# Value for Money Assessment: Benefit-Cost Ratio

#### Rationale for Intervention

The health of the main arterial east-west A44 corrideough Worcester is essential for access, growth and vitality of the City Centre. It is constrained by river crossing, outdated junction designs, and poor facilities for pedestrian and cyclists. The Worce **Streaffic** Model confirms significant delays. Reference case journey times indicating these delays arengive Appendix 3. There are two AQMAs at St Johns (2014) and Dolday (2009) either side of the bridge and Deansway is expected to be an AQMA in the future. Two junctions have been identified for traffic signapprades through the Worcester Asset Management plan.

Status-quo will result in persisting congestionaind around Worcester City Centre, Worcestershire's economic engine. Equally, depressed levels of **sabta** active travel modes within the City Centre's immediate context area will continue, which further centuates congestion. Additionally, failure to increase capacity within the City Centre will tries tit from achieving its full potential.

As such, investment is needed to reduce congestion on the City Centre's east-west axis. Reduced congestion, with increase in active-travel modes, owneate additional capacity on the City Centre's highway network. This can facilitate the deliverythose emerging City Centre Masterplan, along with other measures, to maximise thety CCentre's potential by interifying development. No further development can be delivered within the City Centre he absence of any capacity improvements.

This context presents the rationale for intervention within Worcester City Cente to reduce congestion, promote sustainable travel modes and create capacify diditate further development. This is the focus of the NPIF funded Worcester City Centre Network fice fency (Axis West East) schemes. The schemes will deliver the necessary junction improvements and blic realm enhancements, including walking and cycling infrastructure, at the four locations identication in the scheme's location plan in Appendix 1.

#### Scope of Value for Money Assessment

This appendix presents addition detail on the value for money assessment prepared for the scheme. It brings together the present value benefits (PVB) ciented with transport economic efficiency (Appendix 3) and active mode appraisal (Appendix 4) integenegate PVB for the scheme. The monetary benefits are compared against the present value of costs (PVID) ed below, to calculate a benefit cost ratio which demonstrates the scheme's value for money.

## **Scheme Benefits**

Two WebTAG-compliant benefit streams have bedgentified through scheme appraisal: transport economic efficiency and active mode apprais able 1 indicates that the aggregate PVB generated through these benefit streams is £26.1m (2010 pridevalues). More detail on these benefits streams and derivation of individual PVB's is presentine Appendix 3 and Appendix 4 respectively.

Benefit Stream	PVB (£)
Active Mode Appraisal	7,086,736
Transport Economic Efficiency	19,002,531
Aggregate PVB	26,089,267
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TABLE AGGREGAT BRESENVALUE OBENEFIT (2010 PRICES AND VALUES

## Scheme Costs

The total cost associated with delivering the schessnexpected to amount to £4.6m (2017 outturn costs), as listed in Table 2. The total level of investmentudes the cost of construction, as well as design, prelims, risk and other additional items. The **rapsions** underpinning these additional items are also listed in Table 2.

Cost Item

Assumption

Value (£)

across all cost streams, based on DfT guidance. **Scheudt**ed stream of costs is also subject to the prevailing discount rates recommended by HM **Stuey** is Green Book, based on discounting to 2010 prices and values and a sixty-year appraisal perided NW is PVC, construction vestment is assumed to be distributed evenly across 2018 and 2019, awritbal maintenance incurred from 2020. Replacement costs are incurred at twenty year intervals from the year appening, 2019. Based on this specification, the PVC for total scheme costs is estimated £6.2m (2010 prices and values).

#### Value for Money Assessment

Comparing the scheme's PVB agaPhSC reveals a benefit cost ratio (B) of 4.2, as demonstrated in Table 4. This presents very high value enoney for public sector investment.

Value for Money Metric	Value
PVB	26,089,267
PVC	6,217,095
BCR	4.2

TABLE4: VALUE FOMONEYMETRIC (2010 PRICES AND VALUES

## Sensitivity Tests

Three sensitivity tests have been developed to ast sestimpact of small changes in key elements of the value for money assessment:

Sensitivity Test 1: 20% increase in costs;

Sensitivity Test 2: 20% reduction in benefits (esg result of delayed construction programme);

Sensitivity Test 3: 20% increaseoists and 20% reduction in benefits.

The sensitivity test results presented in Table biodestrate that even where scheme costs are higher than expected and/or scheme benefits are lower the scheme will still deliver high value for money for public sector investment.

Sensitivity Test	PVB	PVC	BCR
1: 20% increase in costs	26,089,267	7,460,514	3.5
2: 20% reduction in benefits	20,871,414	6,217,095	3.4
3: 20% increase in costs and 20% reduction in bene	fit <b>2</b> 0,871,414	7,460,514	2.8

Table 5: Sensitivity Test Value for MorAssessments (2010 prices and values)