



Cheshire West
and Chester

Appendix 2

Project:	CW&C STTY Sustainable Travel Transition Year Bid	Job No:	60427039
Subject:	Appendix 2 - Economic Appraisal Summary Note		
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Sustainable Travel Transition Year Bid

AECOM have been commissioned by Cheshire West and Chester (CW&C) to undertake an Economic Appraisal for each element of their Sustainable Travel Transition Year (STTY) Funding Bid. The local authority area includes the city of Chester, and the towns of Ellesmere Port and Northwich. CW&C coordinate the provision of local transport, infrastructure and development, as well as skills and training, to create a platform for sustainable economic growth.

This funding would build upon the sustainable travel schemes and initiatives which have been enabled and progressively developed through past Local Sustainable Transport Fund (LSTF) funding as well as infrastructure projects.

Purpose of this Note

This Economic Appraisal Summary Note outlines the evidence used and key assumptions made when completing the Economic Appraisal pro forma, submitted as part of the STTY bid. Where it was possible to estimate the economic benefits for certain elements of the sustainable transport package, this note explains how these have been quantified. This note also sets out the benefits that are not possible to quantify, or wider benefits that do not fit into the scheme pro forma table (**Appendix 3**).

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Elements of the STTY Bid

The STTY bid has a number of core elements to sustain and encourage greater use of green and active travel. Through the successful promotion of active travel at the community level, and modal shift from private car to public transport and other more environmentally friendly modes, these elements combine to form a sustainable travel package.

This sustainable travel package is aimed at reducing car kilometres and increasing physical activity, connecting people and places; ultimately enabling sustainable economic growth. This will be achieved through reductions in local greenhouse gas emission, noise, pollution, accidents, and also through an improvement in health and wellbeing associated with walking and cycling.

The STTY funding bid includes training and engagement initiatives designed to increase the uptake and facilitate modal shift to active travel and other more sustainable modes (chiefly cycling, walking, and public transport).

The core package provides improvements focusing on key areas such as access to employment. In addition to these themes, there are also elements aimed at community engagement and the uptake of active modes for leisure, general fitness, and other travel purposes besides commuting.

Each component of the package is outlined in the table below along with the evidence used and demand and forecasting assumptions made in the economic appraisal. A conservative approach has been taken in the application of evidence to inform the assumptions used. The evidence, assumptions, and outputs of the economic appraisal have been used to populate the scheme impacts pro-forma (**Appendix 3**).

Table 1: Scheme Components

	Detail of Activity	Output	Appraisal Approach	Change in Users (Daily)		
				PT (or car share)	Walk	Cycle
1	Access to West Cheshire College	Increase walking and cycling to the Academy, West Cheshire College and the Town Centre through promotional materials, events and awareness raising campaigns and access improvements, supported by ongoing consultation on the feasibility and design works delivered through LSTF2.	63 of the 500 staff participate in PTP. Of those, single occupancy car trips reduced from 63% to 56% amongst participants (removing 5 daily car trips to work).	5		
2			Assume 2% of approx. 8000 students shift to active modes (1% cycling & 1% walking)		80	80
3	Job Seeker/Work Zones	Subsidised 6 month travel for Work Programme Clients - expected beneficiaries 100, also includes assisted travel to interviews for long term unemployed - expected 200 beneficiaries.	The criteria for the ticket is that the individual would not be able to take up the job in the absence of the travel pass. Assume 75% of beneficiaries continue to use public transport long term, and 15% of those are enabled into employment as a direct result of the scheme.	76		
			Assume 200 help to interview passes used.			
4	Business Engagement Delivery	Workplace grants, installation of cycle parking spaces, personalised travel planning, job seeker travel advice drop in sessions undertaken in the same format to the 2015/16 Community Personalised Travel Planning project, subsidised travel, and events in partnership with the Cheshire Police. Included in this package are the costs for Cycling and Walking Officers and Travel Planning Officers	Assumptions based on evidence from delivery of business engagement from the current LSTF programme. 15,000 employees targeted, of which 30% (4,500) engage with PTP. Of those, 10% would shift away from single occupancy car use to other more sustainable modes (450). Of these, 14% shift to walking, and 20% to cycling. Additionally, assume 25% of 200 new cycle parking spaces these are used by new cyclists (50).		63	140
5			Of the 450, 29% shift to public transport	131		
6			Of the 450, 37% shift to car sharing	167		

	Detail of Activity	Output	Appraisal Approach	Change in Users (Daily)		
				PT (or car share)	Walk	Cycle
7	Park and Ride marketing delivery	The initiative utilises effective marketing channels, messages and measures aimed at promotion of modal shift through an increase in Park and Ride patronage	<p>Research suggested that direct marketing of bus services can lead to a 17% increase in trips. http://www.demandforpublictransport.co.uk/TRL593.pdf</p> <p>In this case a 10% uplift in demand (conservative estimate) has been assumed. Base patronage in 2014/15 was 575,402. Divided by annual factor of 220 for daily rate. (34% of the new trips would transfer from car (driving all the way), more drivers than would shift to other modes).</p>	262		
8	Station Travel Planning S/M Interventions	Deliver measures identified within the completed Travel Plans for Chester, Bache and Hooton Stations previously developed through LSTF funding. This includes enhanced signage/wayfinding, cycling parking, and walking maps, as well as promotion of the station use through the itravelsmart application. Develop new Station Travel Plans for Northwich and Winsford.	<p>Chester, Bede and Hooton stations have combined station entries/exits of 5,657,158 (ORR 2014/15). Divide by 2 for one way trips and divide by 308.3 to get daily figure. Assume 1% modal shift to active modes (50% cycling and 50% walking). Also assume 1% uplift in demand (of whom assume 50% walk and 50% cycle)</p>		92	92
9	Ellesmere Port Greenway Promotion and Enhancements	Targeted promotion and enhancement of Ellesmere Port Greenway outer loop based on routes prioritised through LSTF.	<p>Apply 15% uplift in the number of cyclists. Average 40 cyclists use average sections of 5 km, and average 77 pedestrians use average sections of 5 km of route.</p>		12	6

	Detail of Activity	Output	Appraisal Approach	Change in Users (Daily)		
				PT (or car share)	Walk	Cycle
10	Adult Cycle (Bikeability) Training (in line with BC Strategy)	This program would provide approximately 500 individuals whom live, work or study in the borough with an opportunity to improve cycling skills, providing individuals with the confidence to ride on local roads or on cycling tracks in the area	500 adults trained. Research identifies that Bikeability Training delivers a BCR of 7.44:1. It is assumed that 50% become regular cyclists.			250
11	Big Bike Revival	Funding will deliver a Community Cycling Club with a dedicated member of staff at Ellesmere Port Town Centre to be run by CTC	CTC suggests a BCR of 6.12:1. Assume 120 bikes in regular use.			120
12	Chester Development Wayfinding	Initiatives at major interchange points including Chester Railway Station and New Chester Bus Interchange as part of the wider Chester Wayfinding strategic scheme.	Non Quantifiable – costs spread pro-rata amongst other bid elements.	N/A	N/A	N/A
13	Staffing	Programme management to oversee the delivery of STTF schemes including required financial and monitoring tasks, ensuring delivery on time and on budget.	Non Quantifiable – costs spread pro-rata amongst other bid elements.	N/A	N/A	N/A
14	General Marketing Support (web/App etc)	Management and support for the itravelsmart application. This includes further marketing and development to promote use across the borough	Non Quantifiable – costs spread pro-rata amongst other bid elements.	N/A	N/A	N/A

	Detail of Activity	Output	Appraisal Approach	Change in Users (Daily)		
				PT (or car share)	Walk	Cycle
15	Monitoring and evaluation	Completion of monitoring and evaluation requirements for the programme to provide evidence on the 'success' or 'benefits' aligned with the programme objectives. This includes undertaking counts/collecting data etc.	N/A – costs spread pro-rata amongst other bid elements.	N/A	N/A	N/A

Elements which were not possible to quantify / not captured in Pro Forma

Some scheme elements are not possible to quantify in a standard economic appraisal / cost benefit analysis. However, these elements have been listed in the table below which presents a description of the measure and a qualitative statement of the likely benefits.

Table 2: Non-Quantifiable Scheme Elements and Impacts

Item	Description	Qualitative Statement of Impacts
Cycling and Walking Officers	Embedded position within the broader programme works, assisting behavioural change with emphasis on increasing numbers of cyclists and walking through delivery of Business Engagement activities	Enable the delivery of the Business Engagement activities. Costs incorporated within Business Engagement Delivery and have therefore been considered within the BCR.
Travel Planning Officer (Consultancy 0.2 FTE)	0.2 FTE consultancy support to enforce Travel Plans prepared through previous LSTF2 programmes including ongoing monitoring in accordance with the newly launched Travel Planning Guidance for the borough	Enable the delivery of the Business Engagement activities. Costs incorporated within Business Engagement Delivery and have therefore been considered within the BCR.
Chester Development Wayfinding	Initiatives at major interchange points including Chester Railway Station and New Chester Bus Interchange as part of the wider Chester Wayfinding strategic scheme.	Support economic growth through improvements to the walking and cycling network at sites identified through existing and emerging corporate strategies Costs spread pro-rata amongst other bid elements and have therefore been considered within the BCR.
Staffing	Programme management to oversee the delivery of STTF schemes including required financial and monitoring tasks,	This is a necessary element required to oversee and ensure the delivery of the programme on time and on budget. Costs spread pro-rata amongst other bid elements
General Marketing Support (web/App etc)	Management and support for the National Award winning itravelsmart application. This includes further marketing and application development to promote use across the borough in partnership with supporting organisations	Essential for maximising the benefits of the programme and ensuring a lasting legacy post funding. Costs spread pro-rata amongst other bid elements and have therefore been considered within the BCR.
Monitoring and evaluation	Completion of monitoring and evaluation requirements for the programme. This includes undertaking counts to collect baseline data, and monitoring ongoing trends where data has been collected previously	This is a necessary element of the bid to provide evidence on the 'success' or 'benefits' aligned with the programme objectives. Costs spread pro-rata amongst other bid elements and have therefore been considered within the BCR.

Economic Appraisal Methodology

This section provides a methodology to explain how each of the scheme benefits that comprise the Present Value of Benefits (PVB) has been calculated.

General Appraisal Parameters

A number of general appraisal parameters have been included within the scheme assessment, these are as follows:

- Appraisal period: 5 years – 2016-2021 inclusive;
- Discount rate: 3.5% back to 2010 for all costs and benefits;
- A 10% decay rate was applied to all benefits after an initial 100% of benefit in year one;
- Health and Absenteeism Benefits are only assumed to be fully achieved after 5 years. A ramp up of 20% is applied across the first 5 years of the appraisal;
- All values expressed in 2010 values and prices.

Journey Distances and Speeds

To inform the appraisal, the following distance and speed assumptions were applied within the appraisal

Mode	Average Distance	Average Speed
Cycling	5km	15kph
Walking (Mode)	1.15km	5kph
Walking (access to Public Transport)	0.5km (to access/egress PT stops/stations)	5kph
Public Transport	5km (for PT users)	N/A
Car Journeys (car share scheme)	7km	N/A

Calculation of External Costs (Decongestion, Accidents, and Environmental Impacts)

A key benefit of the scheme will be a reduction in car trips on the highway network, due to a transfer to active modes and public transport (as appropriate). As a result of a reduction in highway car km travelled, the following benefits can be calculated:

- Decongestion – due to fewer cars on the highway network reducing congestion levels;
- Accidents – a reduction in the number of highway collisions due to fewer car trips;
- Environmental impacts - relate to a reduction in noise, local air quality, and greenhouse gases due to fewer highway journeys;
- Indirect Taxation impacts – likely to be a disbenefit due to a reduction in the levels of fuel duty paid as a result of the scheme

To calculate these impacts, the car km removed from the highway network was calculated. This was based on a diversion factor of 23.7% of new users due to the scheme have transferred from car. For the Park and Ride scheme, a higher diversion factor of 34% was applied to represent a higher car mode share associated with Park and Ride schemes.

Unit rates in pence per km are provided in WebTAG A5.4 were then applied to the change in car km estimated for the scheme. These rates vary throughout the appraisal, and have been applied in line with recommendations within WebTAG.

Calculation of Physical Fitness Benefits (HEAT)

The WHO's HEAT tool provides a methodology to calculate the health benefits of increased physical activity, associated with a scheme and will form a significant component of the overall benefits of the package of measures. To calculate the health benefits from the scheme, the following approach was adopted:

- Health benefits have been applied to improvements in walking and cycling;
- The number of new users was input to identify the expected number of deaths among these transport users. (The same approach as for the calculation of External Costs was used to calculate the increase in cycling/walking (including walking for public transport));
- A relative risk was calculated based on the duration of activity in cycling and walking against a relative risk of 0.28 for cycling and 0.22 for walking (WebTAG A4.1). This was used to determine the number of lives saved by the scheme;
- The value of a life of £1,659,620 was applied to the estimated number of lives saved estimated by the scheme. It is assumed that the value of a life increases overtime in line with GDP per capita, as provided in the WebTAG databook; and
- For the first year of the appraisal only 20% of the total health saving is applied, with an annual ramp up of benefits applied, until the full health impact is realised after 5 years. Also a 10% decay of benefits was assumed over the appraisal period.

Absenteeism

The impacts of absenteeism reductions have been assessed following the guidance in WebTAG Unit A4-1. The key assumptions adopted are as follows:

- Unit A4-1 states that research shows that 30 mins per day exercise reduces short term absenteeism by 6-32%. UK average absence duration 6.8 days per year with 95% short term equating to 6.5 days per year;
- It is assumed, therefore, that a 6% reduction in short term absenteeism (the conservative end of this range) would be achieved with an average of 30 mins per day exercise;
- This can be extrapolated upwards or downwards for levels of exercise different to an average of 30 mins per day;
- The same assumptions as for the calculation of external costs were used, with behavioural changes applied on 220 working weekdays, 190 educational weekdays, or 70 leisure days per year (of increased cycling/walking (including walking for public transport));
- Mode speeds of 5kph (walking) and 15kph (cycling) were used to convert the journey to/from work into an exercise time with total exercise time through commuting for the year calculated and then converted to an average exercise time per day;
- The above assumptions were incorporated to derive a level of the number of working days reduced absenteeism per year, which was then applied to the estimated cost of absenteeism; and
- The cost of absenteeism was based on the business value of time (£27.07 – 2010 per hour), over 7.5 hours per day. This is assumed to increase overtime in line with values shown in WebTAG A1.3.2 (based on GDP per capita).

Calculation of Jobseekers Benefits

Where a scheme proposes improved access for jobseekers to attend an interview or first period of employment, it is likely that a small number of these jobseekers would enter into employment as a direct result of the access to travel associated by parts of the package of measures. This will result in a saving to the economy. These savings will be in the form of:

- A direct saving in the level of benefits paid;
- A saving to the exchequer in terms of tax paid; and
- An overall benefit to society as a whole.

The combined impacts of the above are assumed to be in the region of £37,000 per jobseeker, per year, assuming they were to enter full time employment.

These values are assumed to be at 2013/14 values over time are assumed to increase by the change in GDP per capita, as provided within the WebTAG databook.

For those scheme elements aimed at assisting jobseekers into work, it is assumed that 15% of targeted users gain permanent employment as a result, and so obtain the level of saving discussed above. Whilst this scheme may target a large number of jobseekers, it is assumed that only a small number of these would enter employment as a direct result of this scheme.

Scheme Costs

Costs for delivering the scheme are provided in line with the values shown within the Financial Case. Within these cost estimates, it is assumed that these are inclusive of a 15% optimism bias which accounts for risk to scheme costs.

Appraisal Results

This section presents the appraisal results of the combined scheme package in the form of a summary Analysis of Monetised Cost and Benefits (AMCB). The AMCB table presented below, shows the scheme generates an overall package Value for Money of BCR 4.25. This represents very high value for money. The sub packages which make up this scheme are also shown below. Full Transport Economic Efficiency (TEE) Table, Public Accounts (PA) Table and AMCB are provided at the end of this note.

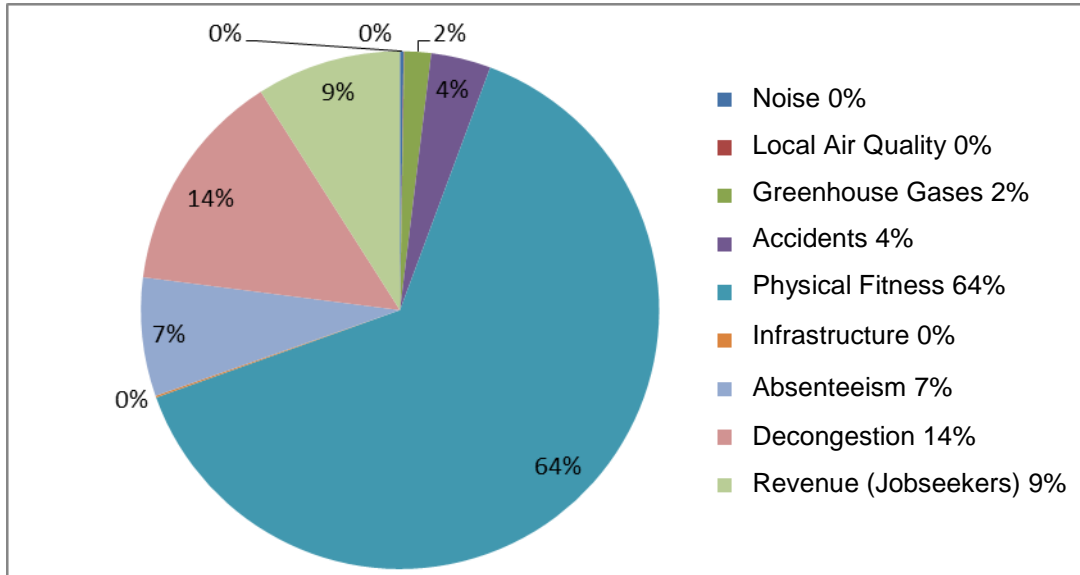
Analysis of Monetised Costs and Benefits (AMCB)

Noise	£6
Local Air Quality	£1
Greenhouse Gases	£44
Accidents	£99
Physical Fitness	£1,690
Infrastructure	£3
Absenteeism	£196
Decongestion	£369
Revenue (Jobseekers)	£239
Wider Public Finances (Indirect Tax)	-£148
Present Value of Benefits (PVB)	£2,500
Broad Transport Budget	£589
Present Value of Costs (PVC)	£589
	£0
Net Present Value (NPV)	£1,911
Benefit to Cost Ratio (BCR)	4.25

All prices in £000s – 2010 prices

A breakdown of the scheme benefits for the combined package of measures is provided in the figure below, demonstrating the contribution each benefit type makes to the overall Present Value of Benefits. As shown below, a significant proportion of the overall scheme benefits are attributable to the physical fitness (Health Benefits).

Breakdown of Scheme Benefits



NB: excludes indirect taxation impacts which are negative.

Full Transport Economic Efficiency Table

Non-business: Commuting	ALL MODES		ROAD	BUS and COACH	RAIL	OTHER
User benefits	TOTAL		Private Cars and LGVs	Passengers	Passengers	
Travel time	75		75			
Vehicle operating costs						
User charges						
During Construction & Maintenance						
NET NON-BUSINESS BENEFITS: COMMUTING	75	(1a)				
Non-business: Other						
User benefits	TOTAL		Private Cars and LGVs	Passengers	Passengers	
Travel time	276		276			
Vehicle operating costs						
User charges						
During Construction & Maintenance						
NET NON-BUSINESS BENEFITS: OTHER	276	(1b)				
Business						
User benefits			Goods Vehicles	Business Cars & LGVs	Passengers	Freight
Travel time	18			18		
Vehicle operating costs						
User charges						
During Construction & Maintenance						
Subtotal	18	(2)				
Private sector provider impacts					Freight	Passengers
Revenue	£239					£239
Operating costs						
Investment costs						
Grant/subsidy						
Subtotal	£239	(3)				
Other business impacts						Other Jobseekers
Developer contributions		(4)				
NET BUSINESS IMPACT	257	(5) = (2) + (3) + (4)				
TOTAL						
Present Value of Transport Economic Efficiency Benefits (TEE)	608	(6) = (1a) + (1b) + (5)				

Notes: Benefits appear as positive numbers, while costs appear as negative numbers. and values

Full Public Accounts Table

	ALL MODES	ROAD	BUS and COACH	RAIL	OTHER
Local Government Funding	TOTAL	INFRASTRUCTURE			
Revenue					
Operating Costs					
Investment Costs	£589				£589
Developer and Other Contributions					
Grant/Subsidy Payments					
NET IMPACT	(7)				
Central Government Funding: Transport					
Revenue					
Operating costs					
Investment Costs					
Developer and Other Contributions					
Grant/Subsidy Payments					
NET IMPACT	(8)				
Central Government Funding: Non-Transport					
Indirect Tax Revenues	£148	£148			
TOTALS					
Broad Transport Budget	£589	(10) = (7) + (8)			
Wider Public Finances	£148	(11) = (9)			

Notes: Costs appear as positive numbers, while revenues and 'Developer and Other Contributions' appear as negative numbers. All entries are discounted present values in 2010 prices and values.

AMCB Table

Noise	£6	(12)
Local Air Quality	£1	(13)
Greenhouse Gases	£44	(14)
Journey Quality		(15)
Physical Activity	£1,886	(16)
Accidents	£99	(17)
Economic Efficiency: Consumer Users (Commuting)	75	(1a)
Economic Efficiency: Consumer Users (Other)	276	(1b)
Economic Efficiency: Business Users and Providers	257	(5)
Wider Public Finances (Indirect Taxation Revenues)	-£148	(11) - sign changed from PA table, as PA table represents costs, not benefits
Present Value of Benefits (see notes) (PVB)	£2,500	(PVB) = (12) + (13) + (14) + (15) + (16) + (17) + (1a) + (1b) + (5) - (11)
Broad Transport Budget	£589	(10)
Present Value of Costs (see notes) (PVC)	£589	(PVC) = (10)
OVERALL IMPACTS		
Net Present Value (NPV)	£1,911	NPV=PVB- PVC
Benefit to Cost Ratio (BCR)	4.25	BCR=PVB/P VC
<p>Note : This table includes costs and benefits which are regularly or occasionally presented in monetised form in transport appraisals, together with some where monetisation is in prospect. There may also be other significant costs and benefits,</p>		