Appendix 2

TITLE

Bedford Road, Houghton Conquest – Comparison of Speed Reducing Options

Report For: Central Bedfordshire Council

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1. Executive Summary

The physical traffic calming measures designed and consulted upon have been chosen as the preferred option. The preferred option will deliver an overall gain that is two-fold, when compared to the option of a safety camera solution.

The safety improvement scheme can be delivered with an initial estimates showing an approximate spend of £53,100. This scheme would prove to be more cost effective than installing an average speed or a spot camera whilst at the same time still delivering a similar effective physical traffic calming measure along Bedford Road.

Introduction

The purpose of this report is to identify and compare possible traffic calming measures for Bedford Road, Houghton Conquest.

The assessment considers whether an alternative traffic calming option, that of installing a speed camera solution along Bedford Road, Houghton Conquest will deliver financial betterment and therefore provide a suitable alternative approach to the physical safety improvement measures designed and consulted upon for this location.

This assessment is intended to assist Central Bedfordshire Council in determining if there is an available traffic calming measure that will reduce speeds along Bedford Road whilst and be delivered at or close a budget of £53,393.

2. Methodology

For the purposes of comparison to determine the most appropriate way of installing traffic calming measures along Bedford Road Houghton Conquest, three options have been identified:

- An Average Speed Camera Solution
- A Spot Speed Camera Solution
- Physical Traffic Calming Measures

At this stage the intention is to provide an installation and maintenance cost for the speed camera solutions along Bedford Road and compare this with the cost to install the proposed physical traffic calming measures.

Based on the project methodology set out in this assessment, Bedford Road Houghton Conquest would require a single '2 camera live link' average speed camera solution under Option 1 and a single spot camera under Option 2.

The cost has been calculated for Options 1 and 2 in line with previous proposals for camera installations in Bedfordshire and is presented below in tabular format (Tables 1 & 2).

Whilst the camera solutions are installed in isolation they do require a 'back-office' functionality to be installed at Bedfordshire Police Offices. This is for enforcement purposes (see Appendix 1).

The layout for Option 3, physical traffic calming measures are shown on *Drawing Number 806906-001-01 Revision A- General Arrangement* and have been priced up accordingly.

Table 1 below provides an installation cost for the average speed camera solution, whilst Table 2 provides a breakdown of the single 'spot' speed camera costs. Table 3 shows a breakdown of the physical measures installation and costs incurred.

Installation Costs (Approximate Costs)	Average Speed Camera
Purchase of Outstations (2 live Cameras, Pole top box, pole and bracket)	£40,600.00
Install Outstations – Commissioning, Validation, Connection to Back Office Instation	£17,000.00
Ancillary Works (incl. electrical/trenching/civils/TM) – based on installation at Stewartby Way, Stewartby	Up to £8,500.00
Amey Design Fee	£3,500.00
Sub Total	**£70,000.00**
Maintenance Costs over 5 Years	
12 months hardware/software support for two live cameras + revalidation process to prove and renew the enforced link certificate (over 4 years) (per annum cost - £9048)	£36190.00
12 months hardware and software support of the back office instation (over 4 years) (per annum cost - £2491)	£9960.00
Sub Total	**£46,150.00**
Total Cost	**£116,150.00**

Table 1- Option 1: Average Speed Camera Installation Costs

Installation Costs (Approximate Costs)	Spot Camera
Purchase of Camera (Single live Digital Camera)	£34,200.00
Installation of Camera Housing Unit	£34,730.00
Ancillary Works (incl. electrical)	£2,500.00
Amey Design Fee	£2,500.00
Sub Total	**£73,930.00**
Maintenance Costs over 5 Years	
Camera Calibration (provides calibration from Month 12 to 60)	£4,100.00
Camera Maintenance (provides maintenance from Month 12 to 60)	£9,240.00
Additional Contract Requirements per annum (Piezo sensors etc.)	£4,000.00
Sub Total	**£17,340.00**
Total Cost	**£91,270.00**

Table 2- Option 2: Spot Camera Installation Costs

Installation Costs (Approximate Costs)	Physical Measure Installation
2 x Raised Table Installation, including Red Tech (15mm)	£16,000.00
1 x Road Hump	£1,600.00
1 x Mini Roundabout alterations	£3,000.00
1 x Chicane	£3,000.00
Haunching	£12,500.00
Drainage	£3,000.00
Road Markings and Signage	£2,000.00
Amey Design Fee	£5,000.00
Sub Total	**£46,100.00**
Contingencies	**£1,600.00**
TM requirements	
4 days road closure	£5,200.00
2 days – 2 way-lights	£220.00
1 day – 3 way-lights	£110.00
Sub Total	**£5,530.00**
Total Cost	**£53,230.00**

Table 3- Option 3: Physical Measure Installation Costs

3. Results

The cost of installing an average speed camera solution, shown in Table 1, is approximately £70,000. This figure includes the purchase of the camera outstations, instation equipment, a design fee and ancillary works whilst not exhaustive will include items such as trenching and electrical requirements. The ancillary works cost is based on a comparable site in Stewartby Way, Stewartby (see Appendix 1). Table 1 also shows an additional requirement for the calibration and maintenance of camera equipment for an average speed camera system. Over a five year period the cost is approximately £46,000.

In total to build and maintain average speed camera traffic calming measures over five years would cost £116,000.

The cost analysis in Table 2 shows that an installation cost for the spot speed camera system can be delivered for around £74,000. This figure includes the purchase of a single digital camera, installation of the camera housing unit along with a design fee and ancillary works.

Table 2 also shows an additional requirement for the calibration and maintenance of camera equipment. The associated costs are approximately £17,000.

In total to build and maintain a spot speed camera traffic calming measure would require an outlay of in the region of £91,000.

The breakdown of costs in Table 3 shows that an (indicative) estimate for installing a physical traffic calming measure of £53,000.

4. Advantages of Average Speed Cameras

The operating principle of the average speed camera solution is based on cameras being constructed into a network allowing a vehicle to enter and exit at any point in the network. By identifying all vehicles as they enter the enforcement zone an average speed is calculated against the exact distance travelled within the zone using Automatic Number Plate Recognition (ANPR).

The approach of creating a link between cameras allows for a larger part of the network to be enforced. It can effectively monitor speeds over a far greater distance than a spot camera and is more effective in 'averaging' down speeds. This system does not create a 'slow-down- speed-up' scenario. It can be beneficial in reducing average speeds at optimum positions and over a longer link.

The system is less conspicuous than its spot camera counterpart. The camera mounting is higher and considerably smaller in size when compared with the spot camera; it is less intrusive when positioned close to properties and/or in areas of conservation.

5. Disadvantages of Average Speed Cameras

Vehicles travelling over a greater distance will be lost through natural dispersion. The loss of vehicles to feeder routes is an issue for average speed cameras and as such this approach may prove counterproductive in the longer term.

An average speed camera solution uses lighting columns at the capture zone, not an infra-red technique. The effect of lighting emission on a local environment such as a small village with part-night lighting systems, can be contentious.

The installation process is particularly long. As an example the process from initiation to evidential pack submission to the Police can take up to 39 weeks. In essence the process takes a considerable amount of design/project management time to ensure delivery.

6. Advantages of Spot Cameras

A spot camera is bi-directional and can be installed at a specific location encouraging a reduction in vehicle speeds.

The installation of the spot camera can take considerably less time to install. Effectively, a site visit, marking out of camera, a feasibility assessment and agreement on site location can be agreed in a single site visit. As a result a crew can be organised and operational promptly. The majority of works can be complete quickly and Amey is only required to feed power to the site. Having a focal point for all works can be instrumental in the delivery of sites.

7. Disadvantages of Spot Cameras

Spot camera solutions do not encourage any reduction in speeds away from camera locations and therefore do not measure speeds over a greater distance.

Spot camera solutions do not encourage any reduction in speeds away from camera locations and therefore do not capture over a greater distance. As can be seen from the breakdown of speed camera costs, as outlined in table 1 and 2, they can be an expensive option whether that is up-front costs or yearly maintenance and operational costs.

Cameras are very expensive and the budget for this scheme is insufficient for their implementation or the ongoing maintenance and operational costs of speed cameras. More importantly, Bedford Road does not have a history of injury incidents and does not meet the requirements for the implementation of safety cameras.

8. Advantages of Traffic calming measures

Physical traffic calming measures in Bedford Road, Houghton Conquest are shown on *Drawing Number 806906-001-01 Revision A- General Arrangement;* they constitute two raised tables, a road hump, a chicane system and mini-roundabout markings.

The scheme as designed and consulted upon will improve road safety for all road users, but in particular pedestrians, cyclists and other vulnerable road users in Blunham. The traffic calming scheme was formally advertised by public notice during December 2014 and January 2015. Residents living alongside this length of road were individually consulted.

The design will importantly, significantly increase the safety of pupils on the route to and from schools in the area. The proposal will support and encourage sustainable travel in line with approved Central Bedfordshire Council policy.

It is important to note that this scheme had been developed in line and in accord with Central Bedfordshire Council policies and priorities as outlined in:-

Local Transport Plan 2011 – 2026 (Adopted April 1st, 2011)

a) Appendix E Walking Strategy

b) Appendix F Cycling Strategy

c) Appendix X Transport Asset Management Plan

d) Local Area Transport Plan – Haynes and Old Warden (including Houghton Conquest) (Adopted April 1st, 2013)

Quantification of speeds along Bedford Road, Houghton Conquest show why it is pivotal that a scheme has been developed to address issues related to speeding vehicles and road safety concerns. The combined average speed of northbound and southbound vehicles along Bedford Road was recorded as 33.94mph and the 85th percentile speeds were 39.18mph with 69% of vehicles over the 30mph speed limit. There are a number of environmental factors that may have contributed to the recorded speeds. Bedford Road is one of the main routes into Houghton Conquest. The road is relatively straight, with properties generally set back from the road, particularly at its north-west end. As a result these factors tend to encourage higher traffic speeds.

Road humps are acknowledged to be an effective method of reducing traffic speeds. The majority of drivers will slow down for road humps and most will maintain a lower mean speed as the hump has been placed at reasonable intervals to other traffic calming measures. The chicane is also an effective slowing feature, and has been carefully considered in this design process. The cost estimate has also taken allowance of the hunching required for the road as it is in poor condition and requires along a long stretch of road to bring it back up to standard.

9. Disadvantages of the traffic calming measures

Raised traffic calming features will inevitably create some noise, vibration and disruption to adjacent residents, particularly given the position of the raised tables. Chicanes can also be problematic as approaching vehicles may accelerate through the feature to avoid the need to give way to opposing traffic. By their very nature, chicanes will also prevent parking in close proximity so are not popular in locations where there is a high level of on-street parking.

Conclusion

This assessment report has been produced to support the proposed traffic calming measures along Bedford Road, Houghton Conquest. The assessment has considered three options; the average speed camera solution, the static camera solution and physical traffic calming measures. The physical installation of traffic calming measures will provide a cost effective traffic calming scheme and will reduce the speed of vehicles travelling along Bedford Road.

10. Recommendation

The main recommendation is that the introduction of traffic calming measures already designed and consulted upon is the preferred option as it will deliver an overall gain that is two-fold. Firstly, the traffic calming will reduce speeds along Bedford Road and secondly, the scheme will be delivered w

APPENDIX 1

Maintenance is covered under revenue stream per year. Please bear in mind that a new camera comes with a 12 month warranty, and 12 months of calibration certificate. Therefore the first paid for Maintenance Contract starts on the first day of year 2 and goes through to the last day of year 2. Therefore 5 years is achieved with 4 Maintenance Contracts, likewise with calibration certificates. A new camera comes with one year of calibration. Four additional calibrations provide cover of 60 months or 5 years.

The Maintenance Contract covers only the D-CAM P Speed camera, not the TBOS/TVM pair of servers and the Shuttle PC and Courtview PC (Both Dell laptops). The above price is not based on individual camera sites; therefore things like piezo sensors, auxiliary flash, power supply module, camera post, roadside router or electrical feeder pillar are not covered by a maintenance contract. These costs are covered under a separate camera maintenance contract.

Average Speed Camera Notes

Please note that the installation of cameras does not include traffic management costs, installation of a feeder pillar nor the lighting column required to light up the capture zone of the cameras. The Home Office approval determines that the camera and the lighting column is 16.5m apart meaning trenching/ducting and pulling the cables through is more expensive under this option. They are required to trench/duct in most cases 3m between the camera and feeder pillar.

The equipment is covered by a standard 12 months onsite warranty. Warranty commences at time of installation.

Spot Speed Camera Notes

Please note that the installation of spot cameras covers traffic management costs, installation of a feeder pillar, camera and auxiliary flash post as well as covering excavation and cable feed. Amey are only required to trench and feed a cable from a power source to their feeder pillar.

This outlines why the installation of cameras and ancillary works vary considerably between both options.

Stewartby

Install/Commissioning = £17000 (2 live)
Cameras (Outstation) = £40546 (2 live)
Civils/TM/Electrical = £8500
Warranty for 12 months = £9048 (2 live cameras)
Warranty for Back Office = £2500
Amey Design Fee = £3000

Total = £80594