Finance and Policy Committee

Date: **17 October 2013**

Item 14: **Safety Camera Replacement Project**

This paper will be considered in public

1 Summary

1.1 The Safety Camera Replacement Project (SCRP) will replace wet film safety cameras, which are soon to be obsolete, with new digital technology, as approved by the Committee on 13 March 2013.

1.2 On 13 March 2013, the Committee deferred a decision on the implementation of average speed cameras as part of the SCRP, pending a future discussion of the TfL policy on the use of average speed cameras, user acceptance of such technology, and the use of alternate technologies (such as speed warning signs) in reducing speed and Killed or Seriously Injured collisions (KSIs).

1.3 This paper provides the information requested by the Committee and sets out the overall approach to the installation and deployment of safety cameras in London. This information is in line with the policies set out in Safe Streets for London (SSfL), the Mayor's road safety action plan for London, which was published on 6 June 2013.

2 Recommendation

2.1 **The Committee is asked to note the paper.**

3 Mitigating speed-related collisions where people are Killed or Seriously Injured (KSIs) in London

Impact of Speeding

3.1 Speed-related collisions (i.e. collisions where the Police accident report records inappropriate speed as being one of the contributory factors in a collision) account for 46 per cent of all KSIs across London in the last three years (see Appendix 1). High vehicle speeds both increase the likelihood of a collision occurring and lead to more severe injuries in the event of a collision. Most pedestrians, for example, survive a collision with a vehicle travelling at 20mph, but at higher speeds fewer survive. Research has shown that variations in average speed are also important: a one mph reduction in average speeds leads to a reduction of six per cent in the number of collisions in urban areas[1]. Reducing speeding and encouraging compliance with speed limits is, therefore, an integral part of actions to meet the target to reduce KSIs by 40 per cent by 2020, as set out in SSfL.

[1] Taylor, Lynam and Baruya, (2000) The Effects of Drivers' Speed on the Frequency of Road Accidents

Approach of Safe Streets for London

3.2 London has been successful in reducing road casualties over the last decade, with a 57 per cent decline in the numbers of people being killed and seriously injured (KSI) on London's roads in the decade to 2010. SSfL sets out a challenging target to further reduce the number of KSIs on London's roads by 40 per cent by 2020, compared to the 2005-2009 baseline. To ensure successful delivery of the SSfL target, the plan is supported by an increase in TfL's Business Plan funding for road safety by £100m to £250m for the period to 2021/22, and demonstrates that improved road safety is one of the Mayor's and TfL's key priorities. The SSfL action plan reflects the core principles of road safety in applying a range of measures based on education, engineering and finally enforcement, to reduce collisions.

3.3 SSfL sets out a range of policies relating to improved management of speed limits to help reduce casualties. The strategy relating to enforcement through safety cameras, in particular, is aimed at maintaining our existing enforcement capability by upgrading the soon-to-be obsolete wet film safety camera network (as delivered by the SCRP). The strategy also identifies further sites on the Transport for London Road Network (TLRN) and borough roads, where the history of KSI collisions might justify installation of safety cameras.

3.4 In order to mitigate an identified speed-related KSI problem, TfL undertakes a range of activities to reduce the likelihood of speeding and to improve compliance with speed limits. Installation of safety cameras is only considered where education and engineering are either ineffective and/or inappropriate for the type of road and where the history of speed-related KSIs would justify a camera installation.

4 Staged Approach to Reducing Speed-Related KSIs

4.1 In keeping with the wider approach to casualty reduction, the selection process to identify the most appropriate intervention to reduce casualties at any given location is based on the following four requirements:

(a) Is the intervention appropriate for the type of road in question?

(b) Does the intervention mitigate KSIs effectively?

(c) Does the intervention provide best value?

(d) Are the relevant criteria (e.g. the Department for Transport (DfT) criteria for safety camera installations) satisfied for the type of intervention considered?

4.2 A flow diagram of the decision making process for reducing speed-related KSI collisions can be found at Appendix 2.

Education and Information

4.3 In general, the first stage in seeking to address speed-related collisions is to provide education and information messages (subject to suitability) to mitigate the problem. Each year, TfL undertakes a number of public information campaigns targeting different user groups. This approach is adopted, for example, where there is a known user group (such as motorcycles) that experiences speed-related collisions.

4.4 In addition, TfL undertakes targeted educational and training initiatives such as BikeSafe for motorcyclists and speed awareness training for some drivers who have been caught speeding.

4.5 In keeping with the overall approach to casualty reduction, education and information initiatives are assessed for conformity with the four requirements noted above. If it is demonstrated that any of these requirements cannot be met, then engineering interventions will be investigated as the next alternative.

Engineering

4.6 Where appropriate, TfL and the boroughs implement a range of physical measures to modify road layouts and the siting of street furniture, e.g. improvements to junctions, traffic calming and anti skid surfacing. These seek to reinforce people's assessment of what is a safe speed to travel in the local environment and encourages compliance with speed limits in line with DfT guidance.

4.7 Collision studies provide insight into the specific road safety problems at identified locations. These studies inform TfL of the engineering changes that could be used to remedy specific speed-related safety problems.

4.8 On roads with lower speed limits and low traffic volumes, the variety of available engineering solutions is greater and includes speed humps, chicanes and other self enforcing measures. These are typically used to ensure compliance with speeds in 20mph zones and/or other residential areas.

4.9 There are also advisory engineering measures (a cross between engineering and education) that can be considered. The Committee has asked for specific information relating to the effectiveness of these types of equipment such as speed warning signs (Speed Indicator Devices, SIDs) and this information is set out in paragraphs 4.13 to 4.18.

4.10 For main roads with higher speed limits, the range of available engineering interventions may be restricted because of usage (e.g. main bus routes) and traffic flows, as well as physical road layout, and other existing features. In the cases where engineering interventions are not appropriate, speed enforcement will be considered according to the policy set out in paragraphs 4.19 to 4.33.

4.11 As with education and information, the aim with engineering is to encourage compliance with local speed limits through measures that avoid the need for active Police enforcement.

4.12 However, despite these measures, the DfT reports that in 2011, either "exceeding the speed limit" or "travelling too fast for the conditions" were contributory factors in 12 per cent of all collisions nationwide and these collisions accounted for 25 per cent of all fatalities. This highlights the need to undertake further measures in specific collision black-spot locations, in order to mitigate KSIs. This usually takes the form of enforcement. The policy for this approach is described in paragraphs 4.19 to 4.33.

Speed Indicator Devices (SIDs)

4.13 The Committee requested further information on the value of alternative approaches to reducing speed, particularly the potential use of SIDs. These have been deployed by a number of boroughs in London on a limited basis, generally reserved for single carriageway routes, though there are limited examples of use on low speed, multi lane roads. Boroughs have sited SIDs at varying locations – both busy and quiet roads – with 20mph and 30mph limits, depending on their local concerns. There is no generally recognised set of criteria for siting SIDs.

4.14 A report on the effectiveness of SIDs by the Transport Research Laboratory (TRL) was commissioned by TfL and published in 2008[2]. The report reached the following conclusions regarding SIDs:

(a) SIDs have been found to have an impact on vehicle speeds on roads in London with a 30mph limit, with the extent of the impact depending on site characteristics;

(b) an overall average speed reduction of 1.4mph was detected across all sites while the SIDs were activated;

(c) the overall reduction of 1.4mph was used to estimate that a 5.6 per cent reduction in KSIs could occur at sites when a SID was operational for a short period of time;

(d) the SID was most effective in the first week of operation with a significant reduction in effectiveness during week two and thereafter;

(e) SIDs are less effective on roads where vehicle flows exceed 7,000 per day; and

(f) SIDs should remain at a site for at least two weeks and no longer than three weeks.

4.15 The report shows that there are some limited benefits from installation of SIDs in low speed environments as part of a wider community engagement programme, particularly where a high level of engineering works is not favoured. It also provides evidence that the effects of the SID diminish soon after installation and does not then improve in the future.

[2] Effectiveness of Speed Indicator Devices on reducing vehicle speeds in London - http://www.tfl.gov.uk/assets/downloads/effectiveness-of-SIDs.pdf

4.16 The TRL research shows that SIDs do offer a benefit in terms of KSI reduction (5.6 per cent reduction) on specific road types, but this does not compare well with spot speed camera installations in London which, on average, reduce KSIs by more than 57 per cent. Therefore, safety cameras have ten times the impact of SIDs in reducing KSIs by improving compliance with safe speed limits.

4.17 The TRL research notes that SIDs provide a limited effect in certain circumstances, i.e. on lower traffic flow roads when sited on a relatively straight, single lane road with the SID 100m away from speed detection. This ensures drivers see the sign clearly and it is obvious to the driver that they are the one who has activated the sign and so should adapt their driving behaviour. If SIDs were installed on multi-lane, high vehicle flow, higher speed roads, it would not be obvious which driver is speeding, thus the effect on their behaviour would be diminished.

4.18 In conclusion, TfL recognises that SIDs are a low cost, low impact means of achieving some degree of casualty reduction on quieter, lower-speed roads as part of a wider local speed management plan. However, TRL's research suggests they are not an appropriate substitute for safety cameras, which are targeted at known KSI black spots. In particular, they are not suitable on high speed roads such as dual carriageways with a significant history of speed-related collisions.

4.19 TfL is undertaking a project to enhance the effectiveness of SIDs in future, as a local safety measure, complementary to other measures set out in this paper. This might include the deployment of mobile SIDs. As such, SIDs remain one of the tools in the engineering road safety "tool box" that may be implemented in appropriate low speed, low traffic volume environments. As with the education interventions, each one will be assessed against the four requirements set out in paragraph 4.1 above. Should the intervention in question fail any one of these, then solutions will be sought from the enforcement options available (as set out in paragraphs 4.20 to 4.34 below).

Enforcement

4.20 As with the previous stages in assessing the most appropriate road safety intervention, the method of enforcement to be deployed will be selected dependent upon the answers to the four requirements noted in paragraph 4.1 above.

4.21 SSfL sets out a range of policies relating to improved compliance with speed limits to deliver a reduction in casualties. These include a combination of on-street officer enforcement (ongoing); maintaining the capability of the existing safety camera network; and consideration of further sites on the TLRN and borough roads where the history of speed-related collisions would justify camera installation in the future. This includes consideration of average speed cameras where appropriate.

4.22 The Police currently carry out on-street enforcement as part of their day to day duties to deter offending and also in relation to locations that have been identified as having a general speeding problem or a problem with particular individuals who consistently speed. This includes deploying measures such as speed guns and mobile camera enforcement for a limited period of time.

4.23 These measures are temporary and are sometimes sufficient to address a localised speeding problem. However, at accident black-spots where there are multiple speed-related KSIs, a more permanent measure may be required in order to mitigate the KSI problem. The safety camera network is, therefore, generally the final option used to reduce speed-related KSIs by encouraging compliance with speed limits.

Spot Speed Cameras

4.24 TfL follows national DfT guidelines in assessing where speed cameras may be appropriate. These are only installed at locations where there has been a history of at least four KSIs over the previous three years, at least two of which must be speed-related. Typically, safety cameras would be installed on roads where it has been identified that there is a cluster of speed-related KSIs in a small area that can potentially be reduced by the presence of a spot speed camera and where this is likely to be the most appropriate and cost effective type of intervention.

4.25 Speed cameras provide the Police with evidence of speeding offences to enable enforcement action. However, the Police apply significant levels of discretion in this matter, based on the principles of proportionality, targeting, consistency and transparency, as outlined in the Association of Chief Police Officers Speed Enforcement Policy Guidelines[3]. The Police also decide which offenders are offered speed awareness training, which are issued fixed penalty notices and which are prosecuted through the courts.

4.26 TfL analysis of casualties over a three year period before and after the installation of the existing safety camera network showed that KSIs fell by an average of around 57 per cent at the locations where safety cameras were introduced (see Appendix 3). On this basis, London's existing safety camera network helps prevent around 500 KSIs each year. The programme for replacement of the existing wet film network with like for like digital cameras will contribute to ensuring these KSI reductions are maintained.

Average Speed Camera Systems

4.27 There are specific circumstances in London where the characteristics of the road mean that KSIs may be better mitigated using average speed camera systems. This is particularly likely to apply on high speed roads (for example, 40mph speed limit or more), high traffic flow, multiple lane roads in order to achieve a further decrease in KSIs beyond conventional speed cameras and other methods.

4.28 These roads will typically already have spot speed cameras in place. Average speed camera systems have the advantage that they provide enforcement of speed limits over a whole section of road; whereas spot speed cameras do not provide active enforcement in the areas between cameras. An average speed camera system can, therefore, help mitigate KSI collisions currently taking place in areas in between the existing spot speed cameras.

---

[3] Association of Chief Police Officer (ACPO) Speed Enforcement Policy Guidelines – table pg7/8
http://www.acpo.police.uk/documents/uniformed/2013/201305-uoba-speed-enf-safer-roads.pdf

4.29 For example, a multi-lane average speed camera system was installed to cover a six mile stretch of the A13 in 2010, replacing existing wet film spot speed cameras. Initial monitoring data shows that during the 18 month period following the installation of average speed cameras on the A13, total KSIs reduced by a further 10 (58 per cent); with seven KSIs occurring, compared to 17 KSIs which occurred in the 18 months prior to installation of the average speed camera system. To achieve a similar reduction in KSIs along the same six mile stretch of road using spot speed cameras, a minimum of 20 cameras would have been required, incurring the issues noted in paragraph 4.31 below.

4.30 Figures published by the DfT, analysing 15 average speed systems installed in the UK between 2000 and 2008, confirm that average speed cameras can reduce the number of people killed or seriously injured by an average of 73 per cent, with a range from 49 per cent to 100 per cent, compared to no cameras being in place.

4.31 In principle, it might be possible to achieve such reductions in KSIs by simply installing more spot speed cameras (to fill in the current gaps between cameras). However, in practice, there are limitations on the number of spot speed cameras that can be installed along any one route:

(a) the maintenance requirements of an increased number of spot speed camera poles, that would be required to provide equivalent enforcement to an average speed camera system, would cause disruption to traffic flows. For example, it would be required to install spot speed cameras at 1,000 metre intervals or less and closure of at least one lane would be required for every maintenance/repair visit; and

(b) unfairness to drivers who may trigger multiple offences for the same excessive speeding event (i.e. a separate offence might be triggered every 1,000 metres).

4.32 In contrast, average speed camera systems offer the potential to manage speed compliance with limited numbers of cameras along a greater route length.

4.33 On 13 March 2013, the Committee raised a further question regarding the user acceptability of average speed cameras. The issue in question was whether it is reasonable to expect drivers to monitor and regulate their speed very precisely in order to drive below the posted speed limit in the event they had accidentally driven slightly above it. However, the Police exercise the same levels of discretion towards speeding offences, irrespective of whether offences are captured using spot speed or average speed camera systems[4]. There is, therefore, the same reasonably significant “margin” above the speed limit before enforcement action is triggered. This makes an allowance for drivers marginally exceeding the speed limit by accident without having to “compensate” by driving below the limit.

4.34 Average speed systems therefore allow drivers to vary their speed along a route, ensuring an average speed over distance in compliance with the limit. This diminishes the likelihood of their being prosecuted by a temporary and/or marginal increase in speed above the limit. For a driver to be liable to enforcement action, they would have to drive significantly in excess of the posted speed limit for a considerable portion of the route in question.

[4] Association of Chief Police Officer (ACPO) Speed Enforcement Policy Guidelines – table pg7/8
http://www.acpo.police.uk/documents/uniformed/2013/201305-uoba-speed-enf-safer-roads.pdf

5 Conclusions

5.1 The paper's conclusions can be summarised as:

(a) speed-related collisions are a serious problem on London's roads and account for 46 per cent of all KSIs in London over the last three years;

(b) TfL deploys a range of measures to address the problem, which start with education and engineering, with enforcement considered as a last resort;

(c) existing safety cameras currently play a key role in reducing KSIs, and on a small number of roads there is potential to secure further KSI reductions through the use of modern average speed camera technology; and

(d) the policy approach to addressing speed-related collision problems set out in this paper is in line with the new Safe Streets for London road safety plan.

5.2 Subject to the views of the Committee, a further paper will be submitted to the meeting in November 2013 seeking authority to include the implementation of average speed cameras as part of the SCRP.

List of appendices to this report:

Appendix 1: Collisions Resulting in People Killed & Seriously Injured in London
Appendix 2: Speed-related KSI Mitigation Options
Appendix 3: Impacts of Existing Safety Camera Network

List of Background Papers:

Finance and Policy Committee Paper – 13 March 2013

Taylor, Lynam and Baruya, (2000) The Effects of Drivers' Speed on the Frequency of Road Accidents

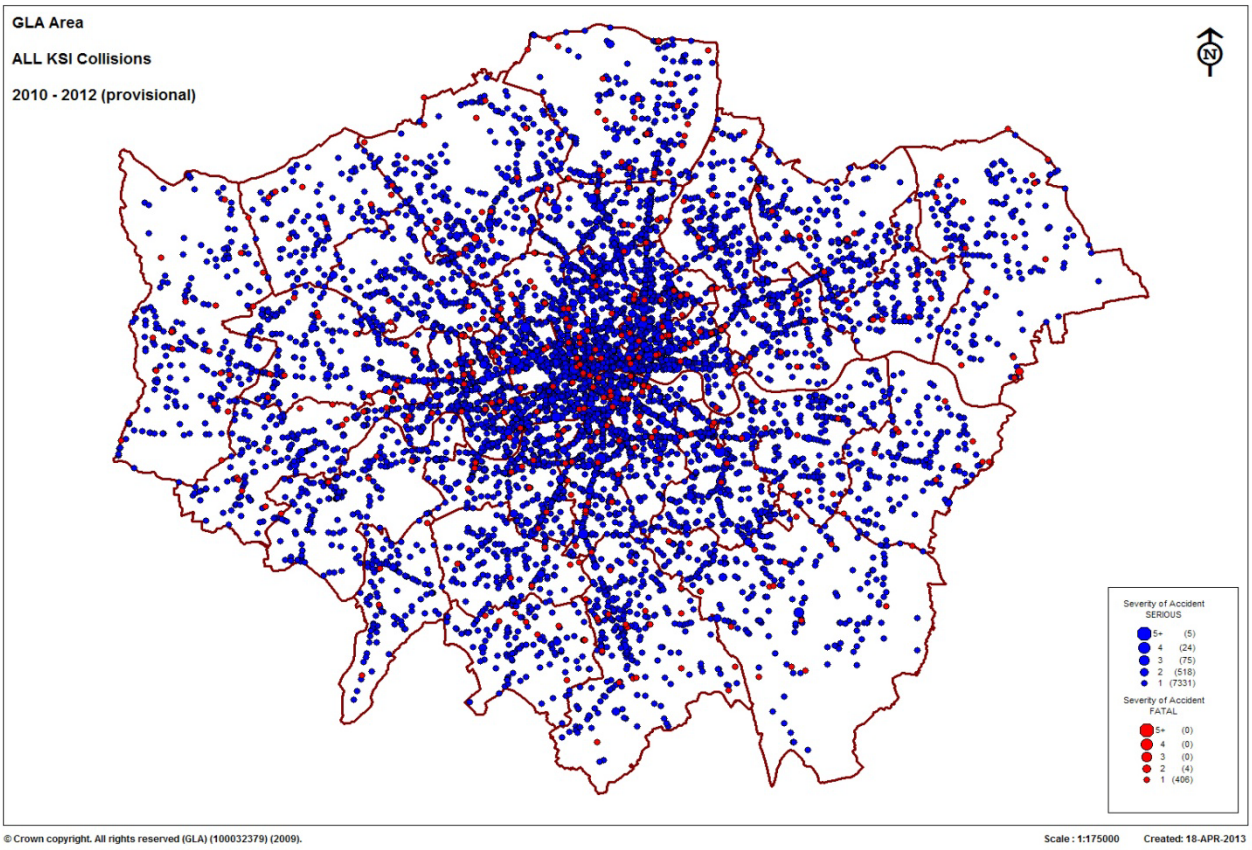
TRL – PUBLISHED PROJECT REPORT PPR 314 – Effectiveness of Speed Indicator Devices on reducing vehicle speeds in London
http://www.tfl.gov.uk/assets/downloads/effectiveness-of-SIDs.pdf

Association of Chief Police Officer (ACPO) Speed Enforcement Policy Guidelines
http://www.acpo.police.uk/documents/uniformed/2013/201305-uoba-speed-enf-safer-roads.pdf

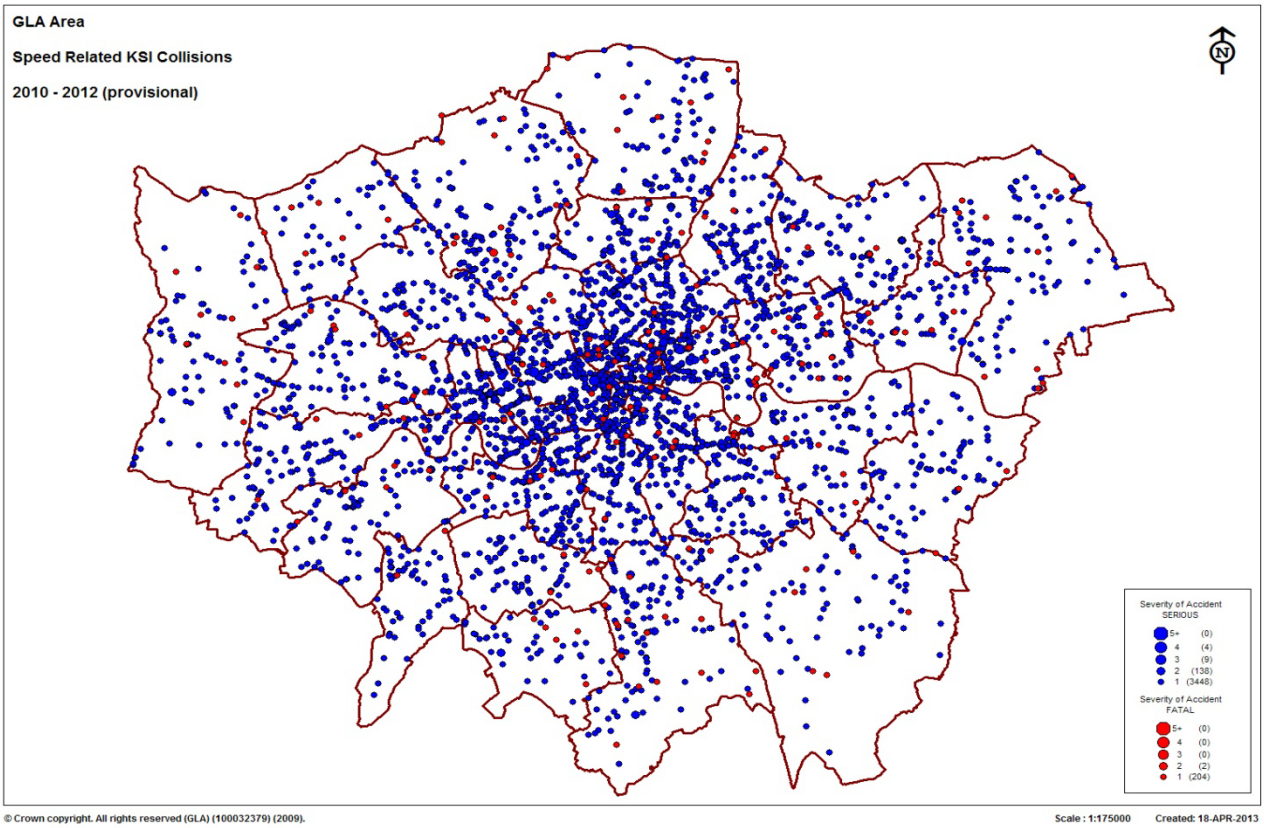
Contact Officer: Leon Daniels, Managing Director, Surface Transport
Number: 020 3054 0178
Email: LeonDaniels@tfl.gov.uk

Appendix 1 – Collisions Resulting in People Killed & Seriously Injured in London (2011 data)

All KSIs in London



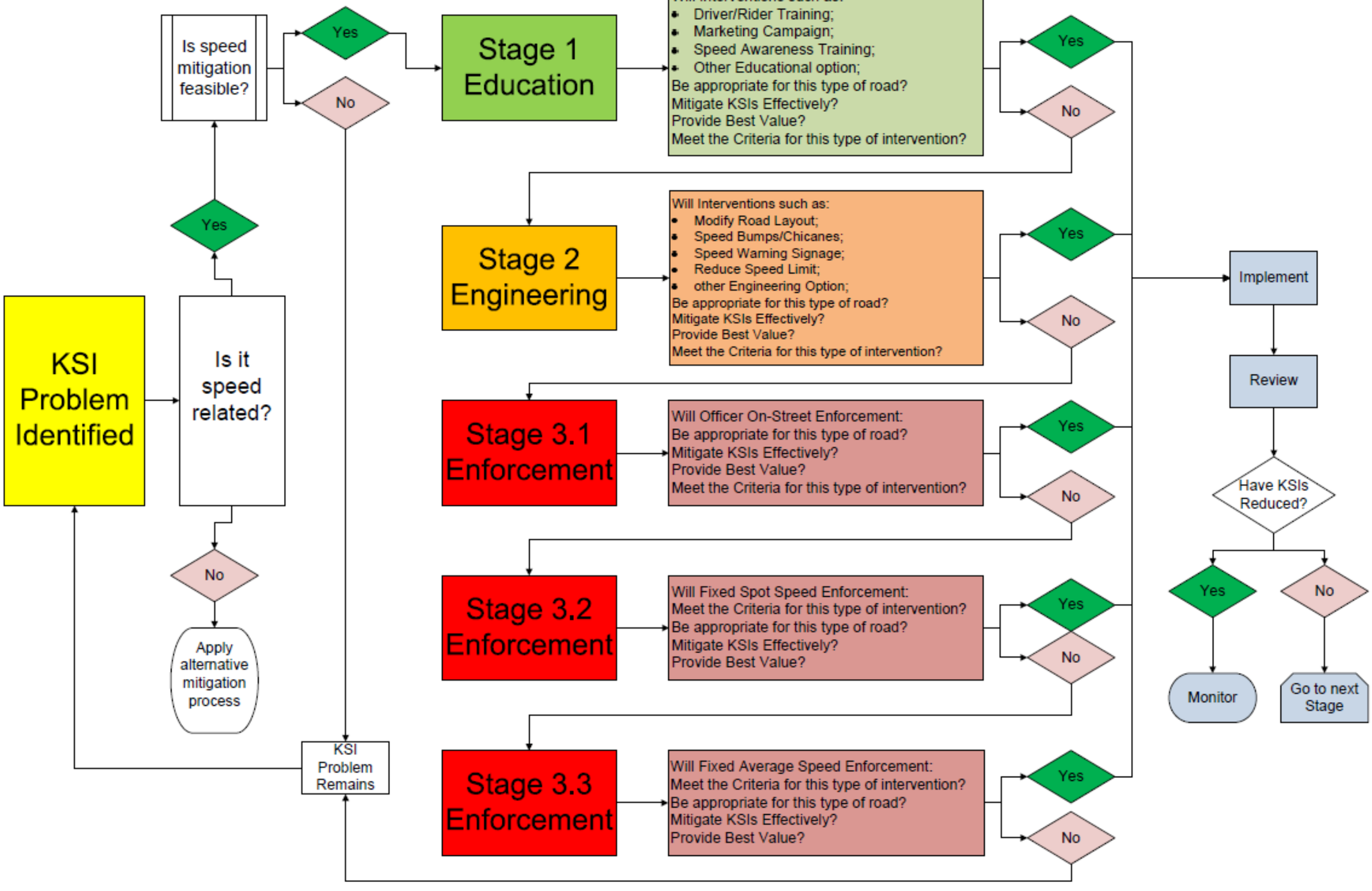
Speed-Related KSIs



8,363 people have been Killed or Seriously Injured (KSIs) in London over the last three years. Of these, 46 per cent (3,805) are speed-related collisions.

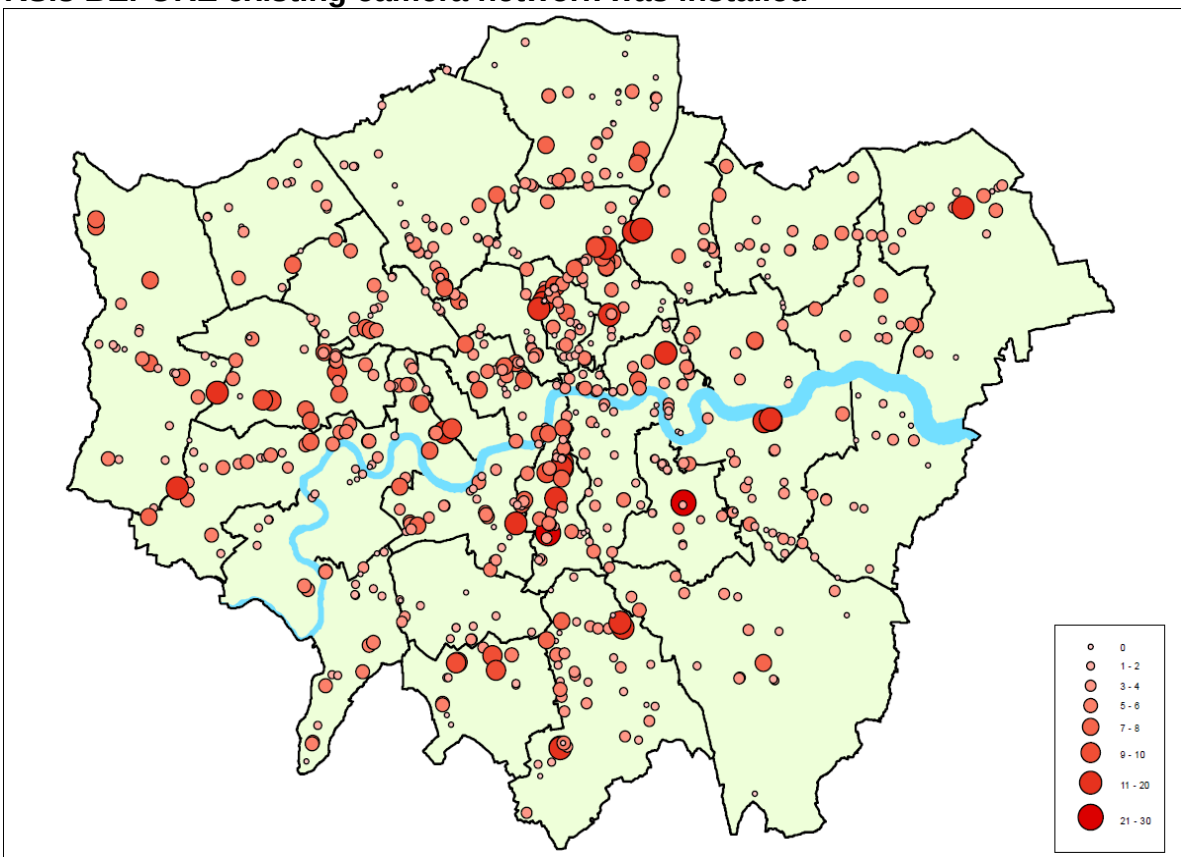
Appendix 2

Speed Related KSI Mitigation Options

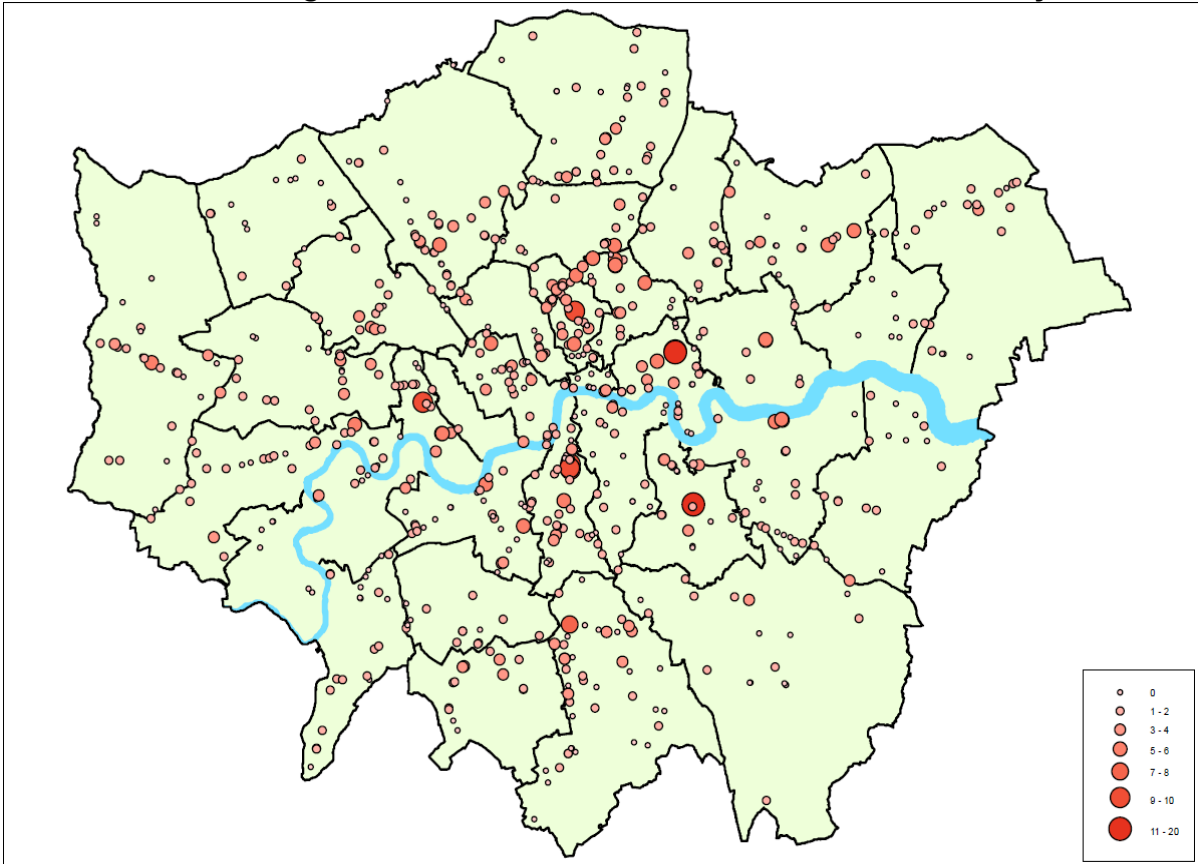


Appendix 3 – Impacts of Existing Safety Camera Network

KSIs BEFORE existing camera network was installed



KSIs AFTER existing camera network was installed: KSIs reduced by 500



The camera network is proven to be the most effective tool to manage down speed-related KSIs. It is a critical component of how TfL manages the safe operation of the road network preventing around 500 KSIs annually. TfL analysis shows that KSIs fell by an average of 57 per cent where safety cameras were introduced.