

A285 DfT Safer Roads Fund Bid

APPENDIX D – BCR SUPPORTING EVIDENCE

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INTRODUCTION

West Sussex County Council (WSCC) have completed a business case submission to the Department for Transport (DfT) to obtain funding from the Safer Roads Fund for a safety improvement scheme on the A285 between the A27 and Petworth excluding the section between Thicket Lane, Halnaker and Droke Lane, Upwaltham which was covered in the phase 1 bid submitted in February 2017. This document is intended to provide supporting evidence for the Benefit-Cost Ratio (BCR) calculation.

VALUE FOR MONEY STATEMENT

The key elements of the appraisal presented in the Economic Case are as follows:

Item	Value
Scheme cost (current prices, undiscounted)	£1,532.4k
Present Value of Costs (PVC)	£1,091.7k
Present Value of Benefits (PVB)	£2,134.6k
Net Present Value (NPV)	£1,200.0k
Benefit-Cost Ratio (BCR)	1.96

BENEFITS

Scheme benefits have been derived using the iRAP VIDA software. We understand that the DfT is in discussion with the Road Safety Foundation regarding the software and its underlying assumptions, so detailed information is not included here. Further information can be found at <http://irap.org/en/about-irap-3/methodology>.

VIDA utilises a large volume of global research to forecast the reduction in the number of Fatal and Serious Injuries (FSI) for each specific countermeasure. These measures are then monetised to produce scheme benefits.

VIDA requires economic parameters to be input to enable the analysis, and these have been set to align the appraisal with the approach set out in WebTAG and the HM Treasury Green Book.

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Economic Parameter	Value Used	Source
Value of Fatality	£1,556,245	TAG Databook March 2017, Table A4.1.1
Value of Serious Injury	£174,878	
No of Serious Injuries per Fatality	10	STATS20 data 2011-2015
Discount Rate	3.5%	WebTAG + Green Book
Appraisal Period	20 years	iRAP global standard and informal advice from DfT, pending formal advice

By monetising FSI reductions using values taken from the TAG Databook, scheme benefits are automatically calculated in 2010 prices. The benefits are calculated based on annual FSI reduction, so the benefit stream is calculated over the 20-year appraisal period. VIDA automatically applies the discount rate, but it discounts to the current year. A further adjustment is therefore needed in order to discount the benefits to 2010 and align with WebTAG requirements.

VIDA assumes that benefits will begin to materialise one year after scheme completion, in this case FY 2018/19. Thus the benefit stream output from VIDA is discounted back to 2017, so an additional adjustment is required for the remaining seven years, and is calculated thus:

$$\text{Discount Adjustment} = \frac{1}{1.035^7} = 0.786$$

COSTS

Costs have been estimated based on WSCC's past experience of similar schemes and advice provided by the Term Maintenance Contractor.

Countermeasure unit rates: Road Marking

150mm ribbed edge line in high performance material £2.50/m

900mm central hatching in high performance material £8.00/m

These costs are based on road marking scheme undertaken by the term maintenance contractor on the A285 in 2016. It is not considered there are any significant risks associated with these rates. However, a 25% optimism bias is included as a risk allowance.

Countermeasure unit rate: Shoulder Widening (haunching)

Haunching (all in rate) £75.00/m base on the midpoint of two rates supplied by the maintenance contractor (£65.00/m - £85.00/m) a 25% optimism bias is included as a risk allowance.

Design costs: 15% of total construction costs

Costs have been derived in current prices, so are required to be adjusted to 2010 prices for use in the BCR calculation. This has been done using the GDP deflator from the Annual Parameters table in the WebTAG databook, March 2017.

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$$Price\ adjustment = \frac{GDP_{2010}}{GDP_{2017}} = \frac{100.0}{110.9} = 0.902$$

Costs are then discounted to 2010, as discussed above.

Some countermeasures require periodic renewal. These have been included in the assessment, so for instance, a countermeasure that requires replacing every 5 years is included 4 times in the 20-year appraisal period. Discount rates are applied for the relevant year in which the cost is incurred.

No inflation allowance has been included in the replacement costs incurred in subsequent years, but an optimism bias of 25% has been included, which should be sufficient to accommodate future price changes over and above the Retail Price Index.

DETAILED RESULTS

Detailed results are presented in Appendix E