

# SAFETY FIRST

## HOW ROAD AUTHORITIES IN LONDON ARE REVERSING THE TREND

One of the busiest cities on the planet has made huge inroads to improving road safety. Although the three Es have played a vital role in ensuring 2010 targets were hit ahead of schedule, an altogether different approach may be needed in the future



Image courtesy of Transport for London

**T**wo elements underpin Transport for London's (TfL) success in reducing accident rates on the capital's roads: budget and policy. "We developed a transparent vision back in 2000," begins Chris Lines, head of the organisation's Road Safety Unit. "We set the budgets in place so we could get on with the three 'Es' – engineering, education and enforcement." In London, there is a clear business plan when it comes to safety. "Every year I go to the TfL board to ask for money and I am always confident as I know that money spent on road safety offers terrific value."

### THE COST OF CRASHES

A fatal accident will cost society around £1.5 million while a serious injury will cost around £167,000. Of course, it is difficult to judge, with factors such as cost to the tax payer, community costs such as loss of earnings and running costs for ambulances and so on, while putting a price on the misery, pain and suffering is even more difficult. However, Lines conducts a great deal of monitoring to assess what benefits come directly from what interventions. "Given we are saving lives, we are able to accurately evaluate rates of return on the investment. For example, we usually get 100% first-year return from an engineering investment. So, if a £100,000 junction improvement prevents a previously average fatality rate of one per year, the financial savings are clear to see."



**Deaths and serious injuries recorded on London roads have fallen by around 40% in less than a decade**

One method for reducing fatalities is a reduction in speed. According to TfL's figures, when a London borough installs a 20mph zone as opposed to 30mph limit, KSI rates are reduced by more than 50%. "Year on year since 2000, we have saved in the region of £3.5 billion, having only spent £200 million on road safety during the same period." This is, Lines notes, excellent value for money on a cumulative basis.

As a result of the built-up nature of London, the building of new roads is rare, so renovation and redesign is the order of the day. All new projects are simulated in advance to check capacity and safety, while all of the engineering is carefully audited to ensure there are real benefits. "There are a whole host of engineering tweaks that we can employ to improve safety," Lines suggests. "If the data indicates a particular problem over the past five years, we try to identify patterns. For example, if a junction suffers from tail-end collisions in the wet, we can install skid-resistant surfaces, while if the crash rates increase when it is dark we are able to deploy better lighting. We target our intervention to meet the specific problems of any given site."

Alongside colleagues in the London Safety Camera Partnership, TfL reckons on a 50% reduction in casualties at a site after a new enforcement camera installation, with a threshold to fit the equipment of four killed or seriously injured during the

previous three years. "It's amazing how even a relatively small amount of reduction in speed can deliver results," Lines observes. "According to our research, reducing average speeds by just 1mph reduces collisions by 5%. It's all about speed management and it becomes more accurate in high-risk areas."

The relationship between speed and severity of injury is well established, figures that make for grim reading, especially if you're a vulnerable road user. Research from the Department for Transport indicates that one in 40 pedestrians struck by a car at 20mph dies, compared with one in five at 30mph. At 40mph, a mere 10% will survive.

### THE LEARNING CURVE

A recent DfT study reveals that every week two people are killed or seriously injured on London's roads after motorists run traffic lights (129 were killed in 2006, although this is expected to be lower in 2007), so the need for action is acute – and any successful solution could have a positive impact in meeting overall safety targets. One of TfL's most recent innovations is a Red Light Awareness Scheme, the aim of which is to educate offenders instead of just dishing out punishment. Attending the course allows those who break the rules to avoid paying a £60 fine and getting three points on their license. During the two-and-a-half-hour course, graphic pictures of pedestrians who have been involved in accidents with cars



Image courtesy of Transport for London

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## CALMING INFLUENCE

**H**igh-tech gadgets such as ISA and digital speed enforcement are not the be-all and end-all when it comes to improving road safety in London – various other traffic-calming measures are also playing a key role in London's success story.

Traffic-calming schemes generally incorporate a range of measures designed to complement each other in both speed management and

environmental aesthetics, including entry treatments, road humps and speed cushions, speed tables, kerbside build-outs, Home Zones and 20mph speed limit zones.

Entry treatments indicate a change of character between a main traffic route and a residential road and have been deployed in various London boroughs where there are residential side roads within town centers – and also to signify the start of a 20mph area. In such instances, entry treatments are usually raised to the same level of the pedestrian pavement and not only provide easier access for those on foot, but also help to slow vehicle speeds and discourage parking close to the junction by narrowing the carriageway. The latter improves visibility for drivers entering the

street to more easily see oncoming traffic and pedestrians. Where possible, tactile paving has been installed at uncontrolled crossing points and bollards installed when absolutely necessary.

Road humps and speed cushions help to control speed and reduce accidents, although the latter are prerogative for larger vehicles, such as buses or emergency vehicles. Speed tables are also used throughout the city and although they function similarly to a road hump, they extend across an entire junction, including all of the approaches. Wherever possible, the materials and color of the table match the carriageway itself, although sometimes a red surface material is employed for differentiation.

Kerbside build-outs are increasing in popularity and



Road humps help to control speed and reduce accidents



are shown – the message often sinks in. More than 360 people have already been on the course during a trial period and, if successful, it could be rolled out nationwide. Lines has high hopes for the plan, predicting it could be as successful as its speeding counterpart: “We are trying to turn enemies into friends,” he explains. “After a bit of instruction, errant drivers start to see cameras as exerting a positive influence.”

There are 242 red light cameras in London and have led to an average 53% reduction in the number of people killed or seriously injured at deployment sites. They have been key to the enforcement process



**Speed management has been central to London's success and enforcement cameras have proved to be effective**

and now the next-generation time-and-distance Spec-3 systems are undergoing Home Office approval. Instead of cabling, the system is designed to be wireless, which could lead to cost savings as well as more flexibility when it comes to selecting positions around the zones to install the cameras. “This is another tool we can employ that could have huge benefits for residential zones,” Lines says. “We can work out the time it should take to pass through a given area and catch those who drive too quickly without having to resort to major road engineering, such as humps, which can cost up to £10,000 each to install.”

Lines acknowledges the problems caused by humps – especially for those in the emergency services – and feels the day could be in sight when cameras render humps totally obsolete. “When regular users know

## PEDESTRIAN PACE

➔ One factor that bothers Lines in particular is the high figures for accidents involving pedestrians. In fact, 40% of the total injury figures for KSI are pedestrians.

One way to help here is to look at car design, with better-designed bumpers and softer areas at the base of the windscreen. “We did some research way back in the 1980s,” Lines details. “A Mini Metro was modified, and although it didn’t look pretty there were a lot of safety benefits. With modern design tools I can’t believe it is impossible to design a nice-looking vehicle that offers more protection to pedestrians.”

The problem isn’t just restricted to travelers on foot, however. Little thought

seems to be given to cyclists, as Lines concludes. “We are struggling against the weight of European legislation of course, which will slow down any progress, but car designers can still do more.”



narrow the width of the roadway and help reduce vehicle speeds and discourage parking close to junctions. Such build-outs provide potential locations for tree-planting and other street furniture (for instance, cycle stands) away from the main movement of the pedestrians on the pavement. Build-outs are often constructed from the same material as the pedestrian pavement and bollards are used only when absolutely necessary. In addition, where implemented in London, line of sight has not been adversely affected.

The concept of the Home Zone is influenced in part by the work of the late Hans Monderman, whose philosophy revolved around the theory of ‘shared space’. Home Zones work through the physical alteration of streets and encourage



**More and more 20mph zones are being introduced in London**

**Entry treatments in London signify the start of a 20mph zone**

motorists to drive with greater care and at lower speeds. Traffic calming and environmental improvements within the zones create a safer, attractive and more accessible street environment, almost to the extent of creating public spaces within the urban fabric.

Former mayor Ken Livingstone was apparently a huge fan of 20mph limits, having been impressed with their effectiveness in the south coast town of Portsmouth where they have been put in place in all residential areas. More than 400 20mph zones are in operation in London. Figures collected by the mayor’s office prior to Livingstone’s ousting from City



Image courtesy of TfL

Hall in May claim that casualties fell by nearly 60% after 20mph zones were introduced.

The Parliamentary Advisory Council for Transport Safety has in the past claimed that the UK’s annual 3,100 road death toll could be cut by 66% to around 1,000 a year if all residential areas imposed 20mph limits. Meanwhile, the research laboratory, TRL, has stated that 20mph limits could cut child road accidents by up to 67%.

**WRITTEN BY**  
LLOYD FULLER



Major advertising campaigns have raised the awareness of the dangers and consequences of motorcycle collisions

about a local 20mph limit and they know the cameras are there, hopefully fewer and fewer of them will speed. If they do, one of our educational programs will set them straight and improve the quality of driving generally across the capital."

#### THE EARLY BIRD...

Lines believes education should start as early as possible. The free-to-attend Children's Traffic Club, for instance, is aimed at three- and four-year-olds and is designed to teach kids about road safety in a fun way. Several initiatives are also being run at schools, such as the Junior Road Safety Officer scheme, while for teenagers there is the award-winning 'Don't Die Before You've Lived' advertising campaign. "This has been brilliantly done and it has had a really good impact on safety awareness," Lines says. "We want to change people's attitudes as they grow up." It's obviously working: for the under-16 age group there has been a staggering 65% improvement in casualty figures since 2000 alone.

Education also targets specific user groups, such as motorcyclists, and ongoing campaigns are aimed at both two-wheelers and the careless car driver. There were 1,200 KSIs resulting from accidents involving powered two-wheelers in 2000, which reduced to a figure of only 819 in 2007. Lines stresses this also has to be seen in the context of the massive growth in the number of bikers on the city's streets. "Motorcycling rates have doubled over the past decade," he confirms, "but the targets remain the same, so we just have to work harder to make the necessary improvements."

Still on two wheels, there has been a big rise in the popularity of cycling, with an 83% increase over the past five years. Current TV commercials highlight the problems – including one featuring a moonwalking bear – and are designed to create more awareness among car drivers.

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The next stage for TfL is to examine the concept of work-related road safety, with an emphasis on two-wheeled couriers. "We need to build road safety into every business by encouraging companies who use couriers to help check if providers have the right equipment and proper route plans and so on. Road safety is a culture we should bring into more aspects of life." A working group is in the pipeline, scheduled to start investigations later in the year.

Looking into the future, an advisory Intelligent Speed Adaptation is a distinct

possibility. A speed limit database is already nearing completion and could be downloaded by any number of GPS-based in-car devices, including aftermarket and factory-fitted devices. An audible or visual warning could be used to let drivers know if the limit is being exceeded. "We have already spoken to some of the GPS and mapping companies, such as NAVTEQ and Tele Atlas, and we are confident that there will be consumer interest," Lines says. "We do not envisage that any legislative changes will be required, and based on an estimate from the recent study by experts at the University of Leeds, if every driver in London had an advisory ISA, casualties could be reduced by 10%." This equates to a financial saving of around £120 million.

The next step could be to incorporate ISA into the vehicle's control system to actually govern speed in certain areas. Although this may not be popular with the general public, commercial operators could be interested.

Despite the best of intentions, there are legal ramifications however. To ensure a convicted speeder can't blame his onboard equipment, Lines likes to classify ISA as a driver aid. "The driver is in control of the vehicle," he says. "The technology will only be offering a warning initially – and after all, this is to save lives, not licenses."

Looking further ahead, Lines believes there is much to learn from the aircraft and rail industries, which have a Vision Zero-type approach. "If there is an accident on an aircraft or a train, there are always inquiries and we should consider this for cars, which statistically are far more dangerous." Regarding predictions for statistics, the goal of a 50% reduction in KSI every 10 years seems appropriate. "We may never reach the day when there are no casualties at all on our roads, but it shouldn't stop us from trying. It's a worthy ambition." ■



"London's serious crashes have fallen by around 40% in the past decade. The capital's crash pattern is similar to many developing countries with pedestrians forming 40% of serious casualties, motorcyclists 20% and cyclists around 10%.

To draw wider lessons from London's experience, local debate on humps, speed cameras, enforcement and campaigns needs to be put to one side – some communities will build more consensus, some less. The bedrock of

London's progress in reducing serious casualties is road safety engineering and enforcement that protect people better from the high energy collisions that kill and maim. Speeds on well channelized main roads are being brought closer to a safe speed limit and 20mph zones in residential areas protect in a less-controlled environment.

The critical success factors in London are simple but too little applied: the creation of a program with political support and funding; the use of data to target action to where it is effective; and the training of safety engineers to get the job done well. The result is thousands of lives and serious injuries saved worth billions of pounds, dollars or euros."

