

Technical note

Project:	SMaRT	To:	Dunstan Westbury
Subject:	Accident Assessment	From:	Eric Norton
Date:	14 Jul 2014	cc:	

1. Introduction

An assessment of the impact of the SMaRT scheme on road traffic accidents has been carried out and the economic benefit of the scheme in this respect calculated.

Accidents are classified into two categories:

- Personal injury accidents
- Damage only accidents

Costs involved in damage only accidents include administration, damage to property and police costs, while personal injury accidents also include the direct social cost of the injury or injuries, any resulting loss of productivity and healthcare costs.

2. Methodology

2.1. Personal Injury Accidents

The impact of the scheme on road safety has been assessed using the DfT's COBALT 2013.2 software, with the 2014.2 version of the parameters file. This software package makes use of traffic flows and speeds, along with network infrastructure specifications and recorded accident data to determine the frequency and severity of personal injury accidents (PIAs) on links and at junctions. In this case combined link and junction accident rates have been applied, rather than making separate assessments by type.

2.1.1. Local Accident Data

Accident records across the Slough area between 2009 and 2014 were examined, considering all fatal, serious and slight injuries and allocating each to its relevant link in the highway model. This data showed a total of 345 slight injuries, 35 serious injuries and no fatalities in the five year period.

2.1.2. Accident Modelling

This COBALT assessment has been based on details extracted from the SATURN highway model over the extent of the modelled area. SATURN link specifications relate closely to those used by COBALT, while junction definitions are less compatible. This is the reason for the use of combined link and junction accident rates. These assessments have been carried out for the Do-Minimum and Do-Something scenarios to evaluate the level of safety improvements.

Due to the scale of the model it was necessary to divide the COBALT assessment into two segments and add the results to produce a network wide total impact. Results presented below represent the total over both of these segments. These figures indicate the numbers and values of accidents over the 60 year appraisal period, based on modelled years of 2015 and 2025 with interpolation and extrapolation used to determine values in the remaining years.

Economic Summary

Total Without-Scheme Accident Costs = £9,858m

Total With-Scheme Accident Costs = £9,853m

Total Accident Benefits Saved by Scheme = £4.618m

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Costs and benefits discounted to 2010

Accident Summary

Total Without-Scheme Accidents = 173,862

Total With-Scheme Accidents = 173,774

Total Accidents Saved by Scheme = 88

Table 1. Casualty Summary

	Fatal	Serious	Slight
Total Without-Scheme Casualties	2,035	19,051	236,523
Total With-Scheme Casualties	2,035	19,040	236,407
Total Casualties Saved by Scheme	0.8	9.3	116

2.2. Damage Only Accidents

In addition to those accidents resulting in injury, an assessment of the costs involved in damage only accidents has been performed. The number of damage only accidents has been forecast based on national averages of the number of damage only accidents occurring for each PIA based on road type.

	Urban	Rural	Motorway
Number of Damage Only Accidents per PIA	17.7	7.8	7.6

The value of these damage only accidents as measured over the Do-Minimum and Do-Something networks over the appraisal period is set out below.

Table 2. Damage Only Accident Costs

	Admin	Property	Police	Total
Total Without-Scheme Costs	£155.9m	£5,207m	£101m	£5,464m
Total With-Scheme Costs	£155.8m	£5,204m	£101m	£5,461m
Total Costs Saved by Scheme	£0.086m	£2.813m	£0.057m	£2.956m

3. Total Accident Benefits

Bringing together the PIA impacts calculated through COBALT with the damage only accident benefits generates the following overall accident benefit values.

Table 3. Total Accident Numbers

	COBALT Total	Damage Only	Total
Total Without-Scheme Accidents	173,862	2,887,516	3,061,379
Total With-Scheme Accidents	173,775	2,885,928	3,059,703
Total Accidents Saved by Scheme	87.7	1,588	1,676

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Table 4. Value of Accidents

	COBA Total	Damage Only	Total
Total Without-Scheme Accident Costs	£9,858m	£5,464m	£15,322m
Total With-Scheme Accident Costs	£9,853m	£5,461m	£15,314m
Total Accident Benefits Saved by Scheme	£4.618m	£2.956m	£7.574m

The value of accident benefits generated along the SMaRT section of the A4 corridor has been evaluated at £17 million. The remaining negative impact of £9.5 million over the wider area is caused by the increased traffic flow enabled by the decongestion which results from the scheme. There are no links displaying significant increases in accident numbers, but a slight increase occurs over the wider area as a result of the greater number of trips.