyclist accidents down by 73%
- Child accidents down by 67%
- Child pedestrian accidents down by 70%
- Child cyclist accidents down by 48%

Since then a number of evaluations have been conducted both in the UK and internationally, generally adding to the evidence that 20mph zones are effective at reducing accidents.

In 1994 Hull City Council began a widespread introduction of 20mph zones and by 2003 had introduced 120 zones covering 500 streets. The casualty statistics between 1994 and 2001 showed a drop of 14% in Hull, compared with a rise of 1.5% in the rest of Yorkshire and Humberside. In the 20mph zones in Hull:²⁶

Accidents fell by 56%
Fatal and serious injuries fell by 90%
Pedestrian casualties fell by 54%
Child casualties fell by 54%
Child pedestrian casualties fell by 74%.

International evidence also shows that road casualties decrease when the speed limit in residential areas is reduced from 50 kph to 30 kph²⁷.

²⁵"A Review of Traffic Calming Schemes in 20 mph Zones, TRL Report 215, 1996

²⁶ Hull Reaps Road Safety Rewards From Slowing the City's Traffic, Brightwell, S. Local Transport Today: 10-1. 2003

²⁷ Zones 30: urban residential areas, SWOV Fact sheet, 2009
http://www.swov.nl/rapport/Factsheets/UK/FS_Residential_areas.pdf

A Transport for London review²⁸ of over one hundred 20 mph zones in London also found that they were very effective in reducing road injuries to children. In the zones, speeds were reduced by 9 mph and traffic flows by about 15%.

Road casualties in the zones were reduced by 45% and fatal or seriously injured casualties by 57%. Again, significant protection was provided to the most vulnerable road users:

- Pedestrian casualties down by 40%, and pedestrians killed or seriously injured (KSI) down by 50%
- Child pedestrian casualties down by 48% and child pedestrians KSI down by 61%
- Cyclist casualties down by 33% and cyclist KSI down by 50%
- Child cyclist casualties down by 59% and child cyclists KSI down by 60%
- Car occupant casualties down by 57% car occupant KSI down by 77%
- Child car occupant casualties down by 51% and child car occupants KSI down by 47%

A major review of road casualties in London between 1986 and 2006 was published in the BMJ in 2009²⁹. It demonstrated that 20mph zones reduced the number of casualties by over 40% (41.9%). 20mph zones were slightly more effective in preventing fatal or serious injuries to children, which were reduced by half (50.2%). There was a smaller reduction in casualties among cyclists than any of the other major groups of road users studied, with a reduction of 16.9%. The analysis showed that the reduction in road injuries in 20mph zones occurred at a greater rate than the overall trend in reduction in casualties in London, and that this was not attributable to any regression-to-the-means effect. There was no displacement in accident risk to roads close to the 20mph zones.

20mph Limits

There is much less evidence about the effectiveness of 20 mph limits (which do not use traffic calming measures) because they are largely a more recent innovation.

A TRL report in 1998³⁰ which examined the effectiveness of 20mph limits without traffic calming measures found that traffic calming was a more effective way of reducing vehicle speeds than signs only, with the later only

²⁸ Review of 20 mph Zones in London Boroughs, TfL Safety Research Report 2, 2003”

²⁹ Effect of 20 mph Traffic Speed Zones on Road Injuries in London, 1986-2006: Controlled Interrupted Time Series Analysis, Chris Grundy et al BMJ 2009;339:b4469

³⁰ Urban Speed Management Methods, Mackie, A , TRL 363, 1998

creating a small reduction in speed. There was some evidence that public awareness campaigns and enforcement further reduced traffic speeds.

However, more recently, Portsmouth City Council implemented an extensive area-wide 20 mph speed limit scheme covering 410km of its 438km (91%) of the length of its residential roads, using speed limit signing alone. It introduced 20 mph speed limits on road network. On most of the roads, the average speeds before installation were 24 mph or less, mainly because of narrow carriageways and on-street parking.

The aim was partly to support the low driving speeds already adopted by many motorists and partly to encourage less aggressive driving from those who drove at inappropriate speeds.

An interim analysis was published in 2009³¹, one year after the 20 mph limits were put in place. It found that 20 mph speed limits reduced the average speed by 0.9 miles per hour, which was not statistically significant. However, at sites where the average speed was above 24mph before the new limit was introduced, there was a statistically significant average speed reduction of 7 mph, although 14 of the 24 sites with these higher speeds still had average speeds between 24 mph and 29 mph after the schemes were implemented.

An analysis of accidents found that there was an overall reduction in casualties but it was not significant when compared to the national trend.

The report concluded that the average speed reduction achieved by speed limit signs alone is less than that achieved by the introduction of 20 mph zones, with traffic calming measures, partly because 20 mph speed limits are implemented where existing speeds are already low. Within an area-wide application of 20mph sign only limits, roads with average speeds higher than 24 mph generally benefit from significant speed reductions, but not to the extent that the 20mph speed limit is self enforcing.

Further research after 3 years of the scheme being in place will hopefully clarify the effectiveness.

Other effects

Accident risk is not usually the only intended outcome of a traffic calming scheme.

As well as road safety benefits, it is important to highlight the contribution that 20mph zones can have in encouraging more physical activity, such as walking and cycling, by helping to create a safer environment. The money spent on the schemes can also greatly improve the residential area.

RoSPA has received many enquiries from members of the public who have raised concerns that traffic calming used in 20mph zones has an unintended

³¹ Interim Evaluation of the Implementation of 20 mph Speed Limits in Portsmouth, Atkins, 2009

negative consequence by causing vehicle damage and injuring vehicle occupants who go over the calming measures, slowing emergency services, or increases vehicle emissions.

Research has been carried out to evaluate the impact on road humps on both vehicle damage and the likelihood of occupant injury by TRL and Millbrook³² which included testing vehicles on speed cushions and road humps and creating computer models of vehicles and their occupants.

The tests did not show evidence of vehicle damage from the humps or significant and permanent changes to the vehicle's suspension systems. The report concluded that the levels of discomfort caused by the humps were generally acceptable if they were traversed at an appropriate speed (15-20 mph) and that the forces on the spine were an order of magnitude smaller than what typically causes an injury. However, some people with conditions, such as degenerative discs or weak bones, are more susceptible to an injury.

One recommendation was that vehicles should be prevented from parking near to or alongside speed cushions to allow ambulances to straddle them.

There have been concerns about the effect of ambulance response times raised by the London Ambulance Service, and that this puts people at risk. However, very little research has attempted to properly assess these or quantify these concerns.

In 1997, a USA study into the effect of three traffic calming measures on response times³³. The traffic calming measures were two different lengths of speed bumps (14 and 21 feet length), and traffic circles (similar in design to mini roundabouts, although the plan in the paper shows vegetation in the middle). The delay caused to different emergency vehicles travelling between 25 and 40mph was measured. The traffic circles had the greatest effect on response times, adding between 1.3 to 10.7 seconds of delay to vehicles. Road humps added between 9.4 and 0 seconds to the response time, with shorter 14 feet bumps adding slightly more time. However, the relevance of these results to the UK is not clear, as the traffic calming measures examined covered the whole width of the road, which is not typically representative of the narrow speed cushions used in the UK.

TRL research looked at the average speed of a fire tender running over different types of traffic calming in an estate in Surrey³⁴. The authors

³² Impact of Road Humps on Vehicles and their Occupants, J Kennedy, C Oakley, S Sumon, I Parry et al, TRL614, 2004

³³ The Influence of Traffic Calming Devices upon Fire Vehicle Travel Times, Michael A. Coleman, Institute of Transportation Engineers 67th Annual Meeting, Boston 1997

³⁴ The Impacts of Traffic Calming Measures on Vehicle Exhaust Emissions, Boulter, PG et al, TRL Report 482, 2001

estimated that, on average, traffic calming measures caused a time delay of 1.25 - 1.40 seconds, and average speeds were lowest over flat top humps, and highest over speed cushions.

When implementing 20 mph zones, consultation with the emergency services, as well as the local community is essential to identify any issues before the traffic calming is put in.

What More Can Be Done?

RoSPA believes that it needs to be much, much easier for drivers to choose to drive at safe speeds. This requires education, training and publicity, better and more consistent roadside information about the posted speed limits and improved vehicle design so that drivers are more aware of the speed at which they are travelling.

Drivers' perception of what is a safe speed on a particular road will often differ from other road users, such as pedestrians, pedal cyclists and horse riders. Therefore, it is important that road design gives drivers the right messages about the maximum safe speed. The reasons for a particular speed limit may not be apparent to motorists and consideration needs to be given to ways of making the reasons for speed limits on particular roads more obvious to the road users, including by providing information at the roadside or through local publicity campaigns.

The over-riding principle of speed limit signing should be to ensure that the limit is always as clear and obvious as possible. Drivers should not be expected to work out the speed limit. Drivers who claim they do not know the limit may be genuinely unsure, or may be making excuses. Making the limit obvious would help those drivers who are genuinely unclear, and would remove the excuse from those drivers who really did know the limit but exceeded it anyway.

Vehicle activated signs and Speed Indication devices are useful ways of alerting drivers if they are going too fast, although they may be most effective if moved between locations.

Safety cameras are also an important and effective measure, although it is not yet possible to use them in 20 mph zones.

Intelligent Speed Adaptation

Technology which can prevent drivers from exceeding the speed limit on any particular road is being developed and tested. The latest field tests³⁵ show that this "*is now a mature technology which is capable of delivering substantial reductions in excessive speed and thereby considerable benefits in terms of safety.*"

³⁵ Isa- UK intelligent speed adaptation: Final Report, University of Leeds and MIRA Ltd, June 2008

Depending on how the technology is implemented, over the 60 year period from 2010 to 2070, it would be expected to reduce fatal accidents by between 10% (approximately 15,400 fatal accidents) and 26% (approximately 43,300 fatal accidents), serious injury accidents between 6% (96,000 accidents) and 21% (330,000 accidents), and slight injury accidents by between 3% (336,000 accidents) and 12% (1.3 million accidents).

One of the requirements for the widespread implementation of this technology is a digital map showing the speed limit on every road in the country, which can easily and regularly be updated, including taking account of speed limit changes due to road works.

Transport for London could create or commission such a map for London, and consider installing such technology in its vehicles.

Speed Awareness Courses

Speed awareness courses are likely to be a useful tool in promoting a strong educational message, both to drivers who deliberately break the limit regularly, and those who have mistakenly travelled at an illegal speed.

Top Ten Tips to Avoid Speeding

Many car drivers unintentionally exceed the speed limit, often without realising it. Modern cars are so powerful and comfortable they give drivers little sensation of their speed. It is too easy to creep above the limit, and in particular, many drivers believe it is difficult to drive a modern car at no more than 30 mph on a road with a 30 mph limit, never mind at 20 mph or less in a 20 mph zone. Drivers are responsible for the speeds at which they choose to drive, but there are some simple and practical things drivers who find it difficult to stay with speed limits can do to help themselves. Transport for London could include in its road safety education programmes and resources advice to help drivers, such as RoSPA's [Top Ten Tips To Stay Within the Limit.](#)³⁶

CONCLUSION

RoSPA strongly supports the use of 20 mph zones as they are an effective means of reducing road accidents. They can, and should, be supported by other measures to help drivers drive at safe speeds, and to enforce the limits for drivers who choose to ignore them. There are indications that in the right circumstances 20 mph limits, without traffic calming measures, can also reduce speeds and provide road safety benefits.

³⁶ RoSPA's Top Ten Tips for Staying Within the Speed Limit, RoSPA, 2007
www.rospa.com/RoadSafety/toptentips/info/top_ten_tips_for_staying_within_the_limit.pdf

APPENDIX 6C: SELECTION OF WRITTEN EVIDENCE: EAST SUSSEX FIRE AND RESCUE SERVICE, 08/02/2010

From: Keith Ring [mailto:Keith.Ring@esfrs.org]
Sent: 08 February 2010 15:02
Subject: RE: scrutiny review on 20 mph

East Sussex Fire & Rescue Service, ESFRS, actively promote safer communities and will work tirelessly with any/all of our partners, and the community we serve, to make the City a safer place to live and work.

We have a statutory duty to save life and the Fire Authority have agreed a set of response times for us to attend life threatening incidents in. We have exemption from certain Road Traffic Laws but our policy is to 'drive to arrive'. All of our drivers are professionally trained and will undertake dynamic risk assessments whilst they are on route to an incident and will vary their driving accordingly.

Although ESFRS are fully aware of the fact that reducing speed limits does lead to lives saved and less severe injuries we would not have any raw data that could be used as evidence. However, I can advise that we do attend far less fatal collisions in the city than in other more rural parts of the county where speed often plays a major part in the severity of the outcome.

ESFRS would support 20mph speed limit and 20mph zone introductions across the city in residential areas. We do have concerns over some types of traffic calming measures, as for example a single road hump can increase our response by 10 seconds. You don't need many of these on a single route and the chances of us arriving in time to save a life can diminish quite quickly. There are far too many options for traffic calming for me to comment upon at this time so we would need to be fully consulted for every scheme likely to be brought in. Of course we could sit down and discuss and agree some generic options so that all parties have an idea of what the likely outcome of a consultation would be.

So to sum up, ESFRS fully endorse making our communities a safer place to live and work and we will fully engage with any of our partners to agree the best ways of achieving this. We would be willing to agree some generic traffic calming scheme measures for certain areas and content to be consulted with fully when any new scheme is identified.

I hope that this provides you with enough information for the Scrutiny Panel but if you require more or, have any questions please do not hesitate to contact me. Alternatively if you require a copy of these comments on headed paper that can be arranged also.

Kind regards,
Keith Ring QFSM,
Area Manager, City Borough Commander

APPENDIX 6D: SELECTION OF WRITTEN EVIDENCE: SOUTH EAST COAST AMBULANCE SERVICE, 17/02/2010

South East Coast Ambulance Service (SECAmb) has been asked to contribute to the current review being undertaken by a cross-party Scrutiny Panel of Brighton & Hove City Council of the effects of reducing the speed limit in some residential and built-up areas of the city to 20 mph. This could include either creating 20 mph zones through the redesigning of roads within the city to include traffic calming measures, or reducing the default speed limit on roads to 20 mph through the use of signs only.

The principle objective of the ambulance service is to save lives and SECAmb would support any initiative which looks to reduce death or injury caused by road traffic collisions. Over the past few years enormous strides have been made by the ambulance services within the UK to get to the sickest patients more quickly to improve outcomes and survival rates from life threatening conditions such as heart attacks and strokes. The service has invested a great deal of effort and resource in planning its service around the temporal and demographic requirements of demand. In this way being able to predict where and when incidents will occur has meant that vehicles are located using pre-determined plans to anticipate calls and thereby reduce the time spent travelling to incidents.

The method of response has also changed, although ambulances are still the most common form of response, the use of community responders to support the professional response along with single responders in cars have supplemented the traditional response. Alongside this, the increased and increasing use of advice and onward referral over the phone has started to decrease the need to make a physical response to all patients.

However, there is still and will continue to be a requirement to respond to the majority of patients who call 999 and for the minority of these suffering life threatening conditions speed of response and having someone there who can affect a change in their condition is vital to their outcome.

SECAmb welcomes the opportunity to contribute to this debate and if required would be happy to share data on the time and location of incidents, which may be of use to the panel as it progresses its work.

The ECSOSC has posed the following questions to SECAmb with reference to speed limits;

Would a widespread 20 mph speed limit across the city effect emergency response times?

- It could be argued that the imposition of a city wide 20mph speed limit would not directly affect emergency response times, as the ambulance service is able to claim an exemption from prosecution (Section 87 of the Road Traffic Regulation Act 1984, as amended by Section 19 Road Safety Act 2006) while using blue lights and sirens to respond to

emergency calls. However, a reduction in the traffic flow on main routes through the city might impact upon our ability to ensure operational cover is maintained in a timely manner in line with our deployment plans.

Would concentrations of 20 mph speed limits in residential areas effect emergency response times?

- We do not consider that such a measure would have any impact on our response times.

Are ambulances impeded by traffic calming measures, are some traffic calming measures better than others?

- It would be inaccurate to suggest that traffic calming measures (e.g. road humps and other road furniture) have no impact at all on ambulances, but it may be helpful to understand that it is not considered significant.
- Smaller road humps that allow ambulances to “straddle” the hump would be considered as perhaps a useful compromise, particularly for our patients en-route to hospital. Larger humps that cross the entire width of the road, although effective at reducing road speed, can make a journey uncomfortable for our patients.
- Road narrowing is usually found on minor routes or residential areas, normally this does not cause problems for the ambulance service if traffic flow is maintained appropriately.

SECAmb will continue to work with our colleagues in other emergency services on matters of access and egress for emergency service vehicles in Brighton and Hove.

Yours sincerely,



James Pavey
Senior Operations Manager
Development
Brighton and Rother

Andy Cashman
Assistant Director of Business

APPENDIX 6E: 20's PLENTY, 22/02/2010

Attached at end of this report