

Economic Impacts of Active Modes

Introduction

The Worcester City Centre Network Efficiency (Axis West East) scheme will deliver public realm improvements, including walking and cycling infrastructure, at the four locations identified in the scheme’s location plan in Appendix 1.

This will promote cycling and walking across the City Centre and its' immediate context area. NPIF 'Guidance on the Application Process' (April 2017) states that “*where other material factors not mentioned above... have particular relevance to the bid, these should be captured in applications. These could relate to benefits to... sustainable modes (walking and cycling and accessibility)*”. The Department for Transport’s Cycling and Walking Appraisal Toolkit (also referred to as the DfT’s Active Mode Appraisal Toolkit, March 2015) has therefore been used to assess scheme benefits as part of a wider value for money assessment.

This section briefly outlines the modelling approach, key appraisal assumptions and results of the analysis.

For the purposes of the assessment of economic impact, the core City area has been defined by four MSOA’s. The use of Office of National Statistics defined Middle Super Output Areas (MSOAs) to establish the study area ensures that data (census method of travel to work etc) can be collected at a recognised scale. In particular, the City Centre is defined as grouping of the following four MSOAs: E02006742, E02006739, E02006740 and E02006744. This definition of Worcester City Centre broadly concurs with the influence area of the emerging Worcester City Centre Masterplan.

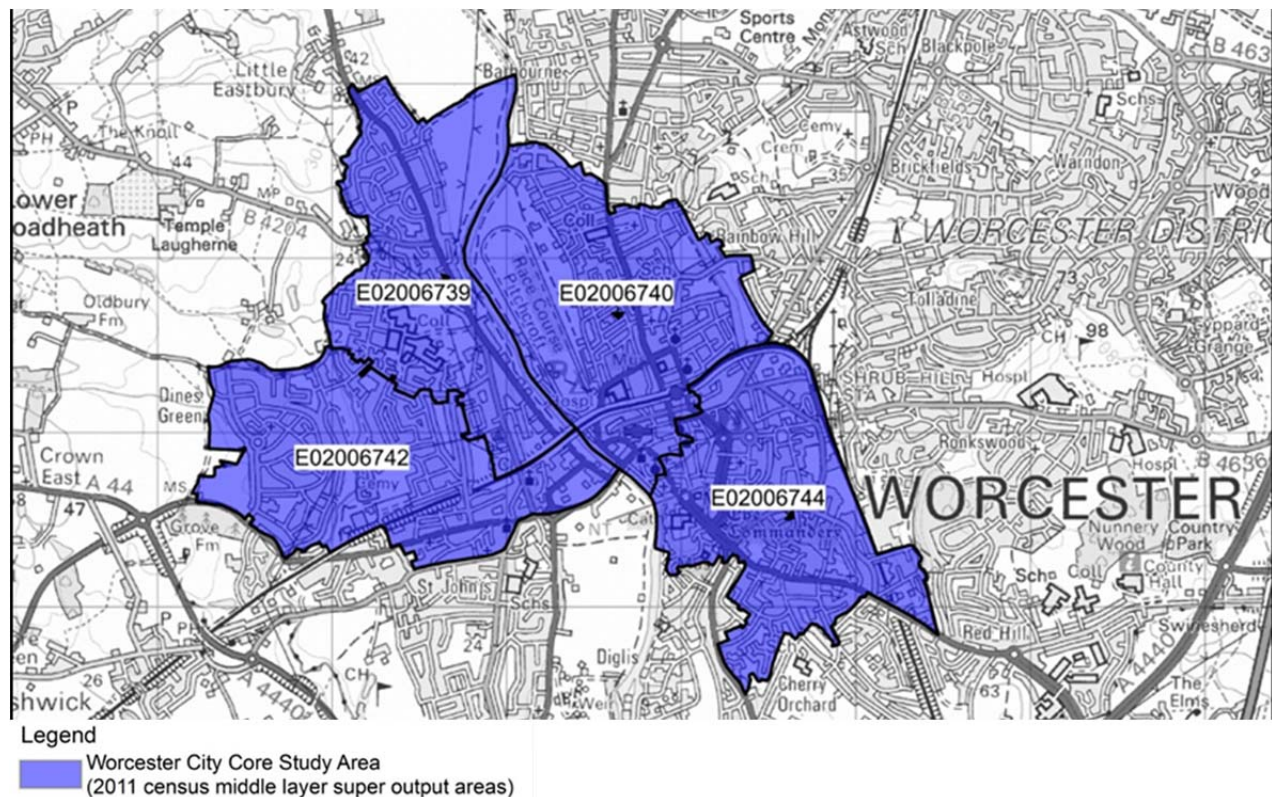


Figure 1: Worcester City Centre MSOAs

Modelling Approach

The key focus of these interventions is to remove key bottlenecks and severances across Worcester City Centre to encourage greater walking and cycling within the City Centre and its immediate context area. Due to the nature of individual location-based interventions, and how they work together to provide an impetus to encourage walking and cycling across the whole area, these schemes have been assessed as a single package of investment, using DfT's Active Mode Appraisal Toolkit, March 2015. The DfT's Active Mode Appraisal Toolkit covers a range of economic, environmental and social impacts. These are summarised in the table below. However, as the scheme package does not include direct investment into infrastructure, an assessment of journey quality impacts has been excluded.

Impact	Benefit Estimated
Physical Activity	Yes
Absenteeism	Yes
Accident benefits	Yes
Environmental benefits	Partially included. As study area is defined as 'Other Urban', WebTAG does not allow air quality benefits to be included.
Decongestion and indirect tax	Yes
Journey quality	No – as no infrastructure schemes included

TABLE 1: IMPACTS ASSESSED FOR WORCESTER CITY CENTRE NETWORK EFFICIENCY

Key Assumptions

The key assumptions adopted for this assessment are listed in Table 2 below. It is also worth noting that a range of benchmark values are built into the DfT's Active Mode Appraisal Toolkit to facilitate the estimation of benefits by different impact categories. These DfT assumptions are visible in the Toolkit.

Figure 2 shows the walking and cycling catchment taken, which was defined using information from the 2011 census (method of travel to work by distance travelled to work). A proportionate overlap query was then used in GIS to estimate the number of residents who travel to work within this area, by foot or cycle.

The uplift in cycling and walking was estimated using monitoring data from similar schemes aimed at increasing walking and cycling. This included data from the Sustainable Travel Towns programme and Cycling Demonstration Town programme.

	Modelling criteria	Value	Commentary
Scheme Details	Opening year	2019	Following the approval of this funding application, the delivery of schemes can commence in early 2018. This is consistent with the requirements of the funding competition: <i>"Allow work to start in Spring 2018." Therefore expected completion and opening in 2019.</i>
	Last year of initial funding	2019	The scheme delivery will be completed by end of 2019. This is consistent with the requirements of the funding competition: <i>"The Department will not be able to provide any funding beyond 31 March 2020."</i>
	Decay rate	10%	Scheme benefits assumed to gradually erode over a conservative appraisal period of 10 years, consistent with the

			central case example outlined in Table B1 of TAG Unit A5.1: Active Mode Appraisal
	Appraisal period	10 years	A conservative approach to suggest that the benefits will only be accrued over a ten-year period.
Do Nothing Scenario	Estimated number of cycle journeys	3,692	Based on census Modal Travel To Work data (MTTW): number of cyclists, within the 'cycling catchment area' of Worcester City Centre. Average length of cycle to work in Worcester is 4km, hence a 2 km radius catchment was adopted to define the 'cycling catchment area (see Figure 2). MTTW data suggests that there are 1,903 cyclists in the City Centre's 'cycling catchment area'. Worcestershire Traffic model suggests that 94% of the journeys in and around Worcester City Centre are return journeys. Hence, total cycle journeys are estimated at 3,692.
	Average. cycle journey length (km)	4 km	Weighted average of 2011 census Journey to Work (JtW) data (Nomis Web DC770IEW1a - Method of travel to work by distance travelled to work) for Worcester City.
	Ave. cycle speed (kph)	15 kph	The Analysis for Cycling Potential: Policy Analysis Research Report states average cycle speed is approximately 15kph.
	Estimated number of pedestrian journeys	12,141	Based on census Modal Travel To Work data (MTTW): number of pedestrians, within the 'walking catchment area' of Worcester City Centre. Average length of walk to work in Worcester is 2.68km, hence a 1.34 km radius catchment was adopted to define the 'walking catchment area (see Figure 2). MTTW data suggests that there are 6,258 pedestrians in the City Centre's 'walking catchment area'. Worcestershire Traffic model suggests that 94% of the journeys in and around Worcester City Centre are return journeys. Hence, total cycle journeys are estimated at 12,141.
	Ave. walk journey length	2.68 km	Weighted average of 2011 census Journey to Work (JtW) data (Nomis Web DC770IEW1a - Method of travel to work by distance travelled to work) for Worcester City.
	Ave. walk speed (kph)	5 kph	The British Heart Foundation reports that the average walking pace is 5 kph.
	Estimate for the number of return journeys	94%	Worcestershire Traffic model suggests that 94% of the journeys in and around Worcester City Centre are return journeys.
	Do Something Scenario	Estimated number of cycle	4,652

	journeys		Travel Towns programme and Cycling Demonstration Town programme suggests that 26% is the lowest level of growth in cycling achieved through improvements to existing infrastructure. This value is applied to existing number of cycle journeys to forecast cycle journeys for the 'do something' scenario.
	Estimated number of pedestrian journeys	13,355	Evaluation evidence for Sustainable Travel Towns programme suggests that 10% is the lowest level of growth in pedestrian journeys achieved through improvements to existing infrastructure. This value is applied to existing number of cycle journeys to forecast pedestrian journeys for the 'do something' scenario.
Decongestion Benefit	Proportion of cyclists attracted from car	20%	Modelling data suggests that a significant proportion of travel to journeys to Worcester City Centre which originate from 'cycling catchment area' area are currently completed by Car. WCC believe this accentuates congestion within Worcester City Centre. Through the proposed investments WCC seek to reduce such journeys. As such WCC have a conservative target to ensure that at least 20% of new cyclists will be attracted from cars.
	Proportion of pedestrians attracted from car	20%	Modelling data suggests that a significant proportion of travel to journeys to Worcester City Centre which originate from 'walking catchment area' area are currently completed by Car. WCC believe this accentuates congestion within Worcester City Centre. Through the proposed investments WCC seek to reduce such journeys. As such WCC have a conservative target to ensure that at least 20% of new pedestrians will be attracted from cars.
	Area type	Other Urban	As defined in Table A2 of TAG Unit A5.4: Marginal External Costs.
Additional information	Background growth	0%	A comparison of 2001 and 2011 census JtW (method of travel to work) confirms that cycling journeys to work have decreased by around 0.5% in 10 years, whereas walking journeys to work have increased by around 0.5% in the same period. This demonstrates the outcomes of lack of active mode based investments within and around Worcester City Centre. For the purpose of this appraisal, overall background growth has been adopted at 0%.

	Period of growth	n/a	Assumed to be zero as the area has witnessed no background growth in pedestrians and cyclists.
	Number of days in analysis period	253 days	Number of standard workdays / year.

TABLE 2: KEY ASSUMPTIONS

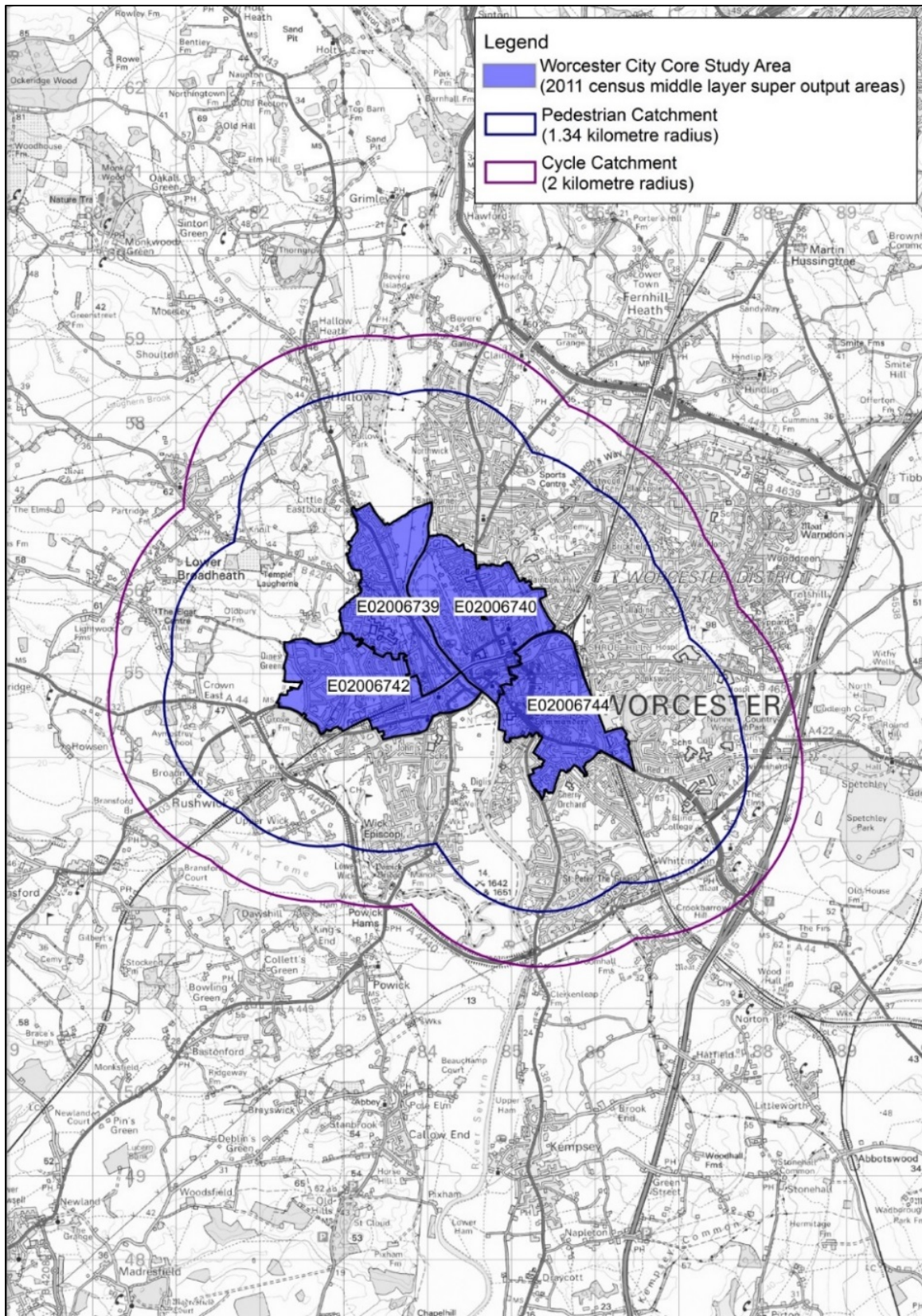


FIGURE 2: WALK AND CYCLE CATCHMENTS, WORCESTER CITY

Economic Impacts and Value for Money

The assessment of Worcester City Centre Network Efficiency package using the DfT's Active Mode Appraisal Toolkit suggests that the scheme can deliver a present value of benefits (PVB) of £7.1 million over a conservative appraisal period of ten years. A summary of the economic impacts are provided in Table 3 below.

Impact Drivers	Estimates (present value in 2010 prices)	Note: PVB is derived from the Active Mode Appraisal Toolkit. Local air quality benefits are zero. This is due to the fact that current WebTAG marginal external costs for the years post 2015 are zero. Journey ambience is also zero as the scheme does not contain any infrastructure improvements that are liable to generate such benefits.
Noise	3.89	
Local Air Quality	0.00	
Greenhouse Gases	12.57	
Journey Quality	0.00	
Physical Activity (incl. absenteeism)	6846.96	
Accidents	58.12	
Decongestion	235.80	
Indirect taxation	-70.60	
Private contribution	0.00	
Present Value of Benefits (PVB)	7086.74	

TABLE 3: ECONOMIC IMPACTS – SUMMARY TABLE (ESTIMATES IN £ '000s)

Physical activity, including absenteeism, is the largest impact driver, followed by decongestion benefits. Further details of the forecast of the impacts can be reviewed in the attached populated Active Mode Appraisal Toolkit for the interventions.

The active mode benefits of £7.1 million (present value in 2010 prices) along with transport user benefits outlined in Appendix 3 of this funding application are compared against the present value costs of Worcester City Centre Network Efficiency package to forecast the scheme's benefit cost ratio (BCR) in Annex Appendix 6.