Appendix A – Scheme Location Plan

Key

Route

〜 Lee Quarry
〜 Cragg Quarry
〜 National Cycle Network 6
〜 Pennine Bridleway

ELSCN Routes 15-16

〜 Huncoat Greenway
〜 Huncoat Greenway - Existing Route
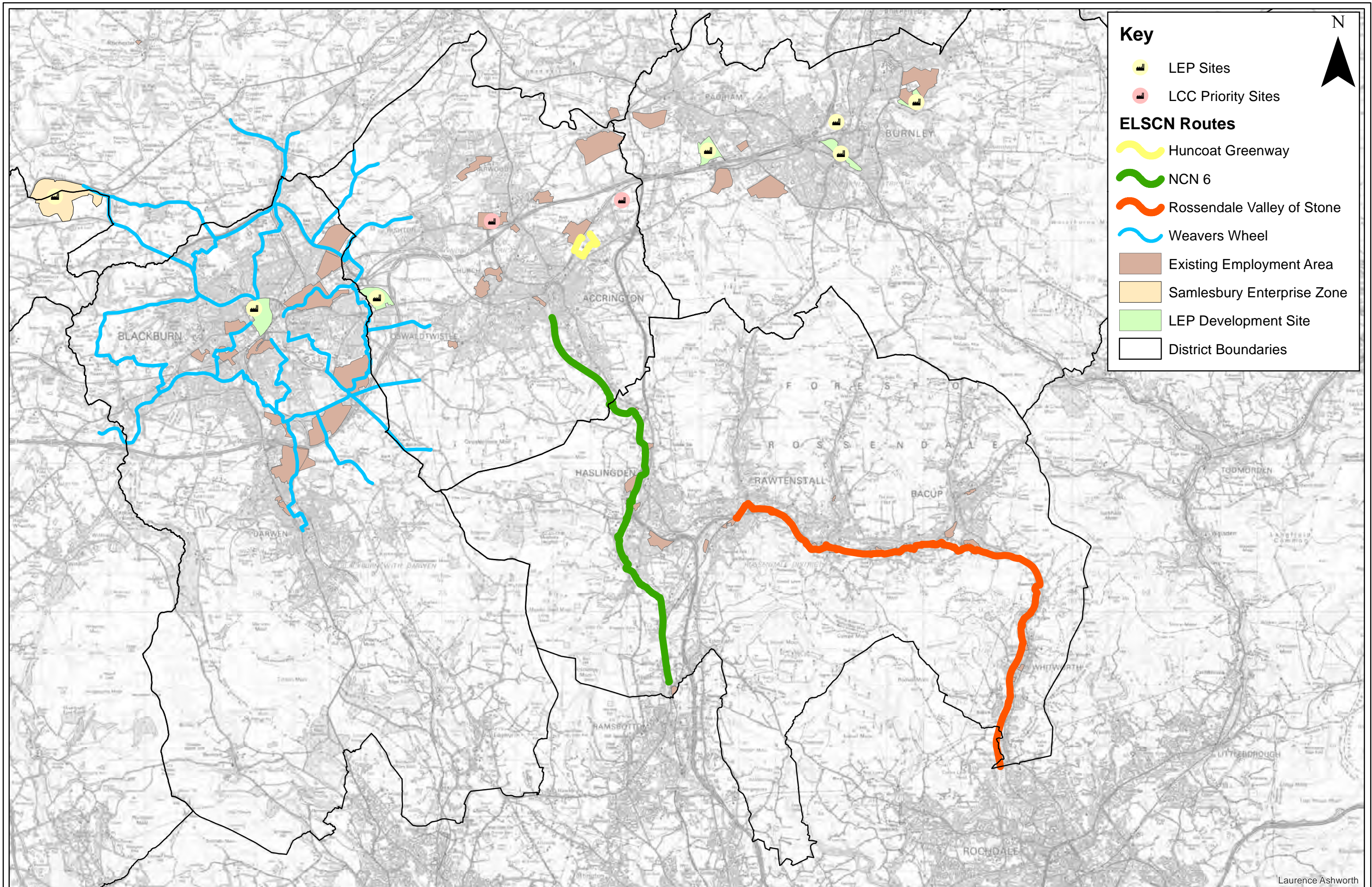〜 NCN 6
〜 Rossendale Valley of Stone
〜 Weavers Wheel

N

BURNLEY
PADHAM
ACCRINGTON
BLACKBURN
OSWALDTWISTLE
DARWEN
HASLINGDEN
RAWTENSTALL
BACUP
TODMORDEN
FOREST OF ROSSENDALE
WHITWORTH
RAMSBOTTOM
LITTLEBOROUGH
ROCHDALE
BURY

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Lancashire
County Council

Date: 10/03/15 | Not to Scale

Appendix A - East Lancashire Strategic Cycle Network

Appendix B – Air Quality Management Areas in East Lancashire

Key

ELSCN Routes

〜 Huncoat Greenway

〜 NCN 6

〜 Rossendale Valley of Stone

〜 Weavers Wheel

◯ Air Quality Management Area

N

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Appendix B - East Lancashire Strategic Cycle Network and Air Quality Management Areas

Date: 27/02/15 | Not to Scale

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Appendix C – Key Employment and Housing Sites close to the network

Key

- **LEP Sites**
- **LCC Priority Sites**

ELSCN Routes

- Huncoat Greenway
- NCN 6
- Rossendale Valley of Stone
- Weavers Wheel
- Existing Employment Area
- Samlesbury Enterprise Zone
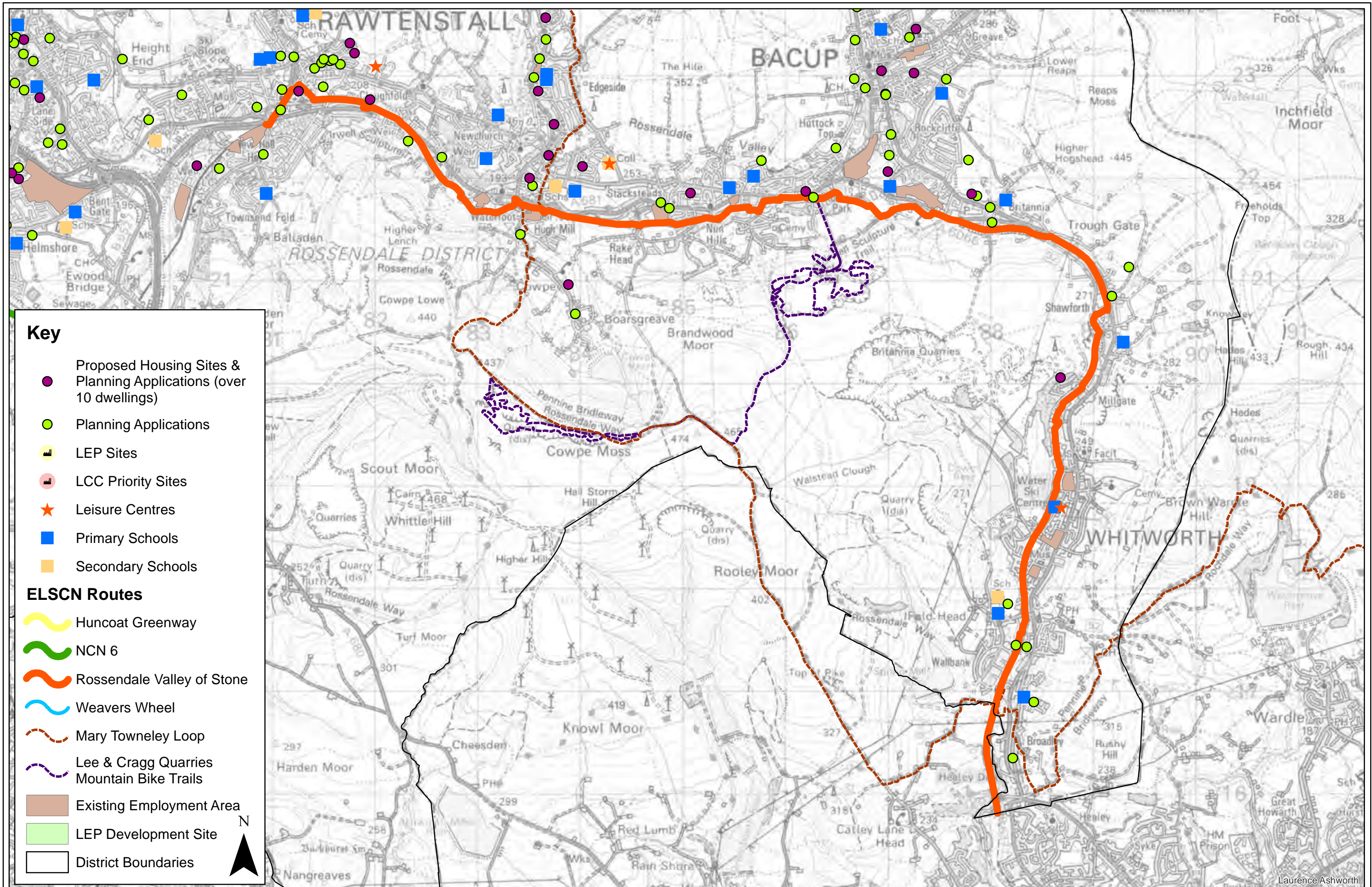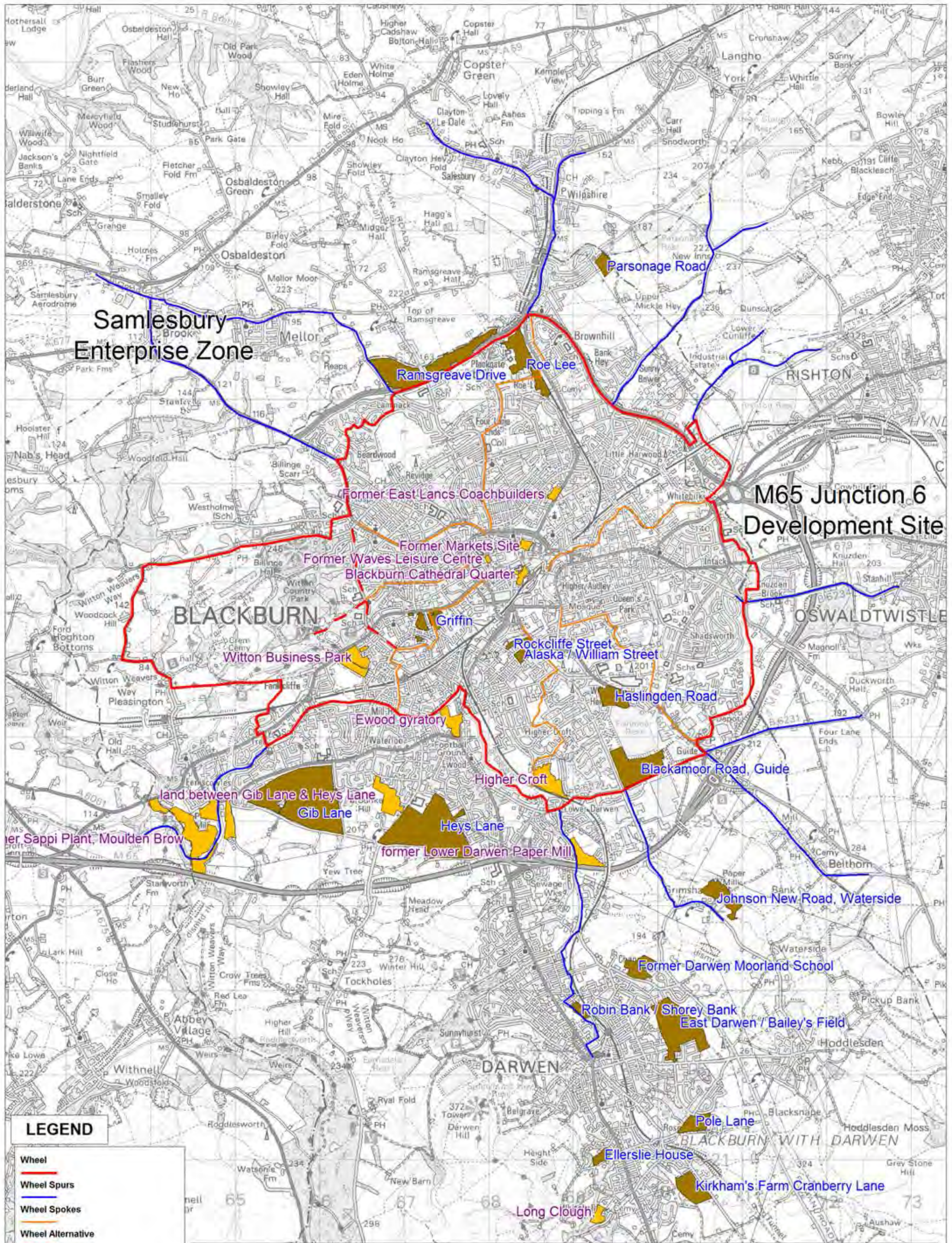- LEP Development Site
- District Boundaries

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Appendix C(i) - East Lancashire Strategic Cycle Network and Major Employment Sites

Key

- Proposed Housing Sites & Planning Applications (over 10 dwellings)
- Planning Applications
- LEP Sites
- LCC Priority Sites
- Leisure Centres
- Primary Schools
- Secondary Schools

ELSCN Routes

- Huncoat Greenway
- NCN 6
- Rossendale Valley of Stone
- Weavers Wheel
- Mary Towneley Loop
- Lee & Cragg Quarries Mountain Bike Trails
- Existing Employment Area
- LEP Development Site
- District Boundaries

N

RAWTENSTALL

BACUP

WHITWORTH

ROSSENDALE DISTRICT

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Key

- **Proposed Housing Sites & Planning Applications (over 10 dwellings)**
- **Planning Applications**
- **LEP Sites**
- **LCC Priority Sites**
- ★ **Leisure Centres**
- ■ **Primary Schools**
- ■ **Secondary Schools**

ELSCN Routes

- **Huncoat Greenway**
- **NCN 6**
- **Rossendale Valley of Stone**
- **Weavers Wheel**
- **Existing Employment Area**
- **LEP Development Site**
- **District Boundaries**

N

Lancashire County Council

Appendix C(iii) - East Lancashire Strategic Cycle Network - NCN6

Key

Proposed Housing Sites & Planning Applications (over 10 dwellings)

Planning Applications

LEP Sites

LCC Priority Sites

Leisure Centres

Primary Schools

Secondary Schools

ELSCN Routes

Huncoat Greenway

NCN 6

Rossendale Valley of Stone

Weavers Wheel

Huncoat Greenway

Existing Employment

LEP Development Site

District Boundaries

N

Lancashire County Council

Appendix C(iv) - East Lancashire Strategic Cycle Network - Huncoat Greenway

Samlesbury
Enterprise Zone

Parsonage Road

Roe Lee

Ramsgreave Drive

M65 Junction 6
Development Site

Former East Lancs Coachbuilders

Former Markets Site
Former Waves Leisure Centre
Blackburn Cathedral Quarter

OSWALDTWISTLE

RISHTON

Griffin

BLACKBURN

Rockcliffe Street
Alaska / William Street

Witton Business Park

Haslingden Road

Ewood gyratory

Higher Croft

Blackamoor Road, Guide

land between Gib Lane & Heys Lane

Gib Lane

Heys Lane

former Lower Darwen Paper Mill

er Sappi Plant, Moulden Brow

Johnson New Road, Waterside

Former Darwen Moorland School

Robin Bank Shorey Bank
East Darwen / Bailey's Field

DARWEN

Pole Lane

BLACKBURN WITH DARWEN

Ellerslie House

Kirkham's Farm Cranberry Lane

Long Clough

LEGEND

Wheel

Wheel Spurs

Wheel Spokes

Wheel Alternative

All Housing Sites

All BwD Development Opportunities

East Lancashire Strategic Cycle Network
Weavers Wheel in Relation to BwD Development Sites

Appendix D – East Lancashire Strategic Network and Indices of Multiple Deprivation

Key

ELSCN Routes

- ∿ Huncoat Greenway
- ∿ NCN 6
- ∿ Rossendale Valley of Stone

Index of Multiple Deprivation 2010

IMD Percentage

- ■ Highest 5%
- ■ Highest 10%
- ■ Highest 20%
- ∿ Weavers Wheel

N

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Appendix D - East Lancashire Strategic Cycle Network and 2010 Index of Multiple Deprivation

Date: 24/02/15	Not to Scale
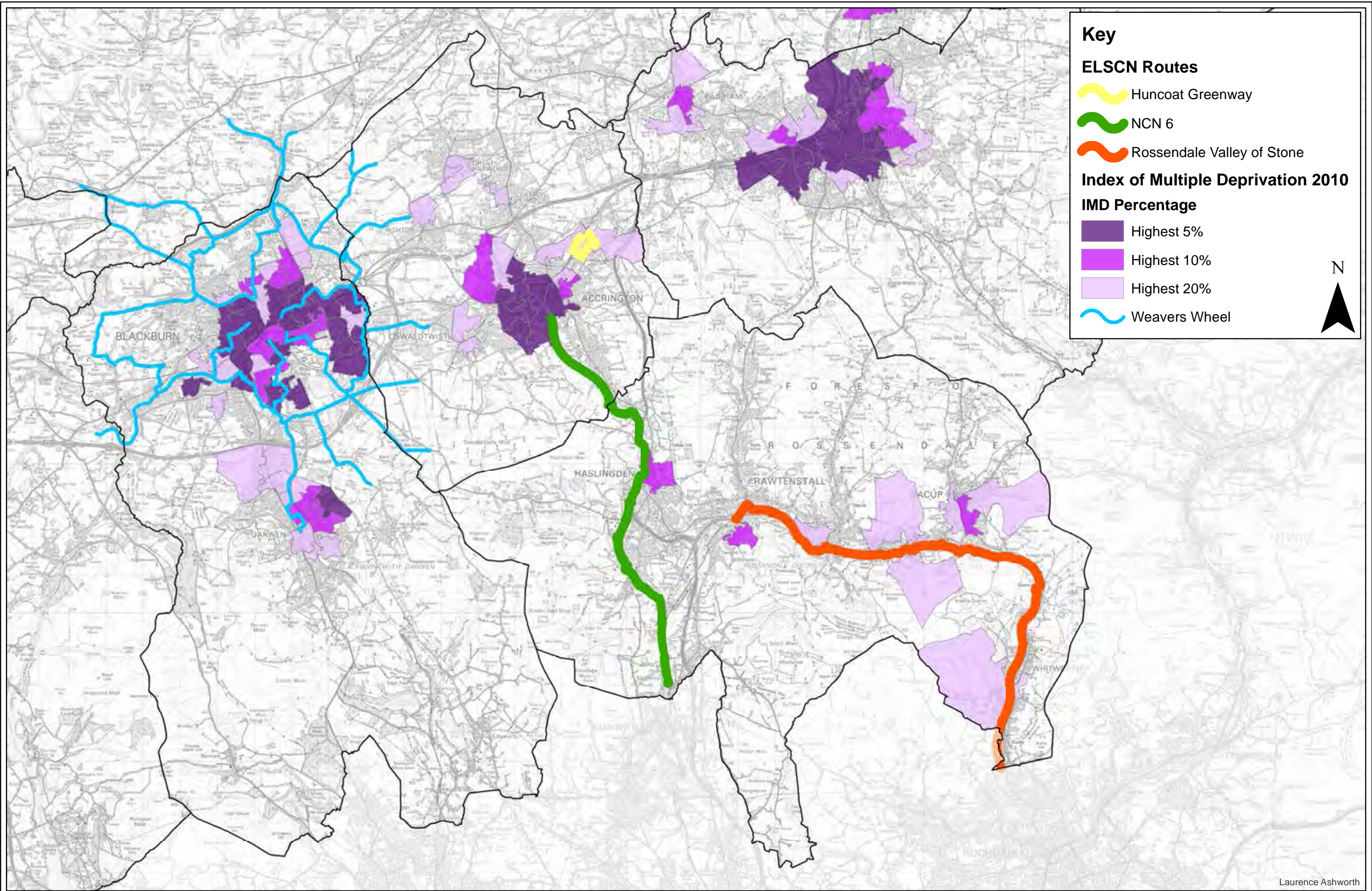
Appendix E – Extract from Local Area Walking and Cycling Statistics 2012/13 (Department for Transport)

Appendix E -

Cycling Statistics for East Lancashire Strategic Cycle Network Business Case - March 2015

Cycling statistics are now summarised annually in the Local Area Walking and Cycling Statistics produced by the Department for Transport. This is available online at https://www.gov.uk/government/statistics/local-area-walking-and-cycling-in-england-2012-to-2013

Unless mentioned otherwise the figures below are from the 2012/13 statistics released in April 2014.

Frequency of Cycling

The latest figures from 2012-13 show that the proportion of adults in England that cycle at least once a week is 9.5%. Rossendale has a similar proportion at 9.6% whereas both Hyndburn and Blackburn with Darwen have significantly smaller proportions at 5.6% and 6.2% respectively.

In contrast to these values Cambridge has by far the largest proportion of it's population cycling at lease once a week in England at 48.6%.

Figure 1 - Proportion of adults cycling at least once a week
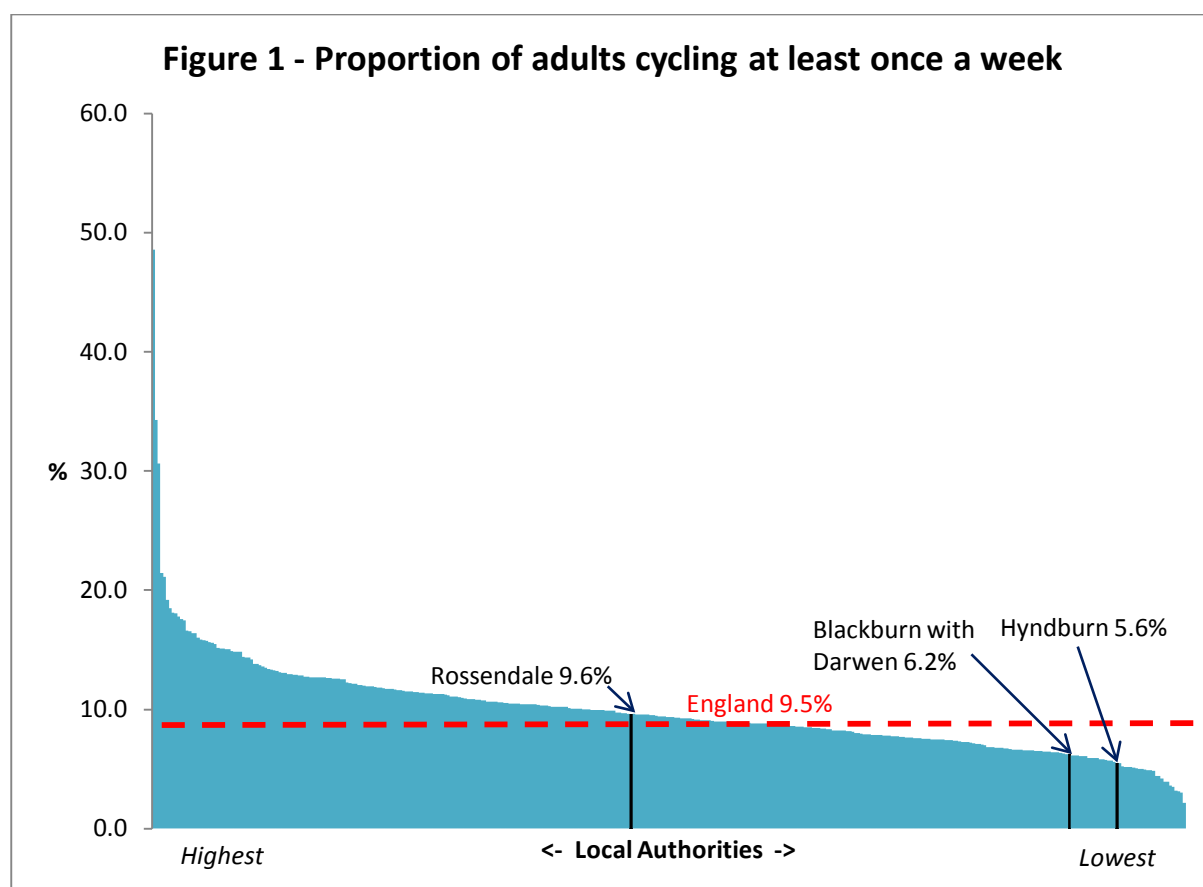
In addition to at least once a week, other frequencies were also looked at. The results for these can be seen in figure 2.

There are a couple of interesting trends that come from these results. Firstly, compared to both Rossendale and Blackburn with Darwen, Hyndburn has a smaller proportion of adults which cycle at least once a month and cycle at least once a week. However, it has a higher proportion of adults which cycle alt least three times a week and at least 5 times a week. In fact, the proportion which cycle at least 5 times a week (2.8%) is higher than both the North West (1.9%) and England (2.5%) values.

Secondly, there is a significant drop in Rossendale from the proportion of adults cycling at least once a week (9.6%) to those cycling at least three times a week (1.6%). This is a much higher drop off compared to Hyndburn, Blackburn with Darwen or the North West and England averages. Interestingly there is hardly any drop off from those cycling at least 3 times a week to cycling 5 times a week from 1.6% to 1.3%.

Figure 2 - Proportion of adults cyling at least once a month/once aweek/3 times a week/5 times a week

	Once a month	Once a week	Three times a week	Five times a week
■ Blackburn with Darwen	9.3	6.2	2.6	1.0
■ Hyndburn	8.2	5.6	3.9	2.8
■ Rossendale	13.7	9.6	1.6	1.3
■ North West	12.8	8.2	3.3	1.9
■ England	14.7	9.5	4.3	2.5
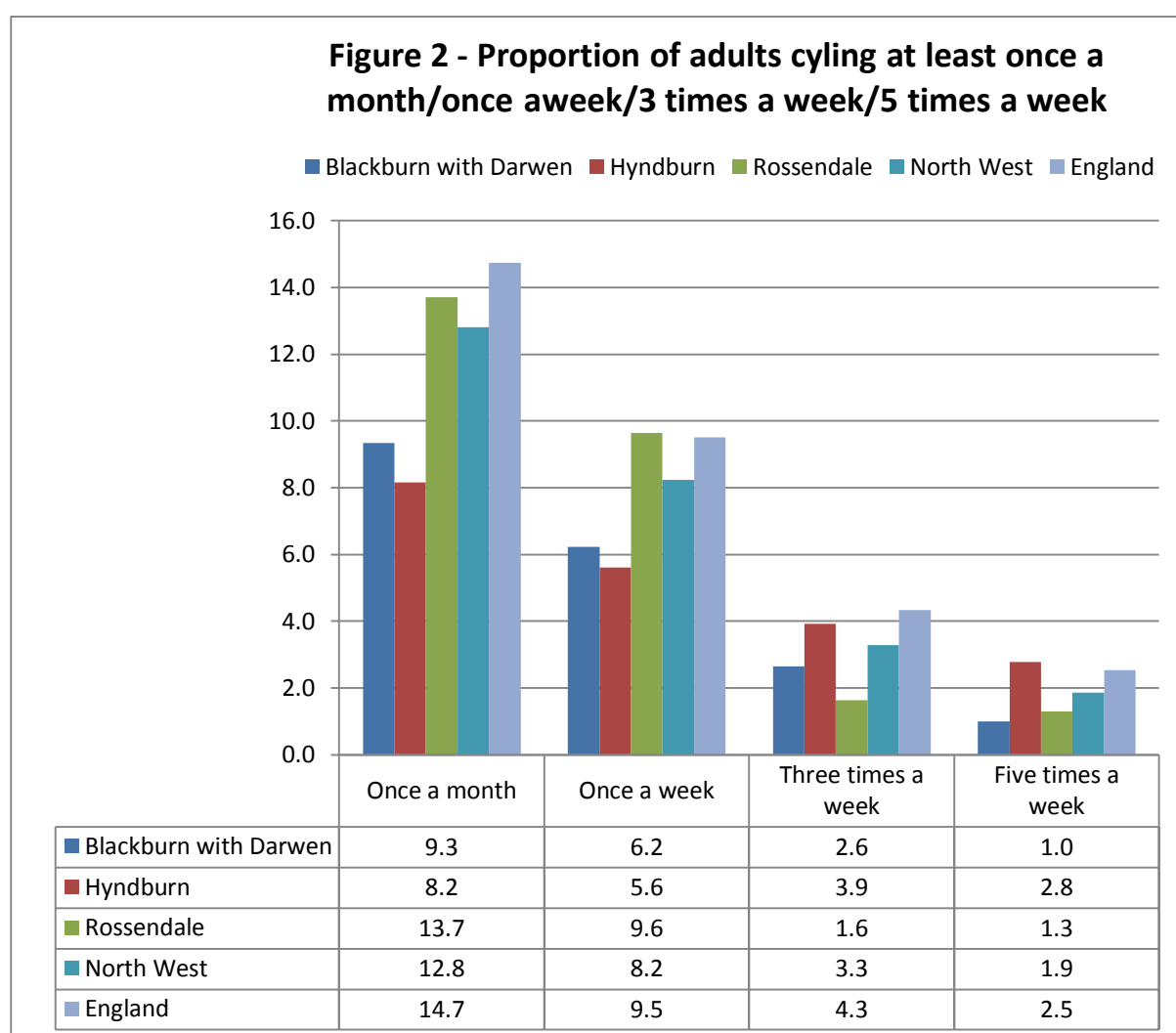
Cycling to Work

The proportion of the working age population that cycle to work is available from the 2011 Census. The England average is 1.9%, higher than all the three districts with Blackburn with Darwen being the highest at 1.4% (also the North West average), followed by Hyndburn at 0.7% and Rossendale at 0.5%.

Appendix F – Public Health England Health Profiles

Public Health England

Blackburn with Darwen

Unitary Authority

This profile was produced on 12 August 2014

Health Profile 2014

Health in summary

The health of people in Blackburn with Darwen is generally worse than the England average. Deprivation is higher than average and about 25.3% (8,700) children live in poverty. Life expectancy for both men and women is lower than the England average.

Living longer

Life expectancy is 12.8 years lower for men and 5.7 years lower for women in the most deprived areas of Blackburn with Darwen than in the least deprived areas.

Child health

In Year 6, 19.5% (322) of children are classified as obese. The rate of alcohol-specific hospital stays among those under 18 was 73.4*, worse than the average for England. This represents 28 stays per year. Levels of breastfeeding and smoking at time of delivery are worse than the England average.

Adult health

In 2012, 26.3% of adults are classified as obese, worse than the average for England. The rate of alcohol related harm hospital stays was 808*, worse than the average for England. This represents 1,095 stays per year. The rate of self-harm hospital stays was 356.6*, worse than the average for England. This represents 544 stays per year. The rate of smoking related deaths was 401*, worse than the average for England. This represents 249 deaths per year. Estimated levels of adult excess weight, smoking and physical activity are worse than the England average. The rate of TB is worse than average. The rate of sexually transmitted infections is better than average.

Local priorities

Priorities in Blackburn with Darwen are tackling the social determinants of health and reducing inequalities, including long term conditions, social isolation, and mental health and wellbeing, particularly in children and young people. For more details see www.blackburn.gov.uk and www.blackburnwithdarwenccg.nhs.uk

* rate per 100,000 population
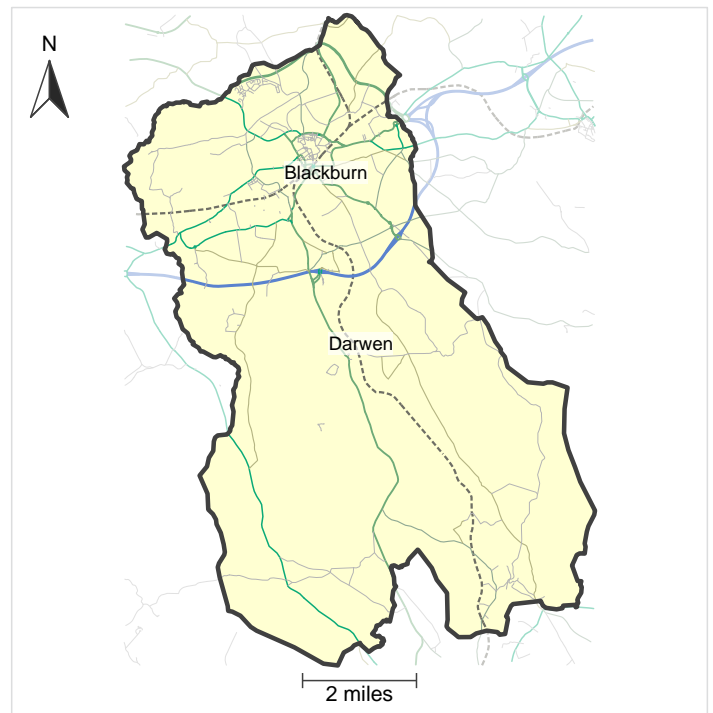
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Population: 148,000

Mid-2012 population estimate. Source: Office for National Statistics.

This profile gives a picture of people's health in Blackburn with Darwen. It is designed to help local government and health services understand their community's needs, so that they can work to improve people's health and reduce health inequalities.
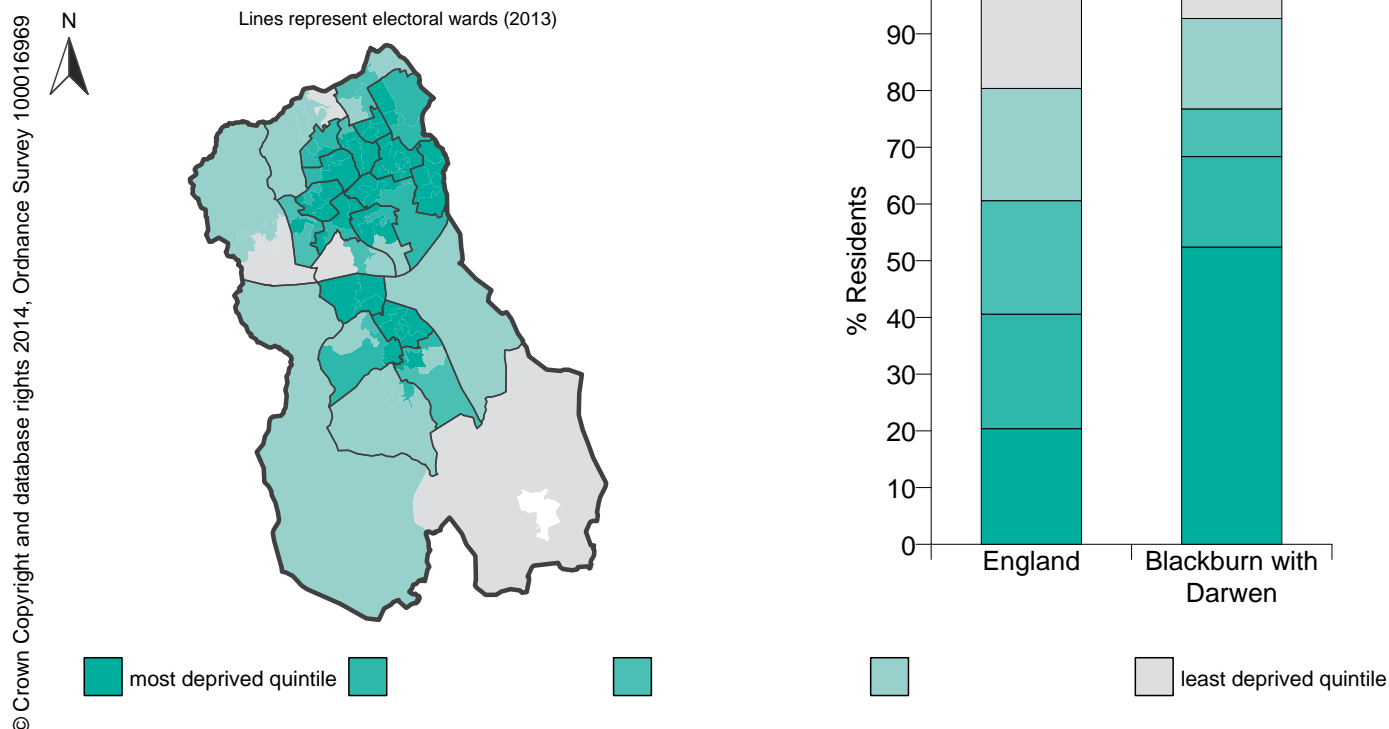
Visit www.healthprofiles.info or scan this Quick Response code: for more profiles, more information and interactive maps and tools.

Follow @healthprofiles on Twitter
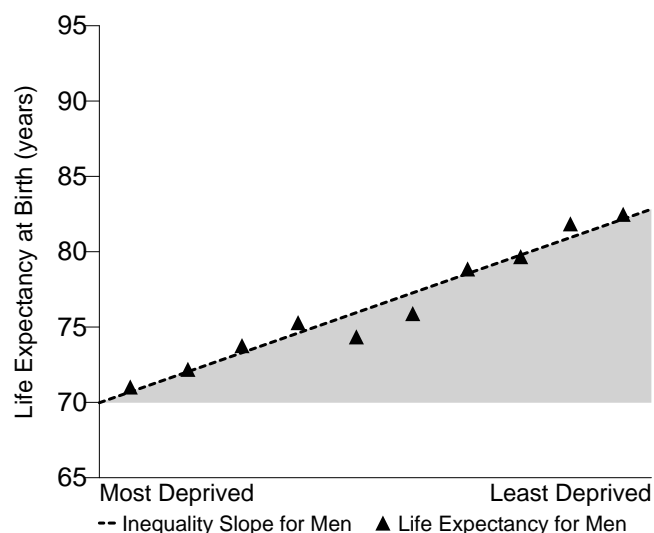
Deprivation: a national view

The map shows differences in deprivation levels in this area based on national quintiles (fifths) of the Index of Multiple Deprivation 2010 by Lower Super Output Area. The darkest coloured areas are some of the most deprived areas in England.

This chart shows the percentage of the population in England and this area who live in each of these quintiles.

N

Lines represent electoral wards (2013)

most deprived quintile

least deprived quintile

% Residents

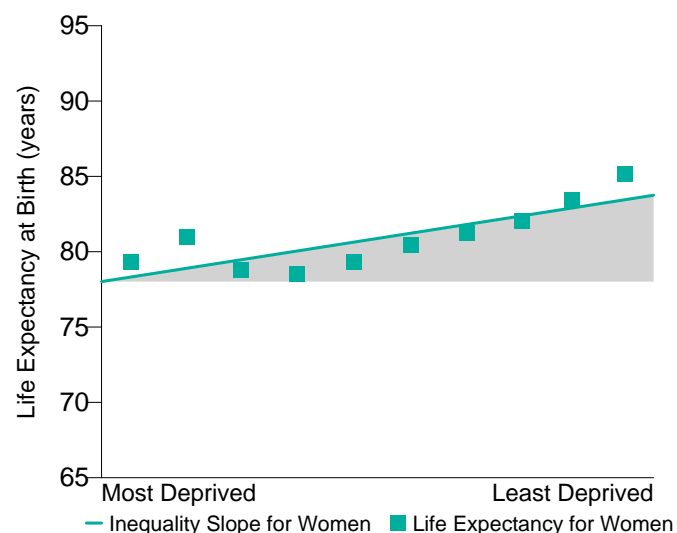England   Blackburn with Darwen

Life Expectancy: inequalities in this local authority

The charts below show life expectancy for men and women in this local authority for 2010-2012. Each chart is divided into deciles (tenths) by deprivation, from the most deprived decile on the left of the chart to the least deprived decile on the right. The steepness of the slope represents the inequality in life expectancy that is related to deprivation in this local area. If there were no inequality in life expectancy as a result of deprivation, the line would be horizontal.

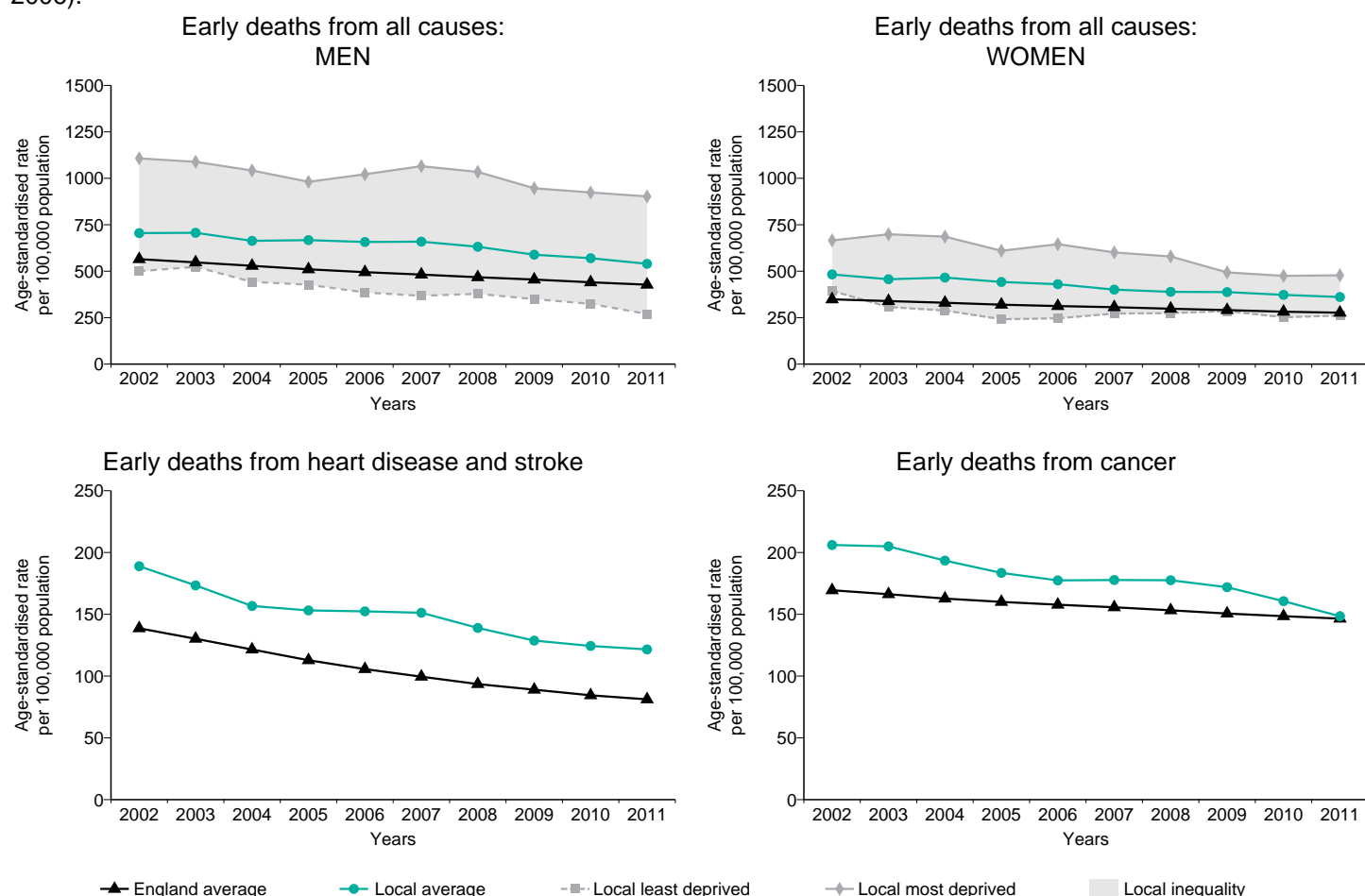Life Expectancy Gap for Men: 12.8 years

Life Expectancy at Birth (years)

Most Deprived   Least Deprived

- - Inequality Slope for Men   ▲ Life Expectancy for Men

Life Expectancy Gap for Women: 5.7 years

Life Expectancy at Birth (years)

Most Deprived   Least Deprived

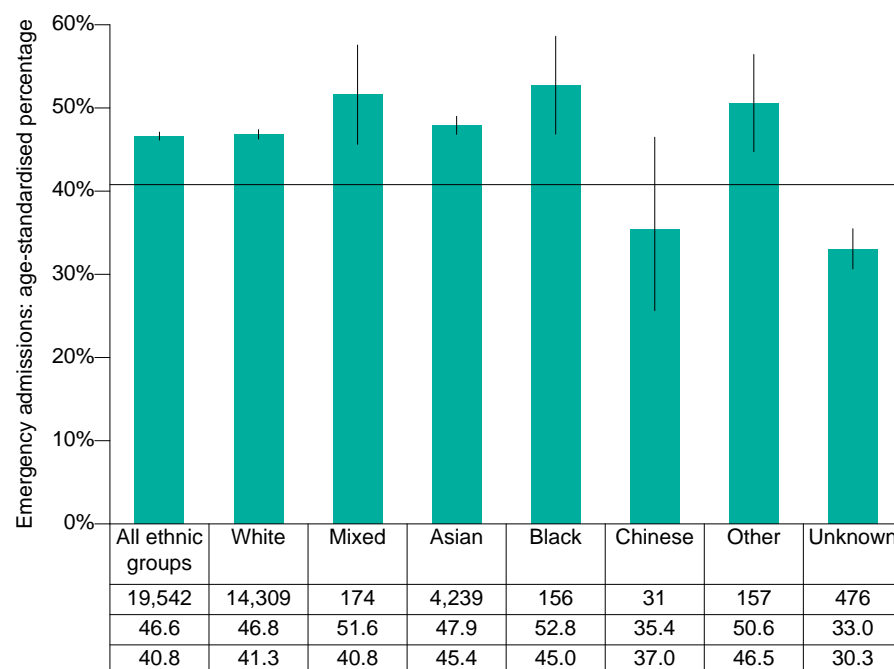— Inequality Slope for Women   ■ Life Expectancy for Women

Health inequalities: changes over time

These charts provide a comparison of the changes in early death rates (in people under 75) between this area and all of England. Early deaths from all causes also show the differences between the most and least deprived quintile in this area. (Data points are the midpoints of 3 year averages of annual rates, for example 2005 represents the period 2004 to 2006).

Early deaths from all causes: MEN

Early deaths from all causes: WOMEN

Early deaths from heart disease and stroke

Early deaths from cancer

—▲— England average   —●— Local average   - -■- - Local least deprived   —◆— Local most deprived   ▨ Local inequality

Health inequalities: ethnicity

Percentage of hospital admissions that were emergencies, by ethnic group
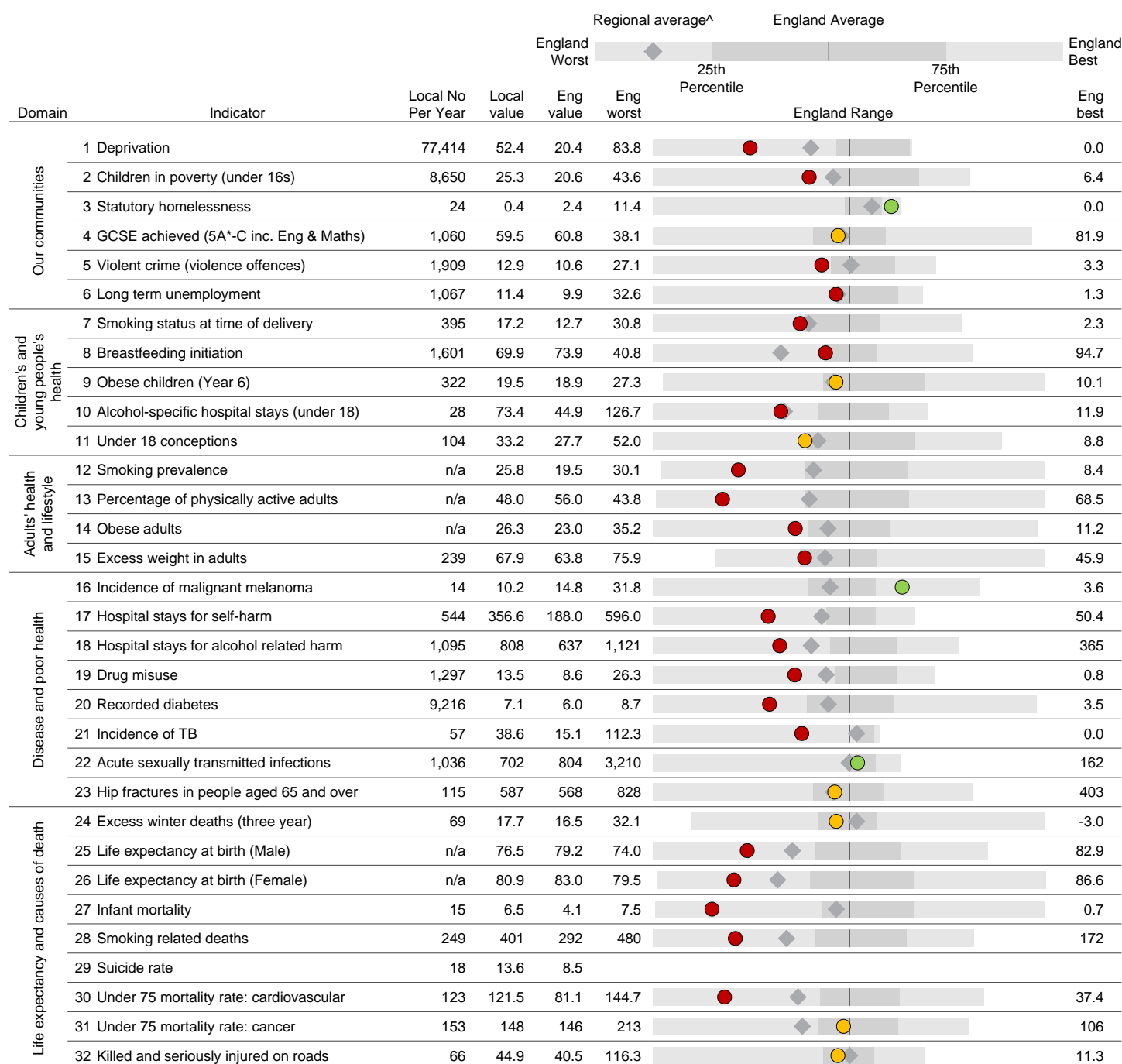

This chart shows the percentage of hospital admissions in 2012/13 that were emergencies for each ethnic group in this area. A high percentage of emergency admissions may reflect some patients not accessing or receiving the care most suited to managing their conditions. By comparing the percentage in each ethnic group in this area with that of the whole population of England (represented by the horizontal line) possible inequalities can be identified.

▮ Blackburn with Darwen

— England average (all ethnic groups)

| 95% confidence interval

Figures based on small numbers of admissions have been suppressed to avoid any potential disclosure of information about individuals.

All ethnic groups	White	Mixed	Asian	Black	Chinese	Other	Unknown	
19,542	14,309	174	4,239	156	31	157	476	Local number of emergency admissions
46.6	46.8	51.6	47.9	52.8	35.4	50.6	33.0	Local value
40.8	41.3	40.8	45.4	45.0	37.0	46.5	30.3	England value

Health Summary for Blackburn with Darwen

The chart below shows how the health of people in this area compares with the rest of England. This area's result for each indicator is shown as a circle. The average rate for England is shown by the black line, which is always at the centre of the chart. The range of results for all local areas in England is shown as a grey bar. A red circle means that this area is significantly worse than England for that indicator; however, a green circle may still indicate an important public health problem.

Domain	Indicator	Local No Per Year	Local value	Eng value	Eng worst	England Range	Eng best
Our communities	1 Deprivation	77,414	52.4	20.4	83.8		0.0
	2 Children in poverty (under 16s)	8,650	25.3	20.6	43.6		6.4
	3 Statutory homelessness	24	0.4	2.4	11.4		0.0
	4 GCSE achieved (5A*-C inc. Eng & Maths)	1,060	59.5	60.8	38.1		81.9
	5 Violent crime (violence offences)	1,909	12.9	10.6	27.1		3.3
	6 Long term unemployment	1,067	11.4	9.9	32.6		1.3
Children's and young people's health	7 Smoking status at time of delivery	395	17.2	12.7	30.8		2.3
	8 Breastfeeding initiation	1,601	69.9	73.9	40.8		94.7
	9 Obese children (Year 6)	322	19.5	18.9	27.3		10.1
	10 Alcohol-specific hospital stays (under 18)	28	73.4	44.9	126.7		11.9
	11 Under 18 conceptions	104	33.2	27.7	52.0		8.8
Adults' health and lifestyle	12 Smoking prevalence	n/a	25.8	19.5	30.1		8.4
	13 Percentage of physically active adults	n/a	48.0	56.0	43.8		68.5
	14 Obese adults	n/a	26.3	23.0	35.2		11.2
	15 Excess weight in adults	239	67.9	63.8	75.9		45.9
Disease and poor health	16 Incidence of malignant melanoma	14	10.2	14.8	31.8		3.6
	17 Hospital stays for self-harm	544	356.6	188.0	596.0		50.4
	18 Hospital stays for alcohol related harm	1,095	808	637	1,121		365
	19 Drug misuse	1,297	13.5	8.6	26.3		0.8
	20 Recorded diabetes	9,216	7.1	6.0	8.7		3.5
	21 Incidence of TB	57	38.6	15.1	112.3		0.0
	22 Acute sexually transmitted infections	1,036	702	804	3,210		162
	23 Hip fractures in people aged 65 and over	115	587	568	828		403
Life expectancy and causes of death	24 Excess winter deaths (three year)	69	17.7	16.5	32.1		-3.0
	25 Life expectancy at birth (Male)	n/a	76.5	79.2	74.0		82.9
	26 Life expectancy at birth (Female)	n/a	80.9	83.0	79.5		86.6
	27 Infant mortality	15	6.5	4.1	7.5		0.7
	28 Smoking related deaths	249	401	292	480		172
	29 Suicide rate	18	13.6	8.5			
	30 Under 75 mortality rate: cardiovascular	123	121.5	81.1	144.7		37.4
	31 Under 75 mortality rate: cancer	153	148	146	213		106
	32 Killed and seriously injured on roads	66	44.9	40.5	116.3		11.3

Indicator Notes

1 % people in this area living in 20% most deprived areas in England, 2010 **2** % children (under 16) in families receiving means-tested benefits & low income, 2011 **3** Crude rate per 1,000 households, 2012/13 **4** % key stage 4, 2012/13 **5** Recorded violence against the person crimes, crude rate per 1,000 population, 2012/13 **6** Crude rate per 1,000 population aged 16-64, 2013 **7** % of women who smoke at time of delivery, 2012/13 **8** % of all mothers who breastfeed their babies in the first 48hrs after delivery, 2012/13 **9** % school children in Year 6 (age 10-11), 2012/13 **10** Persons under 18 admitted to hospital due to alcohol-specific conditions, crude rate per 100,000 population, 2010/11 to 2012/13 (pooled) **11** Under-18 conception rate per 1,000 females aged 15-17 (crude rate) 2012 **12** % adults aged 18 and over, 2012 **13** % adults achieving at least 150 mins physical activity per week, 2012 **14** % adults classified as obese, Active People Survey 2012 **15** % adults classified as overweight or obese, Active People Survey 2012 **16** Directly age standardise rate per 100,000 population, aged under 75, 2009-2011 **17** Directly age sex standardised rate per 100,000 population, 2012/13 **18** The number of admissions involving an alcohol-related primary diagnosis or an alcohol-related external cause, directly age standardised rate per 100,000 population, 2012/13 **19** Estimated users of opiate and/or crack cocaine aged 15-64, crude rate per 1,000 population, 2010/11 **20** % people on GP registers with a recorded diagnosis of diabetes 2012/13 **21** Crude rate per 100,000 population, 2010-2012 **22** Crude rate per 100,000 population, 2012 (chlamydia screening coverage may influence rate) **23** Directly age and sex standardised rate of emergency admissions, per 100,000 population aged 65 and over, 2012/13 **24** Ratio of excess winter deaths (observed winter deaths minus expected deaths based on non-winter deaths) to average non-winter deaths 1.08.09-31.07.12 **25** At birth, 2010-2012 **26** At birth, 2010-2012 **27** Rate per 1,000 live births, 2010-2012 **28** Directly age standardised rate per 100,000 population aged 35 and over, 2010-2012 **29** Directly age standardised mortality rate from suicide and injury of undetermined intent per 100,000 population, 2010-2012 **30** Directly age standardised rate per 100,000 population aged under 75, 2010-2012 **31** Directly age standardised rate per 100,000 population aged under 75, 2010-2012 **32** Rate per 100,000 population, 2010-2012 ^ "Regional" refers to the former government regions.

More information is available at www.healthprofiles.info Please send any enquiries to healthprofiles@phe.gov.uk

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Public Health England

Hyndburn

District

Health Profile 2014

Health in summary

The health of people in Hyndburn is generally worse than the England average. Deprivation is higher than average and about 22.5% (3,900) children live in poverty. Life expectancy for both men and women is lower than the England average.

Living longer

Life expectancy is 11.4 years lower for men and 7.2 years lower for women in the most deprived areas of Hyndburn than in the least deprived areas.

Child health

In Year 6, 19.3% (170) of children are classified as obese. The rate of alcohol-specific hospital stays among those under 18 was 110.2*, worse than the average for England. This represents 21 stays per year. Levels of teenage pregnancy, GCSE attainment, breastfeeding and smoking at time of delivery are worse than the England average.

Adult health

In 2012, 27.7% of adults are classified as obese, worse than the average for England. The rate of alcohol related harm hospital stays was 749*, worse than the average for England. This represents 575 stays per year. The rate of self-harm hospital stays was 318.5*, worse than the average for England. This represents 260 stays per year. The rate of smoking related deaths was 414*, worse than the average for England. This represents 170 deaths per year. Estimated levels of adult smoking and physical activity are worse than the England average. The rate of sexually transmitted infections is better than average.

Local priorities

Priorities in Hyndburn include reducing deaths from road traffic accidents, increasing physical activity and encouraging healthier lifestyles (including reducing smoking in adults and alcohol harm reduction) and improving mental health and wellbeing (especially amongst the elderly). For more details see www.lancashire.gov.uk and www.hyndburn.gov.uk

* rate per 100,000 population
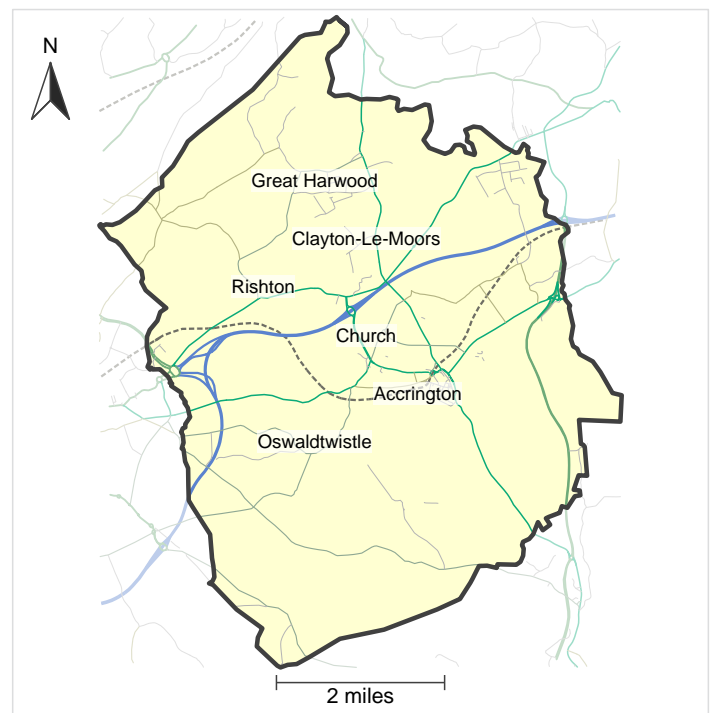
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Population: 80,000

Mid-2012 population estimate. Source: Office for National Statistics.

This profile gives a picture of people's health in Hyndburn. It is designed to help local government and health services understand their community's needs, so that they can work to improve people's health and reduce health inequalities.
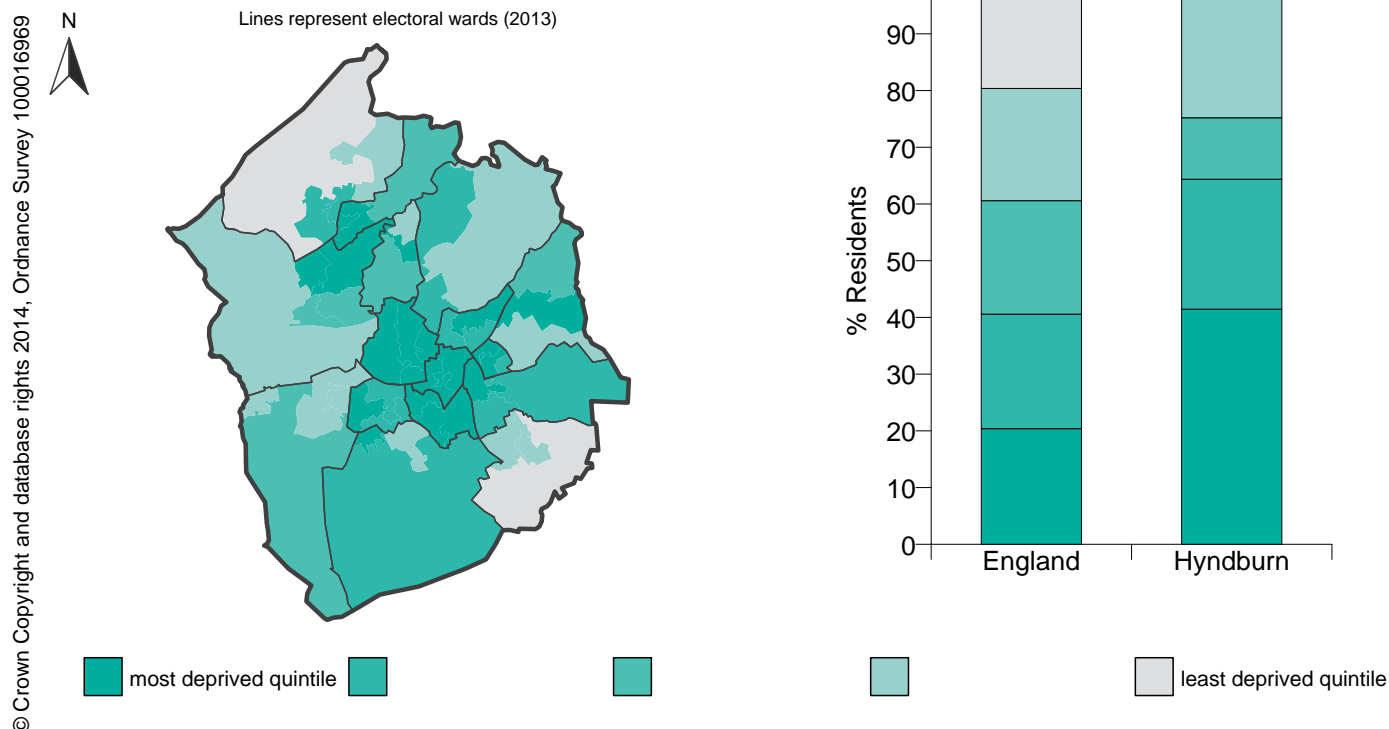
Visit www.healthprofiles.info
or scan this Quick Response code: for more profiles, more information and interactive maps and tools.
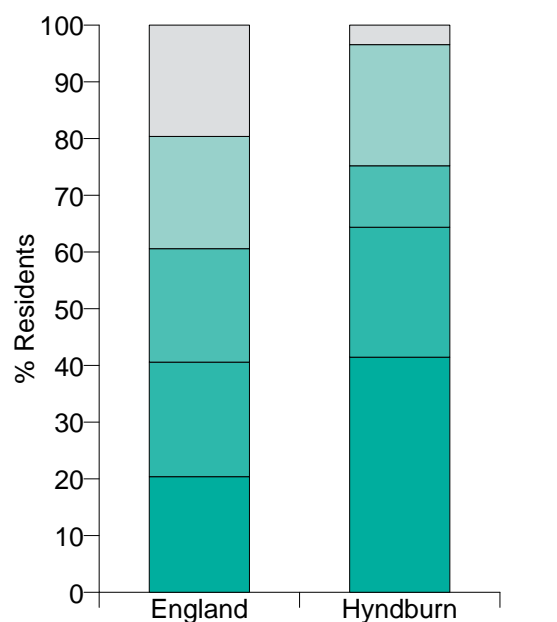
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Deprivation: a national view

The map shows differences in deprivation levels in this area based on national quintiles (fifths) of the Index of Multiple Deprivation 2010 by Lower Super Output Area. The darkest coloured areas are some of the most deprived areas in England.
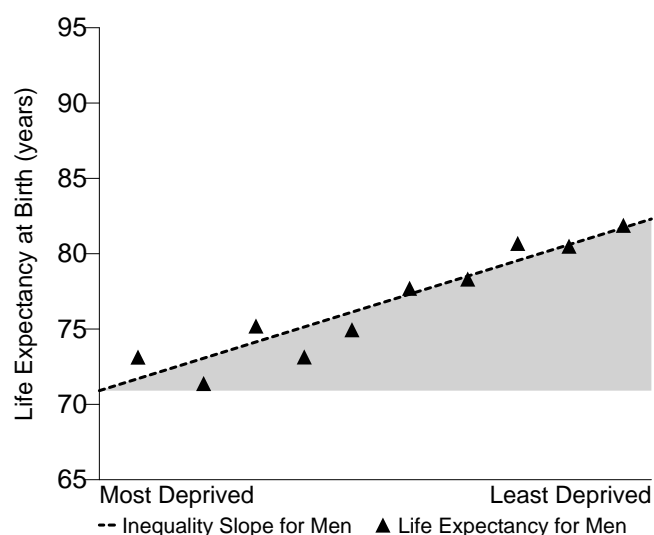
This chart shows the percentage of the population in England and this area who live in each of these quintiles.

N

Lines represent electoral wards (2013)

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% Residents

England   Hyndburn

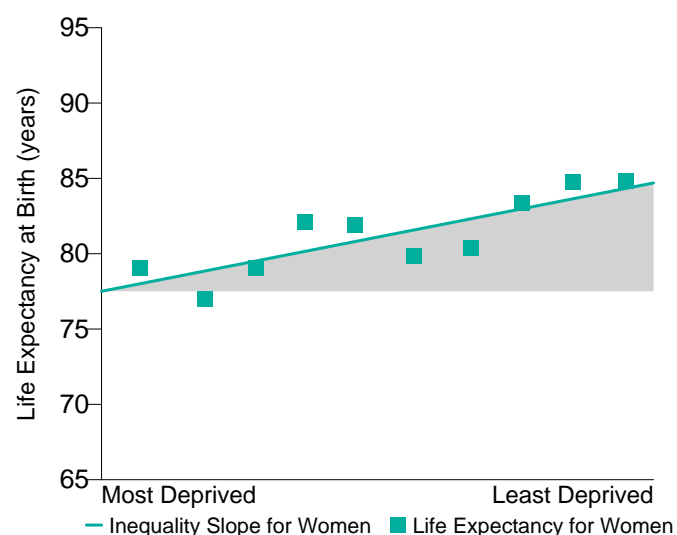■ most deprived quintile   ■   ■   ■   □ least deprived quintile

Life Expectancy: inequalities in this local authority

The charts below show life expectancy for men and women in this local authority for 2010-2012. Each chart is divided into deciles (tenths) by deprivation, from the most deprived decile on the left of the chart to the least deprived decile on the right. The steepness of the slope represents the inequality in life expectancy that is related to deprivation in this local area. If there were no inequality in life expectancy as a result of deprivation, the line would be horizontal.
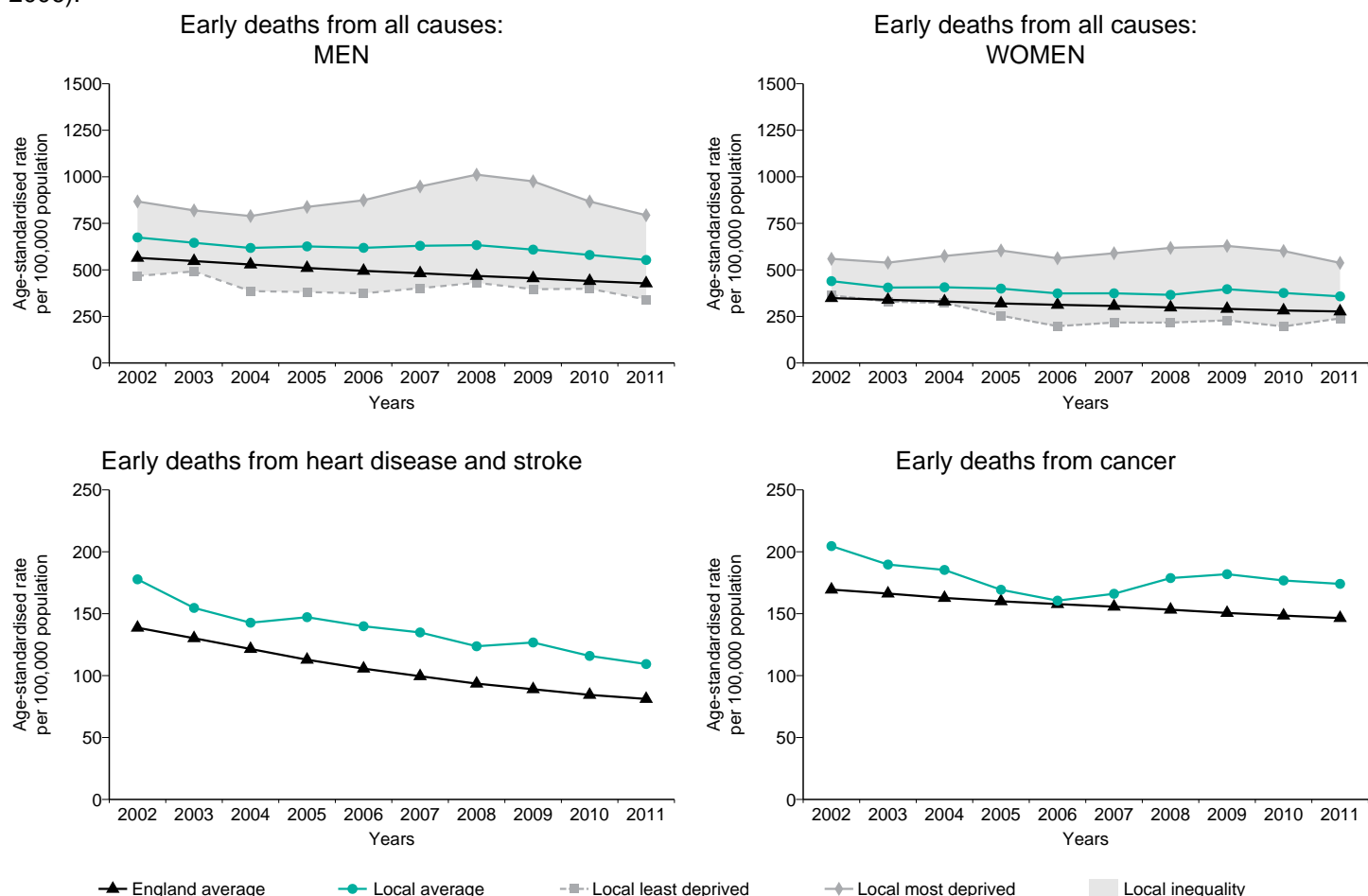
Life Expectancy Gap for Men: 11.4 years

Life Expectancy at Birth (years)

Most Deprived   Least Deprived

- - Inequality Slope for Men   ▲ Life Expectancy for Men

Life Expectancy Gap for Women: 7.2 years

Life Expectancy at Birth (years)

Most Deprived   Least Deprived

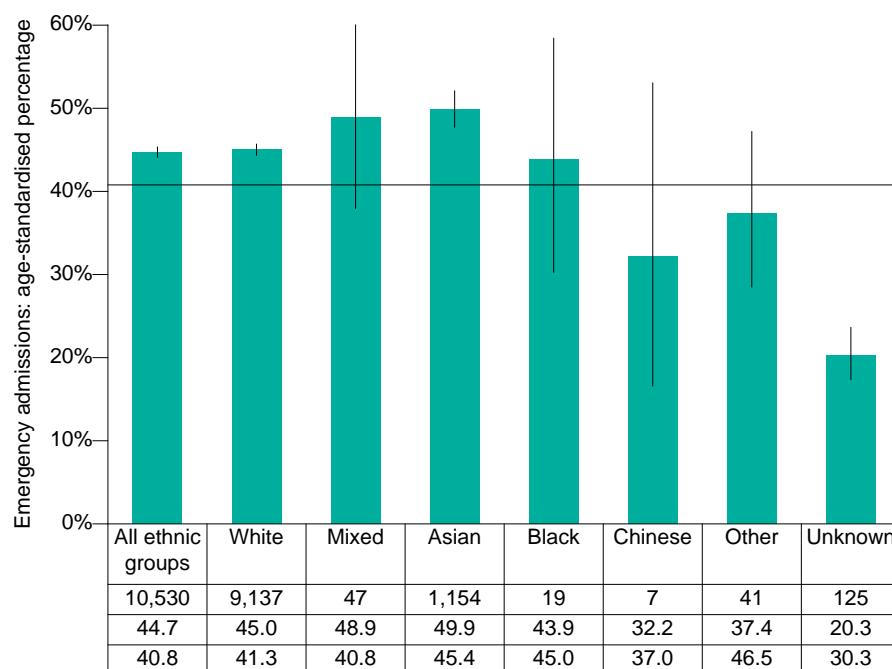— Inequality Slope for Women   ■ Life Expectancy for Women

Health inequalities: changes over time

These charts provide a comparison of the changes in early death rates (in people under 75) between this area and all of England. Early deaths from all causes also show the differences between the most and least deprived quintile in this area. (Data points are the midpoints of 3 year averages of annual rates, for example 2005 represents the period 2004 to 2006).

Early deaths from all causes: MEN

Early deaths from all causes: WOMEN

Early deaths from heart disease and stroke

Early deaths from cancer

— England average — Local average - - Local least deprived — Local most deprived ▨ Local inequality

Health inequalities: ethnicity

Percentage of hospital admissions that were emergencies, by ethnic group
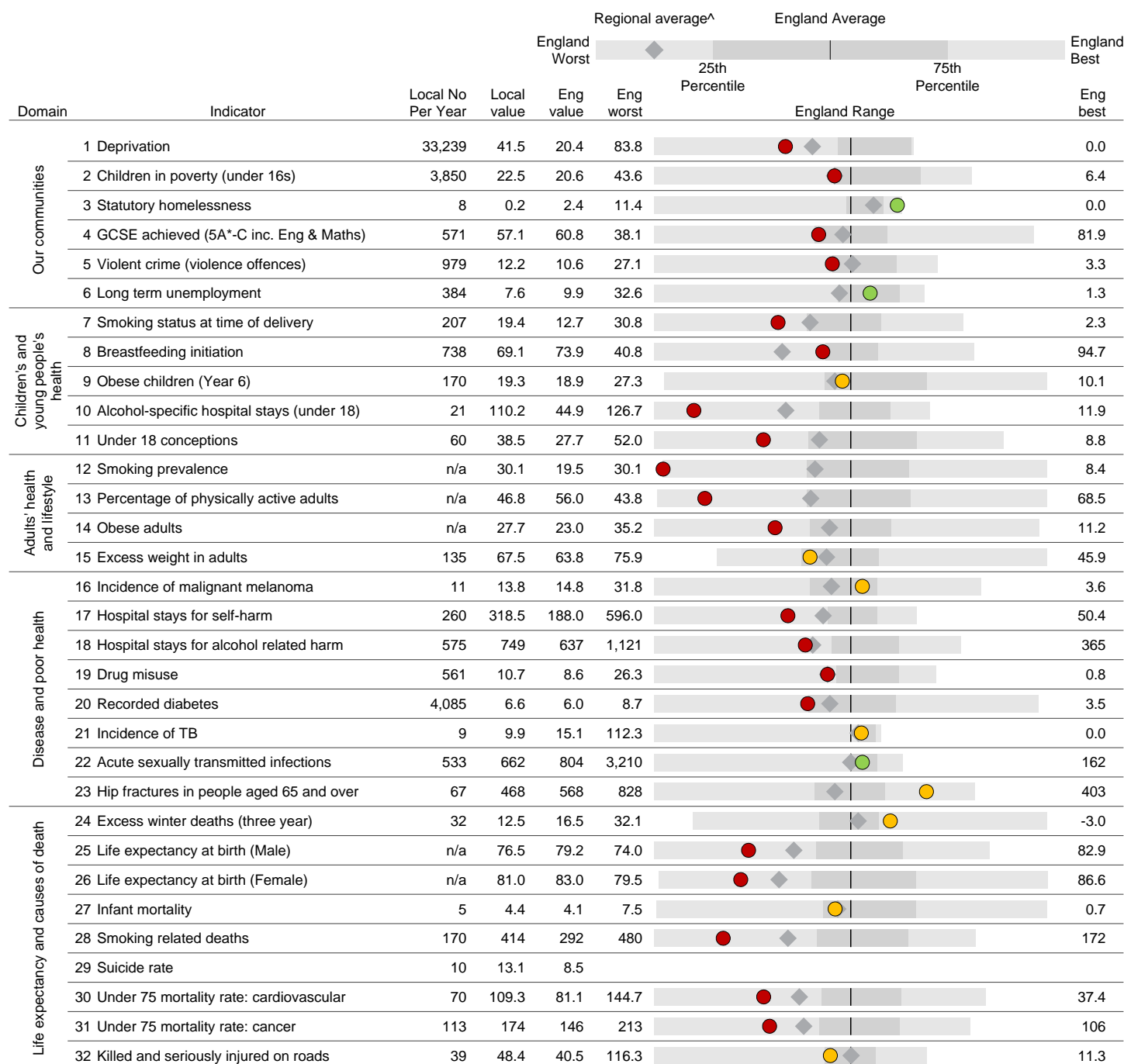

This chart shows the percentage of hospital admissions in 2012/13 that were emergencies for each ethnic group in this area. A high percentage of emergency admissions may reflect some patients not accessing or receiving the care most suited to managing their conditions. By comparing the percentage in each ethnic group in this area with that of the whole population of England (represented by the horizontal line) possible inequalities can be identified.

▨ Hyndburn

— England average (all ethnic groups)

| 95% confidence interval

Figures based on small numbers of admissions have been suppressed to avoid any potential disclosure of information about individuals.

All ethnic groups	White	Mixed	Asian	Black	Chinese	Other	Unknown	
10,530	9,137	47	1,154	19	7	41	125	Local number of emergency admissions
44.7	45.0	48.9	49.9	43.9	32.2	37.4	20.3	Local value
40.8	41.3	40.8	45.4	45.0	37.0	46.5	30.3	England value

Health Summary for Hyndburn

The chart below shows how the health of people in this area compares with the rest of England. This area's result for each indicator is shown as a circle. The average rate for England is shown by the black line, which is always at the centre of the chart. The range of results for all local areas in England is shown as a grey bar. A red circle means that this area is significantly worse than England for that indicator; however, a green circle may still indicate an important public health problem.

Domain	Indicator	Local No Per Year	Local value	Eng value	Eng worst	England Range	Eng best
Our communities	1 Deprivation	33,239	41.5	20.4	83.8		0.0
	2 Children in poverty (under 16s)	3,850	22.5	20.6	43.6		6.4
	3 Statutory homelessness	8	0.2	2.4	11.4		0.0
	4 GCSE achieved (5A*-C inc. Eng & Maths)	571	57.1	60.8	38.1		81.9
	5 Violent crime (violence offences)	979	12.2	10.6	27.1		3.3
	6 Long term unemployment	384	7.6	9.9	32.6		1.3
Children's and young people's health	7 Smoking status at time of delivery	207	19.4	12.7	30.8		2.3
	8 Breastfeeding initiation	738	69.1	73.9	40.8		94.7
	9 Obese children (Year 6)	170	19.3	18.9	27.3		10.1
	10 Alcohol-specific hospital stays (under 18)	21	110.2	44.9	126.7		11.9
	11 Under 18 conceptions	60	38.5	27.7	52.0		8.8
Adults' health and lifestyle	12 Smoking prevalence	n/a	30.1	19.5	30.1		8.4
	13 Percentage of physically active adults	n/a	46.8	56.0	43.8		68.5
	14 Obese adults	n/a	27.7	23.0	35.2		11.2
	15 Excess weight in adults	135	67.5	63.8	75.9		45.9
Disease and poor health	16 Incidence of malignant melanoma	11	13.8	14.8	31.8		3.6
	17 Hospital stays for self-harm	260	318.5	188.0	596.0		50.4
	18 Hospital stays for alcohol related harm	575	749	637	1,121		365
	19 Drug misuse	561	10.7	8.6	26.3		0.8
	20 Recorded diabetes	4,085	6.6	6.0	8.7		3.5
	21 Incidence of TB	9	9.9	15.1	112.3		0.0
	22 Acute sexually transmitted infections	533	662	804	3,210		162
	23 Hip fractures in people aged 65 and over	67	468	568	828		403
Life expectancy and causes of death	24 Excess winter deaths (three year)	32	12.5	16.5	32.1		-3.0
	25 Life expectancy at birth (Male)	n/a	76.5	79.2	74.0		82.9
	26 Life expectancy at birth (Female)	n/a	81.0	83.0	79.5		86.6
	27 Infant mortality	5	4.4	4.1	7.5		0.7
	28 Smoking related deaths	170	414	292	480		172
	29 Suicide rate	10	13.1	8.5			
	30 Under 75 mortality rate: cardiovascular	70	109.3	81.1	144.7		37.4
	31 Under 75 mortality rate: cancer	113	174	146	213		106
	32 Killed and seriously injured on roads	39	48.4	40.5	116.3		11.3

Indicator Notes

1 % people in this area living in 20% most deprived areas in England, 2010 **2** % children (under 16) in families receiving means-tested benefits & low income, 2011 **3** Crude rate per 1,000 households, 2012/13 **4** % key stage 4, 2012/13 **5** Recorded violence against the person crimes, crude rate per 1,000 population, 2012/13 **6** Crude rate per 1,000 population aged 16-64, 2013 **7** % of women who smoke at time of delivery, 2012/13 **8** % of all mothers who breastfeed their babies in the first 48hrs after delivery, 2012/13 **9** % school children in Year 6 (age 10-11), 2012/13 **10** Persons under 18 admitted to hospital due to alcohol-specific conditions, crude rate per 100,000 population, 2010/11 to 2012/13 (pooled) **11** Under-18 conception rate per 1,000 females aged 15-17 (crude rate) 2012 **12** % adults aged 18 and over, 2012 **13** % adults achieving at least 150 mins physical activity per week, 2012 **14** % adults classified as obese, Active People Survey 2012 **15** % adults classified as overweight or obese, Active People Survey 2012 **16** Directly age standardised rate per 100,000 population, aged under 75, 2009-2011 **17** Directly age sex standardised rate per 100,000 population, 2012/13 **18** The number of admissions involving an alcohol-related primary diagnosis or an alcohol-related external cause, directly age standardised rate per 100,000 population, 2012/13 **19** Estimated users of opiate and/or crack cocaine aged 15-64, crude rate per 1,000 population, 2010/11 **20** % people on GP registers with a recorded diagnosis of diabetes 2012/13 **21** Crude rate per 100,000 population, 2010-2012 **22** Crude rate per 100,000 population, 2012 (chlamydia screening coverage may influence rate) **23** Directly age and sex standardised rate of emergency admissions, per 100,000 population aged 65 and over, 2012/13 **24** Ratio of excess winter deaths (observed winter deaths minus expected deaths based on non-winter deaths) to average non-winter deaths 1.08.09-31.07.12 **25** At birth, 2010-2012 **26** At birth, 2010-2012 **27** Rate per 1,000 live births, 2010-2012 **28** Directly age standardised rate per 100,000 population aged 35 and over, 2010-2012 **29** Directly age standardised mortality rate from suicide and injury of undetermined intent per 100,000 population, 2010-2012 **30** Directly age standardised rate per 100,000 population aged under 75, 2010-2012 **31** Directly age standardised rate per 100,000 population aged under 75, 2010-2012 **32** Rate per 100,000 population, 2010-2012   ^ "Regional" refers to the former government regions.

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![Public Health England logo]

Rossendale

District

Health Profile 2014

Health in summary

The health of people in Rossendale is varied compared with the England average. Deprivation is lower than average, however about 19.4% (2,500) children live in poverty. Life expectancy for both men and women is lower than the England average.

Living longer

Life expectancy is 6.0 years lower for men in the most deprived areas of Rossendale than in the least deprived areas.

Child health

In Year 6, 18.1% (135) of children are classified as obese. The rate of alcohol-specific hospital stays among those under 18 was 55.3*. This represents 8 stays per year. Levels of breastfeeding and smoking at time of delivery are worse than the England average.

Adult health

In 2012, 25.5% of adults are classified as obese. The rate of alcohol related harm hospital stays was 697*. This represents 470 stays per year. The rate of self-harm hospital stays was 235.5*, worse than the average for England. This represents 163 stays per year. The rate of smoking related deaths was 374*, worse than the average for England. This represents 129 deaths per year. Estimated levels of adult excess weight are worse than the England average. Rates of sexually transmitted infections and TB are better than average. The rate of early deaths from cardiovascular diseases is worse than average. Rates of statutory homelessness, violent crime, long term unemployment and drug misuse are better than average.

Local priorities

Priorities include improving mental health and wellbeing, premature mortality from the 'big killers' such as cardiovascular disease and encouraging healthier lifestyles especially reducing smoking, unsafe drinking and obesity. See www.lancashire.gov.uk and www.rossendale.gov.uk

* rate per 100,000 population
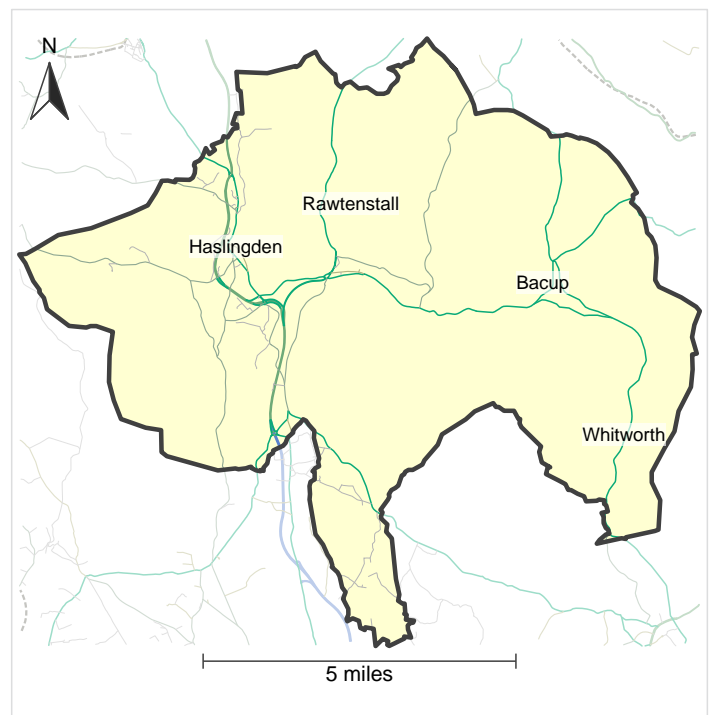
© Crown Copyright and database rights 2014, Ordnance Survey 100016969 OpenStreetMap contributors ODbL

Population: 68,000

Mid-2012 population estimate. Source: Office for National Statistics.

This profile gives a picture of people's health in Rossendale. It is designed to help local government and health services understand their community's needs, so that they can work to improve people's health and reduce health inequalities.
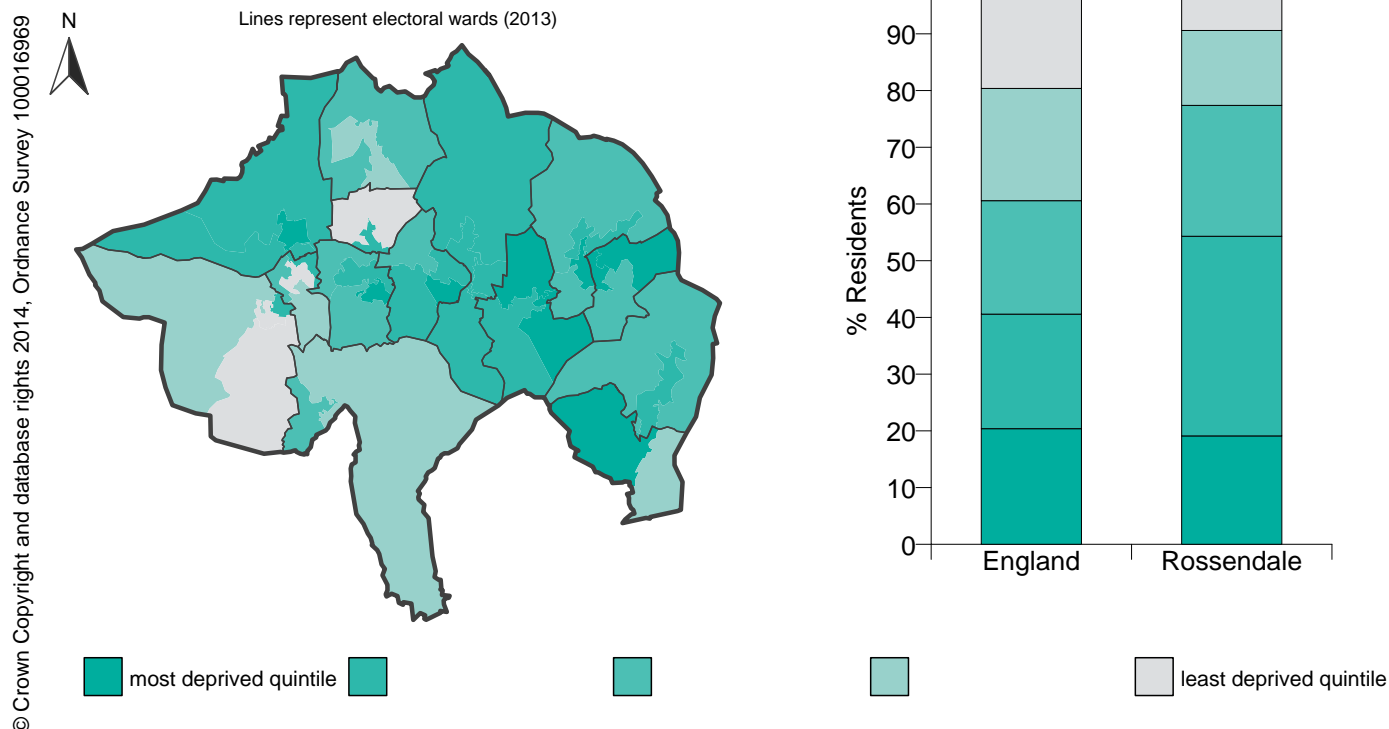
Visit www.healthprofiles.info or scan this Quick Response code: for more profiles, more information and interactive maps and tools.

Follow @healthprofiles on Twitter

Deprivation: a national view

The map shows differences in deprivation levels in this area based on national quintiles (fifths) of the Index of Multiple Deprivation 2010 by Lower Super Output Area. The darkest coloured areas are some of the most deprived areas in England.
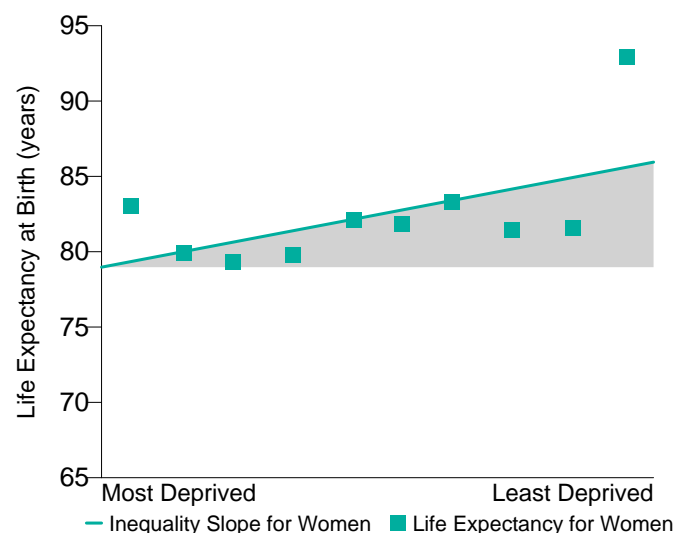
This chart shows the percentage of the population in England and this area who live in each of these quintiles.

Lines represent electoral wards (2013)

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N

most deprived quintile   least deprived quintile

% Residents

England   Rossendale

Life Expectancy: inequalities in this local authority

The charts below show life expectancy for men and women in this local authority for 2010-2012. Each chart is divided into deciles (tenths) by deprivation, from the most deprived decile on the left of the chart to the least deprived decile on the right. The steepness of the slope represents the inequality in life expectancy that is related to deprivation in this local area. If there were no inequality in life expectancy as a result of deprivation, the line would be horizontal.
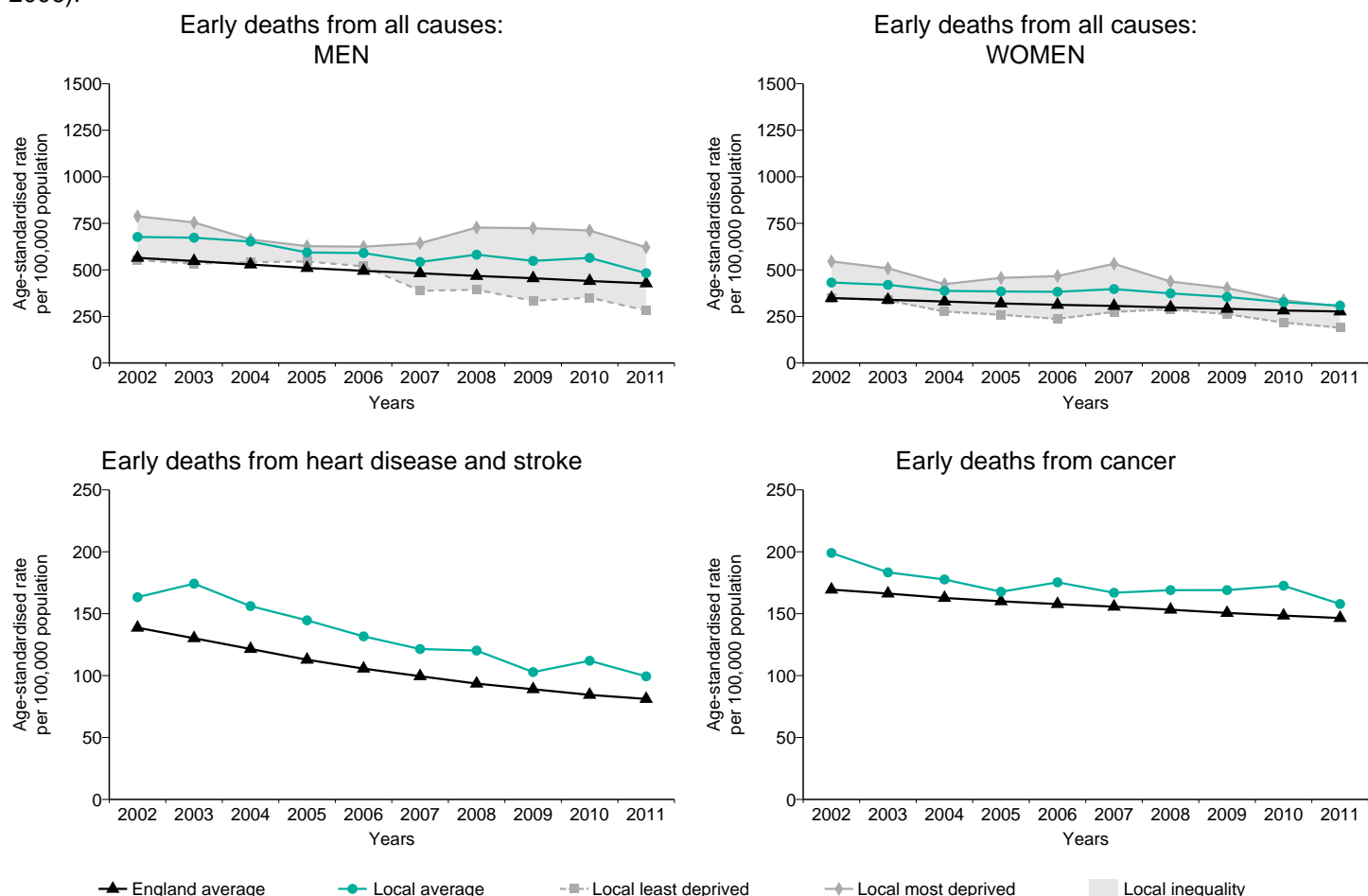
Life Expectancy Gap for Men: 6.0 years

Life Expectancy at Birth (years)

Most Deprived   Least Deprived

- - Inequality Slope for Men   ▲ Life Expectancy for Men

Life Expectancy Gap for Women: 7.0 years

Life Expectancy at Birth (years)

Most Deprived   Least Deprived

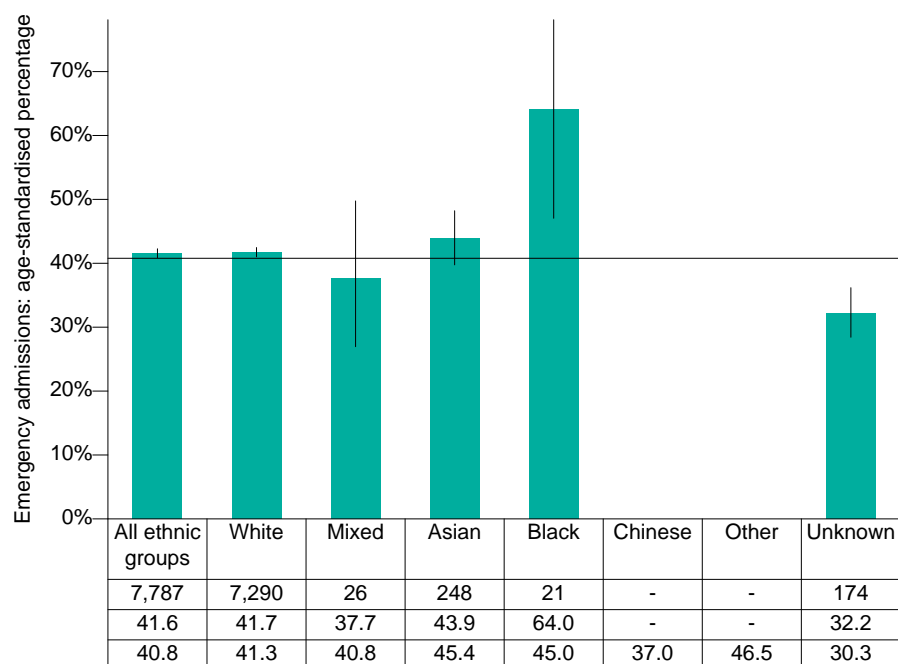— Inequality Slope for Women   ■ Life Expectancy for Women

Health inequalities: changes over time

These charts provide a comparison of the changes in early death rates (in people under 75) between this area and all of England. Early deaths from all causes also show the differences between the most and least deprived quintile in this area. (Data points are the midpoints of 3 year averages of annual rates, for example 2005 represents the period 2004 to 2006).

Early deaths from all causes: MEN

Early deaths from all causes: WOMEN

Early deaths from heart disease and stroke

Early deaths from cancer

— England average   — Local average   - - Local least deprived   — Local most deprived   ▨ Local inequality

Health inequalities: ethnicity

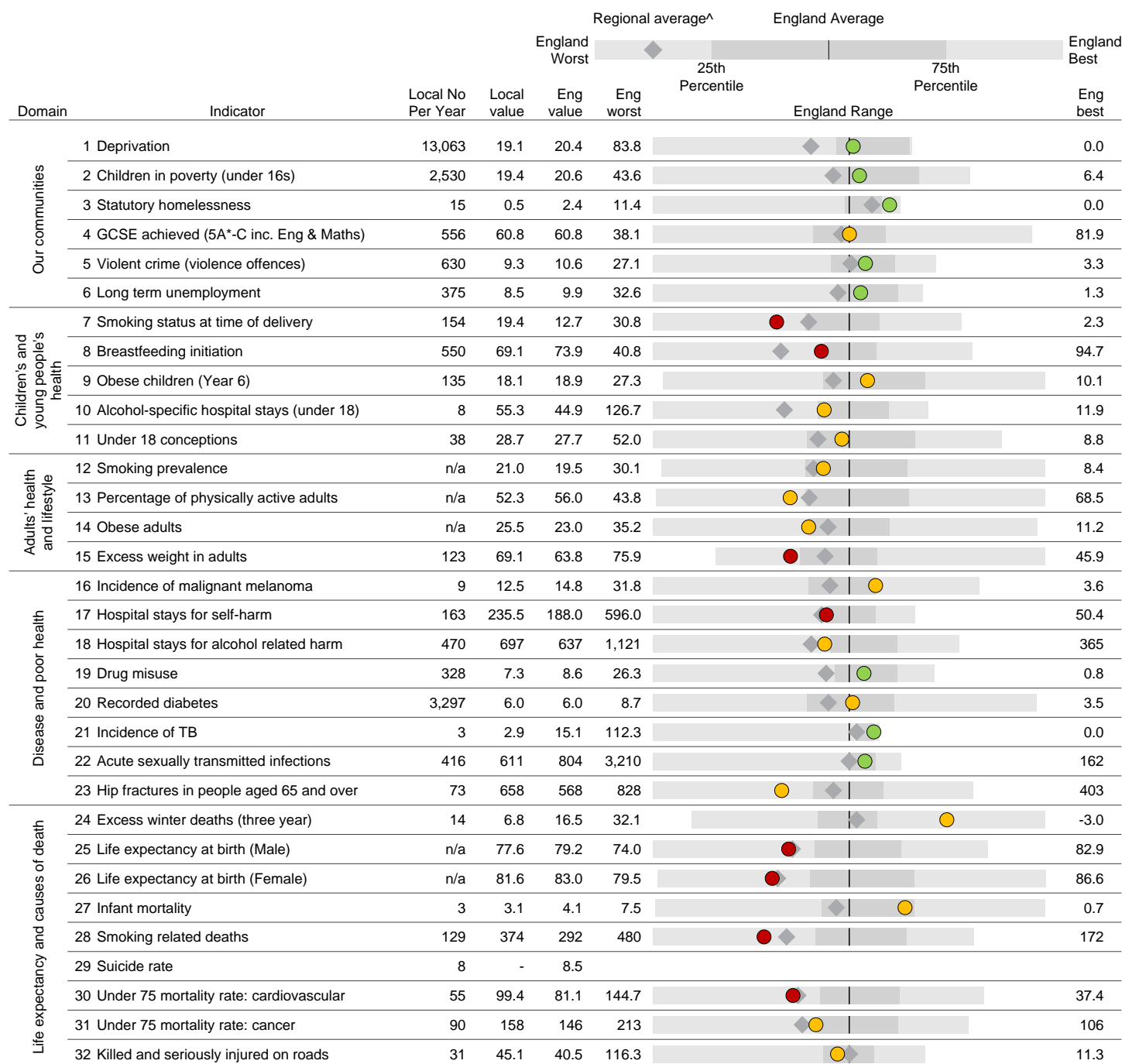Percentage of hospital admissions that were emergencies, by ethnic group

This chart shows the percentage of hospital admissions in 2012/13 that were emergencies for each ethnic group in this area. A high percentage of emergency admissions may reflect some patients not accessing or receiving the care most suited to managing their conditions. By comparing the percentage in each ethnic group in this area with that of the whole population of England (represented by the horizontal line) possible inequalities can be identified.

■ Rossendale

— England average (all ethnic groups)

| 95% confidence interval

Figures based on small numbers of admissions have been suppressed to avoid any potential disclosure of information about individuals.

All ethnic groups	White	Mixed	Asian	Black	Chinese	Other	Unknown	
7,787	7,290	26	248	21	-	-	174	Local number of emergency admissions
41.6	41.7	37.7	43.9	64.0	-	-	32.2	Local value
40.8	41.3	40.8	45.4	45.0	37.0	46.5	30.3	England value

Health Summary for Rossendale

The chart below shows how the health of people in this area compares with the rest of England. This area's result for each indicator is shown as a circle. The average rate for England is shown by the black line, which is always at the centre of the chart. The range of results for all local areas in England is shown as a grey bar. A red circle means that this area is significantly worse than England for that indicator; however, a green circle may still indicate an important public health problem.

Domain	Indicator	Local No Per Year	Local value	Eng value	Eng worst	England Range	Eng best
Our communities	1 Deprivation	13,063	19.1	20.4	83.8		0.0
	2 Children in poverty (under 16s)	2,530	19.4	20.6	43.6		6.4
	3 Statutory homelessness	15	0.5	2.4	11.4		0.0
	4 GCSE achieved (5A*-C inc. Eng & Maths)	556	60.8	60.8	38.1		81.9
	5 Violent crime (violence offences)	630	9.3	10.6	27.1		3.3
	6 Long term unemployment	375	8.5	9.9	32.6		1.3
Children's and young people's health	7 Smoking status at time of delivery	154	19.4	12.7	30.8		2.3
	8 Breastfeeding initiation	550	69.1	73.9	40.8		94.7
	9 Obese children (Year 6)	135	18.1	18.9	27.3		10.1
	10 Alcohol-specific hospital stays (under 18)	8	55.3	44.9	126.7		11.9
	11 Under 18 conceptions	38	28.7	27.7	52.0		8.8
Adults' health and lifestyle	12 Smoking prevalence	n/a	21.0	19.5	30.1		8.4
	13 Percentage of physically active adults	n/a	52.3	56.0	43.8		68.5
	14 Obese adults	n/a	25.5	23.0	35.2		11.2
	15 Excess weight in adults	123	69.1	63.8	75.9		45.9
Disease and poor health	16 Incidence of malignant melanoma	9	12.5	14.8	31.8		3.6
	17 Hospital stays for self-harm	163	235.5	188.0	596.0		50.4
	18 Hospital stays for alcohol related harm	470	697	637	1,121		365
	19 Drug misuse	328	7.3	8.6	26.3		0.8
	20 Recorded diabetes	3,297	6.0	6.0	8.7		3.5
	21 Incidence of TB	3	2.9	15.1	112.3		0.0
	22 Acute sexually transmitted infections	416	611	804	3,210		162
	23 Hip fractures in people aged 65 and over	73	658	568	828		403
Life expectancy and causes of death	24 Excess winter deaths (three year)	14	6.8	16.5	32.1		-3.0
	25 Life expectancy at birth (Male)	n/a	77.6	79.2	74.0		82.9
	26 Life expectancy at birth (Female)	n/a	81.6	83.0	79.5		86.6
	27 Infant mortality	3	3.1	4.1	7.5		0.7
	28 Smoking related deaths	129	374	292	480		172
	29 Suicide rate	8	-	8.5			
	30 Under 75 mortality rate: cardiovascular	55	99.4	81.1	144.7		37.4
	31 Under 75 mortality rate: cancer	90	158	146	213		106
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Indicator Notes
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Appendix G – Risk Register

Appendix G -

East Lancashire Cycleway

Risk Register & Management Plan

Abbreviations for Risk Owners

Cabinet Members = CM

Project Board = PB

Project Manager = PM

Technical Manager Highways = TMH

Technical Manager Ecology = TME

Financial Manager = FM

Legal Services Manager = LSM

Property Services Manager = PSM

Development Control = DC

Contractor = C

**APPENDIX G -   East Lancashire Strategic Cycleway Network –
Risk Register and Management Plan**

Risk ID No	Category of Risk	Risk Item		Potential Consequences		Impact	Probability	Ranking	Risk Strategy & Management Plan	Primary Risk Owner	Current Risk Status
		Emerging Current Anticipated	=E =C =A	Cost Time Environmental Performance	=C =T =E =P	High=5 Med=3 Low=1	High=5 Med=3 Low=1	Red= 13 – 25 (Unacceptable Risk) Amber= 7- 12 (Undesirable Risk) Green= 1-6 (Acceptable Risk)	Accept/ Avoid/ Reduce/ Transfer		
1	Political	Changes in political direction. National and local elections in May 2015	A	Potential risk to funding and overall programme if radical change to policy direction.	P	2	1	2	Accept Will have to wait on the outcome of the elections	PB	LCC and BwDBC have approved the project; Business Case being prepared to secure approval from LEP & Growth Deal
2	Legal and Regulatory	Failure to secure property and legal agreements with private landowners	A	Potential impact upon overall delivery of programme	C T P	4	3	12	Reduce Delay implementation of potentially difficult sections until Years 3 & 4 of Programme. Consider use of compulsory powers where agreements are unlikely to be possible	PM	Detailed early assessment of property and legal issues on individual sections taking place; strategy to deal with individual risk to follow.
3	Legal and Regulatory	Failure to secure planning permission and other regulatory approvals	E	Potential delay to programme and impact upon delivery of overall network	T P	5	2	10	Reduce Pre application discussions with planning, consultation to support any applications. Early discussions with other regulatory bodies – eg Env Agency, English Heritage etc.	PM/ TMH	General principles for requirement for planning permission established, draft consultation strategy produced, designers working to agreed standards
4	Economic/ Financial	Cost overruns / insufficient funding to deliver scheme	E	Potential Impact upon overall programme delivery and concept of the Strategic Cycleway Network	C P	5	3	15	Reduce Effective programme management including to minimise any cost overruns. Close working with the LEP & Design team to ensure effective communication and engagement in capital delivery programme. Any cost overruns to be funded by other sources – LTP3, S106 funding, Landfill tax etc.	PB / PM	Robust cost estimates prepared including allocation of 15% risk allowance. Detailed risks for individual sections identified, other potential sources of funding identified.
5	Technical	Technical and design issues cause issues with delivery of some sections	E	Potential Impact upon overall programme and delay in implementation of some sections	T	4	2	8	Reduce Early assessment and identification of design issues to take place. Investigation of alternative options	PM/TMH	Detailed early assessment of design issues on individual sections taking place. Route options identified, investigation of alternative surfacing taking place
6	Technical	Maintenance Model for routes not agreed	C	Potential impact upon delivery and use of network and thereby impact upon scheme objectives, impacts and outcomes. Also potential impact upon longevity of routes.	C P	4	3	12	Reduce Maintenance agreement in place for Weavers Wheel through LTP3. Solution required for LCC schemes through high level discussions.	PB	Maintenance raised as a standard agenda item at project board meetings. Discussions ongoing about inclusion of cycleway maintenance within the TAMP.
7	Operational	Lack of stakeholder and business support for the scheme	A	Proposed objectives, outcomes and impacts of the scheme may not be achieved.	P	3	3	9	Reduce Significant infrastructure delivered at the start of the programme complemented by publicity and LSTF initiative in 15/16. Monitoring and evaluation to take place to identify areas in need of further investment/engagement and communications.	PM	Close liaison with team(s) delivering LSTF programme taking place to maximise impacts with stakeholders. Communications strategy prepared and range of consultation events will take place. Businesses have been approached about potential funding for signs, information boards etc. for Weavers Wheel

March 2015

**APPENDIX G -   East Lancashire Strategic Cycleway Network –
Risk Register and Management Plan**

Risk ID No	Category of Risk	Risk Item		Potential Consequences		Impact	Probability	Ranking	Risk Strategy & Management Plan	Primary Risk Owner	Current Risk Status
		Emerging =E Current =C Anticipated =A		Cost =C Time =T Environmental =E Performance =P		High=5 Med=3 Low=1	High=5 Med=3 Low=1	Red= 13 – 25 (Unacceptable Risk) Amber= 7- 12 (Undesirable Risk) Green= 1-6 (Acceptable Risk)	Accept/ Avoid/ Reduce/ Transfer		
8	Operational	Lack of community support for the scheme	A	Proposed objectives, outcomes and impacts of the scheme may not be achieved.	P	4	3	12	Reduce Extensive community consultation on design and also engagement activities to ensure successful future use and ownership of routes.	PM	Artist has been appointed to engage with local community on weavers Wheel to deliver bespoke art projects. Initial discussions have taken place with Arts Organisation to undertake a similar exercise on the other routes.

March 2015

Appendix H – Weavers Wheel Preliminary Assessment Report for Arts & Community Engagement
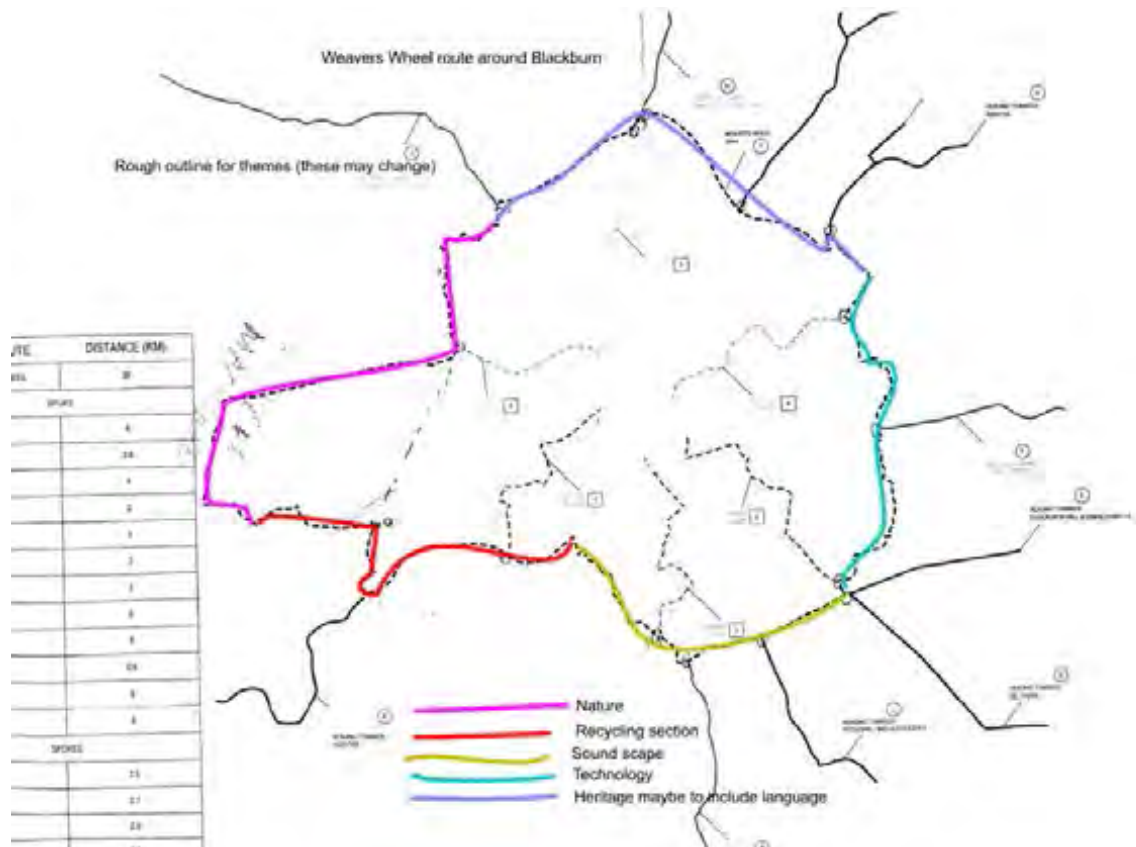
Appendix H –

Weavers Wheel:
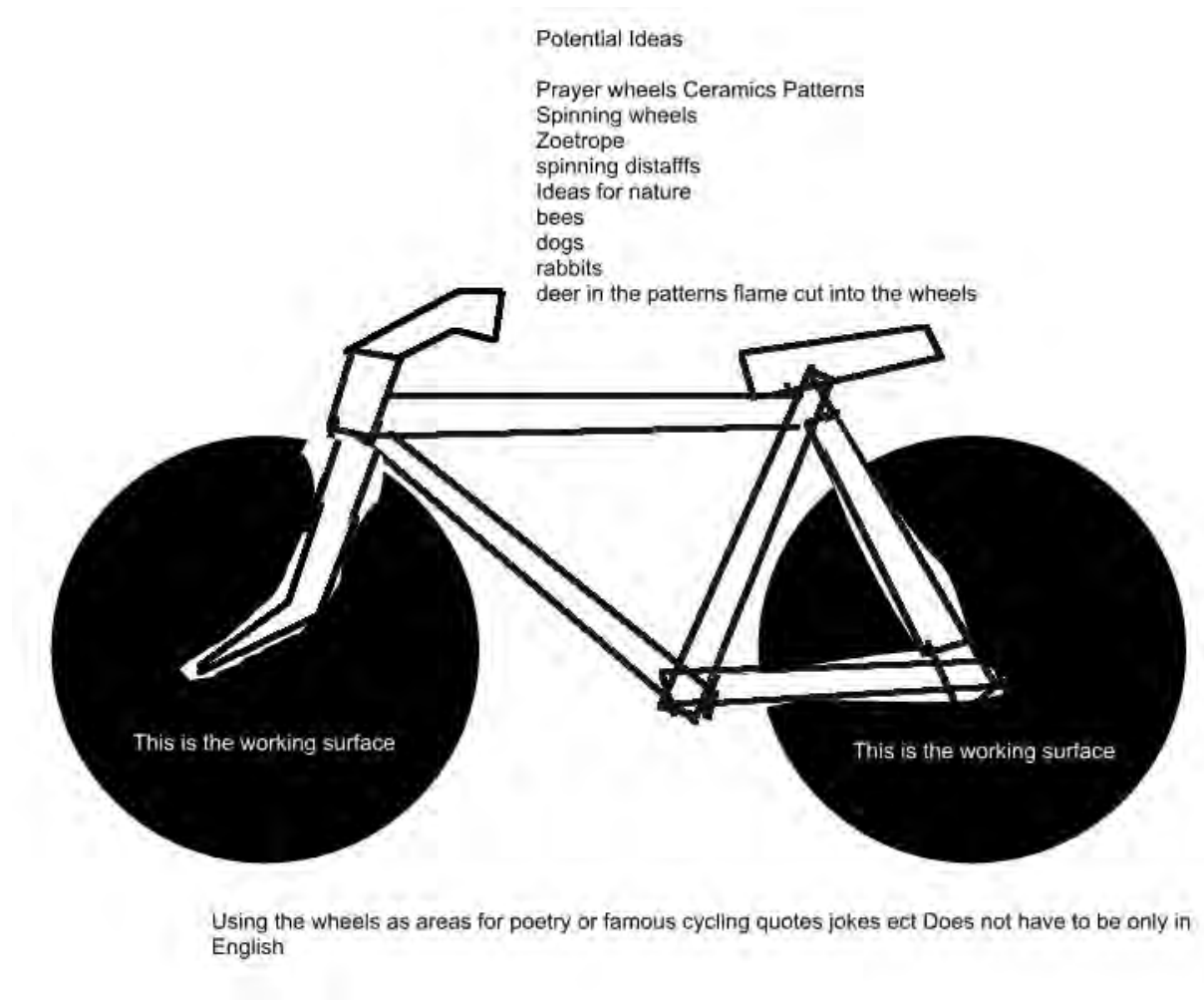
Community & Stakeholder Art / Signage Project

A preliminary report by A Nicholson

- My first impression on hearing this proposal was "what about the hills? " but having ridden the proposed route over a few sunny (and a few not so sunny) days in February I can see the benefit and enjoyment many people will get out of following this route. There are sections that will appeal to all cycling abilities from beginners to more keen and committed leisure and utility cyclists.

- The route I feel could be divided up into about 5 sections and these would have themes that would be reflected in the form and design of the community signage and art work that will be developed.

- The proposed sections being considered so far include:
  o Recycling section
  o Soundscape section
  o Technology section
  o Rural section
  o And either the History or Language section

- Consideration is now being given as to how these are spaced around the wheel. See map below for my initial ideas for zones:

Weavers Wheel route around Blackburn

Rough outline for themes (these may change)

Legend:
- Nature
- Recycling section
- Sound scape
- Technology
- Heritage maybe to include language

- I would suggest the red section will be the first to be developed. Commitments from local schools and local businesses have been provided to help and I have good contacts within the area from previous successful projects with scout groups and local community craft and art groups.

- Moreover, we will also have potential support from the Canal and River Trust and the Young Weavers Group to assist with work on the signage within this area which could start at short notice.

- Main signs will be located at intersects where there maybe confusion over the route to follow but way markers will be distributed along the route. At the boundaries of the zones larger pieces of participatory art will be on visible.

- The initial concept for the first section includes the use of recycled bikes or the imagery of recycling. Through contacts with Emma Fielding at the Canal & Rivers Trust I may have access to old bike frames that have been pulled out of the canal. These could be utilised a number of different ways to make way markers that would be attached to walls or concreted into position to hold signage or as discrete community sculpture.

Please see some of my initial ideas below

Potential Ideas

Prayer wheels Ceramics Patterns
Spinning wheels
Zoetrope
spinning distafffs
Ideas for nature
bees
dogs
rabbits
deer in the patterns flame cut into the wheels

This is the working surface   This is the working surface

Using the wheels as areas for poetry or famous cycling quotes jokes ect Does not have to be only in
English

- These frames could be acid etched cut or added to through welding and construction By using digital art and traditional art sessions participation and ownership could be encouraged among the local communities

- Other recycled pieces include this piece of old signage in Witton Park. I have already asked whether we can use it and there doesn't seem to be any objection from the park authorities.

- A potential site maybe where it is or up in the wooded section towards the Cherry Tree entrance.

- At points where other paths join the route signage will be needed to show the way but also to add interest. My objective is to produce signage that looks attractive and in keeping with where it's placed but also that the community feel ownership of through participation in its design or construction.

- Bridge 96 is a modern concrete bridge with unused alcoves that could be a natural boundary between the recycle section and the Soundscapes section. The alcoves which are covered in graffiti and seem a natural site for some artwork.

- For the Soundscape area I have identified several points that could be developed. Soundscapes would consist of points on the route where the traveller would be given something to listen to either a link through a QR code or a sign indicating something interesting to listen to that could enhance someone's experience of the route. The QR codes would link to a sound file that they can listen to through their smart phone.

- I have already contacted a group of young people from the youth service who are interested in music and they are keen to help. These files may not be just music they maybe stories poetry reminiscences or sound effects. This group was responsible for the recent Song Mine concept at Cherry Tree.

- I have already identified two potential points for soundscapes. One is under Bridge 92 on the canal and is home to a number of pigeons who make a wonderful and unexpectedly peaceful sound calling to each other between the steel under structure.

- Another point of interest is an old mill site towards lower Darwen on the Darwen Valley Parkway. This could be utilised as a soundscape in a different way. At present it is a peaceful countryside valley but at one time it could have been bustling with workers and machinery, we could recreate these sounds and have them as QR codes in the area bringing to life a ghost of its history this could be a primary school year 5 or 6 project possibly.

- There are many schools along the route that I am sure would help. Already I have commitments for help from St Frances Primary School Cherry tree and a commitment to help from Amanda Healy who runs a pottery group in the park for people who have learning disabilities as well as from the Young Weavers Cycling Group who organise many rides and events from the Witton cycle hub.

- I already have good contacts with St Frances Scouts and other craft groups at Green lane Community Centre, Bank Top Neighbourhood Centre and at Mill Hill Community Centre from recent projects and I am sure that they would again support this project.

- I have no doubt that the number of groups helping will grow. To illustrate this I have meetings in my diary for potential supporters such as the Scouts, Blackburn College and other Craft groups from Green Lane.

- I am also meeting with a group of support workers for people with mental health difficulties to see how we can integrate their service users into any sessions within the community.

- Other potential groups that the route runs close to are the Travelling community at Ewood. We could make contact with them through the Travellers education unit. There is the community centre at Ivy Street that I am sure would have groups that would help, and I hope to encourage sculpture students from Blackburn College to help.

- It makes sense to me to research the areas as we move round the route to find community supporters such as schools, community centres, mosques, churches etc. so in effect researching and contacting groups in the next area as we working with groups in the previous area .

ALASTAIR NICHOLSON

EARTHWORKS

CERAMICS, ART & DESIGN

28 Granville Road BLACKBURN

Lancs BB2 6HD

Tel : 01254 581805

Appendix I – Stakeholder and Partner letters of support

26th February 2015

Dear Mr Lund

East Lancashire Cycleways

The Chamber of Commerce is enthusiastic in its support for the creation of a network of Greenways throughout East Lancashire.

We have long-extolled the setting of our industrial towns within beautiful countryside as having latent potential to be a great place for both residents and visitors to be able to live, work, and enjoy their leisure and recreation. This initiative, using the natural asset of our countryside and turning our heritage of disused railway lines into a 'positive', would be a huge step in helping realise that potential.

We see the network as bringing considerable *social* benefits. Some parts of the area have poor health indicators, so there will be a health premium as more people are encouraged to take up cycling and walking, with corresponding improvements in community well-being. By using older by-ways and paths it will help re-connect communities that have been separated by modern highways and changed modes of transport. Any mitigation of traffic volumes will bring an improvement in air quality to our crowded valleys. Safer access to cycling will provide young people with more mobility in an area that has otherwise dispersed communities and limited public transport.

It will provide equally positive *economic* benefits. More people will be able to commute by bike – and the proposed routes do in many instances link housing areas with industry; many of these commuting routes are in congested valleys, so separating cyclists from vehicular traffic is hugely desirable. (It is worth noting that traffic volumes in East Lancashire have generally been rising as educational standards have been improving). There is an unarguable case to be made for Rossendale in particular (with its easy access for 7m people) to significantly increase its visitor economy. The sport-tourism offer, including the Mountain Biking facility at Lee Quarry, the Rawtenstall Ski Slope, Horse-riding (including the unique 'Mary Towneley Loop), and the Rossendale Way would be compounded by the Greenways.

In summary, the **East Lancashire Cycleways** initiative has the potential to improve health, support local business, add to the tourism/ visitor economy, benefit young people and improve the external image, self-perception and well-being of the area. Subsequent connection to national cycleways would help reduce the sometime parochial character (because of historic industrial employment patterns) of the population and help raise horizons and aspirations.

We hope that the application can find favour with planning and would be pleased to provide further information if required.

Yours truly

M. Damms CEO East Lancashire Chamber of Commerce

At the heart of Pennine Lancashire

From: Oakes, Jackie (Cllr)

Sent: 22 February 2015 19:42

To: Lund, Tony

Subject: East Lancs Strategic Cycleway

I understand that you are currently working with other East Lancashire District Authorities to secure funding for this project, and I am contacting you to offer my support for your efforts.

I am particularly interested in the route from Rawtenstall, through Bacup to Rochdale. I represent the Bacup section of this route, and I believe it will be of great help to residents in this area for both leisure activities and commuting to work. A third of residents in this area do not own a car - bus services are expensive and reducing all the time due to the cuts we are all experiencing - and cycling or walking are inexpensive alternatives. However, until these routes are completed there is no clearly defined, easy to use route.

There are obviously other benefits - tourism, health, reduction in pollution - and I do hope you are successful in your efforts, which will be appreciated over a wide area of Lancashire.

I look forward to hearing the outcome, and if I can help further please do not hesitate to contact me.

Regards

Jackie Oakes

Lancashire County Councillor

Rossendale East

Cllr Andrew MacNae
Greensclough Ward

Address: 225 Burnley Road, Bacup, OL13 8RB

Telephone: 07971190827
Email: andrewmacnae@rossendalebc.gov.uk

Date: 26 February 2015

To whom it may concern

Valley of Stone Greenway

Sirs,

I am writing in support of the Valley of Stone Greenway project to highlight its importance to the Rossendale economy and our long-term regeneration and economic development plans.

Amongst the biggest constraints to the Rossendale economy, and of course the Lancashire economy as a whole, are connectivity and skills. At the heart of our approach to economic development are a range of initiatives to address this by both physically improving routes to work and more subtly by seeking to raise perceptions of the area regarding quality of life. The Greenway has a key role to play within this strategy and is a rare project in that it achieves both of our objectives. In doing so it compliments our significant investment in Rawtenstall and Bacup town centres by linking the towns and giving prospective residents and businesses one more good reason to come to Rossendale.

The project also delivers further added value as a visitor attractor, which compliments the rest of our cycling offer and brings direct spend into the area, and as an importnat element of our healthy lifestyle portfolio. In addition I would also highlight the very significant road safety benefits that the Greenway will bring, in particular with regard to young people getting to and from school. Overall I believe the project represents tremendous value and will be a significant addition to Lancashire's offer.

Many thanks

Andy MacNae
Cabinet Member for Regeneration, Leisure and Tourism
Chair Rossendale Cycle Forum
Chair Pennine Mountain Bike Association
Vice Chair Lancashire Visitor Economy Forum

Martin Kay
Chief Executive
Rossendale Leisure Trust Ltd
Room 113, The Business Centre
Futures Park
Bacup
Rossendale
Lancashire
OL13 0BB

Tel: 01706 252491

Mr Tony Lund
Senior Environmental Project Officer
Lancashire County Council
Cuerden Depot, Cuerden Way
Bamber Bridge
PR5 6BS

27 February 2014

Dear Mr Lund,
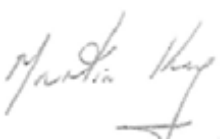
I am writing in support of the project to create Greenways in East Lancashire and in particular the Valley of Stone route, starting at Rawtenstall railway station and heading East to Bacup and continuing down into Rochdale.

As Chief Executive of Rosendale Leisure Trust, a company with the embedded ethos of creating sustainable physical activity programmes for the community of Rossendale I view this project as invaluable.

A safe, flat cycleway gives options for the younger community by way of children's cycling but also give many options for people taking part in the schemes such as GP referral, cardiac rehabilitation and weight management. In Rossendale we have a clear evidenced need of flat trails where people recovering from illness or injury can walk or take a leisurely cycle in their bid to regain health and fitness.

Rossendale Leisure Trust supports East Lancashire and Rossendale in particular in its quest to become a tourist destination in its own right and with attractions such as the East Lancashire Railway, Helmshore Museum, the Adrenaline Gateway, the Ski Slope and the new Vertical Playground project we strongly believe that a safe cycling route around the Rossendale Valley would greatly enhance the Valley's appeal to tourists looking for leisure pursuits.

On behalf of myself, fellow directors and the community we serve we wish you well in delivering this exciting project

Martin Kay

Chief Executive
Rossendale Leisure Trust Ltd

19th February 2015

Dear Tony,

East Lancashire Strategic Cycle Network; the Rawtenstall, Whitworth and Rochdale Valley of Stone Trail and the strategic rotes to Accrington and Great Howden

I am really pleased to hear that you are bringing this whole project forward. I have always considered that in this very difficult terrain, with its congested and heavily trafficked roads, that the only practical way of moving towards an active and sustainable travel culture is to create these really high quality linked up and connected spine routes.

Having worked on the detail of the Valley of Stone route it is rewarding to see the start of this last push to complete the Rawtenstall and Rochdale Railway Path route. I consider that this is a particularly useful and worthwhile greenway project, and one which is significant in a national context. It has a number of valuable characteristics including:

- It runs railhead to railhead over 22kms and has the potential to introduce a large number of people to spectacular and interesting countryside.

- At the same time it runs through a narrow valley crowded with settlements and old industry, rather like the Welsh mining valleys, and so gives local access and recreation to all the communities along the way. At the same time it offers the only practical way of promoting everyday active and sustainable travel in the area.

- It is historically of great interest in that over a dozen separate tramways came down from the hills delivering their stone to the railway for onward conveyancing.

- Significant sections have already been built and are popular with the public and the Councils are now committed to completing the whole project as a single continuous and joined up route suitable for all users.

- The route will serve as a link to the nationally renowned mountain bike routes in Lee Quarry and elsewhere. It will complement that activity by providing an easier cycling experience suitable for all the remaining members of the family.

- The Stone Valley route connects with the Healey Dell section already open which includes one of the most memorable miles of railway path anyway in the UK – the sections leading up to and across the Healey Dell Viaduct.

In short this railway path project is exceptionally worthwhile both in itself and as a catalyst for sustainable transport prospects in this area. I hope that you are able to bring the project to an early completion and to exemplary standards of continuity, quality and interest.

Although I don't know the details of the Accrington and Great Howden routes in the same level of detail, their completion, and eventual linking together connecting to town centres and railway stations, will create an ever more useful local resource catering for more and more local journeys and increasingly popular as a leisure and tourist destination for all the family.

Please let me know what more I can do.

John Grimshaw CBE

Founder of Sustrans and the National Cycle Network

From:	Martin Lewis [MartinL@betagroupltd.com]
Sent:	25 February 2015 17:55
To:	Lund, Tony
Cc:	Stuart Sugarman (stuartsugarman@rossendalebc.gov.uk)
Subject:	RE: East Lancashire Cycleway Letters of support.

I am happy to give my full support for this opportunity. We have several members of staff who travel to work by bicycle as well as many more who use their bikes for vocational reasons. I myself would even bike to work if there was a safer and easier track or route to do so.

Well done and good luck. Anything we can do to reduce the congestion on Rossendale's roads is a good idea.

Kindest Regards
Martin Lewis
Managing Director

Tel : 01706 878330
Fax: 01706 879200
Web: www.betagroupltd.com

Peers Clough Farm
Peers Clough Road,
Rossendale,
Lancs

BB4 9NG

26. 02. 2015

I am writing in support of the proposed **East Lancashire Strategic cycling project.**

Peers Clough Farm is a farm B&B and trekking centre on the nearby Mary Towneley Loop of the Pennine bridleway, catering for walkers, riders and cyclists.

We know and understand the value of such routes in bringing visitors to the area to enjoy our wonderful countryside, and in providing an amenity beneficial to local residents as well.

We have welcomed visiting riders with their own horses from across the country and are constantly on the lookout for new trekking routes for our own locally bred Fell ponies. Again we attract riders from far afield to sample our historic trails, who are greatly impressed by our access to the MTL and Dunnockshaw Community Woodland.

Rossendale has the potential to be a very popular destination for those who love the outdoors. Offering access to safe, off-road riding, cycling and walking with good signage and supporting facilities is a powerful incentive to visitors and enhances the area for all.

We also promote the health and wellbeing generated from exercise in the outdoors and the opportunity for safe routes for cycling commuters can bring nothing but benefit.

Opportunities like this should not be missed, and we fervently hope that these proposed routes will go ahead.

Yours sincerely, Chris Thomas

Proprietor Peers Clough Farm

www.peerscloughfarm.co.uk
www.peerscloughpackhorses.co.uk   **www.towneleytrailriding.co.uk**

2 Baxenden House
Baxenden Fold
Accrington
BB5 2RU
Tel 01254 386459
Fax 01254 382126
Email: mail@chrispeat.co.uk

Affiliated to the British Horse Society

FOREST OF ROSSENDALE BRIDLEWAYS ASSOCIATION

Tony Lund   20 February 2015
Senior Environment Project Officer
Lancashire County Council
Cuerden Depot
Cuerden Way
Bamber Bridge
PR5 6BS

Dear Tony

Further to our email correspondence I am pleased to confirm that the British Horse Society and the Forest of Rossendale Bridleways Association support the work proposed whereby several multi user greenways will be created in East Lancashire.

I believe this will have many benefits locally such as:

- Easier and more varied commuting to work/school options which in turn means people exercising more, creating better health and well-being and a reduction in car journeys.
- Better links to MTL and Lee Quarry for cyclists and horse riders
- Promotion of linked multi user routes across the moors will encourage more visitors into Rossendale and have a positive effect on local shops and businesses
- More tourism opportunities in the valley. The promotion of long distance routes and trails into Rossendale to a wider audience, will positively impact on local visitor numbers and therefore on B&B's, pubs and hotels
- More places to ride will encourage more horse owners to hack out. The BHS study of the Health Benefits of Riding prove conclusively that horse owning and riding is beneficial, particularly for women who might otherwise not take exercise at all in later life as they feel uneasy venturing out alone - being on a horse they feel much less vulnerable
- Health benefits for school pupils through creating alternative off road access to work/school
- Upgrading routes to bridleways will help the burgeoning horse riding population of Rossendale (and further afield) and have a positive effect on local stables, farriers, vets and equestrian supply shops
- The strategy fits into and promotes local and regional strategies such as 'Cycling in Lancashire – Joint Action Plan 2012 – 2015', 'Lancashire Rights of Way Improvement Plan', the 'Lancashire Transport Plan 2011-2021', the 'Rossendale Tourism Strategy' and 'Rossendale Sustainable Communities Strategy'
- The promotion of local businesses via leaflets and project advertising, will also lead to increased visitor numbers and revenue
- There is the potential to create additional local jobs through increased visitor numbers

I hope this information is useful in support of your application and with the project.

Yours sincerely

Chris Peat
Secretary

21st Rossendale (St Mary's) Scout Group

Mr Tony Lund

Senior Environment Project Officer

Lancashire County Council

Cuerden Depot, Cuerden Way

Bamber Bridge

PR5 6BS

3rd March 2015

Dear Mr Lund

East Lancashire Cycleway

I am writing in support of the project to create Greenways in East Lancashire and in particular the Valley of Stone route, starting at Rawtenstall railway station and heading east to Bacup and then down to Rochdale.

As the Group Scout Leader of a group based in Rawtenstall, and a cyclist who often uses the excellent cycle trails on old railway lines in Derbyshire, I have long held the view that there is a very real need to create a safe cycling route for young people in the Rossendale Valley. Over the years we have taken Beavers, Cubs and Scouts cycling in Rossendale and whilst for older scouts there are the excellent moorland trails connected to Lee Quarries, there is very little in the way of safe cycling for our younger members, the safest being the old railway line from Ramsbottom to Irwell Vale.

A route from Rawtenstall to Rochdale, using the old railway lines where possible, would be an excellent facility not just for the recreation of young people but also a safe alternative to encourage young people to cycle to schools or places of work along the route.

Clearly the proposed Greenway would improve also the walking opportunities around the Valley as well, both as a route in itself but also as a means of accessing the walking routes on Rooley Moor and other surrounding hills.

Whilst I see the benefits for young people, those same benefits will be available to all age groups and will create the opportunity for people to become more active, with the related improvements in health. For an experienced cyclist there are good road and off road cycling opportunities in and

Based at The Scout Headquarters, Cherry Crescent, Rawtenstall.
Correspondence to the Group Scout Leader:
Peter Terry
The Croft, Cowpe Road, Waterfoot, Rossendale, Lancs, BB4 7DQ
Tel: 01706 214106
Email: peter@cowpecroft.co.uk
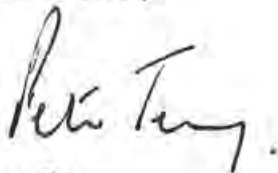
21st Rossendale (St Mary's) Scout Group

around Rossendale but you have to be quite fit to climb the hills leading out of the valley. A route with a minimal and steady gradient would make cycling accessible to many more people.

East Lancashire, and Rossendale in particular, has great potential as a tourist destination bringing with it much needed economic benefit. There are some excellent attractions in the area, the East Lancs railway, Helmshore Museum, the adrenalin gateway, the ski slope, the Whittaker museum and the new Vertical Playground. A safe cycling route around the valley would enhance greatly the Valley's attractiveness as a go to destination for a day out.

On behalf of myself, fellow scouters around the Valley and the many young people in our charge I really hope you are successful in delivering this very welcome project.

Yours sincerely

Peter Terry

Group Scout Leader

Based at The Scout Headquarters, Cherry Crescent, Rawtenstall.
Correspondence to the Group Scout Leader:
Peter Terry
The Croft, Cowpe Road, Waterfoot, Rossendale, Lancs, BB4 7DQ
Tel: 01706 214106
Email: peter@cowpecroft.co.uk

From:	Ian Eastwood [ian.eastwood@hydanis.com]
Sent:	20 February 2015 11:24
To:	Lund, Tony
Cc:	Stuart Sugarman (stuartsugarman@rossendalebc.gov.uk)
Subject:	Re: East Lancashire Cycleway Letters of support.

Dear Tony,

I am what I would call a fair weather pleasure cyclist. I like to ride on the hills with my mountain bike - in all weathers but when it comes to cycling to work - I choose dry days and longer days because I know that it is so difficult for vehicles to see me when it is dark and wet even when I have lights.
At weekends, when she isn't working, I meet up with my daughter and we cycle on the hills and my wife particularly likes the easy routes - such as the one to Rochdale - this is superb to encourage entry level cyclists in areas that are traffic free. However, we tend to travel by car somewhere before we can cycle and this defeats the object as well as makes it harder for me to encourage her to ride. As far as I am concerned, anything that can increase the number of variety of cycleways in and around Rossendale would be welcome. Please let me know it there is anything more that I can do to support, meanwhile. I wish you every success with your endeavours.

Regards,
Ian

KILLELEA
STRUCTURAL STEELWORK

our reference	RK/FSG
your reference	
date	24th February 2015

Mr Tony Lund
Senior Environment Project Officer
Lancashire County Council
Cuerden Depot
Cuerden Way
Bamber Bridge
PR5 6BS

By email and by post

Dear Mr Lund

I am writing in support of plans to create a network of Greenways throughout East Lancashire.

In this area we are blessed with beautiful countryside that lends itself perfectly to this project.

As a local employer, I believe that these networks will not only encourage tourism to our area, but will also provide a boost to local residents.

By improving our cycling and walking networks it will promote cycling as a realistic mode of transport for people which will have a hugely positive effect on the health and well-being of the local community.

If people are able to make positive improvements to their health it will have a fantastic knock-on effect to the happiness and productivity of people living and working in East Lancashire.

More people will be encouraged to commute to work by bike, therefore reducing car journeys, easing congestion and improving our local air quality.

A network of Greenways would also provide an added incentive to people considering coming to live and work at East Lancashire

The benefits are numerous – younger people would have safe and attractive areas to learn valuable skills such as cycling and horse riding, and the Greenways would also provide another link to existing routes such as the Mary Towneley Loop and the fantastic mountain biking facilities at Lee Quarry.

I trust you will take into account the points I have raised when considering the grant application by Lancashire County Council.

Yours sincerely
James Killelea & Co Ltd

Robert Killelea
Managing Director

constructionline
U.K REGISTER OF QUALIFIED CONSTRUCTION SERVICES

REGISTERED STEELWORK CONTRACTOR
BCSA

ALDER GRANGE
COMMUNITY & TECHNOLOGY SCHOOL

Headteacher: Mr D Hampson M.Sc, B.Sc, SLE, NPQH

Calder Road, Rawtenstall, Rossendale, Lancashire BB4 8HW

Telephone: 01706 223171   Facsimile: 01706 210448
e-mail: reception@aldergrange.lancs.sch.uk   Website: www.aldergrange.com

3rd March 2015

To whom it may concern,

Letter of Support for East Lancashire Cycleway

On behalf of the Governors, pupils and staff of Alder Grange Community & Technology School, Rawtenstall, I would like to express our support for the proposed development of the East Lancashire Cycleway.

As a school, we have been promoting cycling as an excellent way for pupils to get to school, and for staff to get to work. The associated benefits in terms of Health and wellbeing, reduction in car journeys and reduced congestion outside school are all important to our community.

This promotion has included upgrading cycle shelter provision and creating a cycle path on the school grounds. The impact of this has been a marked impact in the number of pupils and staff cycling to school, with resulting environmental and health benefits.

To encourage more pupils and staff to use cycles, either for work or for leisure, there needs to be a network of safe, well-maintained cycle routes in the area. We believe that this initiative contributes enormously to this aim. The East Lancashire Cycleway will also provide an excellent resource for young people to learn how to cycle in a safe, yet real environment helping the long-term sustainability of the initiative.

We hope this initiative is successful in securing funding, and look forward to being able to use this fantastic facility in the future.

Yours Sincerely,

David Hampson
Headteacher

The Young Weavers

Monday 2nd March 2015
Mr E. Booth
Lancashire Enterprise Partnership
Dear Mr Booth:

I'm writing to you today as Club Secretary of The Young Weavers family club in Blackburn in support of the proposed Weavers Wheel scheme encircling our town.

My wife and I along with our young Daughter cycled the Preston Guild Wheel shortly after it was opened. We have been back several times since and have seen a steady increase in the number of users on each visit.

After riding this family friendly route we decided to map out a wheel in an attempt to highlight, improve and promote Blackburn's cycling infrastructure, which in turn would help us to continue our work in encouraging families and individuals to become more active and either cycle or walk around what hopefully will be a superbly well signed route around Blackburn. This Wheel would cater for schools, business premises and leisure activities which we hope would help people reduce their reliance on car journeys, giving huge environmental benefits, and also strengthen the links to other East Lancashire cycle routes.

I approached BwD council in mid-2013 to ask if they could help in making this route a reality, and have since become involved in several of the planning stages. If this wheel was to become a reality, this coupled with our work in trying to get people within the community to become more active would have an extremely positive impact on family cycling around our borough. Over the last 3 years in our community work, we have regularly cycled with families and found the same statement from many new or inexperienced riders and that is the lack of good quality, clearly signed cycle routes. The Weavers Wheel would go so far in addressing these feelings and at the same time encourage a community pride in some of our most outstanding areas.

Yours sincerely,
Kevin Riddehough
Club Secretary
The Young Weavers

Whitworth Town Council

Council Offices, Civic Hall, Market Street, Whitworth, Lancs. OL12 8DP

Mr Tony Lund, Senior Environment Project Officer
Lancashire County Council
Cuerden Depot
Cuerden Way
Bamber Bridge
PR5 6BS

Karen Douglas
Clerk of the Council

Monday 2 March 2015

Dear Tony,

RE: East Lancashire Strategic Cycleway Network

I write on behalf of Whitworth Town Council to offer my Council's support in relation to the proposed East Lancashire Cycleway.

As you know, the Whitworth Cycleway was implemented back in 2008 and runs the length of Whitworth, over 4 miles, effectively 'linking' Rochdale with Rossendale. The cycleway is well used not just by cyclists but by walkers and horse riders as well, and we regularly receive favourable comments about its installation.

An East Lancashire Cycleway can only benefit Whitworth and the wider geographical area. Currently the majority of those using the Whitworth Cycleway are doing so for pleasure; however the installation of an East Lancashire Cycleway, especially one that links in with Greater Manchester via Rochdale, will see cycling become a real commuter possibility. As Whitworth becomes ever fuller of cars it would reduce traffic on our roads, especially around rush hour and school times which, for a 'one road in, one road out' town, could make a significant difference to travel times and comfort.

The town has a tourism and leisure committee which works hard to promote tourism and visitors to Whitworth – the installation of this Cycleway will likely see additional visitors to the town, boosting the local economy, but hopefully without the extra car traffic.

The town's Sports Council will also be keen to see benefit from this initiative as more and more people get out and about, enjoying cycling, walking and horse riding and generally improving their fitness levels and enjoying the wonderful countryside and views that Whitworth has to offer.

My Council is keen to be kept informed of future developments in relation to this exciting initiative.

Yours sincerely,

Karen Douglas
Town Clerk, Whitworth Town Council

**QUALITY
TOWN
COUNCIL**

tel/fax: 01706 852018 • email: info@whitworth.gov.uk • www.whitworth.gov.uk

Thursday, 26 February 2015

Reference: Tony Lund, ELSCN

**LETTER OF SUPPORT –
Cycleways and Multi-User Greenways East
Lancashire**

As the founder member of the Rural Rossendale Group and organiser of the annual Foodie Walking Festival I am keen to support projects which build on the existing off-road networks that have been established in Rossendale's unique working landscape.

The loss of connecting railways in Rossendale has been to the detriment of the area and it would be great to see the disused railway lines put to good use.

Looking at Public Health England's 2014 Public health Profile for Rossendale the local health priorities: include improving mental health and wellbeing, premature mortality from the 'big killers' such as cardiovascular disease and encouraging healthier lifestyles especially reducing smoking, unsafe drinking and obesity. I believe the proposed cycleways would go some way towards helping tackle these local health issues.

The roads are becoming increasingly congested and unsafe for cyclists and there is a pressing need to create safe environments for all off road users: cyclists, walkers and horse-riders; with the added benefit of reducing the volume of traffic on the roads if they are used as an option for commuting to work.

Many of the local footpaths in the area are poorly way-marked and poorly maintained. As a result the footpaths of Rossendale are currently under-utilised and local residents and visitors to the area are deterred from enjoying the countryside in the Rossendale Valley. In areas such as the Lake District, where footpaths are well way-marked and maintained, the regions benefit greatly from increased visitor numbers.

We need to make the footpaths and bridleways in the area available to a wider audience. The success of the Mary Towneley Loop, Lee Quarry and Crag Quarry has demonstrated the value of investing in the local environment and we need to build on this. The proposals to further extend these routes can only be a good thing for the area.

The Rural Rossendale Group whole-heartedly supports this application and we look forward to seeing the proposals being implemented and the area flourishing as a result.

Wendy Davison
Founder Member of the Rural Rossendale Trust

26/02/15
Reference: Tony Lund, ELSCN

LETTER OF SUPPORT –
Cycleways and Multi-User Greenways East Lancashire

I have lived in Rossendale all my life and am a partner in a local self-catering farmhouse providing accommodation for visitors to the area. Guests always comment on what a hidden gem Rossendale is. The introduction of cycleways on the disused railway lines can only add to the tourism offer of the area as well as benefiting the local residents.

Our farmhouse is located right on the Mary Towneley Loop bridleway and we have experienced first-hand the success of the Mary Towneley Loop, Lee Quarry and Crag Quarry which is used frequently by walkers, horse-riders and mountain-bikers. We need to build on this and the proposals to further extend these routes can only be a good thing for the area.

Rossendale is accessible to major conurbations in the area because of its excellent motorway links and is less than one hours drive-time from major cities such as Manchester, Leeds and Preston. We want more people to visit Rossedale not just drive past it on their way to the Lake District and the more things we can do to strengthen our tourism offer to increase visitor numbers the better.

I very much supports this application and look forward to telling our guests about the new developments and encouraging them to get out into the beautiful local countryside of Rossendale.

John Earnshaw
Partner Tippett Farm Self Catering

From:	Ronnie Barker [treasurer@pmba.org.uk]
Sent:	23 February 2015 17:22
To:	Lund, Tony
Subject:	RE: East Lancashire Strategic Cycleway Letter of support

Dear Tony

On behalf of Veterans In Communities please accept this email as our support for the plans detailed below.

Kind Regards
Ronnie

Ronnie Barker M.B.E.

Chair – Veterans In Communities

12 Bury Road

Haslingden

Rossendale

BB4 5PL

07967 644728

01706 833180

Charity No: 1151194

Company No: 8230197

'Ensuring that ex-service personnel and their families can return to, belong to and prosper in their local communities'

www.veteransincommunities.org

From:	Holcombe Brook [holcombebrook@weale-hitchen.co.uk]
Sent:	20 February 2015 14:11
To:	Lund, Tony
Cc:	KEITH CONLEY
Subject:	RE: East Lancashire Cycleway Letters of support.

Hi Tony

I read with interest your recent email concerning East Lancashire Cycleways and have no hesitation in supporting the project. As a keen walker and occasional cyclist I am all for the local communities getting out into their adjacent countryside and hopefully this will be of great encouragement.

As a member of the local Ramsbottom Rotary Club no doubt you will contact the President, Keith Conley who will be pleased to add his support.

Kind regards
Nick

2 Holcombe Mews
Holcombe Brook
Bury
BL0 9RN

Tel – 01204 88 6216
Fax – 01204 88 8911
Email – holcombebrook@weale-hitchen.co.uk

Lancashire
County
Council

Tony Lund

Senior Environmental Project Officer

Lancashire County Council

Cuerden Depot

Cuerden Way

Bamber Bridge

PR5 6BS

Phone:	01772 536287
Fax:	
Email:	sakthi.karunanithi@lancashire.gov.uk

Your ref:	
Our ref:	SK/KH
Date:	12th March 2015

Dear Tony,

Public Health Support for the East Lancashire Strategic Cycleway

Public Health are very supportive of this initiative, as you know. It links directly with our aims to improve the Health and Wellbeing and reduce the inequalities in health of the population of East Lancashire. By opening up existing greenways for local communities to actively travel for leisure and work this initiative will be a key plank in supporting us to achieve these aims.

The most recent District Health Profiles show us that the populations of both Rossendale and Hyndburn have significantly higher levels of excess weight in adults than both the England and North West average. Likewise, these populations both have cardiovascular mortality rates in the under 75s that are significantly higher than the national average and in the last Active People Survey, more than 50% of the adult population of these two districts were inactive, again this is significantly worse than the England average. There is clearly a good business case for improving access to greenways through active travel opportunities for both leisure and work for the population in these districts.

The planned infrastructure routes would enhance the opportunities to improve health and wellbeing by opening up greenways for active travel. These will enable people to live longer healthier lives by supporting the reduction of the burden of disease and disability which in turn improves the health of the local workforce. In addition to an increased fitness for the population from such opportunities, there is a knock on effect with reduced sickness days from employment for cyclists, reduced congestion, and more positive mental wellbeing. It can also play a part in reducing climate change. Increasing opportunities for active travel provides measurable benefits to the individual, their family, their employer, the environment and the economy as a whole.

The proposed new routes will provide safer local facilities encouraging residents of all ages and abilities to cycle, walk and horse ride, and can even be used for other novel forms of transport popular with young people such as inline skating. There will be an added benefit of linking communities, enabling residents of all ages to connect with each other, travel to new destinations for leisure and work and bring in tourism all of which will have a positive effect on both physical and mental wellbeing.
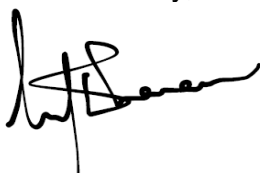
We are fully aware that building infrastructure alone will not be enough to encourage communities in significant numbers to embrace these new facilities. **In anticipation of these cyling infrastucture opportunities, we have been working to develop a 3 year partnership across Pennine Lancashire that will deliver a recreational cycling programme** in partnership with British Cycling, Blackburn with Darwen Borough Council, Lancashire Sport and Public Health England. The initiative is also supported by all 5 East Lancashire Districts. We intend the programme will increase participation and promote safe cycling routes. This will involve training local people/partners to become cycle leaders to deliver the Sky Ride programmes across the area, backed up by a local marketing plan and delivered in collaboration with the local population. We intend the programme to be supported by a Lancashire Strategic Leadership group, and a local operational and delivery group with involvement from the local community.

Both the infrastructure and cycling promotion initiatives will link to the existing East Lancashire wide, 'Up and Active' programme that encourages participation and increase of physical activity; aimed at primarily to those who are classed as inactive as well as encouraging those who are already active to continue to utilise local facilities and resources. See: www.upandactive.co.uk for further information.

Finally, as you will know, cycling makes a positive contribution to the national economy and it is a cost-effective investment. In addition to improving public health and saving the NHS money, it can help: reduce congestion; create jobs; save employers money and improve productivity; (regular cycling commuters use less sick days - a saving of 83m to the UK economy (LSE 2013)) inject money directly into the economy via the cycle trade; and lift house prices. All of these benefits will have an indirect positive impact on the health and wellbeing of the local population.

We are keen to see this infrastructure plan come to fruition. I hope that the bid is successful and look forward to closer working with your team to ensure maximum use is made of these cycleways once complete.

Yours sincerely,

Dr Sakthi Karunanithi
Adult Services, Health and Wellbeing Directorate

12 March 2015

Mr James Syson
Blackburn Town Hall
Blackburn BB1 7DY

Dear James

Letter in support of the East Lancashire Strategic Cycleway Network

This letter is to express our support of the proposed developments to the East Lancashire Strategic Cycleway Network.

The scheme is a much needed enhancement to East Lancashire's cycling infrastructure for residents and for visitors. Supported by British Cycling's led ride programme and national marketing campaign in partnership with BskyB, along with local partners, the scheme will encourage and enable people living and/or working in and around East Lancashire to travel for day-to-day journeys by cycle; and encourage and enable recreational visits to, from and around East Lancashire by cycle.

British Cycling has been formally working in partnership in Blackburn with Darwen Council since 2011 to take a strategic approach to increasing recreational cycling participation in Blackburn with Darwen. Through working closely together we have ensured a solid foundation and a joined up approach to cycling promotion.

Building on the past four years of work with Blackburn with Darwen Council and other local authorities in Lancashire, partners in Lancashire have committed to investing in a Lancashire-wide recreational cycling partnership with British Cycling between 2015 and 2018. The partnership will see Public Health investment and sustainable transport investment, joining up to deliver a comprehensive, county wide cycling programme targeting both residents and visitors. The programme will raise the profile of new cycling infrastructure and British Cycling is strongly committed to working with partners to support the proposed key infrastructure developments in East Lancashire.

We want to encourage a further million people to cycle regularly by 2017, and to inspire a million women to get cycling by 2020. We are keen to express our support for projects that help contribute to these aims and as such, I can confirm, on behalf of British Cycling, our support to you in your application to the Lancashire Enterprise Partnership.
Yours sincerely,

Caroline Gilbert
Recreation Manager (North West)
British Cycling

	Date:	6 March 2015
MR EDWIN BOOTH	My Ref:	DH/DEM
CHAIR OF LEP	Please ask for:	DOMINIC HARRISON
	Direct Dial:	01254 588920
	Email:	dominic.harrison@blackburn.gov.uk

Dear Sir/Madam

WEAVERS WHEEL

I very much welcome and support this bid to create The Weavers Wheel strategic cycle network for Blackburn with Darwen and East Lancashire.

With our local health inequalities and strong history of investment in physical activity for all to drive culture change and economic opportunity, such a boost to active travel and recreation will address many key local public health priorities.

I believe this proposal has a real opportunity to create measurable and life enhancing change for our local residents. The level of cycling in the Borough is a particular challenge (see attached Appendix – BwD Report on Walking and Cycling) - and this initiative is exactly what is required to make a difference.

Yours sincerely

Dominic Harrison
Director of Public Health

Dominic Harrison – Director of Public Health
Blackburn with Darwen Borough Council
Duke Street
BLACKBURN   BB2 1DH

![Canal & River Trust logo]

11 March 2015

James Syson
Transport Strategy
Blackburn Council
Town Hall

Dear James

WEAVERS WHEEL

Canal & River Trust is the waterway charity holding 2,000 miles of inland waterways in trust for public benefit, use and enjoyment. We protect our historic waterways and want to grow the number of people who use them, appreciate them and actively contribute to them.

We believe that Britain's waterway towpaths can and do play an important role as part of a national, regional and local walking and cycling network. Our waterway network includes towpaths which are generally flat and traffic free connecting homes to schools and places of work, towns and cities to each other, and people with the countryside and their cultural heritage. We want to make these paths safe, accessible and valued to all. By improving facilities for people to walk or cycle along the towpaths, and by facilitating highway links between these routes we can help to increase the numbers of people travelling sustainably with clear benefits to health, congestion and the environment.

The Weavers Wheel represents a fantastic opportunity to increase levels of cycling across Blackburn and we support the proposals to use part of the Leeds Liverpool Canal to carry this route.

I wish you well in your application to the Local Enterprise Partnership for funding to bring this scheme forward over the next 12 months. We look forward to working with Blackburn Council and other organisations across the borough to deliver this exciting scheme for the benefit of all our local communities.

Yours Sincerely

Nick Smith
Enterprise Manager

Der Bürgermeister

Herrn Stadtdirektor
Stuart Sugarman
Rossendale Borough Council
Chief Executive's Directorate
The Business Centre, Futures Park
Bacup; OL 13 OBB
Großbritannien

Bocholt, 10. März 2015

Growth Fund bid for East Lancashire Strategic Cycle Network

Dear Mr. Sugarman,
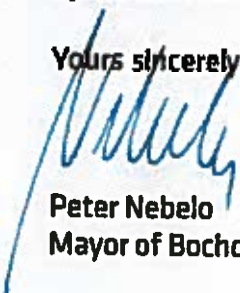
Bocholt, located in North West Germany, is twinned with Rossendale in North West England. We recently visited Rossendale and were very interested to hear about the proposals for the Valley of Stone Greenway and National Cycle Route 6. From our own experience we would strongly support the proposed investment in this by the Growth Fund as a valuable opportunity to invest in the area.

In 2015 Bocholt was voted the fourth time as the most "cycle friendly town in Germany", a title we are very proud of. Around 30% of people cycle to work in Bocholt. This is largely due to the network of high quality cycleways we have developed for varying types of users and different types of bicycles. We have, for example, developed a "cycle motorway" linking various settlements of which large parts are on a former railway line. Developing the cycle network has given us many benefits such as helping to reduce traffic and improve health. Importantly, it has been of significant economic benefit as a large number of cycle shops and facilities have opened to service the demand for bikes, clothing, etc and provides an important element of the authorities tourism offer.

We have offered our twinning partners the opportunity to visit Germany to learn from our own "good practice" which will hopefully provide practical examples of what could be delivered in Rossendale.

In conclusion we believe from our own experience that well-engineered and thought through cycle schemes deliver many benefits and give the proposal our full endorsement.

Yours sincerely

Peter Nebelo
Mayor of Bocholt

Units 1,2 and 3
Riverside Business Park
Holme Lane
Rawtenstall
Lancashire
BB4 6JB
20th February 2015

Dear Tony,

I wholeheartedly support plans for the proposed East Lancashire Cycleway. It is an exciting and forward thinking project, long overdue in the East Lancashire area. Projects such as this involve whole communities and the idea that health and wellbeing is being placed at the forefront shows that Lancashire County Council and East Lancashire District Authorities are thinking seriously about the health of the local population and what can actually be done to promote a sense of wellbeing, rather than merely discussing statistics and the issues related to sedentary lifestyles.

From a safety aspect, it is crucial that we look for ways in which to enable children and adults to walk, cycle and ride in safety for both commuting and for recreation purposes, reducing car journeys and providing realistic travel options in the local area. This can open up a whole new way of life for communities, particularly where roads are congested, difficult to navigate and where countryside is inaccessible to the public due to farming.

The proposal for a network of Greenways through East Lancashire, based around disused railway lines has the potential to enhance lives for present and future generations and I really hope the opportunity to make such a difference is strongly supported.

Yours sincerely

Tony Holt
Director

Tel: 01706 212030 | Fax: 01706 213737 | HD Signs: 01706 222122 | Email: sales@linemark.co.uk
www.linemark.co.uk   www.nvirol.co.uk   www.hdsigns.co.uk
VAT No: 652 6268 27   Company Reg No: 304 3172

Our ref ST/njt

26th February 2015

Tony Lund
Senior Environment Project Officer
Lancashire County Council
Cuerden Depot
Cuerden Way
Bamber Bridge
PR5 6BS

Dear Tony

Letter of Support – East Lancashire Greenways Network
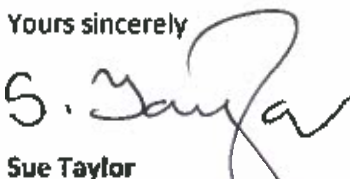
On behalf of Accrington and Rossendale College, I would like to offer my support for the East Lancashire Greenways Network programme. The proposal to convert 3 disused railway lines into safe and accessible cycling, walking and horse riding routes will bring many benefits to our local residents, including students of the college, as well as to local employees and visitors to the area. These will include:

- Cycling as a realistic and safe travel option in the area
- More people commuting to work by bike
- Health and wellbeing improvements as people get more exercise
- A healthier and so more productive workforce
- Unlocking tourism potential of the area
- Reduction in car journeys and traffic volumes
- Improved network for horse riders offering safe off road routes
- Great facility for younger horse and bike riders to learn on and gain confidence
- Link into other projects in the area such as the Mary Towneley Loop and the Lee Quarry mountain bike trails
- Excellent easy walking routes linking communities to local facilities
- Better image for the area

The proposed Greenway routes include Accrington to Ramsbottom (National Cycle Route 6), Rawtenstall to Rochdale (Valley of Stone route) and Huncoat Greenway. All three will provide safe and pleasant alternatives to using major roads across the area.

This development is long overdue in East Lancashire, and has my strongest support.

Yours sincerely

Sue Taylor
Principal

Rossendale Harriers Athletic Club
www.rossendaleharriers.co.uk

Dear Sir or Madam,

I am writing as Chairman of Rossendale Harriers and A.C. and on their behalf in support of the Lancashire County Council and the East Lancashire District Authorities plans to create a network of Greenways throughout East Lancashire.

With a membership of 400 plus, 50% of those being junior athletes the plans to create a network of safe and pleasant to use routes would be something our membership would make good use of and support as we strive to promote a fit and healthy lifestyle.

For our Juniors especially we are constantly looking for new and safe places for them to train, run and exercise and these plans fulfil those criteria.

Many of our members cycle to and from work on already busy roads and these proposed developments should enhance that experience and also encourage more of the population to leave the car at home and take up the safer and healthier of a cycle to work commute.

Rossendale Harriers and A.C. fully support the plans outlined to create the greenway network.

Yours Sincerely

Chairman, Rossendale Harriers and Athletic Club

The Sutton Group

of Companies

Registered office: Riverside, Newchurch Road, Bacup, Lancashire, OL13 0DT
t - +44 (0)1706 874961   f - +44 (0)1706 879268   e - info@thesuttongroup.co.uk

Mr Tony Lund
Senior Environment Project Officer
Lancashire County Council
Cuerdon Depot, Cuerden Way
Bamber Bridge
PR5 6BS

6 March 2015

Dear Mr Lund

East Lancashire Cycleway

I am writing in support of the project to create Greenways in East Lancashire and in particular the Valley of Stone route, starting at Rawtenstall railway station and heading east to Bacup and then down to Rochdale.

As one of the largest employers in the Rossendale Valley, ironically with our head office situated on the site of the old railway station in Bacup, there are numerous reasons for us to support this scheme:

1.   The transport links between Rawtenstall and Bacup are horrendous. Any iniative to remove traffic from this route would be beneficial. We already have several people who cycle to work and if a safer route could be provided for them this would obviously be beneficial. A safer route would also encourage more people to try cycling to work which would remove traffic from a congested route where at peak times what should be a fifteen minute journey between Rawtenstall and Bacup can easily take forty minutes.

2.   As a footwear company we have worked with various government departments on safety and fitness iniatives. This scheme falls into both these categories and therefore attracts our full support.

3.   Our company has a charitable trust attached to it and this trust makes donations to local causes. Two causes that we support and are relevant to this proposal are LANPAC (Lancashire Partnership Against Crime) and Military Mountain Bikers. LANPAC work with local communities to reduce crime and one of their biggest challenges is providing iniatives to
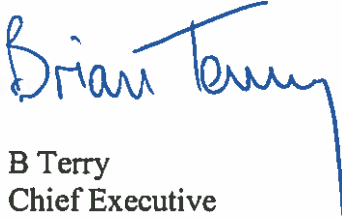
keep young people off the streets. This proposal is a perfect fit with LANPAC's aims. Military Mountain Bikers are based at Stubbylee Hall, Bacup and again this proposal is a perfect fit with their venture.

East Lancashire, and Rossendale in particular, has great potential as a tourist destination bringing with it much needed economic benefit. A safe cycling route around the valley would enhance greatly the Valley's attractiveness as a destination for a day out and fits perfectly with other schemes such as the regeneration of Rawtenstall and Bacup town centres.

On behalf of myself and the 150 employees on our Valley sites most of who live in Rossendale I hope you are successful in delivering this project.

Yours sincerely
The Sutton Group of Companies

B Terry
Chief Executive

Our ref: ELancs SCN
Your ref:

Tony Lund
Senior Environment Project Officer
Lancashire County Council
Cuerden Depot
Cuerden Way
Bamber Bridge
PR5 6BS

24 March 2015

Dear Tony

East Lancashire Strategic Cycle Network

Sustrans is delighted to learn that there is a possibility of funding being forthcoming to develop the East Lancashire Strategic Cycle Network.

Through the work we have done to explore the options and potentials of the routes involved we are convinced of the considerable value of the routes to the communities served and connected. We would wish to give our support to the business case and trust that funding will be confirmed for this most worthwhile group of projects.

Yours faithfully

Peter Green
Area Manager Greater Manchester

Tel 0161 923 6056
Mobile 07799 627842
Email peter.green@sustrans.org.uk

Appendix J – Draft Communications Strategy & Action Plan

Appendix J

East Lancashire Strategic Cycle Network – Communications Strategy & Action Plan*

* The Communications Strategy and Action Plan is a live document that will be regularly reviewed and amended as required at key project milestones.

Background

The adopted East Lancashire Highways and Transport Masterplan commits the county council to develop and implement a Strategic Cycle Network in East Lancashire. The masterplan identifies a number of potential links that could form part of this network, linking communities to employment and offering potential for tourism and recreation.

The Lancashire Strategic Economic Plan submitted to Government by the Lancashire Enterprise Partnership at the end of March 2014 included a bid for £2.6m in 2015/16 from the Local Growth Fund (LGF) towards delivery of the strategic cycle network. In July, the Government announced that it would commit to this amount in full, with the proviso that the Lancashire Enterprise Partnership and its partners (in this case the county council and Blackburn with Darwen Borough Council) commit a further £3.29m, making an investment of almost £5.9m in total.

In Lancashire, it is proposed to invest just over £5m in three routes: the 'Valley of Stone' in Rossendale, Accrington to Ramsbottom (National Cycle Network Route 6) and the Huncoat Greenway in Hyndburn. In tandem, Blackburn with Darwen Council will be investing £850,000in its Weaver's Wheel project.

Key messages and benefits

The development of the East Lancashire Cycle Network and its interaction with other forms of sustainable transport will contribute towards: economic growth; reduced congestion leading to reduced carbon emissions and improved air quality; improved health and other wider environmental and social benefits. The cycle network will be promoted as an alternative to the car for a range of journeys, reducing travel costs and also to encourage tourism and recreation, contributing to supporting healthier lifestyles.

The benefits of the scheme include:

- Improved quality & length of multi-user (pedestrians, horse riders & cyclists) network of routes in East Lancashire
- Greater access for residents and visitors to employment, education and training opportunities
- Healthier more sustainable local communities
- Reduction in car use and peak time congestion
- Contributing towards economic growth (including tourism & the visitor economy)
- Improved image of the area
- Improved quality of environment
- Reduction in cyclist & pedestrian accidents

Communications Strategy

This document outlines the proposed communications strategy to support the communication and engagement process required for the implementation of the East Lancashire Cycle Network over the next four years. The plan will broadly outline the stages of delivery, enabling key audiences to be engaged with in a timely and effective manner.

Activity will broadly focus on the following key areas:

Engaging with the media	Engaging with the public	Engaging with stakeholders
Strong relationships with the media are important for cascading information to the varied audiences affected by the scheme.	Effective engagement with communities. More localised engagement to take place with communities affected by the scheme.	Effective engagement with stakeholders will be key in ensuring there is continued support for the scheme.

Audiences

Local communities	Key influencers and stakeholders	Other key stakeholders
- Residents living adjacent to the routes - Residents within usable distance of the routes - Wider public - Community groups & centres (Stacksteads Community Group and so on) - Schools & places of education close to the routes - Businesses located close to the routes	- Lancashire Economic Partnership & Transport for Lancashire (Business Case approval) - County Councillors - Rossendale, Hyndburn & Blackburn with Darwen Councillors MPs, MEPs - Rossendale, Hyndburn & Blackburn Officers - Sustrans - User Groups – Rossendale & Hyndburn Cycling Forums, Pennine Mountain Bikers Association (PMBA) etc, Bridleways Groups - Highways Agency (will have a big influence on route choice through Haslingden) - All landowners potentially affected by the route - Public Health	- Rossendale & Hyndburn Chambers of Commerce - Statutory and non-statutory consultees - Institutional stakeholders, including local and national organisations with environmental and transport-related interests. - Natural England - Environment Agency - English Heritage - Department for Transport - East Lancashire Railway - Business interests in the local area - Sustainable Travel Team (Connecting East Lancashire)

		• Town/ Parish Councils (e.g. Whitworth town Council, Huncoat Forum • Other Cycling and Horse riding Groups – e.g. British Cycling, CTC etc.
Other key stakeholders as identified by project team though stakeholder mapping exercise.		

Communications Action Plan

Stage 1: Re-engaging with key audiences – January 2015 – June 2015

Activity	Lead	Deadline
Public/Community Engagement ▪ Draft copy for informing the public via newsletter/flyers/posters ▪ Design generic leaflet about the project ▪ Arrange/identify dates for any community events	Project Team/Comms Comms Project Team	
Media Relations ▪ Prepare media briefing – brief media face to face (if required) ▪ Project team to inform media team of any good/positive news stories/opportunities	Comms Comms/Project Team	
Stakeholder Relations ▪ Brief cabinet member ▪ Brief divisional members ▪ Draft and issue stakeholder update (create and update stakeholder database) ▪ Arrange and deliver Bitesize Briefing for members ▪ Put article on C-First	Project Team Project Team Project Team/Comms Project Team/Comms Comms	

Stage 2: Funding approved

Activity	Lead	Deadline
Public/Community Engagement		
▪ Inform key members of the community affected by the route that funding has been approved	Project Team	
Media Relations		
▪ Issue news release to confirm funding	Comms	
▪ Reactive media relations activity	Comms	
▪ Ongoing positive news stories from project team	Project Team/Comms	
Stakeholder Relations		
▪ Brief cabinet member	Project Team	
▪ Brief divisional members	Project Team	
▪ Draft and issue stakeholder update	Project Team	
▪ Update on C-First	Comms	

Stage 3: Delivery and Implementation of the Cycle Network

Activity	Lead	Deadline
Public/Community Engagement		
▪ Inform key members of the community affected by the route that funding has been approved	Project Team	
Media Relations		
▪ Issue news release to confirm funding	Comms	
▪ Reactive media relations activity	Comms	
▪ Ongoing positive news stories from project team	Project Team/Comms	
Stakeholder Relations		
▪ Brief cabinet member	Project Team	
▪ Brief divisional members	Project Team	
▪ Draft and issue stakeholder update	Project Team	

Appendix K – Economic Assessment Technical Report (Jacobs)

Lancashire County Council

East Lancashire Strategic Cycle Network

Technical Report: Economic Appraisal & Value for Money Assessment

April 2015

JACOBS

<table>
<tr><td>Document Control Sheet</td><td>BPP 04 F8
Version 15; March 2013</td></tr>
</table>

Project: East Lancashire Strategic Cycle Network
Client: Lancashire County Council   Project No: B2237505
Document title: Technical Report: Economic Appraisal & VfM Assessment
Ref. No: B2237505/656

	Originated by	Checked by	Reviewed by
ORIGINAL	NAME Daniel Smith	NAME Craig Higgins	NAME Leighton Cardwell
Approved by	NAME Leighton Cardwell	As Project Manager I confirm that the above document(s) have been subjected to Jacobs' Check and Review procedure and that I **approve them for issue**	INITIALS LC
DATE 30.01.2015	Document status: DRAFT For Review		

	Originated by	Checked by	Reviewed by
REVISION **FINAL**	NAME Daniel Smith	NAME Peter Hibbert	NAME Leighton Cardwell
Approved by	NAME Leighton Cardwell	As Project Manager I confirm that the above document(s) have been subjected to Jacobs' Check and Review procedure and that I **approve them for issue**	INITIALS LC
DATE 16.03.2015	Document status: FINAL		
REVISION **FINAL**	NAME Daniel Smith	NAME Peter Hibbert	NAME Leighton Cardwell
Approved by	NAME Leighton Cardwell	As Project Manager I confirm that the above document(s) have been subjected to Jacobs' Check and Review procedure and that I **approve them for issue**	INITIALS LC
DATE 08.04.2015	Document status: FINAL- Incorporating ATKINS BCR Comments		

Contents

1   Introduction

1.1 Background

This report documents the findings of an economic assessment of the East Lancashire Strategic Cycle Network, comprising four packages of cycleway improvements which make up the funding bid prepared on behalf of Lancashire County Council by Jacobs.

This assessment work was commissioned by Lancashire County Council to ascertain the likely Benefit Cost Appraisal and Gross Value Added (GVA) generated by the scheme. This analysis is required to support the formulation of a five case business case submission to the LEP and to assess the value for money of the scheme; along with potential wider economic benefits that could be generated for residents and businesses in the locality.

Whilst Benefit Cost Appraisal is the traditional approach to assessing the merit of transport schemes, GVA analysis seeks to complement standard transport appraisals where these have already been produced. The wider economic impacts of the proposed transport schemes are particularly important to understand in terms of the potential benefits for the locality, and in the context of supporting the funding bid for the scheme from the Local Growth Fund, as well as the Government's economic growth agenda.

Both are included in this assessment, but are kept separate in line with DfT guidance on the Value for Money (VfM) case.

1.2 Overview of Schemes

Four schemes have been appraised which together comprise the wider East Lancashire Strategic Cycle Network, the results of which are outlined in this report. These have been specifically identified to 'fill the gaps' of the existing network, supporting existing infrastructure and providing additional connectivity to the national cycle network. Should the four elements of the wider scheme be given funding, this will provide a strategic 'backbone' network from which future funding will be sort, in stages, to further supplement the network.

The four schemes which have been appraised are:

- *Scheme A:* Cycle access mitigation measures to Huncoat Greenway;

- *Scheme B:* Upgrading of the existing National Cycle Network (NCN6) route between Accrington and Ramsbottom;

- *Scheme C:* Corridor improvements to the Valley of Stone Cycleway; and

- *Scheme D:* The Weaver's Wheel Cycleway Improvement package.

As a recognised priority within the East Lancashire Highway and Transport Masterplan and subsequently Lancashire's Strategic Economic Plan, the Weavers Wheel is being designed to deliver a fully signed, regionally important cycle network around Blackburn. This is aimed at helping to transform the perception of cycling and inspire residents and visitors of all ages to undertake more trips by bike whether for employment, education or leisure purposes. In this regard, the Weaver's Wheel scheme bares many conceptual similarities with the recently approved Preston Guild

Wheel scheme and it is expected that, given the similarities, the Weaver's Wheel scheme will also replicate its success in engaging with the community in its design and continued, ongoing use.

The appraisal methodology adopted has been defined using WebTAG Unit A5-1 '*Active Mode Appraisal*' and is proportionate to the scheme costs, as per Transport for Lancashire's assurance framework.

The assessments have therefore been undertaken using proven methodologies and utilising the best evidence available at the time of writing.

A plan of each of the package of measures is included in Appendix A, with further details for each scheme provided below.

1.2.1 Scheme A: Huncoat Greenway Mitigation Measures

The Huncoat Greenway scheme aims to connect Huncoat and Accrington to the south west. Three sections are already in place, but the central part of the scheme is currently missing which significantly reduces its usefulness and limits the number of potential users. Completion of the scheme will provide cyclists and pedestrians with a safe, off road route avoiding the busy A679 Burnley Road and will connect housing to Huncoat Industrial Estate, other employment areas and nearby schools.

Proposed improvements included in the scheme are outlined in Table 1-A.

Table 1-A   Scheme A: Proposed Improvements

ID	Section	Distance (m)	Current Provision	Proposed Provision
1	Cemetery Section	580.0	Route through Accrington Cemetery from Whitewell Rd connecting to Bolton Avenue.	Some resurfacing of main route, new boundary wall, entrance feature & signage.
2	Huncoat Ind Estate	442.0	Route to rear of Huncoat Industrial Estate on former railway sidings.	Path construction with potential retaining structures, some sections may need to be hand dug because of power lines.
3	Bolton Avenue	260.0	Highway connecting Accrington Cemetery to existing Huncoat Greenway.	New road crossing, white lines, signage, possible acquisition agreement to use adjacent land.
4	Whitwell Road	150.0	Unsurfaced highway between Accrington cemetery and existing cycleway	Surfacing of highway, signage, landscaping.

1.2.2 Scheme B: NCN6 between Accrington and Ramsbottom

The National Cycle Route 6 scheme runs in a roughly north-south direction from Accrington in the north to the Lancashire border at Ramsbottom in the south. It is 12km in length and is based along the line of a former railway although this no longer exists in large sections, especially around Haslingden.

The completion of the route will help to complete a missing link of the Preston to Manchester longer distance route, but also play an important role in connecting Accrington, Haslingden and Ramsbottom. The route has potential to be used by commuters, especially to significant employment areas to the west of Haslingden. The scheme's linkages with the East Lancashire Railway and Irwell Sculpture Trail to the south mean it could also contribute towards the visitor economy.

Proposed improvements included in the scheme are outlined in Table 1-B.

Table 1-B   Scheme B: Proposed Improvements

ID	Section	Distance (m)	Current Provision	Proposed Provision
1	Woodnook Greenway	2,641.0	Existing off-road cycleway	Resurfacing of existing path, signage, drainage.
2	Baxenden - Rising Bridge	1,090.0	Former Railway now occupied by factory	Section of public footpath could be upgraded. Remainder requires construction of new route, possibly fencing
3	Rising Bridge Road	800.0	Existing residential street, relatively quiet.	New crossing/safe entry required to Baxenden Chemicals section, signage, white lines, possible shared use footway.
4	Hud Hey Road	161.0	Short section of highway including bridge crossing of A56.	New crossing and, signage, white lines, possible work to parapets.
5	Hud Hey - Booth St	568.0	Open field adjacent to A56.	New path construction, some of which is on poorly drained ground. Ramp up to Hud Hey St needed, possible need for a short bridge.
6	Booth St - Commerce St	348.0	Highway within industrial area.	Signage, works to improve highway. Possible alternative off-road route across Highways Agency land
7	Well Bank	731.0	Highway embankment next to A56, woodland area with some steep slopes.	New path construction, bench cutting, retaining walls, tree clearance, potential new bridge connecting to Flip Road.
8	Flip Rd - Grane Rd	509.0	Highways serving St Crispin industrial area.	Signage, segregated cycle lane - could be difficult with existing parking situation.
9	Swinnel & Ogden Brook	894.0	Small section of highway and existing cycle route through open space.	Signage, some resurfacing of existing cycleway especially on embankment slope up to viaduct.
10	Helmshore Viaduct	366.0	Viaduct for former railway past Helmshore Museum.	Works to parapets required, surfacing and potential pointing and other improvements to structures.
11	Bridge End Close	464.0	Existing cycleway behind Bridge End Close.	Surfacing improvements to existing path, signage.
12	Station Road	206.0	Residential Street and busier Helmshore Rd B6214.	Signage, white lines, widening of footway on Station Road, crossing of Helmshore Rd.
13	Snigg Hole	274.0	Access road and existing cycleway through open space	Resurfacing of existing access road, signage, possible new bridge across River Ogden.
14	Irongate Lane	633.0	Existing largely unsurfaced path accessing farms.	Resurfacing required, additional land needed in climb up from River Ogden, signage, drainage works.
15	Irwell Vale	546.0	Former railway cutting with ramp up to Irongate Lane and informal footpath.	Signage, new path construction, drainage works.
16	Lumb Viaduct	145.0	Grade 2 listed Railway Viaduct across River Irwell.	Works to parapets and possibly decking of bridge, new surfacing.
17	Lumb Mill	443.0	Existing Cycleway (part of NCN6) along former railway.	Signage, surfacing improvements, other environmental improvements.
18	Alderbottom - Strongstry	536.0	Existing Cycleway (part of NCN6) along former railway.	Signage, surfacing improvements, drainage works likely, possible works to bridge, other env. Improvements.
19	Strongstry - Stubbins	663.0	Former railway embankment and bridge over highway at Strongstry.	Signage, tree clearance, path construction, works to cast iron bridge, new ramp down embankment.

1.2.3 Scheme C: Valley of Stone

The Valley of Stone is a 16.5km long route from Rawtenstall in the west to the Lancashire border with Rochdale at Healey Dell. It is a largely off-road route following a former railway line and when completed will provide a viable sustainable travel alternative to the A671, A681 and A6066 main roads which run along the valley. The route will connect the settlements of Rawtenstall, Waterfoot, Bacup and Whitworth as well as many employment sites along the valley.

Proposed improvements included in the scheme are outlined in Table 1-C.

Table 1-C   Scheme C: Proposed Improvements

ID	Section	Distance (m)	Current Provision	Proposed Provision
1	Rawtenstall Station to Hill End Lane	1,670.0	Mixture of road and pavement.	Signage, line marking, some minor repairs to surface of road.
2	Hill End Lane to Visitor Centre	930.0	Off-road, existing cycleway.	Resurfacing, road crossings with coloured tarmac.
3	Buckhurst Plant Gap	650.0	New section required to bypass plant hire company which has built on railway line.	Construction of new rout,: either by moving fence line or bench cutting in to hillside.
4	Buckhurst to Tunnels	575.0	Section on-road. some resurfacing required.	Repairing tarmac on some quiet roads and line marking & signage
5	Tunnels and Bridge	560.0	This section needs a new bridge and two disused railway tunnels restoring in addition to surface tarmacking.	Construction of new bridge, reopening and restoration of tunnels, tarmacing of route.
6	Thrutch Tunnel to Blackwood Road.	900.0	Currently stone surfaced track.	Tarmacing of existing route.
7	Blackwood Road to Holme Street	870.0	Two options to be explored.	Dependent on final route chosen.
8	Ormerods Gap	450.0	Two options for this section: one on-road/footway following existing highway; second would involve construction of a new track alongside the river.	Dependent on final route chosen.
9	Futures Park to Stubbylee Park	870.0	Build new track from Futures Park up to Stubby Lee Park.	Bench cut zig-zag up slope in to park.
10	Stubby Lee to New Line Car Park	600.0	Sections of this route are currently subject of a DMO: entire length of route may have bridleway status.	Assuming DMO is successful, diversion of the route and then new track construction.
11	Britannia Greenway	1,200.0	Currently stone surfaced track which washed out three years ago due to a bank collapse blocking a drain. Well used and very attractive section.	Some drainage works and resurfacing to required standard.
12	Old Lane to Oak Street	1,890.0	Existing cycleway built around 10 years ago to a high standard. Needs some repairs and bringing up to required standard.	Repairs and adding features of interest.
13	Oak Street to Station Road (Slingco gap)	1,100.0	Existing cycleway in need of some improvements. Need to find route through Slingco factory.	Repairs and addressing some issues around adverse gradients. Negotiating route around the Slingco Factory.

| 14 | Station Road to Massey Croft | 1,800.0 | Follows the road which currently has a 20mph limit in place. | Road markings and possibly moving cycleway on to footway if appropriate. Road safety audit required. |
| 15 | Massey Croft to Lancashire Border | 2,400.0 | Follows current concessionary cycleway. Stone surfaced track passes through Healey Dell Nature Reserve. | Resurfacing with tarmac and associated drainage works. |

1.2.4 Scheme D: Weavers Wheel

The Weavers Wheel scheme will be 92km in length in total, offering cyclists, as well as walkers, a fully signed interconnected network of routes crossing rich and varied landscape linking existing and planned employment, retail and residential land use with green open space. The outer 'wheel' will be approximately 25km in length and will provide an attractive and rewarding journey whichever direction is chosen. A series of six 'spokes' into Blackburn town centre will also be fully signed from the 'wheel' enabling people to benefit from direct access to local employment, education, retail and leisure opportunities by bike. Covering all points of the wheel over 15KM of cycling 'spokes' will be fully signed into the town centre.

Further details on the circular, spokes and spurs sections of the Weavers Wheel scheme are included in Table 1-D, Table 1-E and Table 1-F respectively.

Table 1-D   *Scheme D: Proposed Improvements: Circular Sections*

ID	Section	Distance (m)	Current Provision	Proposed Provision
1A	See Plan	1,100.0	Uses the established NCN Route 6 through Witton Park to Tower Road (existing off road non segregated cycleway), the newly completed Crescent Cycle Link within Witton Park (existing off road non segregated cycleway) to link through onto the road network. A short on-road section to the Canal on Cherry Tree Lane.	Signage and line marking some minor repairs to surface of road. Build out provisions to deter parking from key areas
1B		5,000.0	Off road using the Leeds Liverpool canal on surfaced towpath to link from Cherry Tree to Aqueduct Road. A short on road section links onto the off road section of the River Darwen Parkway running from Ewood Cycles building through to Fore Street Lower Darwen.	Minor pot hole repair, signage improvements and anti-skid materials. Less experienced cyclists given directions to use Traffic Signal Controlled Junction at Ewood Cycles. Replacement of sub-standard gates with "K-barriers" at entrance and exit points onto the canal
1C		1,000.0	Short on road section to link to another section of the established off-road non segregated route of the River Darwen Parkway. This section by-passes the steep on road section of Stopes Brow.	Signage and line marking. Surfacing to established off road route. Improved marking layout at the Blackamoor Road junction with the inclusion of Advanced Stopping Area and lead in taper.
1D		1,100.0	On-road section	Signage and line marking

1E		400.0	On-road section	Guide Roundabout is signalised under a separate scheme - cycle crossing provisions incorporated and off road shared cycleway / footway sections.
1F		2,400.0	A mixture of segregated footway / cycleway and off-road non segregated	Signage and improvements to road markings on segregated sections. The Arran Trail will have vegetation cut back to re-introduce the full width of the cycleway. Improvements will be made to the surface course which is badly damaged over a considerable length.
1G	See Plan	2,900.0	Short on-road section linking to St Ives Road via a Public Footpath (cycles to be pushed). Long section of on-road non segregated to link Accrington Road through to the red Lion Roundabout at Whitebirk. From Whitebirk Roundabout the Leeds Liverpool Canal Towpath is used to link through to Trident Way.	On-road sections to benefit from road marking and improved signage. Investigations are underway into the upgrading of the existing public footpath to a cycle track. The Red Lion Roundabout will be negotiated using shared footways and new, uncontrolled crossing facilities. Further signage and pothole repairs along the Leeds Liverpool Canal section.
1H		1,600.0	Off-road segregated non segregated cycleway.	Improved signage
1I		1,900.0	On-road section	Improved signage
1J		1,800.0	On-road section	Provision of off road shares, un-segregated cycleway/footway on existing footways and through Service Roads running adjacent to the main road. Improvements to signing, lining and carriageway surfacing repairs. Toucan crossings / cycle signals will be installed at the Pleckgate Road and Lammack Road junctions
1K		400.0	On-road section	Improved signage and road markings
1L		6,300.0	A mixture of on-road section with an off-road non segregated section leading back through Witton Park to the Start point at the hub	Improved signage and road markings.

Table 1-E   Scheme D: Proposed Improvements: Spoke Sections

ID	Section	Distance (m)	Current Provision	Proposed Provision
1	See Plan	2,500.0	On-road	Anti-skid treatments to steps leaving the canal. Signage and line marking some minor repairs to surface of road. Investigation into incorporating some parts of the route into existing 20mph zones.
2		2,700.0	On-road	Resurfacing, road crossings with coloured tarmac at Holmbrook Close. Pot hole repairs and cutting back of vegetation
3		2,900.0	On-road	Improved signs and road markings to link the spoke onto an established off road cycle route leading to Blackburn Railway Station.
4		2,500.0	Canal towpath	Pothole repairs to canal towpath sections. Edge repairs to be discussed with the Canal Authorities.
5		3,200.0	On-road	Improved signage and lining to on road sections. Widening of Public footpath linking through from Whalley New Road to the Pleckgate Areas.
6		1,600.0	On-road	Signing and road marking improvements

Table 1-F   Scheme D: Proposed Improvements: Spurs Sections

ID	Section	Distance (m)	Current Provision	Proposed Provision
A	See Plan	2800.0	On-road	Improvements to traffic signal junction at Preston New Road / Yew Tree Drive to introduce cycle facilities. Provision of shared un-segregated cycleway/footways where possible and the introduction of improvements to signing and lining over the on-road sections.
B		3,800.0	On-road	Lining and Signing improvements
C		2,200.0	On-road	Lining and Signing improvements
D		2,100.0	On-road	Lining and Signing improvements
E		2,000.0	Canal Towpath	Pothole repairs to canal towpath sections. Edge repairs to be discussed with the Canal Authorities. Improvements to signage.
F		2,800.0	On-road	Lining and Signing improvements
G		2,400.0	On-road	Lining and Signing improvements. Minor junction improvements to incorporate cycle facilities.
H		2,900.0	Canal Towpath	Pothole repairs to canal towpath sections. Edge repairs to be discussed with the Canal Authorities. Signage Improvements.

1.3 Overview of Approach

An economic assessment has been undertaken to appraise the transport user costs and benefits of the scheme, including potential mode share benefits (determined by the DfT Marginal External Costs (MEC) approach), health benefits and work absenteeism benefits created by the scheme.

A separate GVA assessment has been undertaken on proposed development that the scheme supports, or GVA arising from productivity uplifts, in order to assess the potential wider economic benefits that the transport scheme could generate.

Jacobs has ensured that the GVA calculation undertaken accords with both HM Treasury Green Book guidance on additionality, and the principles and procedures adopted in WebTAG, in line with a traditional economics approach.

As a result, all GVA values presented are net figures (inclusive of locally orientated deadweight, displacement, leakage and substitution factors, where applicable). This ensures that GVA values presented comply with national best practice, only present the **additional** benefits thereby derived for UK Plc, and only focus on the *net change* in overall economic welfare.

All values, whilst presented annually, have also been presented in 2010 prices and values, discounted in line with Treasury and WebTAG standards.

1.4 Report Contents

The remainder of this report is structured as follows:

- Cost Estimates;
- Economic Assessment Methodology;
- GVA Methodology;
- Results; and
- Summary & Conclusion.

2 Cost Estimates

2.1 Introduction

This section of the report outlines the cost estimates included in the assessment provided by the Client, Lancashire County Council.

2.2 Cost Estimates

Costs were provided in January 2015, however are presented in 2014 prices and are summarised in Table 2-A.

Table 2-A   Scheme Cost Estimates

Scheme	Construction	Land	Preparation	Supervision	Maintenance	Totals
Huncoat Greenway	£391,932	£0	£20,628	£0	£206,280	£618,840
NCN^	£3,434,344	£0	£180,755	£0	£1,807,549	£5,422,648
Valley of Stone	£2,346,968	£0	£123,525	£0	£1,235,246	£3,705,738
Weaver's Wheel	£1,198,241	£0	£90,190	£0	£644,216	£1,932,647
Total	**£7,371,485**	**£0**	**£415,098**	**£0**	**£3,893,291**	**£11,679,873**

The above scheme costs are inclusive of risk, maintenance and optimism bias, and therefore differ from the total capital funding sought.

The above costs include the following assumptions:

- Scheme costs were provided by the Client, phased over a 3-year spend profile;

- An appropriate level of risk allowance (15%) has been included within the costs provided by Client, reflecting the scope and nature of the scheme;

- A 2% inflation has been applied to the costs, from the 2014 cost base to the first year of spend;

- Costs were adjusted from resource costs to market prices, applying an uplift of 19.1%;

- A 44% optimism bias has been applied to the costs for the purposes of the value for money assessment. This is in line with a Stage 1 scheme of this nature, as outlined in WebTAG Unit A1-2 '*Scheme Costs*'; Paragraph 3.5.6, Table 8, and highlighted in Table 2-B.

- No maintenance costs for the scheme were provided, therefore it was assumed that these would be 50% of the total capital costs, discounted to the 30th year of the scheme.

Table 2-B   Scheme Development Stages[1]

Category	Stage 1	Stage 2	Stage 3
Local Authority and Public Transport Schemes	Programme Entry	Conditional Approval	Full Approval
Highways Agency Schemes	PCF Options Phase	Order Publication/ Works Commitment	Works Commitment
Railways	Grip Stage 3: Pre-feasibility	Grip Stage 4: Option selection	Grip Stage 5: Design development

A full profile of the costs for each scheme is included in Appendix B.

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[1] DfT WebTAG Unit A1.2 '*Scheme Costs*', January 2014

3 Economic Assessment Methodology

3.1 Introduction

This section of the report outlines the methodology for quantifying transport user benefits arising from the proposed schemes.

3.2 Economic Appraisal and Value for Money

Benefit cost appraisal is the traditional approach to quantifying the costs or benefits of a transport intervention. The output Benefit Cost Ratio (BCR) from the assessment is therefore a prominent input into how a scheme intervention is appraised as part of the business case submission and supporting documentation.

Figure 3-A illustrates how the outputs from the economic assessment feeds into the appraisal process and 'Value for Money (VfM)' categories.

Figure 3-A   Economic Assessment & VfM
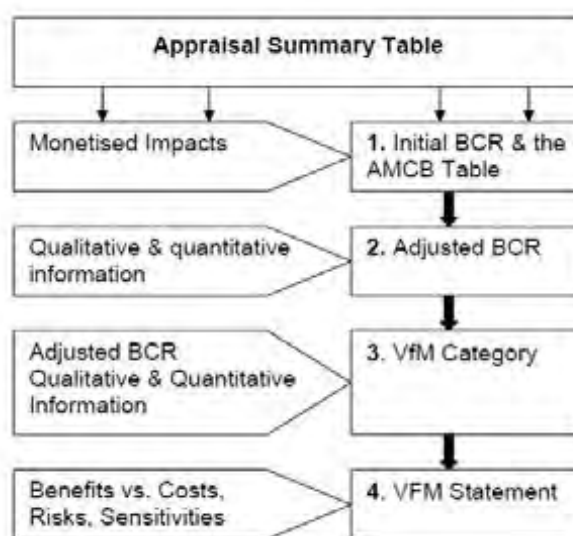
Costs of the scheme have been provided by Lancashire County Council (the Client), as outlined in the previous section.

The output BCR from the benefit cost appraisal determines the VfM category the scheme falls within, as outlined below:

- poor VfM if the BCR is less than 1.0;

- low VfM if the BCR is between 1.0 and 1.5;

- medium VfM if the BCR is between 1.5 and 2.0;

- high VfM if the BCR is between 2.0 and 4.0; or

- very high VfM if the BCR is greater than 4.0.

3.3 Quantification of Scheme Benefits

The overall approach to economic appraisal has been informed by WebTAG Unit A5.1: *'Active Mode Appraisal'*, which outlines the methodology for appraising walking and cycling schemes.

This guidance is included in Appendix C of this report.

Chapter 3 of the guidance makes reference to the calculation of benefits for the various aspects impacted by a scheme, as is outlined in the following sub-sections. In practical terms, the approach is briefly outlined below:

- Quantification of transport user demand currently using existing cycle infrastructure, calculated from the infrastructure catchment population and local mode share.

- The existing transport user demand has been benchmarked against locally available count data for the area. The scheme's forecasted impact on demand has been benchmarked against other local and similar case studies, which have been subject to monitoring and evaluation over the past 3-4 years. Further details on these existing schemes is included in Section 3.4;

- Quantification of provision of new infrastructure;

- Quantification of per-user time savings;

- Calculation of annual 'Value of Time (VoT)' savings;

- Calculation of demand change/uplift from the package of schemes;

- Quantification of vehicle kilometers (vehKM) abstracted from the highway network;

- Monetisation of VoT and vehicle kilometer savings for design and forecast years;

- Interpolation of monetised benefits (including health benefits) between the forecast years, and then over a 60-year appraisal period, with no demand after the final modelled year; and

- Discounting benefits to a 2010 cost base for comparison in the economic appraisal.

Chapter 4 of the WebTAG guidance outlines the treatment of benefits for reporting, which is generally consistent with other types of transport schemes.

Quantification of the various elements of the cycle scheme is further discussed in the following sub-sections.

3.3.1 Quantification of Demand

In order to quantify the number of potential users of the four proposed schemes, a catchment area population was extracted using Office for National Statistics (ONS) Middle Super Output Areas (MSOA) for each of the four schemes. Population figures are based on the 2011 census geographies and were uplifted using NTEM 2013 growth rates to 2014.

Using ONS population statistics, the population was extracted for the location and the 'Travel to Work' mode share applied the produce the total number of regular travellers within the catchment area travelling by cycle.

Figure 3-B to Figure 3-E illustrates the catchment area identified for each of the four schemes. Catchment areas have been selected based on the surrounding settlement boundary, population centres and origin-destination movements of land uses served by the proposed cycle improvements.

Figure 3-B   Scheme A: Huncoat Greenway Demand Catchment Area
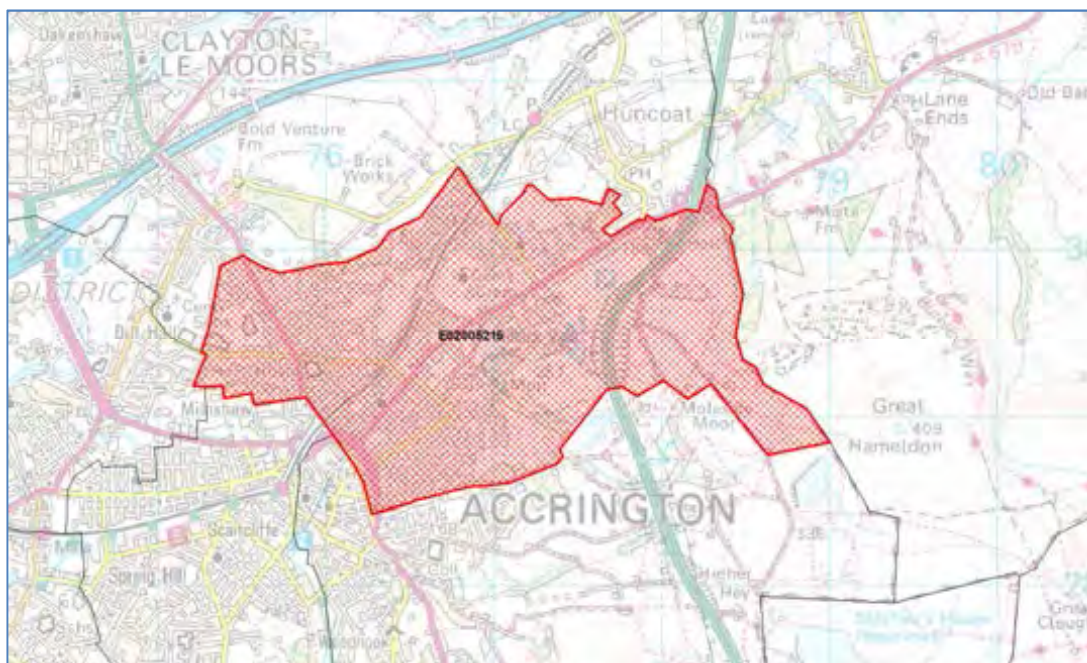
Figure 3-C   Scheme B: NCN 6 Demand Catchment Area
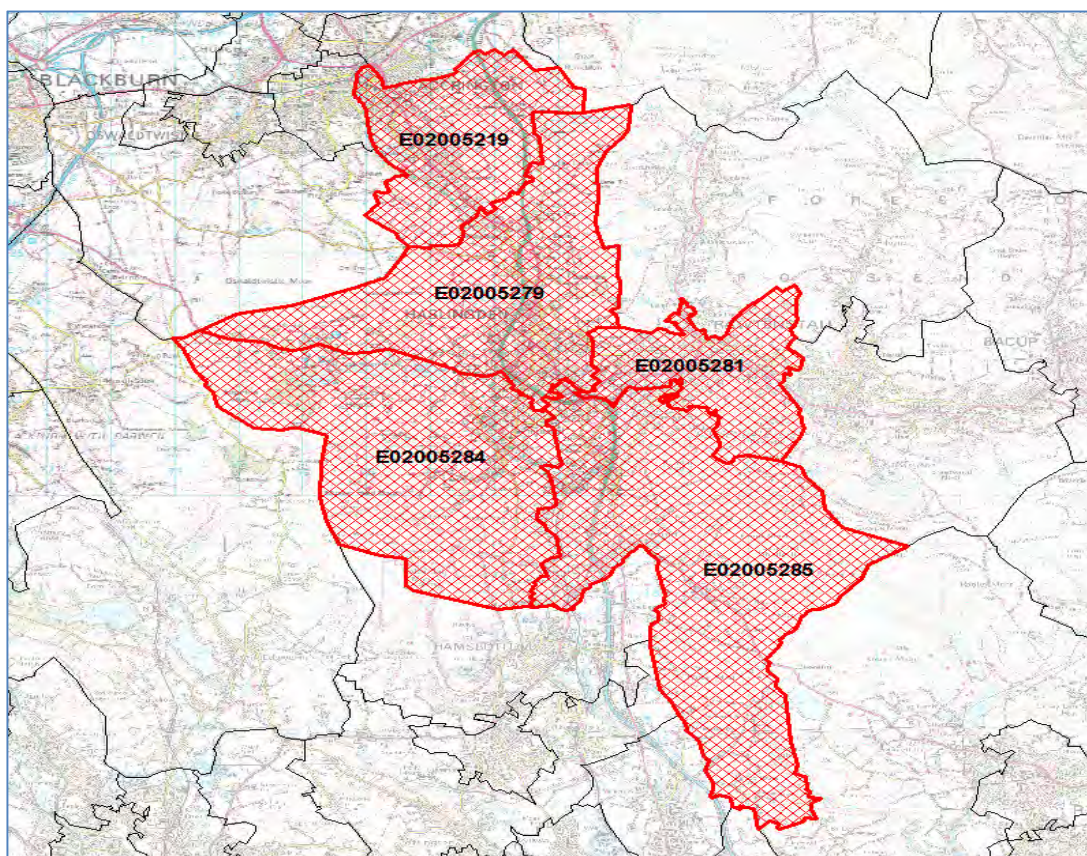
Figure 3-D   Scheme C: Valley of Stone Demand Catchment Area
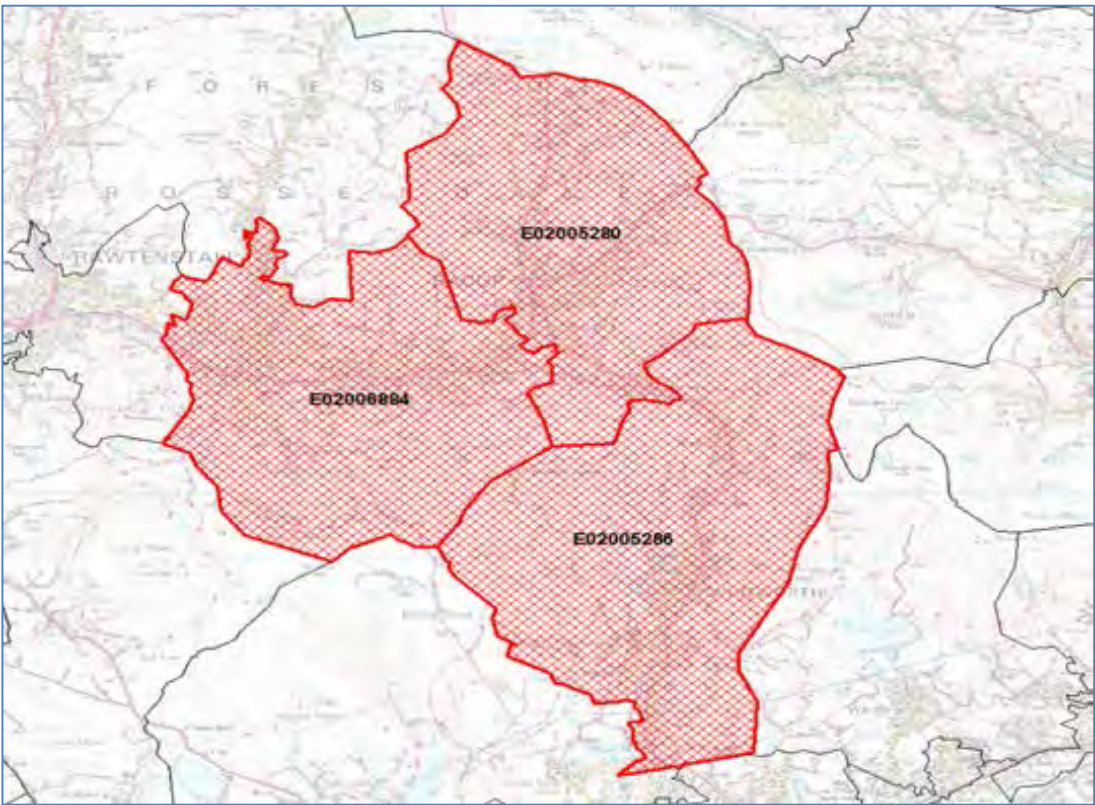
Figure 3-E   Scheme D: Weavers Wheel Demand Catchment Area
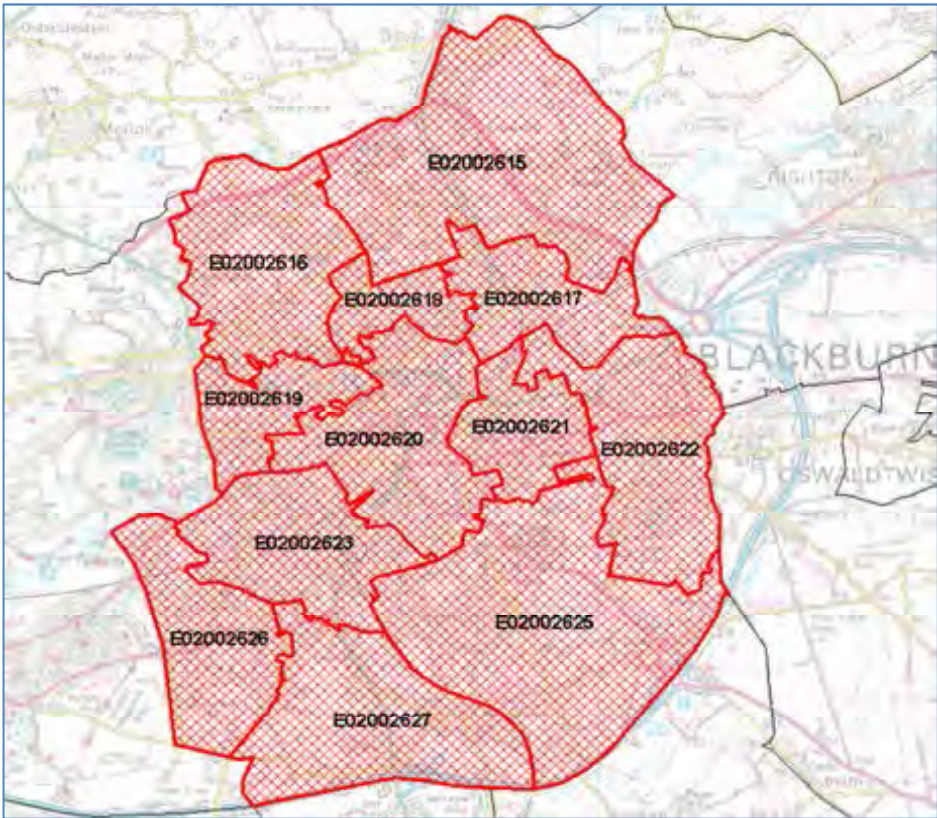
3.3.2 Calibration of Demand

Whilst the demand extracted from the ONS data provided a base level of cycling demand in the area, additional data was supplied to better estimate the quantum of existing cyclists using actual cycling routes, which was taken from available cycling count data from similar schemes in each area.

To factor the demand calculated from the ONS areas presented in the previous section to the observed demand on existing similar schemes, a 'permeability factor' was used. This factor allows the number of people travelling by cycle in the locality to be adjusted to the number of observed cycle trips, as evidenced from similar cycle schemes.

Table 3-A   Calculation of Permeability Factor

Scheme	Huncoat Greenway	NCN6	Valley of Stone	Weaver's Wheel
Calculated Daily Demand (Trips)	313	403	282	1,196
Observed trips on similar schemes within locality from count data	50-160	70-385	60-95	60-550
Averaged, observed Daily Trips	109	101	70	269
Permeability Factor	**35.0%**	**25.0%**	**25.0%**	**22.5%**

Table 3-A outlines the level of input demand, observed data and calculated permeability factor, utilised to ensue levels of demand on each route are suitable, and evidenced against counts on similar nearby cycling routes; rather than just relying on census data and mode share evidence alone.

3.4 Forecasting Demand Growth

Growth in demand has been forecast based on observed growth in cycle traffic from similar schemes within the locality.

However, given that variation in growth can vary considerably between schemes, several sensitivity tests have been undertaken to ensure the outputs of the economic assessment are robust

Levels of growth have been taken from three similar schemes, including:

- SUSTRANs Connect2 Bury scheme, where the percentage uplift in cycling was observed as 15% (May/June 2010 to May/June 2012 intercept survey results).

- SUSTRANs Connect2 Padiham scheme, where the percentage uplift in cycling was calculated as 69%.

- Guild Wheel circular route (Preston), where automatic counters have recorded an increase in daily counts of 129% (over a 5-year period from 2009 to 2013).

Given these levels of observed demand growth in similar 'hub and spoke' and corridor routes, the applied uplifts are considered reasonable for the four elements that make up the East Lancashire Strategic Cycle Network.

Table 3-B outlines the growth levels applied and the additional sensitivity tests undertaken. The higher growth rates have been reduced to 60% and 120% respectively, rather than 69% and 129%.

A 30% demand increase test has also been applied; given this is close to the level of demand uplift obtained from the DfT cycling demonstration town evidence, and may be thought of as a nationally evidenced level of demand uplift.

Table 3-B   Demand Cycle Growth

Scheme	Huncoat Greenway	NCN6	Valley of Stone	Weaver's Wheel
15%	✓	✓	✓	✓
30%	✓	✓	✓	✓
60%	✓	✓	✓	✗
120%	✗	✗	✗	✓

To ensure a robust and conservative VfM appraisal has been undertaken, the lowest observed growth figure (i.e. 15%) has been used in the core scenario for deriving the BCR for the East Lancashire Strategic Cycle Network scheme.

Based on the local evidence, additional sensitivity tests have been undertaken in which higher rates of growth have been applied at 30% and 60%. For the Weaver's Wheel scheme, 120% growth has been tested as a third scenario, based on observed demand uplift evidence from the Guild Wheel scheme in Preston.

3.4.1 Quantification of Journey Time savings

Journey time savings have been calculated for existing and new cycle transport users.

In addition, the introduction of the scheme is expected to shift transport users from private car to cycle modes, therefore leading to an increase in available capacity on the highway network.

Where new cycle users are derived as a result of the above, the 'rule of a half' has been applied.

3.4.2 Quantification of vehicle kilometre savings

The reduction in car vehicle kilometres travelled, derived from an average trip length (from ONS) for commuting trips for the locality, has been quantified to calculate the savings in terms of 'Marginal External Cost (MEC)' savings resulting from the scheme.

The quantified MEC savings follow the guidance outlined in WebTAG Unit A5.4 *'Marginal External Costs'*, which is also included in Appendix D for reference. The

MEC savings provide a series of benefits including decongestion, noise, air quality, carbon, safety and reduced infrastructure investment; each of which can be monetised.

The MEC savings have been calculated for the scheme opening year (2016) and interpolated between then and the scheme forecast year (2031), utilising weighted averages. Weighted average congestion areas have also been used, reflecting the dispersed impact the scheme will have on the wider highway network.

3.4.3 Quantification of Absenteeism and Health/Mortality Benefits

The quantum of existing car users shifting mode to cycle has been calculated and associated health benefits monetised. WebTAG databook (COBALT 1) values have been used (in line with guidance) to monetise health/mortality benefits.

Work absenteeism benefits have also been calculated as a function of the number of new cyclists travelling more than 30 minutes. This methodology reflects research[2] which has shown that there is a direct, monetised benefit between those cycling more than 30 minutes and a reduction in work absenteeism. This stream of benefits has been calculated based on the proportion of cyclists that travel by bike for more than 15 minutes each way; using ONS data to inform this percentage within the health and absenteeism benefits calculations.

3.5 Forecasting Benefits over the Appraisal Period

The aforementioned journey time savings, MECs, work absenteeism and mortality benefits for the opening and forecast years have been monetised for each time period, using standard WebTAG VoT's, as outlined in guidance and the latest November 2014 (release 1.3b) WebTAG databook.

These benefits were then factored up to an annual period to produce a yearly benefit for the scheme (for the opening and forecast years) and interpolated and projected over a standard 60-year appraisal period, as illustrated in Figure 3-F. No growth was applied after the 2031 forecast year

Figure 3-F   Interpolation & Projection of Benefits

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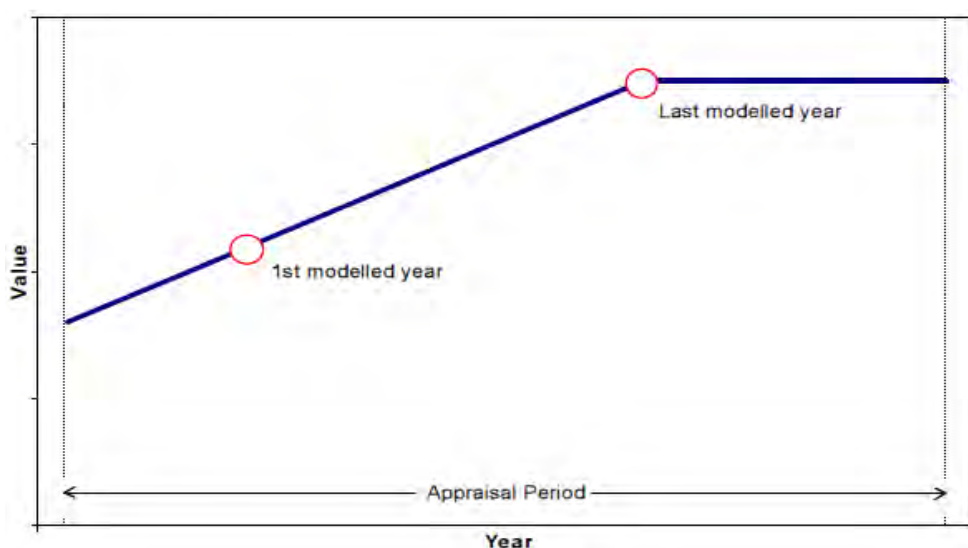
[2] World Health Organisation (2014) *'Health Economic Assessment Tools for walking and cycling: Methodology and User Guide'*

Benefits have then been discounted to 2010 values, as outlined in standard Treasury Green Book appraisal methodology, using standard discounting rates (3.5% for 30 years, falling to 3.0% thereafter).

The cost of the scheme in question has then been compared with the projected benefits over 60-years to produce the overall BCR which will inform the VfM category of the scheme.

4 GVA Methodology

4.1 Introduction

This section of the report outlines the methodology used to quantify the potential GVA benefits of the schemes.

4.2 Methodology

The analysis of GVA impacts has been undertaken in the following stages, as summarised by Figure 4-A below.

Figure 4-A   Theoretical Framework

1. Theoretical Framework:
Identification of potential GVA benefits for the transport scheme

2. Quantifying benefits: Calculate each aspect of GVA benefit based upon official guidance & published studies

3. Assign types of GVA benefits to the transport scheme

4. Calculations and results
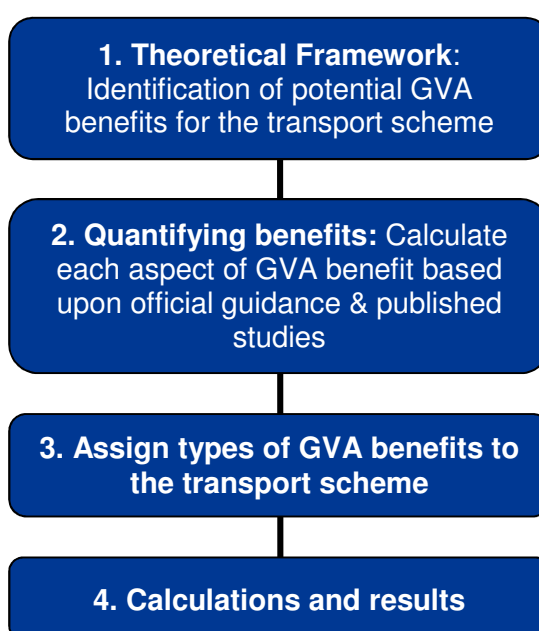
4.3 Theoretical Framework

The GVA analysis seeks to complement standard transport appraisals. The wider economic impacts of the proposed transport schemes are particularly important to understand in terms of the potential benefits for the locality and the Government's economic growth agenda.

GVA measures the total value of goods and services; i.e. economic activity. In its simplest terms, it is therefore GDP at a local/regional level, minus indirect taxation.

There are usually three ways to measure GVA; via an output approach, an income approach, or an expenditure approach. All three methods should provide the same value in theory; however, in a transport context it is very difficult to determine what the expenditure or additional goods produced directly from a transport scheme will be.

Thus, in a transport context, almost all valuations of GVA across the locality are based on an income approach, as we are able to quantify the amount of new development 'unlocked', the net additional jobs created from the introduction of a transport scheme or the productivity uplifts of the scheme.

As a result, there are three key mechanisms by which transport schemes produce GVA benefits; based on the number of new jobs created, the enhanced productivity of existing jobs and the direct cost savings brought about by a transport scheme, as summarised below:

1) More jobs = Additional wages = greater GVA

2) Higher productivity = Higher profits = greater GVA

3) Direct cost savings = greater GVA

In the case of the first mechanism, transport acts as an enabler of growth by allowing additional jobs to be accommodated in a certain location thanks to enhanced transport links and transport capacity. These jobs are therefore not created by the transport scheme itself, but are supported by the increase in accessibility facilitated by the scheme; i.e. the jobs and GVA benefits are (to varying proportions) dependent[3] on the transport scheme.

In the case of the second mechanism, transport can make existing jobs more productive by reducing journey times, enhancing connectivity and productivity. The reason for this is that a reduction in journey times increases the accessibility of the employment area, which may lead to a better match in terms of labour supply and demand, allowing greater efficiencies to be made through agglomeration tendencies of entrenched economic actors.

Direct cost savings in terms of travel also provide benefits to residents and businesses.

4.4 GVA Benefit Quantification

Unlike standard transport appraisals, there is not a single methodology for estimating the impacts of a scheme on GVA, employment, or similar measures of the performance of the real economy. In contrast, methodologies vary considerably across studies.

All methods reviewed have particular strengths and weaknesses, and thus there is no single definition of what GVA is or how it should be quantified.

In this context, Jacobs has developed a bespoke methodology based on the above definition and a consistent theoretical framework for assessing additional economic benefits. This ensures that the scheme is subject to a standard process and quantification of benefits; albeit using local variations in GVA per job, and local transport capacity constraints overcome by the implementation of the transport intervention.

Not all benefits outlined are to be applied to each scheme. The GVA components that are to be applied from the framework for the assessments have considered the following sources of benefits, as outlined in the following sub-sections.

---

[3] "Dependent development" for housing is defined using the WebTAG definition as follows:
"New housing is dependent on the provision of some form of transport scheme if, with the new housing, but in the absence of any transport scheme, the transport network would not provide a reasonable level of service on the highway networks to existing and/or new users."

4.4.1 Productivity Impacts & Direct Cost Savings

The first type of GVA benefits, which arise from productivity benefits as a result of reduced journey times, is quantified by estimating productivity uplifts for the affected transport users. Transport users have been divided into two categories: freight and car users. A different methodology is used for each category.

(a) Private Car Movements

In this case, a simple productivity elasticity for reductions in journey time has been used to estimate the percentage productivity uplift[4].

(b) Freight Movements

Productivity benefits from reduced journey times for vehicles transporting freight have been obtained by applying the reduction in journey time to an average productivity value of time for freight[5], corresponding to £56/hr. This value is only been applied to heavy goods vehicles.

> *As part of this assessment, the strategic cycle network is identified to have productivity & direct cost saving benefits from the reduction in vehicle traffic created by the scheme.*
>
> *However, it should be noted that the values are not generally significant, and are not directly incorporated into the BCR for the scheme.*

4.4.2 Development & Regeneration

The second type of GVA benefit, which is generated by unlocked development and employment, is quantified by multiplying the number of jobs expected to be generated by GVA per employee (by district area, and employment sector, using standard industrial categories).

GVA per employee is calculated as a weighted average of employment by industry and GVA per employee in each industry. There are ten industry categories which have been obtained from the ONS.

In line with the HCA guidance, deadweight, leakage displacement, substitution and economic multipliers have been applied to 'net-off' benefits that would otherwise happen, producing the final benefits that occur as a direct result of the transport intervention being appraised. Estimates for these effects have been derived from Ekosgen's analysis of typical values, from a Study undertaken for the SEP in 2014 for the LEP, but typically result in additionality factors reducing the total level of GVA benefit by 70%, on average, across Lancashire.

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[4] ITS(2010) *Review of methodologies to assess transport's impacts on the size of the economy*
[5] AECOM (2012) *Wider Economic Benefits - Humber Bridge Study*

> *As part of this assessment, no directly dependent development was identified with the Client.*
>
> *However, future development and economic growth is accommodated by a reduction in traffic on the network as a result of the scheme. This released capacity is able to support future economic growth by new development trips, unlocking potential additional GVA benefits as a result.*
>
> *However, this is presented as both net values, and as supporting additional evidence, and is not added directly to the BCR for the scheme.*

4.4.3 Conformity with WebTAG

The annual benefits obtained in the GVA analysis have been forecast over a 60-year period to be consistent with WebTAG guidance and to ensure consistency with the BCR outputs derived, and which already incorporate user benefits of the scheme, and associated cost savings.

The GVA results are streamed over 60-years, and we have applied a 2% per annum GVA growth rate (for the first 30 years of the scheme, from 2016 to 2046) in line with WebTAG and the WebTAG data book on forecast real increases in productivity over time.

The benefits over the 60-year period have then been discounted using a 3.5% discount rate for 30-years hence, and then a 3% discount rate as defined in WebTAG, and in line with Treasury Green Book guidance. Displacement, leakage and substitution have then been applied, as previously discussed.

Finally, the accuracy of the results is highly dependent on the assumptions that have been employed in the analysis. As the analysis is to some extent limited by data availability – such as the absence of a full suite of local count data – conservative assumptions have been made where necessary, as outlined in the previous sections of this report.

5 Results

5.1 Introduction

This section presents the results from the economic appraisal and GVA analysis.

5.2 Economic Appraisal Results

5.2.1 Combined Package

Table 5-A outlines the outputs of the benefit cost analysis for the scheme, split out by each of the three sensitivity tests as outlined in Section 3.4, with benefits calculated over a 60-year appraisal period.

Table 5-A   Combined Package Results in £'s

Combined	Growth Sensitivity		
	15%	**30%[6]**	**60%[7]**
Noise	£128	£155	£199
Local Air Quality	£4	£4	£6
Greenhouse Gases	£667	£808	£1,035
Journey Quality (Congestion)	£19,894	£24,067	£30,834
Physical Activity - Mortality	£17,444,070	£20,472,046	£25,775,336
Physical Activity - Absenteeism	£219,293	£265,264	£339,839
Infrastructure Maintenance	£121	£147	£188
Accidents	£1,723	£2,085	£2,672
Economic Efficiency	£3,374,819	£4,026,322	£5,118,018
Wider Public Finances (Indirect Taxation)	-£2,810	-£3,402	-£4,360
Present Value of Benefits (PVB)	£21,057,910	£24,787,497	£31,263,768
Broad Transport Budget	£9,525,857	£9,525,857	£9,525,857
Present Value of Costs (PVC)	£9,525,857	£9,525,857	£9,525,857
Net Present Value (NPV)	£11,532,053	£15,261,640	£21,737,910
Benefit to Cost Ratio (BCR)	**2.21**	**2.60**	**3.28**

The economic appraisal results for the combined elements of the scheme show that even with the lowest demand growth rate applied, the overall scheme produces a positive BCR in the **high** VfM category (i.e. BCR >2), as per WebTAG guidance.

Full economic assessment appraisal results for each of the 4 components of the East Lancashire Strategic Cycle Network scheme are included in Appendix E.

---

[6] For the Weaver's Wheel Scheme, growth is 60%
[7] For the Weaver's Wheel Scheme, growth is 120%

5.3 Sensitivity Tests

In consultation with the independent assurers, a 30 year appraisal period, rather than a 60 year period (albeit with additional maintenance cost included), has also been tested.

This has a positive effect of raising the BCR's from:

Table 5-B   Sensitivity Tests over Appraisal Length on value for Money.

Scheme Package	Growth Sensitivity		
	15%	30% / 60%	60% / 120%
Current BCR 60yr	2.21	2.60	3.28
BCR 30yr	2.79	3.30	4.14

It can be seen above that the BCR's increase with the 30 year appraisal period, for two reasons:

➢ Stripping out of maintenance costs, previously 50% of the capital cost in year 30;
➢ Mortality and absenteeism benefits were already calculated over a 30-year period anyway, so are not affected by the change.

Benefits derived from the marginal external cost approach have however reduced within this - and as would be expected with halving the appraisal period.

5.4 GVA Results

The results of the assessment are presented in different GVA measures explained in Table 5-C.

Table 5-C   Measures of GVA and discounting

GVA measure	Explanation
Total GVA benefits over 60 years (undiscounted)	60-year values are provided over the lifetime of the scheme and which align with the same period of analysis associated with traditional transport appraisals. This figure shows the total 60-year GVA benefits undiscounted in 2010 prices.
Annual GVA benefits averaged over 60 years (undiscounted)	An annual GVA benefit averaged over 60-years is also presented. This is presented in 2010 prices and is undiscounted.
Total GVA benefits over 60 years (discounted)	This figure shows total benefits discounted over 60-years in 2010 prices. Discounting takes into account the effect of inflation at 3.5% for the first 30-years, and then 3% for the remaining 30 years.
Annual GVA benefits in 2010 (discounted)	**An annual GVA benefit averaged over 60-years is also presented. This is presented in 2010 prices and is discounted.**

The results of the GVA analysis are presented in Table 5-D. It should be noted that the preferred annual measure of GVA is highlighted in the final column.

Table 5-D   **GVA Analysis Results**

Scheme	Sensitivity	Undiscounted total GVA (60 yrs, 2010 prices)	Annual GVA (2010 prices undiscounted)	Discounted total GVA (60 yrs, 2010 prices)	Annual GVA (2010 prices discounted)
A	15%	£1,639,544	£27,326	£527,659	£8,794
	30%	£1,853,397	£30,890	£596,484	£9,941
	60%	£2,281,104	£38,018	£734,134	£12,236
B	15%	£2,365,632	£39,427	£740,599	£12,343
	30%	£3,023,001	£50,383	£946,399	£15,773
	60%	£4,579,220	£76,320	£1,433,598	£23,893
C	15%	£651,879	£10,865	£228,406	£3,807
	30%	£817,792	£13,630	£282,317	£4,705
	60%	£1,205,617	£20,094	£406,835	£6,781
D	15%	£6,058,865	£100,981	£1,949,942	£32,499
	60%	£8,429,725	£140,495	£2,712,963	£45,216
	120%	£11,590,872	£193,181	£3,730,324	£62,172
Total Package	15%	£24,476,052	£407,934	£7,846,374	**£130,773**
	30/60%	£31,266,233	£521,104	£10,031,678	**£167,195**
	60/120%	£41,003,708	£683,395	£13,165,517	**£219,425**

The GVA analysis undertaken has shown that the East Lancashire Strategic Cycle Network scheme could generate an average annual return of **£130,773** in GVA uplift per annum in 2010 discounted prices. This represents a total of **£7.9 million** of GVA uplift over a standard 60-year appraisal period for the most conservative demand growth scenario.

6 Summary & Conclusion

6.1 Summary

This report documents the findings of an economic assessment of the East Lancashire Strategic Cycle Network, comprising four packages of cycleway improvements which make up the funding bid prepared on behalf of Lancashire County Council by Jacobs.

The economic appraisal is based on a calibrated approach which uses locally available cycle count data which has been benchmarked against the impacts of similar local cycle schemes which have been completed in recent years.

The scheme benefits calculated have followed standard approaches outlined in WebTAG guidance. Benefits calculated have been interpolated between the scheme opening year (2016) and the forecast year (2031). Standard WebTAG and Treasury Green Book approaches have been used to undertake the benefit cost appraisal, discounted to 2010 prices over a standard 60-year appraisal period.

A scheme cost of **£11.7 million** (in 2014 prices) has been used for the purposes of the economic assessment, which includes a 15% risk allowance, 44% optimism bias, conversion to market prices and future maintenance at 50% (discounted to the 30th year after the scheme opening year). The scheme cost used in the economic assessment therefore differs from the total capital funding sought.

The economic appraisal has shown that the proposed scheme would provide benefits to existing transport users by reducing journey times, as well as having significant monetised health benefits.

In the absence of a singly recognised and adopted methodology for estimating GVA impacts, the GVA analysis has been undertaken using an evidence-led, theoretically consistent framework approach, based on available studies and parameters, as well as collaborative working with the Client.

The GVA analysis has quantified the additional benefits that would be generated from the proposed scheme which are attributable to the level of demand abstracted from the local highway network. The results are presented net of additionality components, as required by the Green Book.

The results from the GVA analysis indicate that the scheme will have a positive impact on the local economy by releasing additional capacity on the highway network that could support additional development in the locality.

6.2 Conclusion

The economic appraisal results for the East Lancashire Strategic Cycle Network scheme show that even with the lowest demand growth rate applied, the overall scheme produces a positive BCR in the **high** VfM category (i.e. BCR >2), as per WebTAG guidance.

The Present Value Costs (PVC) and Present Value Benefits (PVB) for the package of schemes which constitute the East Lancashire Strategic Cycle Network is outlined in Table 6-A.

Table 6-A   Combined Package Results

Sensitivity	15%	30/60%	60/120%
Combined Package PVB	£21,057,910	£24,787,497	£31,263,768
Combined Package PVC	£9,525,857	£9,525,857	£9,525,857
Combined Package NPV	£11,532,053	£15,261,640	£21,737,910
Scheme BCR - 60 year	**2.21**	**2.60**	**3.28**
Scheme BCR - 30 year	**2.79**	**3.30**	**4.14**

The scheme also provides additional benefits to the local economy. A net GVA benefit over the appraisal period of approximately **£130,773** per annum, averaged over a 60-year appraisal period for the low growth scenario has been calculated based on locally adjusted GVA values (in 2010 discounted prices, adjusting for additionality). For the high growth assessment, this increases to **£219,425** per annum.

Over the full 60 year assessment period, the total 2010 discounted benefits amount to **£7.9 million** and **£13.2 million** for the low and high growth scenarios respectively.

Appendix A   Plan of Interventions

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Revised Risk

— High
— Medium
— Low

N

Revised Risk

~ High
~ Medium
~ Low
□ District Boundaries

N

NCN 6
Mitigation Measures and Revised Risk Rating - October 2014

Date: 08/10/14   Not to Scale

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Rossendale Valley of Stone
Mitigation Measures and Revised Risk Rating - October 2014

Revised Risk

High

Medium

Low

District Boundaries

WP7
WP6
WP4
H
G
WP3
WP5
WP7
6
NCN6
Start
A
BLACKBURN
E
WP2
D
WP1
C
WP7

LEGEND

Weavers Wheel

☐ Region

Wheel Spurs
—— Line

Wheel Alternative (Utility)
—— Line

Wheel Spokes
—— Line

status						
INFORMATION						

drawing title
CONSTRUCTION PHASE WORKS PACKAGES

client
BLACKBURN WITH DARWEN B.C.
TOWN HALL
BLACKBURN BB1 7DY

scale @ A3	designed by	drawn by	checked by	approved by	date drawn
NTS	APN	DR	APN		MAR 14

project no.
F

project title
PROPOSED WEAVERS WHEEL NETWORK

drawing no.

revision
I01

REV	DESCRIPTION	DRAWN	CHK	APP	DATE

Do Not Scale From This Drawing

Appendix B   Scheme Costs and Profile

Scheme A: Huncoat Greenway

Scheme Costs	Construction	Land	Preparation	Supervision	Maintenance
	£391,932	£0	£20,628	£0	£206,280
Total	£412,560				

Spend Profile					
2014	0%	0%	0%	0%	0%
2015	1%	0%	51%	0%	0%
2016	16%	0%	52%	0%	0%
2017	24%	0%	0%	0%	0%
2018	0%	0%	0%	0%	0%
2019	66%	0%	0%	0%	0%
2020	0%	0%	0%	0%	0%
2021	0%	0%	0%	0%	0%
2022	0%	0%	0%	0%	0%
2023	0%	0%	0%	0%	0%
2024	0%	0%	0%	0%	0%
2025	0%	0%	0%	0%	0%
2026	0%	0%	0%	0%	0%
2027	0%	0%	0%	0%	0%
2028	0%	0%	0%	0%	0%
2029	0%	0%	0%	0%	0%
2030	0%	0%	0%	0%	0%
2031	0%	0%	0%	0%	0%
2032	0%	0%	0%	0%	0%
2033	0%	0%	0%	0%	0%
2034	0%	0%	0%	0%	0%
2035	0%	0%	0%	0%	0%
2036	0%	0%	0%	0%	0%
2037	0%	0%	0%	0%	0%
2038	0%	0%	0%	0%	0%
2039	0%	0%	0%	0%	0%
2040	0%	0%	0%	0%	0%
2041	0%	0%	0%	0%	0%
2042	0%	0%	0%	0%	0%
2043	0%	0%	0%	0%	0%
2044	0%	0%	0%	0%	0%
2045	0%	0%	0%	0%	0%
2046	0%	0%	0%	0%	188%
TOTAL	108%	0%	103%	0%	188%

* Inclusive of inflation increases from 2014 price base, at 2% per annum.

Scheme B: NCN6 Accrington to Ramsbottom

Scheme Costs	Construction	Land	Preparation	Supervision	Maintenance
	£3,434,344	£0	£180,755	£0	£1,807,549
TOTAL	£3,615,099				

Spend Profile (insert percentage profile)					
2014	0%	0%	0%	0%	0%
2015	1%	0%	51%	0%	0%
2016	28%	0%	52%	0%	0%
2017	26%	0%	0%	0%	
2018	9%	0%	0%	0%	
2019	42%	0%	0%	0%	0%
2020	0%	0%	0%		0%
2021	0%	0%	0%	0%	0%
2022	0%	0%	0%	0%	0%
2023	0%	0%	0%	0%	0%
2024	0%	0%	0%	0%	0%
2025	0%	0%	0%	0%	0%
2026	0%	0%	0%	0%	0%
2027	0%	0%	0%	0%	0%
2028	0%	0%	0%	0%	0%
2029	0%	0%	0%	0%	0%
2030	0%	0%	0%	0%	0%
2031	0%	0%	0%	0%	0%
2032	0%	0%	0%	0%	0%
2033	0%	0%	0%	0%	0%
2034	0%	0%	0%	0%	0%
2035	0%	0%	0%	0%	0%
2036	0%	0%	0%	0%	0%
2037	0%	0%	0%	0%	0%
2038	0%	0%	0%	0%	0%
2039	0%	0%	0%	0%	0%
2040	0%	0%	0%	0%	0%
2041	0%	0%	0%	0%	0%
2042	0%	0%	0%	0%	0%
2043	0%	0%	0%	0%	0%
2044	0%	0%	0%	0%	0%
2045	0%	0%	0%	0%	0%
2046	0%	0%	0%	0%	188%
TOTAL	**107%**	**0%**	**103%**	**0%**	**188%**

* Inclusive of inflation increases from 2014 price base, at 2% per annum.

Scheme C: Valley of Stone

Scheme Costs	Construction	Land	Preparation	Supervision	Maintenance
	£2,346,968	£0	£123,525	£0	£1,235,246
TOTAL	£2,470,492				

Spend Profile (insert percentage profile)					
2014	0%	0%	0%	0%	0%
2015	3%	0%	51%	0%	0%
2016	65%	0%	52%	0%	0%
2017	3%	0%	0%	0%	0%
2018	15%	0%	0%	0%	0%
2019	19%	0%	0%	0%	0%
2020	0%	0%	0%	0%	0%
2021	0%	0%	0%	0%	0%
2022	0%	0%	0%	0%	0%
2023	0%	0%	0%	0%	0%
2024	0%	0%	0%	0%	0%
2025	0%	0%	0%	0%	0%
2026	0%	0%	0%	0%	0%
2027	0%	0%	0%	0%	0%
2028	0%	0%	0%	0%	0%
2029	0%	0%	0%	0%	0%
2030	0%	0%	0%	0%	0%
2031	0%	0%	0%	0%	0%
2032	0%	0%	0%	0%	0%
2033	0%	0%	0%	0%	0%
2034	0%	0%	0%	0%	0%
2035	0%	0%	0%	0%	0%
2036	0%	0%	0%	0%	0%
2037	0%	0%	0%	0%	0%
2038	0%	0%	0%	0%	0%
2039	0%	0%	0%	0%	0%
2040	0%	0%	0%	0%	0%
2041	0%	0%	0%	0%	0%
2042	0%	0%	0%	0%	0%
2043	0%	0%	0%	0%	0%
2044	0%	0%	0%	0%	0%
2045	0%	0%	0%	0%	0%
2046	0%	0%	0%	0%	188%
TOTAL	**106%**	**0%**	**103%**	**0%**	**188%**

* Inclusive of inflation increases from 2014 price base, at 2% per annum.

Scheme D: Weaver's Wheel

Scheme Costs	Construction	Land	Preparation	Supervision	Maintenance
	£1,198,241	£0	£90,190	£0	£644,216
TOTAL	£1,288,431				

Spend Profile (insert percentage profile)					
2014	0%	0%	0%	0%	0%
2015	6%	0%	102%	0%	0%
2016	80%	0%	0%	0%	0%
2017	6%	0%	0%	0%	0%
2018	6%	0%	0%	0%	0%
2019	6%	0%	0%	0%	0%
2020	0%	0%	0%	0%	0%
2021	0%	0%	0%	0%	0%
2022	0%	0%	0%	0%	0%
2023	0%	0%	0%	0%	0%
2024	0%	0%	0%	0%	0%
2025	0%	0%	0%	0%	0%
2026	0%	0%	0%	0%	0%
2027	0%	0%	0%	0%	0%
2028	0%	0%	0%	0%	0%
2029	0%	0%	0%	0%	0%
2030	0%	0%	0%	0%	0%
2031	0%	0%	0%	0%	0%
2032	0%	0%	0%	0%	0%
2033	0%	0%	0%	0%	0%
2034	0%	0%	0%	0%	0%
2035	0%	0%	0%	0%	0%
2036	0%	0%	0%	0%	0%
2037	0%	0%	0%	0%	0%
2038	0%	0%	0%	0%	0%
2039	0%	0%	0%	0%	0%
2040	0%	0%	0%	0%	0%
2041	0%	0%	0%	0%	0%
2042	0%	0%	0%	0%	0%
2043	0%	0%	0%	0%	0%
2044	0%	0%	0%	0%	0%
2045	0%	0%	0%	0%	0%
2046	0%	0%	0%	0%	188%
TOTAL	105%	0%	102%	0%	188%

* Inclusive of inflation increases from 2014 price base, at 2% per annum.

Appendix C   WebTAG Unit A5.1: Active Mode Appraisal

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TAG UNIT A5.1

Active Mode Appraisal

January 2014

Department for Transport

Transport Analysis Guidance (TAG)

https://www.gov.uk/transport-analysis-guidance-webtag

This TAG Unit is guidance for the **APPRAISAL PRACTITIONER**

This TAG Unit is part of the family **A5 – UNI-MODAL APPRAISAL**

Technical queries and comments on this TAG Unit should be referred to:

Contents

1   Introduction

1.1.1   This Unit gives guidance on how to estimate and report impacts on active modes (e.g. walking and cycling). Specific cycling and walking schemes are often relatively small. The amount of effort devoted to the analysis of such schemes should be proportional to the scale of the project or the scale of impact on cycling and walking modes.

1.1.2   Section 2 describes methods that can be used to forecast demand for interventions targeting active modes; section 3 describes how the key impacts resulting from an intervention should be monetised; section 4 describes how the results should be reported; section 5 discusses sensitivity testing; and section 6 discusses the importance of monitoring and evaluation.

1.1.3   This Unit is most applicable to schemes with a significant active modes focus, but is in principle applicable in all cases. When reading these sections it may help to assume that a scheme aimed at active mode use is being appraised. TAG Guidance on The Transport Appraisal Process describes the option development process, where a cycling or walking scheme may have emerged as the best transport solution for a given problem. TAG Unit A5.5 – Highway Appraisal describes a basic method for treating impacts on pedestrians and cyclists where they are not explicitly included in the modelling approach.

1.1.4   This Unit follows the standard approach to appraisal as explained in Guidance for the Technical Project Manager and TAG Unit A1.1 – Cost-Benefit Analysis. However, issues of particular importance to active modes such as physical activity benefits and journey quality are more fully explained.

1.1.5   There is significant uncertainty around the use of the techniques and the valuations suggested in this Unit and thorough use of sensitivity testing around core assumptions should be used when presenting results. Therefore this guidance will be most useful in assessing the effectiveness of one cycling and/or walking scheme against another, using similar input assumptions.

2   Active Mode Forecasting

2.1   Introduction

2.1.1   TAG Unit M1.1 – Principles of Modelling and Forecasting provides guidance on how modelling may be used to estimate future demand for transport facilities. Where cycling and walking schemes form part of a larger set of transport proposals, demand models or spatially aggregate models of the types described in that Unit may be appropriate.

2.1.2   Where cycling and walking is an integral part of a strategy, for example the imposition of 20mph speed restrictions in urban areas, coupled with other changes to create a more appealing environment for pedestrians and cyclists, then model design should include appropriate representation of the alternatives to cycling and walking.

2.1.3   Walking and cycling schemes may be promoted separately from other transport investment proposals and in these circumstances different modelling approaches may be required. This section summarises three possible approaches to forecasting demand for new cycling and walking facilities forecast outside of a formal model. Analysts should also bear in mind the potential impact on the use of other modes.

2.1.4   It is of crucial importance to forecast walk and cycle demand as accurately as possible to produce a successful appraisal. Forecasts are the primary indicator of a scheme's effectiveness, along with estimates of the resulting change in use of other modes. Since the cost of walking and cycling schemes is often relatively low and the scale of impact relatively small, the cost-benefit analysis is highly sensitive to the quality of these forecasts. Sensitivity tests will be necessary to examine the potential impacts in the face of uncertainty. On the cost side, optimism bias (at the appropriate rate) should also be included in the scheme costs (see TAG Unit A1.2 – Scheme Costs).

2.1.5   It is important that the without-scheme case includes the impacts of other schemes that may affect the mode share of active modes (e.g. the introduction of town centre pedestrian areas, or a congestion charging system). Where the impacts of a cycling or walking scheme are being considered in the context of another major scheme, it may be appropriate to include the major scheme in the without scheme scenario to identify the incremental effects on cycling and walking. The methods described below are valid for forecasts over and above the without scheme case. Inaccuracies in the base growth forecasts may cause the benefit-cost ratios of the appraised schemes to be inconsistent with those in other areas.

2.1.6   It is anticipated that demand management measures such as Smarter Choices initiatives should be assessed with a proportionate application of a full appraisal, which is likely to require a demand model. These schemes can achieve relatively large impacts on mode choice and hence the change in the volume of motorised traffic may be significant enough to warrant a full model. TAG Unit M5.2 – Modelling Smarter Choices provides further guidance.

2.1.7   The existing evidence base on how long the demand impact of active mode schemes will last is relatively sparse. Initial increases in walking and cycling may decline over time and this is likely to be particularly relevant for demand management schemes such as Smarter Choices initiatives. This phenomenon can be represented in forecasts through use of a decay rate, so that demand in the 'with scheme' scenario converges with the 'without scheme' demand forecasts over time.

2.1.8   It is important that consistent assumptions are used when comparing schemes and it is advised when undertaking the analysis to include different forecast assumptions to gauge how successful the scheme may be given different forecasts around the core. It may be that some schemes are more sensitive than others, which may affect the decision of which scheme to adopt were outturn forecasts to be more pessimistic, say, relative to the core scenario.

2.2   Approach 1: Comparative Study

2.2.1   The least complex and costly approach to estimating future levels of cycling and walking is through comparisons with similar schemes. Larger proposals are likely to have greater demand changes and afford better potential for comparison with existing schemes. Examples could include river crossings or the creation of other significant links in a network that reduce time and distance, or comprehensive urban centre networks that significantly change the balance between motor traffic and walking and cycling generalised costs.

2.2.2   The difficulty with this method is the many other transport system and socio-economic differences and changes that may exist between the two study areas. Forecasting and valuing benefits form only part of the decision making process and, depending on other policy aspirations, there may be sufficient confidence in an approach based on comparative study.

2.2.3   Encouraging walking and cycling: Success Stories (DfT, 2004a) provides some useful starting points and some indication of potential levels of change for a variety of schemes that have achieved positive outcomes throughout Great Britain. Other sources of data may include monitoring exercises undertaken before and after a similar scheme has been implemented in the local area. The availability of this data is limited, although scheme-specific monitoring is an area that is receiving greater attention and should be encouraged to increase the number of case studies available and hence improve forecasts in future appraisals.

2.3   Approach 2: Estimating from Disaggregate Mode Choice Models

2.3.1   A general introduction to the use of bespoke and other mode choice models is in TAG Unit M2 – Variable Demand Modelling.

2.3.2   Wardman, Tight and Page (2007) derived a model to forecast the impacts of improvements in the attractiveness of cycling for commuting trips of 7.5 miles or less. The full version of this model gives an expression for the forecast market share for cycling given changes in the utility of the different modes.

2.3.3   The example below of the model only applies to changes in the generalised costs of cycling. As such it implies that the utility of all modes except cycling remain unchanged. However, it is fairly straightforward to extend the logit model to include changes in the generalised costs of other modes following the advice given in TAG Unit M2. Given the assumption of no changes in the costs of other modes the logit model used simplifies to:

$$P_y^f = \frac{P_y^b e^{\Delta U_y}}{P_y^b e^{\Delta U_y} + (1 - P_y^b)}$$

Where:

ΔU_y is the change in utility of the cycling mode, in year y

P_y^b is the proportion of those choosing to cycle out of the maximum of those where it is a viable option, without any intervention, in year y

P_y^f is the proportion of those choosing to cycle out of the maximum of those where it is a viable option, with intervention, in year y.

2.3.4   This formula applies to those who would consider the cycle mode as an option. In reality, a significant proportion of people will never select cycling as a viable transport option. Therefore, the model here should not be applied to the whole population. The survey used to derive this model found that 60% of commuters (the purpose being tested) would never consider cycling. Therefore the result of the formula only applies to the 40% who might. To give a figure for total mode share, one simply multiplies this result through by 40%.

2.3.5   The changes in utility are calculated using the equation below and the coefficients in Table 1. These are empirically-based coefficients of utility derived from the above study that apply to the number of people with short commutes (7.5 miles or less) who could enjoy the benefit provided. Only those coefficients relevant to changes in cycle conditions are shown.

$$\Delta U = t(c_w - c_n)$$

Where:

ΔU is the change in utility of the cycling mode

t is the travel time

c_w is the coefficient of utility on routes with facilities (i.e. the do something, with-intervention case)

c_n is the coefficient of utility on routes with no facilities (i.e. do nothing, without-scheme case)

Table 1 Utility of changes to cycle facilities (Source: Wardman et al, 2007)		
Change	**Interpretation**	**Coefficient**
Change in time on off-road cycle track	Minutes	-0.033
Change in time on segregated on-road cycle lane	Minutes	-0.036
Change in time on non-segregated on-road cycle lane	Minutes	-0.055
Change in time on no facilities	Minutes	-0.115
Outdoor parking facilities	present/not present	0.291
Indoor cycle parking	present/not present	0.499
Shower/changing facilities plus indoor cycle parking	present/not present	0.699
Payment to cycle	one way payment in pence	0.013

2.3.6 The most favourable cycling conditions are assumed to be on an off-road cycle track (-0.033 'utils' per minute). favourable when compared to a road with no facilities, which has a higher coefficient of disutility (-0.115 'utils' per minute). However, the coefficient is negative because cycling for a minute still produces a disutility, as does travel time more generally.

2.3.7 Using the coefficients supplied in Table 1, the change in utility from ten minutes' use of a road with no facilities to a segregated cycle track is therefore 0.82 (= 10 * (0.115 - 0.033)). Note that zero overall change in travel time is assumed.

2.3.8 If the base proportion of the population who cycle is 2% of all travellers and we assume that a maximum of 40% would cycle, we derive p_y^b as 5%. The model predicts that the proportion of this population cycling after the change will be 10.7% of the total mode share:

0.107 = 0.05 * exp(0.82) / (0.05 * exp(0.82) + (1 - 0.05))

As discussed, to calculate the total mode share of cycling, should it be required, we can multiply by 40% to get a value of 4.3% of the whole population.

2.3.9 Analysts should note that this model only applies to those who could make use of any change to facilities on short commuting journeys. The impact of a variety of different changes can be calculated but these results should be regarded as very approximate in general application.

2.3.10 In theory, such models could be extended to cover walking but research in this area is problematic. People do not regard walking as a mode of transport in quite the same way as driving, using a bus or even cycling so studying their reaction to changes in the walking environment is difficult.

2.4 Approach 3: Sketch Plan Methods

2.4.1 TAG Unit M1.2 – Data Sources and Surveys provides guidance on nationally available data sets. Sources that may be useful include Census journey to work trip matrices and distances and Department for Transport National Trip End Model (NTEM) forecasts of trip ends by mode (including cycling and walking), journey mileage, car ownership and population and workforce planning data. NTEM modal split figures only reflect demographic factors and increasing car ownership. Local models will take account of changes in the generalised cost of travel by each mode and other impacts of rising incomes and local policy action to influence travellers' "taste" for different modes.

2.4.2 Changes to levels of walking and cycling as evidenced or forecast from these data sources may be approximately estimated by rule-of-thumb calculations. Care needs to be taken when assessing the extent to which a scheme might influence trip making, given the sensitivity of the cost-benefits analysis to the forecasts.

2.4.3   Popularity of walking and cycling may also vary from place to place with the acceptability of those modes in those areas, as well as their attractiveness. For example, local walk and cycle initiatives may change the overall attractiveness of these modes without consideration of individual infrastructural schemes. At any rate, background growth, such as that forecast by NTEM, in walking and cycling is required so that the change in demand brought on by a scheme may be compared to the reference case scenario that will experience the background growth.

2.4.4   An approximate elasticity estimate for the change in demand for cycling in a district, based on a change in the proportion of route that has facilities for cycle traffic (cycle lanes, bus lanes and traffic free route), is +0.05. This has been derived from models of the variation in cycle use at ward level (specifically a revision of the models used in Parkin, 2004). As an example, a district might have 2,000 trips by bicycle per day with a total road length of 500 kilometres and an existing length of cycle facilities in the district of 50 kilometres. A scheme is proposed to create a new off-carriageway cycle route of 10 kilometres in length. The new cycle facilities increase the proportion of cycle facilities by 20% (from 10% to 12% of total road length). The expected increase in cycle trip numbers would be 1% (+.05 * 20%), or 20 trips per day (1% * 2000 trips). It should be noted that this is a useful, albeit approximate method for predicting the increase in demand for cycling and the results may differ somewhat from the more multifaceted approach described when estimating from disaggregate mode choice models.

2.5   Other Considerations

2.5.1   Forecasting does not usually distinguish between children and adults. In respect of cycling and the journey to school it may be appropriate to explicitly consider the different responses that children may make to schemes.

2.5.2   Catchments for new public transport modes are based around distances from existing public transport nodes and the topography of the catchments is also sometimes considered. Where there is a proposal for a significant walking or cycling route, for example a traffic-free route along a previously inaccessible green corridor, it may be appropriate to consider analogous techniques.

2.5.3   In comparison to other modes, the choice for walking and cycling is more likely to be influenced by the journey purpose because this affects, for example, the amount of luggage that needs to be carried and the type of clothing that it is appropriate to wear. It may be appropriate to consider modelling techniques that explicitly account for journey end activity.

2.5.4   Estimation of the demand for cycling and walking might also need to take into account the different types of user. For example, pedestrians could be characterised as "striders", who are using walking to get somewhere and might be sensitive to changes in travel time or "strollers", who might be less concerned about travelling efficiently but more sensitive to environmental factors (Heuman, 2005). DfT (2004b) suggests a number of different types of "design pedestrian types" and "design cyclist types". These include commuters, utility cyclists and shopper/leisure walkers all of which might be expected to react differently to different interventions in the form of facilities.

3   Calculation of Key Impacts

3.1.1   Table 2 below shows the key indicators that govern most of the costs and benefits that need to be measured to undertake an appraisal. Figure 1 in Appendix A shows how the indicators inter-relate to the impacts appraised in schematic form. The subsequent guidance explains these in greater detail.

Table 2 Indicators used in the economic appraisal of walking and cycling schemes	
Indicator	**Used to appraise**
Cycling and walking users	Journey quality
New individuals cycling or walking	Physical activity Journey quality
Car kilometres saved	Accidents GHG emissions, air quality and noise Indirect tax revenue Travel time (decongestion)
Commuter trips generated	Absenteeism

3.1.2   TAG Unit A1.1 – Cost Benefit Analysis provides guidance on appraisal periods. Most walking and cycling schemes will have finite project lives and/or significant uncertainty around the longevity of impact (particularly for demand management schemes) so that the sixty year appraisal period recommended for large-scale infrastructure projects might not be applicable. The length of appraisal period will have a significant impact on the appraisal and monetised estimates of impacts should be subject to sensitivity tests around the appraisal period (sensitivity testing is discussed further in section 5). Where longer appraisal periods are used it is vital that all maintenance and renewal costs during the appraisal period are included in cost estimates.

3.1.3   TAG Unit A1.1 also requires all monetary values in appraisal to be presented in real, discounted values (in the Department's base year) and in the market prices unit of account. This applies to walking and cycling schemes just as it does to other schemes.

3.1.4   Appendix B provides a worked example of how to apply this guidance to a case study, including sensitivity tests around key assumptions such as the length of the appraisal period and the decay rate applied to demand impacts.

3.2   Physical Activity Impacts

3.2.1   Physical activity impacts typically form a significant proportion of benefits for active mode schemes. The method for calculating these impacts is taken from 'Quantifying the health effects of cycling and walking' (WHO, 2007) and its accompanying model, the Health Economic Assessment Tool (HEAT). The method requires estimates of the number of new walkers or cyclists as a result of the scheme; the time per day they will spend active; and mortality rates applicable to the group affected by the scheme. The economic benefit of reduced mortality should be valued using the value of a prevented fatality given in TAG Data Book. More detailed guidance on estimating these benefits is given in the physical activity section of TAG Unit A4.1 - Social Impact Appraisal.

3.3   Absenteeism Impacts

3.3.1   Improved health from increased physical activity (such as walking or cycling) can also lead to reductions in short term absence from work. These benefits can be estimated using the methods in TfL (2004), details of which are given in TAG Unit A4.1. The method requires estimates of the number of new walkers and cyclists who are commuting; the time per day they will spend active; and average absenteeism rates and labour costs.

3.4   Journey Quality Impacts

3.4.1   Journey quality is an important consideration in scheme appraisal for cyclists and walkers. It includes fear of potential accidents and therefore the majority of concerns are about safety (e.g. segregated cycle tracks greatly improve journey quality over cycling on a road with traffic). Journey quality also includes infrastructure and environmental conditions on a route. As an impact which is apparent to users, the journey quality benefits should be subject to the 'rule of a half' (see TAG Unit A1.3 – User and Provider Impacts) – current users of the route will experience the full benefit of any improvements to quality but the benefits for new cyclists/walkers should be divided by two.

3.4.2   The evidence in this area is fairly limited. Analysts should use judgment, or potentially a 'sliding scale' approach to value journey quality impacts depending on the perceived quality of an intervention, using published research figures as a guide to the maximum value for an improvement. The journey quality section of TAG Unit A4.1 provides further guidance and the values for estimating journey quality impacts for cyclists and pedestrians are given in TAG Data Book, respectively. Analysts must ensure that when the benefits of schemes are compared against one another, consistent assumptions are made concerning journey quality monetary benefits.

3.5   Accident Impacts

3.5.1   Accident benefits (or disbenefits) are calculated from changes in the usage of different types of infrastructure by different modes and the accident rates associated with those modes on those types of infrastructure. Therefore accident analysis should take account of changes in accidents involving pedestrians and cyclists, resulting from changes in walking and cycling and the infrastructure used, and the impact of mode switch on accidents involving other road users.

3.5.2   The accidents section of TAG Unit A4.1 provides guidance on forecasting and valuing active mode accidents. Where there is significant mode switch, the marginal external cost (MEC) method (TAG Unit A5.4 – Marginal External Congestion Costs) can be used as a simplified approach to estimate the change in accidents generated by a change in car kilometres.

3.6   Environmental Impacts

3.6.1   The environmental benefits from a walk or cycling scheme are achieved through a reduction in motorised traffic and hence a reduction in the associated externalities. The assessment of disbenefits such as noise, air pollution and greenhouse gases are explained in TAG Unit A3 – Environmental Impact Appraisal and TAG Unit A5.4 describes how these impacts can be estimated using the MEC method. Other environmental factors such as the impact on landscape and biodiversity should also be considered.

3.6.2   Some schemes will have more accurate information through use of a formal transport model. Where information on speeds and types of vehicle affected are available, more accurate estimates of greenhouse gas impacts can be estimated using tables in the TAG Data Book for fuel consumption (Table A1.3.11), carbon emissions (Table A3.3) and carbon values (Table A3.4).

3.7   Decongestion and Indirect Tax Impacts

3.7.1   Mode switch from car to active modes will benefit those who continue to use the highways (decongestion benefit) and impact on indirect tax revenues. The MEC method used to estimate accident and environmental benefits from reductions in car use can also be applied to these impacts (see TAG Unit A5.4).

3.8   Time Saving Impacts on Active Mode Users

3.8.1   While many active mode schemes may aim to increase demand for walking and cycling through improved quality of facilities, they may also result in time savings to pedestrians and cyclists through provision of quicker or shorter routes. In such circumstances the time saving benefits should be

estimated using the 'rule of a half' method described in TAG Unit A1.3 – User and Provider Impacts and the values in TAG Data Book.

4 Reporting the Impacts of Walking and Cycling Schemes

4.1.1 The impacts of a walking and/or cycling scheme should generally be reported in the same way as any other scheme, using the same reporting tables.

4.2 Transport Economic Efficiency (TEE) Table

4.2.1 Impacts on walkers and cyclists, in qualitative or monetised form, should be reported in the 'Other' column of the TEE table, split by business, commuting and other journey purposes. Where decongestion benefits for road users are calculated using the MEC method, these should be recorded as time benefits in the 'Road' column[1].

4.3 Public Accounts (PA) Table

4.3.1 TAG Unit A1.2 – Scheme Costs provides guidance on estimating scheme investment and operating costs. Costs of walking and cycling schemes should be treated in the same way as for other schemes; including appropriate adjustments for risk and optimism bias and presented in the market prices unit of account.

4.3.2 Where there is significant mode shift and the MEC method has been used, the change in indirect tax should be recorded. Note that costs in the PA table are recorded as positive values so that a reduction in indirect tax revenue should appear as a positive value.

4.4 Analysis of Monetised Costs and Benefits (AMCB) Table

4.4.1 Sub-totals from the TEE and PA tables should be carried over to the AMCB table. Monetised estimates of physical activity (comprising health and absenteeism impacts), journey quality, accidents and environmental impacts following the methods described in this unit should also be included in the AMCB table.

4.5 Appraisal Summary Table (AST)

4.5.1 Monetised estimates should also be recorded in the 'Monetary' column of the appropriate rows of the AST. Practitioners should refer to TAG Units relating to specific impacts for guidance on what should be recorded in the 'Summary of key impacts' column and any further quantitative information that should be reported.

4.6 Non-monetised Impacts

4.6.1 The appraisal should also consider impacts that it is not possible to monetise. Practitioners should refer to TAG Units relating to the specific impacts for further guidance on how they should be assessed and reported in the AST.

5 Sensitivity Testing

5.1.1 A critical issue with the appraisal of walking and cycling schemes is that the above analyses can be highly sensitive to the forecasts and assumptions used. Therefore, in all cases it is advised, to produce as robust an analysis as possible, that sensitivity tests are undertaken on the core assumptions made.

5.1.2 Key assumptions to consider in sensitivity testing include the following, but other variables may also be relevant:

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[1] The decongestion benefits include both time and vehicle operating cost (e.g. fuel) savings but time savings tend to dominate.

- **Length of appraisal period**. How long will the benefits really last before reinvestment is required? This is especially pertinent if demand management measures are being appraised or considered;

- **Rate of decay of users and benefits**. The existing evidence base is relatively sparse on how long the benefits of active mode schemes last. Therefore the impact of different forecast assumptions on the scale of benefits should be tested (potentially including negative decay rates to represent increased use encouraging others to take up active modes over time). It may be that some schemes are more sensitive than others, which may affect the decision of which scheme to adopt were outturn forecasts to be more pessimistic, say, relative to the core scenario.

- **Quantum of journey quality benefits**. It can be particularly difficult to assess the size of journey quality benefits to apply, not only in terms of the values to adopt, but the applicability of those values to users. The latter will depend on the length of time users are exposed to improvements (e.g. cyclists will often not use a full length of improved infrastructure for their journey). Different unit benefits per user should be tested to better understand how this impacts on the potential scheme benefits.

- **Other key assumptions**. All other assumptions underpinning the appraisal need careful consideration and justification since these will impact on the sensitivity of the scheme assessment and the resulting costs and benefits produced. For example, assumptions concerning average journey length will be important. In the case of a pedestrian bridge, for example, the scheme may encourage more walkers but will result in less health benefits if, say, journey times are reduced as a result of the connectivity benefits derived by the new crossing.

6   Monitoring and Evaluation

6.1.1   Monitoring and evaluation are important elements of implementing schemes that affect walking and cycling. Monitoring and evaluation should take place in a timely manner and planning monitoring and evaluation will help to clarify scheme aims and objectives.

6.1.2   Data arising from evaluation exercises will add to the current evidence base. This will be of great use when forecasting for subsequent schemes, especially if similar schemes are planned in the future and in light of the importance of sustainable transport options to health and the environment. Since post-scheme monitoring should be an important part of the implementation of a successful scheme, an estimate of the costs to do so should be included in the scheme costs.

6.1.3   Monitoring of schemes is **essential** both before and after implementation. A set of 'before scheme' data is required to establish a Without Scheme case against which to compare forecasts. The purpose of collecting post-scheme evaluation data is to ensure that the impact of any scheme is identified to:

- check whether the predictions made about a scheme were correct;

- determine whether a scheme was a success or not;

- analyse why it was effective (or otherwise);

- identify what can be learned from the scheme; and

- inform the analysis and appraisal of future schemes.

6.1.4   Evaluation can also be used to publicise a scheme and make the lessons learned available to the wider transport planning community. Useful guidance on the evaluation of Road Safety Education Interventions is contained in 'Guidelines for Evaluating Road Safety Education Interventions' (DfT, 2004c) and much of this may be applicable to the evaluation of a walking or cycling scheme.

6.1.5   The advent of Smarter Choices Initiatives also make monitoring and evaluation of vital importance. The data collected will assist in quantifying demand shifts through the introduction of softer measures and the propensity for people to change modes having received better information to make more informed choices. There is an evident overlap with the needs of transport models to forecast these changes in demand effectively, requiring relatively large volumes of good quality data.

6.1.6   Table 3 details the potential monitoring requirements of cycling and walking schemes.

Table 3 Minimum Monitoring Requirements of Cycling and Walking Schemes	
	Data to be collected
Prior to scheme implementation	Number of cyclists/pedestrians per day Utility/leisure split Journey time Origins and destinations
Scheme Details	Length of scheme Environmental improvements (landscaping, vegetation etc) Safety/security improvements (lighting, CCTV etc) Links with other schemes (part of a network, parking, resting places, crossings etc) Information (signage)
Following scheme implementation	Number of cyclists/pedestrians per day Utility/leisure split Mode shift (previous journey mode) Previous journey route (if transferred) Journey time Origins and destinations

6.1.7   Methods of monitoring cycling include the following:

- National Travel Survey, National Traffic Census, National Population Census (National level)

- Automatic Traffic Counters (ATCs) (including pneumatic tube counters, piezoelectric counters and inductive loops)

- Manual Classified Counts (MCC)

- Cordon and Screenline Counts

- Destination Surveys

- Interview Surveys

6.1.8   Monitoring techniques that should be used for walking include:

- Origin/destination surveys

- Household surveys and travel diaries

- Manual counts

- Automatic count methods (including video imaging, infrared sensors, piezoelectric pressure mats).

6.1.9 Further information on each of these monitoring techniques; how to select survey sites; and when to undertake surveys is provided in the ['Traffic Advisory Leaflets Monitoring Local Cycle Use' (DETR, 1999)](#) and ['Monitoring Walking' (DETR, 2000)](#).

7 References

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8 Document Provenance

This TAG Unit forms part of the restructured WebTAG guidance, taking previous TAG Units as its basis. It is based on previous Units 3.14.1 Guidance on the Appraisal of Walking and Cycling Schemes, which became definitive guidance in 2009, and 3.5.5 Impacts on Pedestrians, Cyclists and Others, which was based on Appendix G of Guidance on the Methodology for Multi-Modal Studies. The case study in the appendix has been updated to reflect changes to values in other guidance units.

Appendix A Summary Of Active Mode Scheme Appraisal Process

Figure 1, shows the basic processes used to collect together the various cost and benefit elements for the appraisal of a walking and cycling scheme. This method was used to generate the case studies in Appendix B.

BENEFITS

Unit benefit to journey quality for given scheme per km	Benefit due to reduced relative risk of mortality through physical activity (average individual)	
JOURNEY QUALITY BENEFIT	HEALTH BENEFIT	Mode shift from SP surveys (those who could use a car/bus but didn't)

| Scheme length | C/W kms along scheme | New C/W trips (observed/ forecast) | Tax revenue per car km |

| Average W/C trip length | Car/bus kms saved | TAX REVENUE |

CO₂ emissions over time (Cg/l)			
Average fuel consumption over time (Cg/l) for given speed	ENVIRONMENTAL BENEFIT	ACCIDENT BENEFIT	DECONGESTION BENEFIT
Social Cost of Carbon (SCC) per tonne			Decongestion benefit per km

| | Change in accident rate over time | |
| PRIVATE SECTOR BENEFIT | Cost of accidents by severity | Risk of accident by severity per km |

COSTS

Subsidies (positive) Developer contributions (negative)	REVENUE COST	TOTAL CAPITAL COSTS
	PT service revenue per passenger	Real Maintenance costs	Real Construction costs
		Optimism bias	Market price adjustment

Appendix B Example Walking and Cycling Case Study

B.1   Introduction

B.1.1   This Appendix applies the guidance to an example hypothetical case study for illustrative purposes. Section B.2 describes the hypothetical scheme and its costs; section B.3 describes the forecasting approach used; section B.4 sets out how the costs and benefits are calculated; section B.5 how the results should be reported; section B.6 describes sensitivity testing; and section B.7 commentary on the case study.

B.2   The Case Study and Scheme Costs

B.2.1   This appraisal case study considers improvements to a canal towpath in London, providing access to a major industrial business park area. The project consists of upgrades to an existing 6km route carrying relatively high levels of usage from modest to high quality. Improving levels of commuter use is a particular priority.

B.2.2   Construction of the hypothetical scheme takes place in 2010, with the scheme opening in 2011. The construction cost is estimated at £182,000 with maintenance costs incurred every year and estimated as £18,800 per annum, in 2010 prices.

B.3   Estimating demand for and impacts of cycling and walking schemes

B.3.1   The demand impact of the scheme is estimated with Approach 1: Comparative Study. The increase in demand is based on user counts and surveys before and after an actual completed scheme, which showed a considerable increase in usage following upgrade to the route surface quality and connectivity.

B.3.2   In this case study, background growth rates by mode were taken from data from the National Trip End Model (NTEM), specifically growth in trip productions per annum in London. In this case this was assumed to be 0.25% for cyclists and 0.52% for walkers.

B.3.3   Both the 'without scheme' and 'with scheme' scenarios are based on 2010 counts of walkers and cyclists using the route. The 'without scheme' scenario is then based on the annual NTEM growth rates above. The 'with scheme' scenario is based on counts from the comparative study, which showed a 51% increase in cyclists and 11% increase in pedestrians using a similar canal towpath two years after a similar upgrade (i.e. demand in 2012 in the with scheme scenario is 51%/11% greater than demand in 2010).

B.3.4   To calculate the number of cycling and walking users generated by the scheme, the number of users expected under the 'without scheme' scenario is subtracted from the forecast number of users under the 'with scheme' scenario. Table B1 below shows the usage in terms of numbers of cyclists and pedestrians based on the 2010 count data collected during the pre-implementation phase and the with and without scheme forecasts.

Table B1 Cyclists and pedestrians before and after intervention (based on observed counts)		
	Cyclists	**Walkers**
2010 (usage per day)		
Trips	1,085	517
Individuals	597	284
2012 (usage per day)		
Without scheme (trips)	1,090	522
With scheme (trips)	1,636	572
Usage difference (trips)	546	50
Without scheme (individuals)	600	287
With scheme (individuals)	900	315
Usage difference (individuals)	300	27

B.3.5   The number of individual users is based on the assumption that 90% of trips are part of a return journey using the same route, to avoid double counting in the calculation of the number of individuals affected (e.g. 1,085 trips * 90% / 2 + 1,085 trips * 10% = 597 individual users). The number of new individual users is used in the calculation of health benefits and is calculated by subtracting the number of users in the previous year from the number of users during the current year. The proportion of users on commuting journeys (which is relevant to the calculation of absenteeism benefits) is 56.4%, taken from surveys as part of the comparative study.

B.3.6   Levels of growth beyond 2012 have been estimated using the concept of a rate of decay in use, as discussed in section 2.1. In this case, it has been assumed that after the initial encouragement of active mode users to the intervention, rather than maintaining this increased level of use indefinitely, additional use reduces over time compared to the 'without scheme' case by 10% per annum. This may be seen as conservative in this case study, since the path is built and importantly maintained over time.

B.3.7   The number of car kilometres saved by the scheme is used in the calculation of decongestion, indirect tax and environmental impacts using the Marginal External Cost method. The total change in walking and cycling kilometres is calculated by multiplying the forecast 'without scheme' and 'with scheme' trips by the average trip lengths, which are assumed to be 3.9kms for cyclists and 1.15kms for walkers (taken from NTS) and subtracting the former from the latter. The proportion of users then reporting that they could have used a car but chose not to (27.3% in this example, based on surveys for the comparative study) is taken as the proportion of the total walking and cycling kilometres that can be described as car kilometres saved. Therefore, this example leads to 596 car kilometres being saved per day in 2012 (27.3%*(546 cycling trips * 3.9kms + 50 walking trips * 1.15kms)). Note in this example it is assumed that average journey lengths by mode remain unchanged. As a result, even though the intervention is a 6km length of off-road cycle track, it is not assumed that users will traverse the whole length of that track.

B.3.8   Figure B1, below, shows the number of walking and cycling trips forecast to use the scheme daily with and without the scheme. This also shows net change in car trips (since total car trips are not known and in fact do not matter as the important element is the reduction in car kilometres). Another assumption in this case is that no account has been made for potential mode shift from public transport.
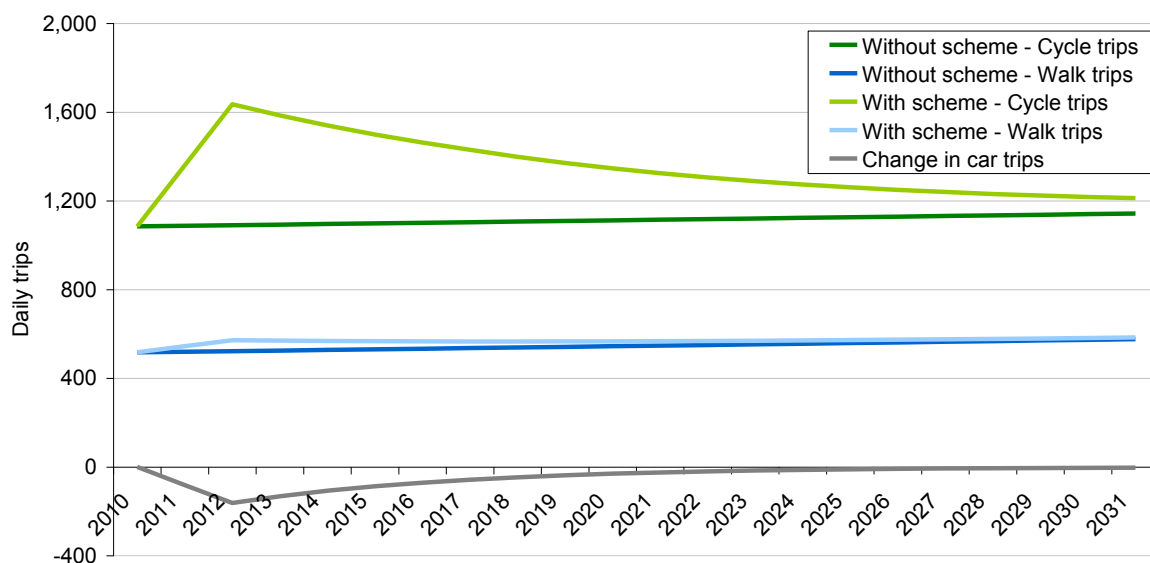
Figure B1 Daily usage forecasts of walking and cycling and net change in car mode

B.4   Calculating the costs and benefits

B.4.1   The combination of user numbers, growth rates and trip profiling form the basis for the calculation of total trips, numbers of new users, car kilometres saved, and numbers of commuter trips. Each of these is required for the generation of the monetised values for the items listed below. In each case the calculated value is the net present value over the appraisal period.

B.4.2   As discussed in section 3 the sixty year appraisal period over which most large-scale infrastructure schemes for other modes are assessed is not generally recommended for schemes targeting active modes. In this case study a twenty year appraisal period is used and sensitivity testing of this assumption is discussed in section B6.

B.4.3   This case study includes the physical activity, absenteeism, journey quality and decongestion (calculated using the Marginal External Cost method) benefits of the upgraded towpath. As it is an upgrade to an existing route, time savings to users are not included.

Scheme costs

B.4.4   The scheme investment costs (design and construction) and operating costs (maintenance) are required for the appraisal. Construction will take place in 2010 and the construction cost is estimated at £182,000. Maintenance costs will be incurred every year and are estimated as £18,800 per annum, in 2010 prices. The estimated costs have been adjusted by +15% to account for optimism bias (in practice, this varies with the level of development of the scheme – see TAG Unit A1.2 – Scheme Costs), and a further 19.1% has been added to adjust total capital costs and operating costs to market prices. The maintenance costs presented in Table B2 have been summed and discounted over the twenty year appraisal period to form part of the Present Value of Costs (PVC) (see TAG Unit A1.1 – Cost Benefit Analysis).

Table B2 Present value costs of the case study after inclusion of optimism bias and adjustment to market prices (2010 prices)		
	Capital costs	**Maintenance costs**
Scheme capital cost	£182,000	£276,545
+15% optimism bias	£209,300	£318,027
+19.1% market price adjustor	£249,276	£378,770

Physical Activity

B.4.5   The reduction in the relative risk of premature death due to physical inactivity is calculated for potential new walkers and cyclists along the scheme route, based on the time spent active per day using estimated average length (from the NTS, as above), speed (assumed to be 20kph for cyclists and 5kph for walkers from DMRB 11.8.3) and frequency of new trips encouraged by active modes. The reduction in relative risk for cyclists is 0.28 (relative risk of 0.72) at 36 minutes per day[2] and for walkers is 0.22 (a relative risk of 0.78) at 29 minutes per day for seven days a week[3] (compared to inactive individuals). As the reduction in relative risk is based on time spent travelling it is important to use realistic assumptions about average speeds.

B.4.6   Table B3 shows the calculation of the reduction of relative risk for walkers and cyclists. The average active time per day across individuals making return and single leg trips is based on the assumption that 90% of trips form part of a return journey. The reductions in relative risk are calculated by interpolating between 0 and the maximum reductions of 0.28 and 0.22 for cyclists and walkers, respectively, on the basis of the average active time per day (for example, for cyclists: 21.3mins / 36mins * 0.28 = 0.17).

Table B3 Calculation of reduction in relative risk of mortality for cyclists and walkers				
	Cyclists		**Walkers**	
	Return	Single	Return	Single
Daily distance (km)	7.8	3.9	2.3	1.15
Average speed (kph)	20	20	5	5
Active time per day (mins)	23.4	11.7	16.6	8.3
Proportion of individuals	0.82	0.18	0.82	0.18
Average active time per day (mins)	21.3		15.1	
Reduction in relative risk	0.17		0.11	

B.4.7   As the evidence on reductions in relative risk for walkers is based on increased activity for 7 days a week, the active time per day is adjusted for the number of days per year (220) the new walkers are assumed to use the upgraded towpath (i.e. for return journeys, Active time per day = 2.3km / 5kph * 60 minutes per hour * 220/365 days = 16.6 minutes per day).

B.4.8   The calculated reduction in relative risk of death and the number of new walkers and cyclists are used to calculate a figure for the potential number of lives saved based on average mortality rates. For this case study an average mortality rate of 0.0024 is used[4], the mean proportion of the population of England and Wales aged 15-64 who die each year. It is also assumed that the benefit of using active modes accrues over a five year period, after which new cyclists or pedestrians achieve the full health benefit of their activities.

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[2] Andersen et al (2000) All-Cause Mortality Associated With Physical Activity During Leisure Time, Work, Sports, and Cycling to Work, Archives of Internal Medicine, Vol. 160, pp1621-1628
[3] World Health Organisation (2011), Health economic assessment tools, (HEAT) for walking and for cycling, Economic Assessment of Transport Infrastructure and Policies, Methodology and User Guide, Copenhagen.
[4] Source: ONS 2007

B.4.9   The number of potentially prevented deaths is then multiplied by the value of a prevented fatality used in accident analysis (see TAG Data Book) to give a monetary benefit for each year. Table B4 shows the calculation of the physical activity benefits for new cyclists in 2012 when there are 300 new cyclists as a result of the scheme, 150 receiving 20% of the full benefit (as they have been more active for one year) and 150 receiving 40% (as they have been more active for two years).

Table B4 Calculation of the monetised physical activity cycling benefit in 2012					
% of total benefit	New cyclists	Average mortality	Expected deaths	Reduction in RR / potential lives saved	Value of a prevented fatality (2010 prices)
Total / average	300	0.0024	0.7	0.17	£1,643,572
100%	0	0.0024	0.0	0.00	£0
80%	0	0.0024	0.0	0.00	£0
60%	0	0.0024	0.0	0.00	£0
40%	150	0.0024	0.4	0.02	£38,500
20%	150	0.0024	0.4	0.01	£19,179
Total				0.04	£57,679

B.4.10   These calculations are repeated for both cyclists and walkers for each year of the appraisal period, including real growth in the value of a prevented fatality in line with forecast GDP/capita, then summed and discounted to give a total benefit of £1.3m, in 2010 present values. This may also be converted into a unit saving per additional cyclist or pedestrian for ease of calculation across the appraisal period.

Absenteeism

B.4.11   Absenteeism from work is expected to decrease where more people walk or cycle to work. Moderate physical activity is seen to lead to a reduction in sick days taken from work and hence provides a benefit to the employer. This is not the same as the benefit of better health for the individual.

B.4.12   Average annual absenteeism rates per person (7.2 days per year, based on London-specific data) are multiplied by the expected reduction in absenteeism from increased cycling and walking (6% based on 30mins activity per day), based on data from a US study (WHO, 2003), resulting in a reduction in sick days of 0.43 days per affected individual (7.2 * 6%). The employer cost saving of the reduction is then calculated, based on a daily employment cost of £300, resulting in a benefit of £129 per affected individual (£300 * 0.43). The number of new cyclists and walkers is factored by the proportion of commuting trips on the route (56.4%) to give the number of individuals affected. This results in a value for the reduction in absenteeism per new user of £52 per annum per new cyclist (£129 * 56.4% * 21.3mins / 30mins) and £37 per annum per new walker (£129 * 56.4% * 15.1mins / 30mins), based on the average time spent active relative to the 30 minutes per day in the US study.

B.4.13   As with the physical activity benefits, the absenteeism benefits are assumed to accrue over a five year period, are estimated for each year, including real growth in the employment cost in line with forecast GDP/capita, and then summed and discounted to give a total benefit of £77,500, in 2010 present values.

Journey Quality

B.4.14   Journey quality is calculated on the basis of a 'safety-insecurity' value, as derived from the research studies cited in the relevant section of TAG Unit A4.1.The approach is based on assigning a 'quality value' to each trip made by existing and new users. Separate journey quality values are used for

cyclists and pedestrians. In each case the 'rule of a half' is used whereby current users experience the full benefit of quality improvements but the benefits for new users are divided by 2.

B.4.15   For cycling trips, the journey quality value is derived from the willingness to pay value of an off-road cycle track (7.03 pence per minute in 2010 prices). The assumption is also made that the average cyclist will use the upgraded towpath for approximately half their journey and that the upgrade from previous conditions represents only half of the full value. Effectively this means that one quarter of this value is used, which converts to a unit benefit of 21 pence per cycle trip (7.03p / 2 / 2 * 11.7mins/trip).

B.4.16   For walkers it has been assumed that the improvements to the towpath will include level kerbs (1.9p/km), information panels (0.9p/km), pavement evenness (0.9p/km), directional signage (0.6p/km) and bench provision (06.p/km). Again it is assumed that walkers use the route for half their journey and so that full benefits are halved. This gives an approximate unit benefit of 3 pence per walking trip ((1.9+0.9+0.9+0.6+0.6) / 2 * 1.15).

B.4.17   The benefit per trip is applied to the forecast number of trips in the 'without scheme' case and, following the rule of a half, half the benefit per trip is applied to new trips in the 'with scheme' case. In these calculations an annualisation factor of 220 is used, based on the number of working days in a year. Weekend use is therefore not included and this may represent a conservative view. Quality benefits are calculated for each year, including real growth in the values in line with forecast GDP/capita, summed and discounted to give a total quality benefit of £1.0m, in 2010 present values.

Benefits estimated with the Marginal External Cost method

B.4.18   Decongestion, accident, greenhouse gas, air quality, noise and indirect tax benefits have been estimated using the marginal external cost method using forecasts of reduced car kilometres as a result of the scheme. Reduced highway maintenance costs (which are netted off the construction and maintenance costs in the PVC) are also calculated in the same way. Detail on this method, including a worked example based on this case study, in given in TAG Unit A5.4 – Marginal External Costs.

B.4.19   Table B5 shows the 2010 present value of the impacts estimated with the marginal external cost method.

Table B5 Impacts estimated with the marginal external cost method (2010 prices and present values)	
Impacts	**Present value**
Decongestion	£1,125,217
Accidents	£49,490
Greenhouse gases	£2,117
Air quality	£3,322
Noise	£15,183
Indirect tax	-£89,079
Infrastructure	£1,537

B.5   Reporting the results

Transport Economic Efficiency

B.5.1   The only Transport Economic Efficiency (TEE) impacts estimated in this case study are the road decongestion benefits, estimated from the estimated reduction in car kilometres. The £1.2m benefit represents both time and vehicle operating cost savings and is not disaggregated by journey purpose.

B.5.2 Table B6 shows a simplified Public Accounts (PA) table, recording the construction and maintenance costs of the scheme (from Table B2) and the reduced highway infrastructure costs and indirect tax impact estimated with the marginal external cost method (from Table B5).

Table B6 Public Accounts (PA) table		
Funding	**Walk / cycle**	**Road**
Revenue		
Operating costs	£378,770	-£1,537
Investment Costs	£249,276	
Developer and Other Contributions		
Grant/Subsidy Payments		
Indirect Tax Revenues		£89,079
Broad Transport Budget	£626,509	
Wider Public Finances	£89,079	

Analysis of Monetised Costs and Benefits

B.5.3 Values from the TEE and PA tables should be carried forward in to the Analysis of Monetised Costs and Benefits (AMCB) table. In addition, values for 'Physical activity' (including absenteeism), 'Journey quality', 'Accidents', 'Greenhouse gases', 'Noise' and 'Local air quality' should also be included in the AMCB table. The scheme 'Present Value of Costs' (PVC) is the impact on the 'Broad Transport Budget' from the PA table. The 'Present Value of Benefits' (PVB) is the sum of all other impacts (including the indirect tax impact). The 'Net Present Value' and the 'Benefit Cost Ratio' are then calculated from the PVC and PVB. Table B7 shows the AMCB table for this example and Figure B2 shows the breakdown of the benefits.

Table B7 Analysis of Monetised Costs and Benefits	
Noise	£3,322
Local Air Quality	£2,117
Greenhouse Gases	£15,183
Journey Quality	£1,034,576
Physical Activity (including absenteeism)	£1,331,358
Accidents	£49,490
Economic Efficiency (Decongestion)	£1,125,217
Wider Public Finances (Indirect Tax Revenues)	-£89,079
Present Value of Benefits (PVB)	£3,472,183
Broad Transport Budget	£626,509
Present Value of Costs (PVC)	£626,509
OVERALL IMPACTS	
Net Present Value (NPV)	£2,845,674
Benefit to Cost Ratio (BCR)	5.5
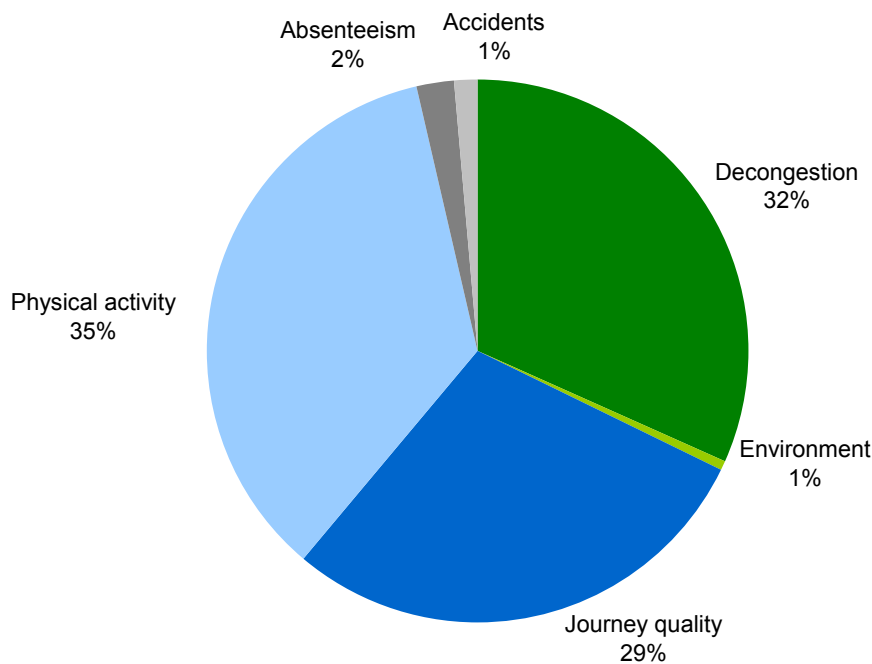
Figure B2 Proportion of benefits attributable to each main impact

B.6   Sensitivity testing

B.6.1   For this case study, assumptions around the decay rate, appraisal period and journey quality benefits were tested. Figure B3 below shows the forecast 'with scheme' cycling trips at each year under different decay rates.
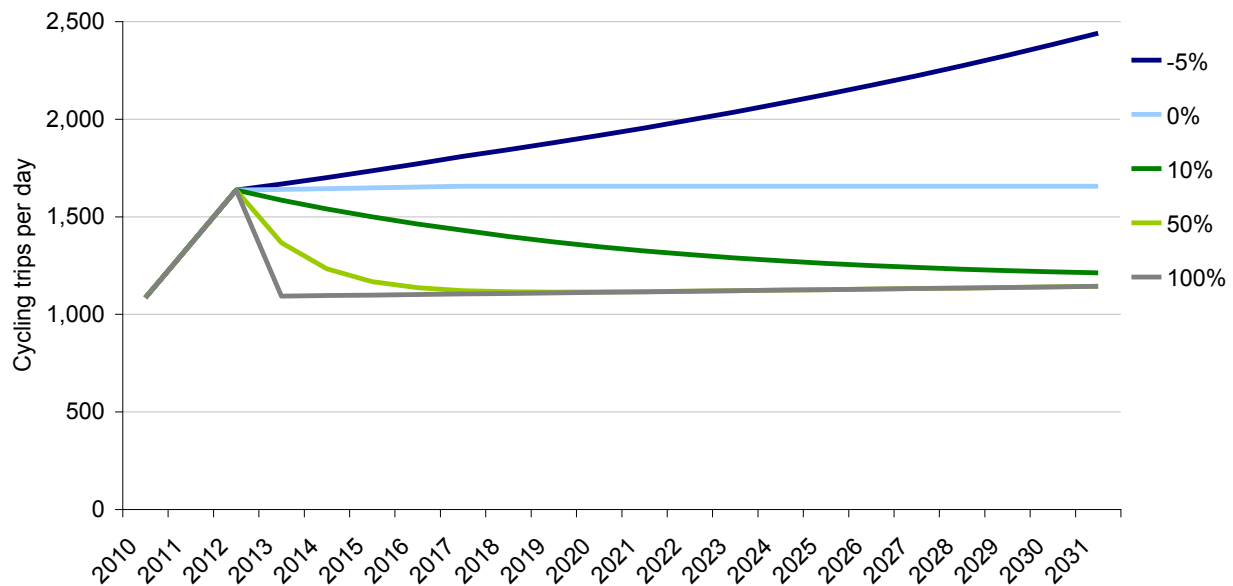
Figure B3 Cycling trips resulting from each decay rate assumption

B.6.2   Figure B4 below shows the impact on the BCR of varying the decay rate and the appraisal period. As is commonly found, the BCR increases with the appraisal period, particularly if a sustained impact is assumed (i.e. under the 0% and -5% decay rate assumptions). Under more conservative assumptions that cycling levels will decline gradually after the intervention, the BCR is less affected by the length of the appraisal period.

B.6.3   It is noteworthy that the more sustained the impact, i.e. the greater the number of new users, the more physical activity will dominate the benefits. With larger decay rates, journey quality benefits will

be proportionately more important, since the number of existing users that continue to receive the quality benefits will be more dominant in the profile of users.
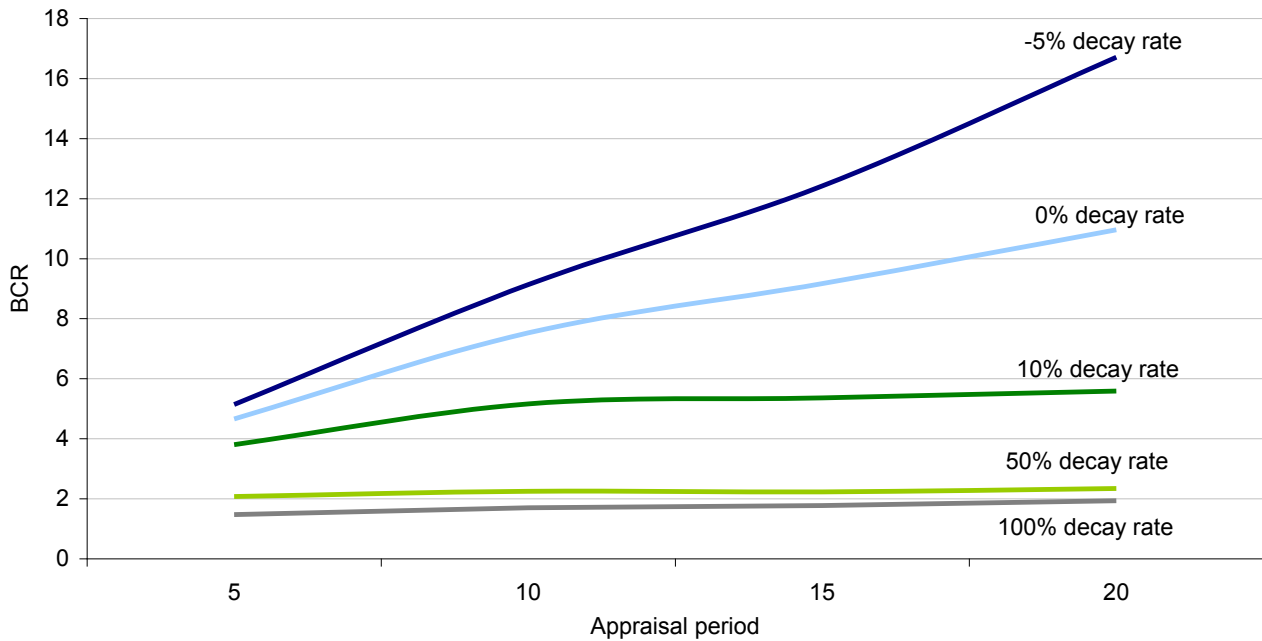
Figure B4 Sensitivity test results comparing the BCR for different decay rates and appraisal periods

B.6.4   Figure B5 shows how the BCR varies with changes to the assumed unit journey quality benefit. The core assumptions of 21p per cycle trip; 3p per walking trip; a decay rate of 10%; and a 20 year appraisal period, result in a BCR of 5.5. Even assuming one eighth of the journey quality benefits gives a BCR around 4 due to physical activity and decongestion benefits. Clearly, raising the level of benefits can have a large impact, with quality benefits of around £1.65 per cycling trip resulting in a BCR of 17. This illustrates the importance of setting quality benefits at a justified level, which are transparently supported by evidence.
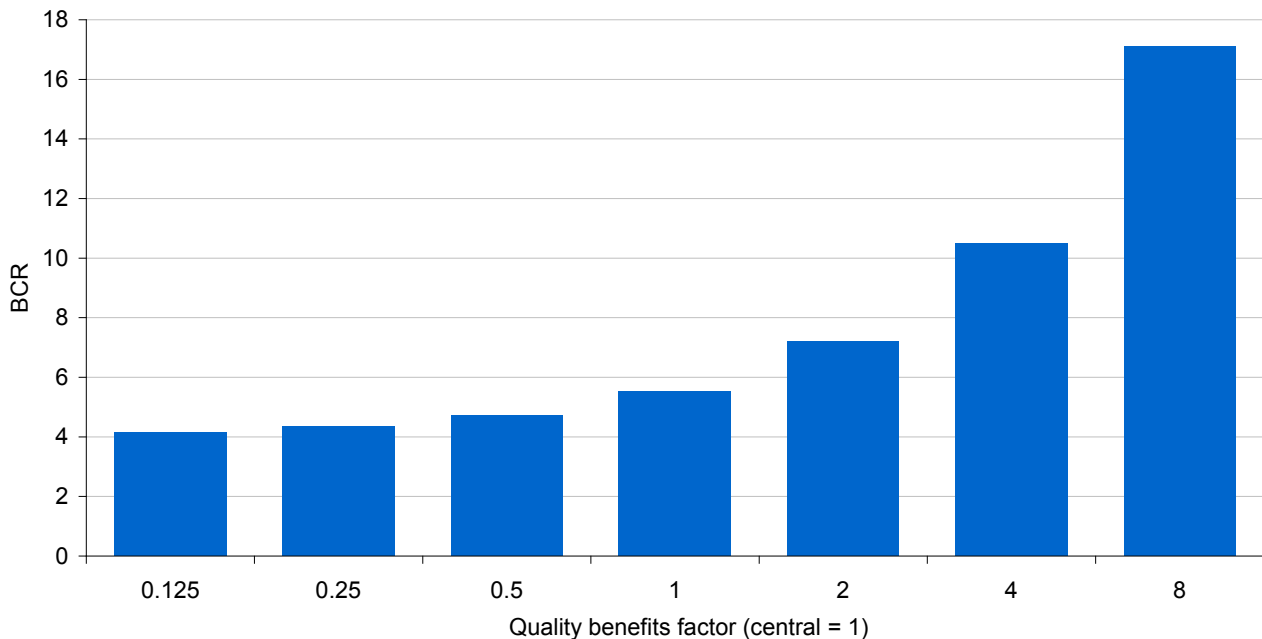
Figure B5 Sensitivity test results showing the impact on the BCR of different journey quality assumptions

B.7   Comments on the case study

B.7.1   The analysis shows that this scheme is forecast to be successful, with the main benefits resulting from physical activity, journey quality and decongestion. As the scheme is in a highly congested area (Central London) a high marginal external congestion cost is used in the calculation of decongestion benefits. Schemes in less dense and congested urban areas (where lower marginal external congestion costs should be used) are likely to see a lower proportion of decongestion benefits.

B.7.2   Physical activity benefits tend to dominate due to the relative success of the cycle track in encouraging new users to cycle and to a lesser extent to walk. The increase in demand will be in part due to the increased amenity that the route provides and its attractiveness to users, new and existing.

B.7.3   Since the route is already in use by a significant number of users, the amenity benefits of improved journey quality are proportionately high, as existing users receive the full benefit and new users receive only half (due to applying the rule of a half). Since it is assumed that the real and perceived quality of the route is sustained across the appraisal period of twenty years, this benefit continues to accrue, even where the decay rate reduces the number of users back towards the levels without the scheme (since existing users are also relatively high in the without-scheme case).

B.7.4   This case study provides a hypothetical example of the key themes that largely summarise the appraisal benefits of walking and cycling schemes in general:

- Physical activity benefits will tend to dominate where forecasts of new walk and cycle users are relatively large (i.e. significant mode shift occurs);

- Journey quality will be proportionately greater where there is a relatively large number of existing users;

- Decongestion benefits will be much more important in congested urban areas of a higher density.

B.7.5   A significant caveat in this case study is that the comparative study used in the forecasting interacts with the London congestion charge zone. Therefore, forecast usage of walk and cycle modes may piggy-back on the mode shift expected from that major scheme. This case study has been undertaken as a methodological exercise. Clearly this emphasises the need to consider local factors and potential impacts from other schemes, especially where significant mode shift may have occurred. Although difficult, attempts should be made to separate out the potential impacts of other schemes in the locality so that a common realistic reference case can be used when comparing different scheme options. In the example of this case study, the reference case used may inform other schemes in the area on a comparative basis, but must be recognised as potentially biased when appraising schemes in other areas that will not benefit from the same mode shift impact associated with the congestion charge scheme.

Appendix D   WebTAG Unit A5.4: Marginal External Costs

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TAG UNIT A5.4

Marginal External Costs

January 2014

Department for Transport

Transport Analysis Guidance (TAG)

https://www.gov.uk/transport-analysis-guidance-webtag

This TAG Unit is guidance for the **APPRAISAL PRACTITIONER**

This TAG Unit is part of the family **A5 – UNI-MODAL APPRAISAL**

Technical queries and comments on this TAG Unit should be referred to:

Contents

1   Introduction

1.1.1   Road decongestion benefits will arise where significant traffic reductions occur in moderate to congested conditions. In uncongested areas the effects of reduced traffic are likely to be minimal, analogous to moving along the flat part of a traditional speed/flow curve. Fully specified multi-modal models can provide robust estimates of decongestion benefits and should be used where practical and proportionate to do so.

1.1.2   However, in some instances alternative models, such as elasticity-based models, are used in forecasting, for example for the majority of rail schemes. Models of this sort are not capable of providing estimates of road decongestion benefits and this TAG Unit provides guidance on how decongestion benefits should be estimated when a multi-modal model is not used.

1.1.3   The primary method for estimating decongestion benefits in the absence of a multi-modal model is based on **marginal external costs** (MECs). The use of road vehicles incurs both private costs borne by the individual traveller (such as fuel costs and personal travel time) and external costs borne by others. For car use, these external costs include congestion, air pollution, noise, infrastructure and accident costs. The MEC method is based on the change in these external costs arising from an additional (or removed) vehicle (or vehicle km) on the network. These costs have been estimated from the Department's National Transport Model and **Surface Transport Costs and Charges: Great Britain 1998[1]**. More detail on the derivation of the costs, and the definitions of road types, area types and congestion bands, are given in Appendix A.

1.1.4   The MEC method is most likely to be used when appraising rail, walking or cycling interventions, where the use of multi-modal models is less common and analysts should refer to TAG Unit A5.1 – Active Mode Appraisal and TAG Unit A5.3 – Rail Appraisal, as appropriate. The MEC method may also be applicable in other situations, for example for low cost options or where decongestion benefits are small compared to other impacts, but this should be agreed with the Department at an early stage and verified in the Appraisal Specification Report (see Guidance for the Technical Project Manager).

1.1.5   The MEC method does not take into account all of the responses available to those who switch mode (for example changing destinations) or the effect of the initial change in traffic levels on costs and subsequent demand. Sensitivity testing of scheme appraisals to the results of the MEC approach will therefore be expected.

1.1.6   Alternative methods for estimating decongestion benefits in the absence of a multi-modal model, but when information on highway flows or trips is available, are discussed in section 3. As above, sensitivity testing is expected of the impact on the scheme appraisal of assumptions made when using these methods.

2   Application of marginal external costs

2.1.1   Several steps need to be taken to estimate the change in the external costs of car use from this information. Steps one to three calculate total changes in external costs for the opening year and the future forecast year, and then step four explains how this analysis can be extended to cover the whole appraisal period

- Step 1 – Estimate the change in car kilometres

- Step 2 – Analyse the characteristics of the car journeys removed

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[1] Sansom, T., Nash, C., Mackie, P., Shires, J., & Watkiss, P. (2001) 'Surface Transport Costs & Charges: Great Britain 1998' Department of the Environment, Transport and the Regions, London.

- Step 3 – Calculate marginal external costs for modelled years

- Step 4 – Discount costs over the appraisal period

2.1.2   A worked example of the method is given in Appendix B.

2.2   Step 1 – Estimate the change in car kilometres

2.2.1   The first step is to estimate the change in car kilometres due to the intervention in the opening year and at least one other forecast year. This will be determined by the extent to which car traffic will be diverted off the roads. There will be a diversity of approaches to this assessment depending on the nature of the scheme and its size. The Department should be consulted when new approaches are used or new issues arise when estimating the change in car kilometres.

2.2.2   Diversion factors for schemes can be derived from the experience of previous similar schemes, or may also be estimated from a study undertaken specifically for the scheme. A survey of the intention of road users affected by the scheme will quantify the number of journeys that may move from the road so potentially resulting in decongestion benefits.

Rail diversion factors

2.2.3   Where possible, the change in car kilometres should be estimated using local evidence such as passenger surveys. In the absence of local evidence, diversion factors based on the National Transport Model (NTM) may be used to convert a change in rail passenger kilometres to a change in car kilometres. The diversion factors are presented in Table 1 and show that, for example, for a hypothetical increase in rail travel of 100 kilometres, 46 kilometres (46%) would come from lengthening current rail trips, with the remaining 54 kilometres from diversion from other modes (including 26 kilometres from removed car kilometres[2]). The diversion factors were estimated by modelling an increase in rail fares and should be subject to sensitivity testing. More detail on their derivation is given in Appendix C.

Table 1 National average diversion factors from the National Transport Model - Changes in distance travelled as a percentage of a change in rail passenger kilometres						
	Walk	Cycle	Car driver	Car passenger	Bus	Total kms travelled
Change in distance travelled by mode as % of change in rail passenger kms	-0.47%	-0.46%	-26%	-20%	-7.4%	46%

2.2.4   For some schemes these national diversion factors will not be applicable, for example where long distance access trips by car are likely to be affected or where the purpose of a scheme is to encourage mode shift. All scheme appraisals will need to consider whether the nature of the scheme is likely to make the national factors inappropriate, meaning that local evidence will be required to inform the change in car kilometres.

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[2] For the purposes of this unit, the 20% change in car passenger kilometres does not affect the change in car kilometres.

Walking and cycling diversion factors

2.2.5   The diversion factors in Table 1 may also be applicable to walking and cycling schemes, although more detailed empirical evidence and forecasting techniques are more relevant (e.g. Evaluation data from the Sustainable Travel Towns[3]).

2.3   Step 2 – Analyse the characteristics of the car journeys

2.3.1   In the absence of a highway model, the techniques described below assign the car kilometres saved to different road types, area types and congestion levels. If feasible and proportionate to the cost of the proposed scheme, local evidence should be sought about the routes that would be used. Likely road routes can be identified using highway models or routing software, while traffic flow data for busy roads is available from the relevant highway authority. If possible an opening year estimate and at least one further forecast year estimate should be produced.

2.3.2   Local analysis of the characteristics of the traffic is likely to be most feasible for the opening year estimate. Congestion levels are expected to change over time and routes may also change if, for example, other transport schemes are built. Consideration should be given to how the assignment of traffic might change over time, but this may not be possible in some circumstances. In this case, the same pattern of traffic may be assumed in the future forecast year as the opening year. Advice from the Department should be sought if it is unclear what effort is proportionate.

2.3.3   In the absence of, or to support, local evidence, estimates of regional traffic flows derived from the NTM can be used. The proportions of traffic in each congestion level for each road type and area type vary by region and are given in the TAG Data Book:

A5.4.1 – Traffic by region, congestion band, area type & road type

2.3.4   Proportions of traffic are given for 2010 and five year intervals to 2035. Proportions for any intermediate year can be obtained by linear interpolation. The proportions for 2035 may be assumed if the future forecast year is beyond that date.

2.3.5   If local evidence can provide road and area types but not congestion bands, then the regional traffic tables can provide evidence on likely congestion bands. For example, if the evidence suggests that a road trip which diverts from rail in the East Midlands will use only rural roads, of which half are 'A' and half are 'other', then these two columns of the table for that region can be used to derive the appropriate weights to apply to the diverted car kilometres. These weights will indicate the level of congestion typically encountered by each additional car kilometre in that region for the selected road and area type. Advice should be sought from the Department if the most appropriate method of application is unclear.

2.4   Step 3 – Marginal external costs results

2.4.1   Steps one and two should provide the change in car kilometres by road type, area type and congestion level for the opening year and, usually, at least one other forecast year. These can then be used with the marginal external costs given in the TAG databook, disaggregated in the same way, to estimate the decongestion benefits in the opening and forecast year:

A5.4.2 – Marginal external costs by road type and congestion band

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[3] https://www.gov.uk/government/publications/the-effects-of-smarter-choice-programmes-in-the-sustainable-travel-towns-full-report

2.4.2   The marginal external costs are presented in pence per kilometre in real, undiscounted
        market prices. The results change over time as the underlying values of the impacts
        increase in line with Departmental methodology and factors such as fuel efficiency
        improve. Also presented are weighted average costs for Great Britain for each element.

2.4.3   The values for each future year should be combined with the characteristics of the
        predicted car traffic changes to give the total external costs of those changes for the
        scheme opening year and the other forecast year.

2.4.4   Care must be taken when using values in congestion band 5. In principle these are
        conditions where traffic flow has broken down and there is currently little evidence as to
        how traffic operates in such conditions. Therefore the analyst should consult the
        Department if considering using values in this band.

2.4.5   The method described above assumes that the alternative journeys taken in the without
        scheme and with scheme scenarios have the same origin and destination area types. This
        simplifying assumption is necessary in the absence of a trip distribution model.

2.4.6   In some instances, particularly some rail interventions which are aimed at a particularly
        time of day, it is more practical to classify changes in car kilometres by time of day and
        region, rather than road type and congestion band. The TAG databook also contains
        proportions of traffic and marginal external costs disaggregated in this way:

        A5.4.3 – Car traffic shares by time of day

        A5.4.4 – Marginal external costs by region and time of day

2.4.7   The values in Table A5.4.4 relate only to transport economic efficiency (time and vehicle
        operating cost) impacts. Therefore, where these values are used to calculate decongestion
        benefits, values from Table A5.4.2 should be used to estimate other impacts (such as
        accidents or greenhouse gas emissions). In such circumstances it may be problematic to
        determine the appropriate road type, congestion band etc so the weighted average values
        for Great Britain should be used.

2.4.8   The choice of which level of disaggregation to use should be based on what is most
        practicable in view of the scheme and the requirements of the analysis. The reporting
        should include a justification of the external costs used and where various options are
        considered (potentially including different modes) it is expected that a consistent approach
        will be taken.

2.5   Step 4 – Calculation of discounted external costs of car use for whole appraisal period

2.5.1   Steps 1-3 will have provided total undiscounted external costs of changes in car use for the
        scheme opening year and, usually, at least one other forecast year.

2.5.2   Interpolation and extrapolation can be used to derive individual values for all other future
        years to the end of the appraisal period. Analysts should have regard to the advice in TAG
        Unit A1.1 - Cost Benefit Analysis on interpolation and extrapolation of benefits.

2.5.3   However, it is recognised that defining reasonable growth profiles for traffic may be difficult
        for many schemes, particularly those that have used the regional traffic proportions
        provided above. In the absence of other evidence, road demand (and its allocation to the
        area and road types/congestion levels) in the final year of the appraisal period may be
        assumed to be the same as in the last modelled year. The standard assumptions about
        growth in factors such as values of time and fuel efficiency should be assumed to continue
        to grow over time and these values applied in the last year of the appraisal period.

2.5.4   The profile of benefits between the last modelled year and the end of the appraisal period may then be estimated by interpolation between the benefits estimated in the last modelled year and the end of the appraisal period.

2.5.5   These results should then be discounted to the Department's standard base year. TAG Unit A1.1 also includes advice on discounting.

3   Alternative approaches

3.1.1   Where a highway model is available it can be used to estimate decongestion benefits without using the external costs estimated by the NTM. The alternative approaches below still require an initial estimate of the reduction in car kilometres (Step 1 – Estimate the change in car kilometres) but Step 2 – Analyse the characteristics of the car journeys and Step 3 – Marginal external costs results can be replaced by:

- manual reduction of flows on the affected highway links. As this is a simple link-based approach, the output can be analysed to determine the average cost per vehicle at different flow levels. This approach should only be used where the number of highway trips removed is small and the routing of highway trips can be assumed to be unaffected;

- manual reduction of trips for the affected cells of the highway trip matrix. Following this, a highway assignment model should be applied and benefits can be assessed using TUBA. This method should be used where re-routing of highway trips is expected, but secondary induced traffic effects can be ignored; or

- where changes in highway journey times are significant and these benefits become a significant proportion (say, about 10%) of the transport economic efficiency benefits, induced traffic should be taken into account via an augmented application of the method discussed in the preceding bullet. Trips in affected cells of the highway trip matrix may be manually reduced. However, when applying the highway assignment model, elasticities should be included to cater for induced traffic. Further guidance on the use of elasticities to estimate induced traffic is given in TAG Unit M2 – Variable Demand Modelling. The TUBA software programme should be used to assess the decongestion benefits.

4   Presentation of results

4.1   Appraisal tables

4.1.1   The results of this analysis should be presented in the standard Transport Economic Efficiency, Public Accounts and Analysis of Monetised Costs and Benefits tables. Results should be reported as follows:

- The estimated change in congestion costs should be entered in TEE table as a change in consumer travel time for cars, LGVs and goods vehicles. It should be noted that the calculation of 'congestion' cost includes an estimate of vehicle operating cost changes.

- The estimated changes in greenhouse gases, local air quality, noise and accident costs should be entered in the relevant boxes of the AMCB table.

- Road related infrastructure costs will generally accrue to the Highways Agency or Local Government and should therefore appear in the PA table under the central or local government investment costs headings.

- A note should be added to all tables to explain that the methodology in this unit has been applied.

4.1.2 All values estimated using this method should also be included in the Appraisal Summary Table with a note to explain how they were estimated.

4.2 Spreadsheet of results

4.2.1 It is anticipated that the above method will require the use of spreadsheet software to calculate the total external cost change estimate. A clear spreadsheet of all calculations, assumptions and results must be submitted with any scheme that uses this methodology. The separate totals for each category of benefit calculated using this methodology (e.g. congestion, greenhouse gases, etc.) should be stated clearly in scheme documentation.

5 References

Sansom, T., Nash, C., Mackie, P., Shires, J., & Watkiss, P. (2001) 'Surface Transport Costs & Charges: Great Britain 1998' Department of the Environment, Transport and the Regions, London.

Sloman, L., Cairns, S., Newson, C., Anable, J., Pridmore, A. & Goodwin, P. (2010) 'The Effects of Smarter Choice Programmes in the Sustainable Travel Towns', Report to the Department for Transport, London.

6 Document Provenance

Marginal External Congestion Costs

This TAG Unit forms part of the restructured WebTAG guidance, taking the 'in draft' October 2013 versions of TAG units 3.9.5 – MSA – Decongestion Benefits and 3.13.2 – Guidance on Rail Appraisal – External Costs of Car Use as its basis. This includes adjustments to the decongestion element of the marginal external costs as a result of changes to the values of travel time savings.

Unit 3.9.5 was based on Annex E of **Major Scheme Appraisal in Local Transport Plans: Part 1 Detailed Guidance on Public Transport and Highway Schemes** (DfT, 2003). It was updated in 2007, when rail specific guidance in Unit 3.13.2 was also introduced. Both units were updated again in August 2012.

Appendix A MECS and the National Transport Model

A.1 Derivation of MECs from the National Transport Model

A.1.1 This section describes how marginal external costs have been calculated using the National Transport Model (NTM). It is a multi-modal model which includes 6 modes of transport - car driver, car passenger, rail, bus, walk and cycle. The model is composed of a series of sub-models, three of which are applied in iteration to produce the main model outputs. More information on the NTM is available on the DfT's website[4].

A.1.2 The NTM calculates the marginal costs of congestion using a set of speed-flow curves. These are used to represent the relationship between the volume of traffic on a particular link and the speed of the traffic. Congestion is modelled as non-linear. When a link is relatively free of congestion, an additional vehicle will not have a large impact on speed. As the link becomes more congested, an additional vehicle will have a much larger impact upon average speed.

A.1.3 Within the NTM, congestion is defined as time lost relative to free flow conditions. The speed at free flow conditions is set at the speed limit, adjusted for junctions. As a link becomes congested (and therefore traffic will be travelling at less than free-flow speed) the implied time penalty is modelled.

A.1.4 The external costs associated with the time penalty firstly consists of the value of journey time increases due to congestion. The NTM combines the modelled delay of a marginal vehicle with the recommended WebTAG values of time (TAG Data Book) and then sums these across all users of a road to give the cost of delay of an additional vehicle kilometre.

A.1.5 In addition, the change in vehicle operating costs are taken into account. The addition of a single car will result in a small change in vehicle operating costs per vehicle caused by a small reduction in average speed for all the vehicles already on the link. Adding these costs to the time costs of delay gives the marginal external congestion costs.

A.1.6 Estimates of the external costs of accidents, noise, infrastructure damage, local air quality and greenhouse gases (in the form of carbon in carbon dioxide) are calculated in addition to the congestion costs. These are taken from Sansom et al. (2001) which gives these marginal external costs by vehicle-type, road-type and area-type for 1998. Values are adjusted away from Samson et al. (2001) to reflect updated subsequent guidance.

A.1.7 Overall, both NTM results on congestion and other external costs originating from Sansom et al. are valued in the future given:

- Values of time extrapolated according to TAG Data Book table 1.3.2;

- DECCs guidance on the current and future cost of a tonne of CO_2 with the NTM accounting for improvements in fuel efficiency;

- DEFRA guidance on the current cost of NO_x and PM_{10} (the latter by area type);

- Current and future fuel duty and VAT from HM Treasury;

- Accidents, local air pollution, noise and infrastructure costs are all assumed to grow in line with GDP per capita reflecting increases in people's willingness to pay. The NTM accounts for tighter vehicle emissions standards in line with DEFRA guidance.

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[4] https://www.gov.uk/government/organisations/department-for-transport/series/transport-appraisal-and-modelling-tools#the-national-transport-model

A.2   NTM road and area types

A.2.1   This section contains information and tables explaining the definitions of terms used in FORGE (Fitting On of Regional Growth and Elasticities) and the marginal external cost outputs. Table A1 shows the codes assigned to different area and road types used in TAG Data Book tables A5.4.1 and A5.4.2. All motorways outside conurbations are assumed to be in rural areas for the purposes of the model.

Table A1 Specification of Conurbations, Other Urban, Rural, Motorways, A roads and B&C roads in terms of FORGE area and road type codes									
FORGE Area Type	Conurbations 1 to 5			Other Urban 6 to 9			Rural 10		
FORGE Road Type	Motor ways	A roads	Other roads	Motor ways	A roads	Other roads	Motor ways	A roads	Other roads
	1	2 to 5	6 & 7	n/a	2 to 5	6 & 7	1	2 to 5	6 & 7

A.2.2   Table A2 shows the FORGE area type codes and a detailed definition of the FORGE area types.

Table A2 FORGE area types	
1. Central London	City of London, Westminster south of Westway, and a few adjacent wards of neighbouring boroughs
2. Inner London	Remainder of: Westminster, Camden, Islington, Kensington & Chelsea, Lambeth, Southwark. All of: Hackney, Hammersmith & Fulham, Haringey, Lewisham, Newham, Tower Hamlets, Wandsworth
3. Outer London	Barking & Dagenham, Barnet, Bexley, Brent, Bromley, Croydon, Ealing, Greenwich, Harrow, Havering, Hillingdon, Hounslow, Kingston-upon-Thames, Merton, Redbridge, Richmond upon Thames, Sutton, WalthamForest.
4. Inner Conurbation	Cities of Birmingham, Manchester, Liverpool, Sheffield, Leeds, Newcastle Upon Tyne and Glasgow
5. Outer Conurbation	Remainder of former Metropolitan counties: i.e. rest of West Midlands, rest of Greater Manchester, rest of Merseyside, rest of South Yorkshire, rest of West Yorkshire, rest of Tyne & Wear and the Greater Glasgow area (including Kirkintilloch, Airdrie, Wishaw, East Kilbride, Paisley, Erskine and Milngavie)
6. Urban Big (>250,000)	Blackpool, Bournemouth, Brighton, Bristol, Cardiff, Edinburgh, Hull, Leicester, Middlesbrough, Nottingham, Plymouth, Portsmouth, Southampton, Stoke
7. Urban Large (>100,000)	Aberdeen, Basildon, Blackburn, Cheltenham, Colchester, Derby, Dundee, Gloucester, Ipswich, Luton, Milton Keynes, Newport(Gwent) Northampton, Norwich, Oxford, Peterborough, Preston, Reading, Slough, Southend, Swansea, Swindon, Telford, Torbay, Warrington
8. Urban Medium (>25,000)	Abbots Langley, Abingdon, Accrington, Aldershot & Farnborough, Alfreton & Heanor, Amersham & Chesham, Ashford, Ashtead, Aylesbury, Ayr, Banbury, Banstead, Bargoed & Newbridge, Barnstaple, Barrow, Barry, Basingstoke, Bath, Bedford, Bedworth, Belper & Duffield, Bexhill, Billericay, Bishop Auckland, Bishop's Stortford, Blyth & Cramlington, Bognor Regis, Boston, Bracknell, Bradford & Trowbridge, Braintree, Brentwood, Bridgend, Bridgwater, Bridlington, Bromsgrove, Buckhaven & Leven ,Burnley & Padiham, Burton upon Trent, Bury St Edmunds, Bushey Heath, Camberley & Frimley, Camborne & Redruth, Cambridge, Cannock, Canterbury, Canvey Island, Carlisle, Caterham & Warlingham, Chatham, Chelmsford, Chertsey, Chester, Chesterfield, Chippenham, Chipping Sodbury, Chorley, Clacton/Frinton/Walton, Cleethorpes, Clevedon & Backwell, Codsall & Wombourne, Congleton, Consett & Stanley, Conwy & Llandudno, Corby, Crawley, Crewe & Nantwich, Cumbernauld, Cwmbran, Darlington, Dartford, Deal, Dover, Dumbarton & Alexandria, Dunfermline, Durham, East Grinstead, Eastbourne, Eastleigh, Egham, Ellesmere Port, Epping/Loughton/Chigwell, Epsom & Ewell, Exeter Exmouth, Falkirk & Grangemouth, Falmouth, Farnham, Fleet, Gillingham, Glenrothes, Glossop, Grantham, Gravesend, Grays & Ockenden, Great Malvern, Great Yarmouth, Greenock & Port Glasgow, Grimsby, Guildford,, Hailsham & Polegate, Harlow, Harpenden, Harrogate, Haslingden & Rawtenstall, Hassocks & Burgess Hill, Hastings, Hatfield & Welwyn, Hartlepool, Haywards Heath, Hemel Hempstead, Hereford, Herne Bay & Whitstable, High Wycombe, Hinckley, Hitchin/Letchworth/Baldock, Hoddesdon/Cheshunt, Horsham, Hucknall, Hythe/Folkestone, Ilkeston, Inverness, Kettering, Kidderminster, Kilmarnock, King's Lynn, Kirkcaldy, Lancaster, Lancing, Leatherhead, Leighton Buzzard, Leyland, Lichfield, Lincoln, Littlehampton,, Livingston, Llanelli, Loughborough, Lowestoft, Lymington/New Milton, Macclesfield, Maidenhead, Maidstone, Mansfield, Margate, Marske/Saltburn/Brotton, Merthyr Tydfil, Mold/Buckley, Neath, Nelson/Colne, Newark, Newbiggin/Bedlington, Newbury, Newhaven & Seaford, Newton Abbot, Northwich, Nuneaton, Ormskirk/Skelmersdale, Penarth, Perth, Peterhead, Peterlee, Pontypridd, Port Talbot, Radlett/Elstree/Borehamwood, Rainham/Wigmore, Ramsgate/Broadstairs, Rayleigh/Rochford, Redditch, Reigate, Rhyl/Prestatyn, Rickmansworth, Rochester, Rugby, Runcorn, Salisbury, Sandown & Ventnor, Scarborough, Scunthorpe, Seaham, Sheerness, Shildon/Newton Aycliffe, Shrewsbury, Sittingbourne, South Oxhey, Spennymoor/Coxhoe, St Albans, St Neots, Stafford, Staines/Sunbury, Stanford-le-Hope, Stevenage, Stirling, Stroud/Nailsworth, Sutton/Kirkby, Swadlincote, Tamworth, Taunton, Tonbridge, Tunbridge Wells, Waltham Abbey, Walton/Weybridge/Esher, Warwick & Leamington Spa, Watford, Wellingborough, Weston-super-mare, Weymouth & Portland, Whitehaven, Widnes, Wilmslow, Winchester, Windsor, Winsford, Witham, Woking, Wokingham, Worcester, Worksop, Worthing, Wrexham, Yateley, Yeovil, York
9. Urban Small (>10,000)	
10. Rural	

A.2.3   Table A3 gives a description of the FORGE road type codes.

Table A3 FORGE road codes			
Road Type	London and Conurbations	Other Urban	Rural
1	Motorway	N/A	Motorway
2	N/A	N/A	Trunk Dual A
3	N/A	N/A	Principal Dual A
4	Trunk A	Trunk A	Trunk Single A
5	Principal A	Principal A	Principal Single A
6	B and C Roads	B and C Roads	B Roads
7	Unclassified	Unclassified	C & Unclassified

A.3   NTM congestion bands

A.3.1   The congestion bands used in the external costs spreadsheets reflect the volume to capacity ratio of a traffic link. The volume (v) is the actual traffic flow and the capacity (c) is the theoretic maximum traffic flow. These can be expressed in terms of vehicle (or PCU (passenger car unit)) per time period per road (or lane) length. Table A4 shows how the congestion bands relate to the ratios.

Table A4 Congestion Bands in terms of volume over capacity	
Congestion band	Volume / Capacity
1	v/c < 0.25
2	0.25 < v/c < 0.5
3	0.5 < v/c < 0.75
4	0.75 < v/c < 1
5	v/c > 1

A.3.2   When assigning traffic to the v/c bands the process assumes "average network" lane capacities. However, depending on local conditions, the actual capacity of a link may be somewhat more or less than the capacity assumed at the site. In some cases actual flows may exceed the theoretical capacity of a link and lead to v/c ratios in excess of 1.

A.3.3   Appraisals should seek to identify the capacities of roads that are used as substitutes for rail, if possible and proportionate for the size of the scheme. In the absence of more local knowledge, Tables A5 and A6 contain suggested capacities for roads in rural and urban areas respectively. Table A7 shows the PCU factors for different vehicle types.

Table A5 Suggested average capacities (PCU per lane km per hour) for rural roads					
Road Type	Motorway	Trunk & Principal Dual	Trunk & Principal Single	B Roads	C & Unclassified Roads
Capacity Flow (PCU)	2330	2100	1380	1150	1050

Table A6 Suggested average capacities (PCU per lane km per hour) for urban roads

Road Type	Area Type	Capacity Flow (PCU)
Motorway	1, 2 & 4	2000
	3 & 5	2330
A Road	1,2 & 4	700
	3	1100
	5	1100
	6,7,8 & 9	1100
B&C Road	1	550
	2	550
	3	790
	4	550
	5 & 6	790
	7 to 9	1050
Unclassified Road	1	550
	2	550
	3	790
	4	550
	5 & 6	790
	7 to 9	1050

Table A7 PCU Factors by Vehicle Type

Vehicle Type	PCU Factor
Car	1.0
Light Goods Vehicle	1.0
Rigid Goods Vehicle	1.9
Artic Goods Vehicle	2.9
Public Service Vehicle	2.5

Appendix B Marginal External Cost worked example

B.1.1 This appendix provides a worked example of how to calculate the benefits of reduced car kilometres resulting from mode switch using the Marginal External Cost (MEC) method. The example is based on the cycling and walking case study of improvements to a canal towpath serving a large industrial estate in London in Appendix B to TAG Unit A5.1 – Active Mode Appraisal.

B.1.2 The example follows the four-step process described in the main body of this Unit:

- Step 1 – Estimate the change in car kilometres

- Step 2 – Analyse the characteristics of the car journeys removed

- Step 3 – Calculate marginal external costs for modelled years

- Step 4 – Discount costs over the appraisal period

B.2 Step 1 – Estimate the change in car kilometres

B.2.1 Forecast demand for walking and cycling kilometres as a result of the scheme are forecast on the basis of before and after intervention trip counts from a comparative study and assumptions about average trip distance. Removed car kilometres are based on user surveys from the comparative study which indicated that 27.3% of users had a car available for the trip but chose not to use it. The length of car trips removed is assumed to be equal to the walking and cycling trips they are replaced with, meaning car kilometres removed are 27.3% of the forecast increase in walking and cycling kilometres.
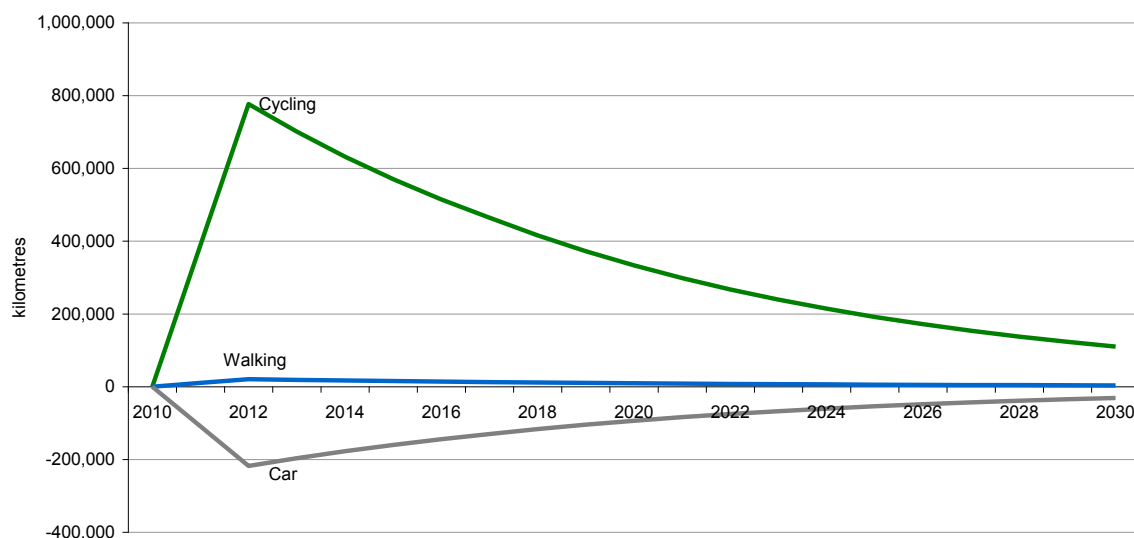
Figure B1 - Forecast increase in annual walking and cycling kilometres and reduction in car kilometres

B.3 Step 2 – Analyse the characteristics of car journeys removed

B.3.1 In the absence of specific information on the car trips being removed, average proportions of traffic by road type for London from **TAG Data Book table A5.4.1** have been used.

Table B1 Proportions of traffic by road type for London (TAG Data Book table A5.1)			
	Motorways	**A Roads**	**Other Roads**
2010	4.1%	55.6%	40.2%
2015	4.1%	55.9%	40.0%
2020	4.2%	55.8%	40.0%
2025	4.3%	55.8%	39.9%
2030	4.3%	55.7%	40.0%

B.4 Step 3 – Calculate marginal external costs for modelled years

B.4.1   The MECs by road type for London, for each category of impact and year, were taken from **TAG Data Book table A5.4.2**. These were then weighted with the proportions of traffic in Table B1 to produce weighted average marginal external costs for each year and category of impact.

Table B2 Weighted average marginal external costs for London (pence per kilometre, 2010 market prices)					
	2010	**2015**	**2020**	**2025**	**2030**
Decongestion	56.0	62.1	81.0	109.3	132.1
Infrastructure	0.1	0.1	0.1	0.1	0.2
Accidents	2.9	3.1	3.4	3.6	4.0
Local Air Quality	0.3	0.1	0.1	0.00	0.00
Noise	0.2	0.2	0.2	0.3	0.3
Greenhouse Gases	1.1	1.0	0.9	0.9	0.9
Indirect Taxation	-6.2	-6.0	-5.5	-4.8	-4.5
Reduction in car kms	0	-159,932	-93,579	-53,922	-31,042
Net impact	£0	-£96,922	-£74,947	-£58,975	-£41,278

B.4.2   The benefit in each year for which marginal external costs are provided is then calculated as the product of the MECs presented in Table B2 and the number of car kilometres forecast to be removed in that year.

B.5 Step 4 – Discount costs over the appraisal period

B.5.1   Forecast reductions in car kilometres were produced for each year of the appraisal period. Therefore the MECs for each category were interpolated between the years for which values are given in the TAG databook (for example a decongestion value of 72.4pence per kilometre in 2018). The cost per kilometre for each category was multiplied by the number of car kilometres removed in each year of the appraisal period. The stream of benefits for each category was then discounted to a 2010 base year using the standard HMT Green Book discount rates given in **TAG Data Book table A1.1** and described in TAG Unit A1.1 – Cost Benefit Analysis.

B.5.2   The calculations are set out in Table B3 and the overall results are presented in Table B4 (the figures in Table B4 show the change in marginal external costs, so that negative values represent benefits).

Table B3 Calculation of marginal external costs

Cost (ppkm)	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020	2021	2022	2023	2024	2025	2026	2027	2028	2029	2030
Congestion	56.0	57.1	58.3	59.5	60.8	62.1	65.5	69.0	72.8	76.8	81.0	86.0	91.3	96.9	102.9	109.3	113.5	117.9	122.5	127.2	132.1
Infrastructure	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.2	0.2
Accident	2.9	2.9	3.0	3.0	3.0	3.1	3.1	3.2	3.2	3.3	3.4	3.4	3.5	3.5	3.6	3.6	3.7	3.8	3.9	3.9	4.0
Air Quality	0.3	0.3	0.2	0.2	0.2	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Noise	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.3	0.3	0.3	0.3	0.3	0.3	0.3	0.3
GHG	1.1	1.1	1.1	1.0	1.0	1.0	1.0	1.0	0.9	0.9	0.9	0.9	0.9	0.9	0.9	0.9	0.9	0.9	0.9	0.9	0.9
Indirect Tax	-6.2	-6.1	-6.1	-6.1	-6.0	-6.0	-5.9	-5.8	-5.7	-5.6	-5.5	-5.4	-5.2	-5.1	-5.0	-4.8	-4.8	-4.7	-4.6	-4.6	-4.5

	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020	2021	2022	2023	2024	2025	2026	2027	2028	2029	2030
Car kms (000s)	0	-109	-218	-196	-177	-160	-144	-130	-117	-104	-94	-84	-75	-67	-60	-54	-48	-43	-39	-35	-31

Benefits	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020	2021	2022	2023	2024	2025	2026	2027	2028	2029	2030
Congestion	£0	-£62	-£127	-£117	-£108	-£99	-£94	-£90	-£85	-£80	-£76	-£72	-£69	-£65	-£62	-£59	-£55	-£51	-£47	-£44	-£41
Infrastructure	£0	£0	£0	£0	£0	£0	£0	£0	£0	£0	£0	£0	£0	£0	£0	£0	£0	£0	£0	£0	£0
Accident	£0	-£3	-£6	-£6	-£5	-£5	-£5	-£4	-£4	-£3	-£3	-£3	-£3	-£2	-£2	-£2	-£2	-£2	-£2	-£1	-£1
Air Quality	£0	£0	£0	£0	£0	£0	£0	£0	£0	£0	£0	£0	£0	£0	£0	£0	£0	£0	£0	£0	£0
Noise	£0	£0	£0	£0	£0	£0	£0	£0	£0	£0	£0	£0	£0	£0	£0	£0	£0	£0	£0	£0	£0
GHG	£0	-£1	-£2	-£2	-£2	-£2	-£1	-£1	-£1	-£1	-£1	-£1	-£1	-£1	-£1	£0	£0	£0	£0	£0	£0
Indirect Tax	£0	£7	£13	£12	£11	£10	£9	£8	£7	£6	£5	£4	£4	£3	£3	£3	£2	£2	£2	£2	£1

	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020	2021	2022	2023	2024	2025	2026	2027	2028	2029	2030
Discount factor	1.00	0.97	0.93	0.90	0.87	0.84	0.81	0.79	0.76	0.73	0.71	0.68	0.66	0.64	0.62	0.60	0.58	0.56	0.54	0.52	0.50

Discounted Benefits (£000s)	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020	2021	2022	2023	2024	2025	2026	2027	2028	2029	2030
Congestion*	£0	-£60	-£119	-£106	-£94	-£84	-£77	-£71	-£64	-£59	-£54	-£49	-£45	-£42	-£38	-£35	-£32	-£28	-£26	-£23	-£21
Infrastructure	£0	£0	£0	£0	£0	£0	£0	£0	£0	£0	£0	£0	£0	£0	£0	£0	£0	£0	£0	£0	£0
Accident	£0	-£3	-£6	-£5	-£5	-£4	-£4	-£3	-£3	-£3	-£2	-£2	-£2	-£2	-£1	-£1	-£1	-£1	-£1	-£1	-£1
Air Quality	£0	£0	£0	£0	£0	£0	£0	£0	£0	£0	£0	£0	£0	£0	£0	£0	£0	£0	£0	£0	£0
Noise	£0	£0	£0	£0	£0	£0	£0	£0	£0	£0	£0	£0	£0	£0	£0	£0	£0	£0	£0	£0	£0
GHG	£0	-£1	-£2	-£2	-£2	-£1	-£1	-£1	-£1	-£1	-£1	-£1	£0	£0	£0	£0	£0	£0	£0	£0	£0
Indirect Tax	£0	£6	£12	£11	£9	£8	£7	£6	£5	£4	£4	£3	£3	£2	£2	£2	£1	£1	£1	£1	£1

B.5.3   The decongestion benefits form part of the Transport Economic Efficiency (TEE) impacts of the scheme and should be reported in the TEE table in the "Road" column and carried through in to the Analysis of Monetised Costs and Benefits (AMCB) table and Appraisal Summary Table (AST). The MEC approach does not distinguish between journey purposes but the decongestion benefits can be split using the default values in **TAG Data Book table A1.3.4**. The decongestion benefits represent changes in both travel time and vehicle operating costs. It should be noted in the AST that this is the case and that the benefits have been calculated with the MEC method.

B.5.4   The indirect tax impacts should be reported in the Public Accounts (PA) table, AMCB table and AST. The infrastructure impact represents a reduction in highway maintenance costs and should be included as a negative cost in the PA table, netting off the scheme costs. The accident, local air quality, noise and greenhouse gas impacts should be reported in the AMCB and AST and contribute to the scheme's Present Value of Benefits (PVB).

Table B4 Present values of marginal external costs	
Category of impact	**Present Value (£000s, 2010 market prices)**
Decongestion	-£1,125
Infrastructure	-£2
Accident	-£49
Local Air Quality	-£2
Noise	-£3
Greenhouse Gases	-£15
Indirect Taxation	£89

Appendix C Deriving rail diversion factors from the NTM

C.1.1 Two scenarios in the NTM were compared to derive the diversion factors in Table C1. The base case has rail fares remaining at 2003 levels until 2025; this is compared to a scenario which introduces RPI+1 per cent per annum increase in fares over the same time period. The results are presented as a percentage of the change in rail kilometres.

Table C1 National average diversion factors from the National Transport Model - Changes in distance travelled as a percentage of a change in rail passenger kilometres						
	Walk	Cycle	Car driver	Car passenger[5]	Bus	Total kms travelled
Change in distance travelled by mode as % of change in rail passenger kms	-0.47%	-0.46%	-26%	-20%	-7.4%	46%

C.1.2 A fall in rail passenger kilometres is observed in the model due to the relative increase in rail costs, and hence an increase in the use of other modes. Overall distance travelled is estimated to fall by 46% of the fall in rail kilometres as the trips replacing rail trips are generally shorter distance. 26% of the decrease in rail passenger kilometres is replaced by car driver kilometres. The information on the mode share of distance travelled in Table C1 is required for estimating the external costs of the rail related change in road use. The use of these factors converts a change in rail passenger kilometres to a change in car kilometres, taking into account car occupancy rates.

C.1.3 The mode share of all trips in Table C2 is shown for the purpose of illustrating the outputs from the NTM but is not required for estimating the change in car kilometres. In the NTM the total number of trips does not change with a change in costs, hence the total change in trips in Table C2 is zero. However, length of journey and the destination area type choice are possible responses to changing costs.

Table C2 National average diversion factors from the National Transport Model - Changes in trips as a percentage of a change in rail trips						
	Walk	Cycle	Car driver	Car passenger	Bus	Total trips
Change in trips as a percentage of a change in rail trips	-13%	-3.7%	-44%	-24%	-16%	0%

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[5] For the purposes of this unit, the 20% change in car passenger kilometres does not affect the change in car kilometres.

Appendix E   Economic Appraisal Results

Scheme A: Huncoat Greenway Element

The table below outlines the outputs of the benefit cost analysis for the Huncoat Greenway scheme, split out by each of the three sensitivity tests as outlined in Section 3.4, with benefits calculated over a 60-year appraisal period.

Scheme A Results in £'s

Scheme A	Growth Sensitivity		
	15%	30%	60%
Noise	£10	£12	£14
Local Air Quality	£0	£0	£0
Greenhouse Gases	£54	£61	£75
Journey Quality (Congestion)	£1,595	£1,803	£2,219
Physical Activity - Mortality	£387,749	£438,325	£539,477
Physical Activity - Absenteeism	£17,554	£19,844	£24,423
Infrastructure Maintenance	£10	£11	£14
Accidents	£139	£157	£193
Economic Efficiency	£198,578	£224,480	£276,283
Wider Public Finances (Indirect Taxation)	-£228	-£257	-£317

Present Value of Benefits (PVB)	£605,461	£684,435	£842,381

Broad Transport Budget	£500,067	£500,067	£500,067

Present Value of Costs (PVC)	£500,067	£500,067	£500,067

Net Present Value (NPV)	£105,394	£184,368	£342,314

Benefit to Cost Ratio (BCR)	**1.21**	**1.37**	**1.68**

This highlights that with the lowest growth rate applied, the scheme produces a positive BCR in the **low** VfM category (of between 1.0 and 1.5 BCR), as outlined in WebTAG guidance. However, the scheme helps provide direct connectivity to the Burnley-Pendle Growth Corridor, identified in the SEP as having the highest GVA of any scheme being promoted by Transport for Lancashire, and in particular provides a safe, off road route avoiding the busy A679 Burnley Road and will connecting housing and employees to Huncoat industrial Estate, other employment areas and nearby schools. These additional benefits are quantified in Table 5-C.

Scheme B: NCN 6 Element

The table below outlines the outputs of the benefit cost analysis for the NCN6 scheme, split out by each of the three sensitivity tests as outlined in Section 3.4, with benefits calculated over a 60-year appraisal period.

Scheme B Results in £'s

Scheme B	Growth Sensitivity		
	15%	30%	60%
Noise	£52	£59	£72
Local Air Quality	£1	£1	£1
Greenhouse Gases	£268	£303	£373
Journey Quality (Congestion)	£8,043	£9,092	£11,190
Physical Activity - Mortality	£8,425,963	£9,525,002	£11,723,079
Physical Activity - Absenteeism	£88,865	£100,456	£123,638
Infrastructure Maintenance	£49	£55	£68
Accidents	£693	£784	£964
Economic Efficiency	£1,616,689	£1,827,562	£2,249,307
Wider Public Finances (Indirect Taxation)	-£1,118	-£1,264	-£1,556

Present Value of Benefits (PVB)	£10,139,505	£11,462,049	£14,107,138

Broad Transport Budget	£4,403,225	£4,403,225	£4,403,225

Present Value of Costs (PVC)	£4,403,225	£4,403,225	£4,403,225

Net Present Value (NPV)	£5,736,280	£7,058,824	£9,703,913

Benefit to Cost Ratio (BCR)	2.30	2.60	3.20

This highlights that with the lowest growth rate applied, the scheme produces a positive BCR in the **high** VfM category (of greater than 2.0 BCR), as outlined in WebTAG guidance.

Scheme C: Valley of Stone Element

The table below outlines the outputs of the benefit cost analysis for the Valley of Stone scheme, split out by each of the three sensitivity tests as outlined in Section 3.4, with benefits calculated over a 60-year appraisal period.

Scheme C Results in £'s

Scheme C	Growth Sensitivity		
	15%	30%	60%
Noise	£27	£31	£38
Local Air Quality	£1	£1	£1
Greenhouse Gases	£142	£160	£197
Journey Quality (Congestion)	£4,206	£4,755	£5,852
Physical Activity - Mortality	£5,745,151	£6,494,518	£7,993,253
Physical Activity - Absenteeism	£46,296	£52,335	£64,413
Infrastructure Maintenance	£26	£29	£36
Accidents	£366	£413	£509
Economic Efficiency	£749,534	£847,300	£1,042,830
Wider Public Finances (Indirect Taxation)	-£601	-£679	-£836

	15%	30%	60%
Present Value of Benefits (PVB)	£6,545,149	£7,398,864	£9,106,294

	15%	30%	60%
Broad Transport Budget	£3,032,938	£3,032,938	£3,032,938

	15%	30%	60%
Present Value of Costs (PVC)	£3,032,938	£3,032,938	£3,032,938

	15%	30%	60%
Net Present Value (NPV)	£3,512,211	£4,365,926	£6,073,356

	15%	30%	60%
Benefit to Cost Ratio (BCR)	2.16	2.44	3.00

This highlights that with the lowest growth rate applied, the scheme produces a positive BCR in the **high** VfM category (of greater than 2.0 BCR), as outlined in WebTAG guidance.

Scheme D: Weaver's Wheel Element

The table below outlines the outputs of the benefit cost analysis for the Weaver's Wheel scheme, split out by each of the three sensitivity tests as outlined in Section 3.4, with benefits calculated over a 60-year appraisal period.

Scheme D Results in £'s

Scheme D	Growth Sensitivity		
	15%	30%	120%
Noise	£39	£54	£75
Local Air Quality	£1	£2	£3
Greenhouse Gases	£204	£284	£390
Journey Quality (Congestion)	£6,049	£8,416	£11,572
Physical Activity - Mortality	£2,885,207	£4,014,201	£5,519,527
Physical Activity - Absenteeism	£66,578	£92,630	£127,366
Infrastructure Maintenance	£37	£51	£71
Accidents	£526	£732	£1,006
Economic Efficiency	£810,017	£1,126,981	£1,549,598
Wider Public Finances (Indirect Taxation)	-£864	-£1,202	-£1,652

Present Value of Benefits (PVB)	£3,767,795	£5,242,149	£7,207,955

Broad Transport Budget	£1,589,628	£1,589,628	£1,589,628

Present Value of Costs (PVC)	£1,589,628	£1,589,628	£1,589,628

Net Present Value (NPV)	£2,178,167	£3,652,522	£5,618,328

Benefit to Cost Ratio (BCR)	**2.37**	**3.30**	**4.53**

This highlights that with the lowest growth rate applied, the scheme produces a positive BCR in the **high** VfM category (of greater than 2.0 BCR), as outlined in WebTAG guidance.

Scheme Comparison: LCC East Lancashire Cycle Network		PVB	£605,461
Scheme Discription: Scheme A: Huncoat Greenway Mitigation Measures		PVC	£500,067
Cycle Improvements to provide new cycle routes and improvements to existing cycle routes around Huncoat Industrial Estate.		NPV	£105,394
Costs include 44% OB and allowance for risk. 15% growth applied.		BCR	1.211

Parameters & Inputs

Opening Year Total Time Savings (Veh Delay in hrs)

Opening Year time savings	£5,016

Forecast Year Total Time Savings (Veh Delay in hrs)

Forecast Year time savings	£5,016

Opening YearTotal Distance Saving (Veh KM in KM)

Annualised Total Veh KM	220.0

Design Year Total Distance Saving (Veh KM in KM)

Annualised Total Veh KM	220.0

MEC Parameters

Assessment Period (Years)	60
DM MEC Type:	Weighted Average
DS MEC Type:	Weighted Average
DM MEC Congestion Band:	Weighted Average
DS MEC Congestion Band:	Weighted Average
MEC growth post-2035?	2%

- Input Values
- Default Values
- Output Values

Assessment Parameters

Current year	2015
Scheme Opening Year	2016
Scheme Design Year	2031
Include VoT growth over time?	Yes
Include growth in benefits post-design year?	No

Scheme Cost Estimate Year	2014
Scheme Cost Discount Factor	3.5%
Discount Factor (0-30 years)	3.5%
Discount Factor (31-75 years)	3.0%

Estimation of Discounted Scheme Costs

Scheme Costs	Construction	Land	Preparation	Supervision	Maintenance	TOTAL
	£391,932	£0	£20,628	£0	£206,280	£412,560

Spend Profile (insert percentage profile)

Year	C%	L%	P%	S%	M%		C	L	P	S	M	Total	Deflation Factor	Total Costs (Undiscounted prices)	Discount Factor	Total Costs (2010 prices, discounted to 2010)	Resource Costs to Market Prices Factor	Total Costs (2010 prices, discounted to 2010) in Market Prices
2014							£0	£0	£0	£0	£0	£0	0.9289	£0	0.871	£0	1.19	£0
2015	1%		51%				£4,884	£0	£10,520	£0	£0	£15,404	0.9289	£14,309	0.842	£12,048	1.19	£14,337
2016	16%		52%				£64,047	£0	£10,731	£0	£0	£74,778	0.9289	£69,463	0.814	£56,508	1.19	£67,245
2017	24%						£95,088	£0	£0	£0	£0	£95,088	0.9289	£88,330	0.786	£69,427	1.19	£82,618
2018	0%						£0	£0	£0	£0	£0	£0	0.9289	£0	0.759	£0	1.19	£0
2019	66%						£260,541	£0	£0	£0	£0	£260,541	0.9289	£242,023	0.734	£177,580	1.19	£211,320
2020							£0	£0	£0	£0	£0	£0	0.9289	£0	0.709	£0	1.19	£0
2021							£0	£0	£0	£0	£0	£0	0.9289	£0	0.685	£0	1.19	£0
2022							£0	£0	£0	£0	£0	£0	0.9289	£0	0.662	£0	1.19	£0
2023							£0	£0	£0	£0	£0	£0	0.9289	£0	0.639	£0	1.19	£0
2024							£0	£0	£0	£0	£0	£0	0.9289	£0	0.618	£0	1.19	£0
2025							£0	£0	£0	£0	£0	£0	0.9289	£0	0.597	£0	1.19	£0
2026							£0	£0	£0	£0	£0	£0	0.9289	£0	0.577	£0	1.19	£0
2027							£0	£0	£0	£0	£0	£0	0.9289	£0	0.557	£0	1.19	£0
2028							£0	£0	£0	£0	£0	£0	0.9289	£0	0.538	£0	1.19	£0
2029							£0	£0	£0	£0	£0	£0	0.9289	£0	0.520	£0	1.19	£0
2030							£0	£0	£0	£0	£0	£0	0.9289	£0	0.503	£0	1.19	£0
2031							£0	£0	£0	£0	£0	£0	0.9289	£0	0.486	£0	1.19	£0
2032							£0	£0	£0	£0	£0	£0	0.9289	£0	0.469	£0	1.19	£0
2033							£0	£0	£0	£0	£0	£0	0.9289	£0	0.453	£0	1.19	£0
2034							£0	£0	£0	£0	£0	£0	0.9289	£0	0.438	£0	1.19	£0
2035							£0	£0	£0	£0	£0	£0	0.9289	£0	0.423	£0	1.19	£0
2036							£0	£0	£0	£0	£0	£0	0.9289	£0	0.409	£0	1.19	£0
2037							£0	£0	£0	£0	£0	£0	0.9289	£0	0.395	£0	1.19	£0
2038							£0	£0	£0	£0	£0	£0	0.9289	£0	0.382	£0	1.19	£0
2039							£0	£0	£0	£0	£0	£0	0.9289	£0	0.369	£0	1.19	£0
2040							£0	£0	£0	£0	£0	£0	0.9289	£0	0.356	£0	1.19	£0
2041							£0	£0	£0	£0	£0	£0	0.9289	£0	0.344	£0	1.19	£0
2042							£0	£0	£0	£0	£0	£0	0.9289	£0	0.333	£0	1.19	£0
2043							£0	£0	£0	£0	£0	£0	0.9289	£0	0.321	£0	1.19	£0
2044							£0	£0	£0	£0	£0	£0	0.9289	£0	0.310	£0	1.19	£0
2045							£0	£0	£0	£0	£0	£0	0.9289	£0	0.300	£0	1.19	£0
2046					188%		£0	£0	£0	£0	£388,743	£388,743	0.9289	£361,113	0.290	£104,662	1.19	£124,548
TOTAL	108%	0%	103%	0%	188%		£424,560	£0	£21,251	£0	£388,743	£834,554	N/A	£775,237	N/A	£420,224	N/A	£500,067

N.B. It is assumed that Preparation and Supervision costs are included within the above costs
N.B. Optimism Bias only applied to Construction costs, not Land

Applying the methodology below produces the discounted scheme cost (PVC):-
a) Assume the Construction costs are spread evenly over the construction period (assumed to be 2 years)
b) Assume land is bought in the first year of construction
c) All costs are in undiscounted Q1 prices, so need to be converted to undiscounted 2010 prices using the industry-standard method of RPIs
d) All costs discounted to 2010
e) All costs need to be converted to Market Prices

Estimation of Benefit to Cost Ratio (BCR) with MEC

Time Saving benefits (discounted)	£198,578
MEC Discounted (2016 to 2010 Prices)	£1,580
Mortality Benefits	£387,749
Absentee Benefits	£17,554

Total Benefits with MEC	£605,461
Total costs (discounted)	£500,067
BCR with Marginal External Costs	1.21076

Estimation of Benefits By User Class Over Appraisal Period

Year	ngle Year Benefore opening	after design y	Benefits profile		Total Benefits (2010)	VoT Growth	VoT Adj.	Discount Factor	Total Benefits (2010 prices, discounted)
2010	0	0	5,016	0	£0	1.00	£0	1.000	£0
2011	0	0	5,016	0	£0	1.01	£0	0.966	£0
2012	0	0	5,016	0	£0	1.01	£0	0.934	£0
2013	0	0	5,016	0	£0	1.02	£0	0.902	£0
2014	0	0	5,016	0	£0	1.04	£0	0.871	£0
2015	0	0	5,016	0	£0	1.06	£0	0.842	£0
2016	5,016	5,016	5,016	5,016	£5,016	1.08	£5,407	0.814	£4,398
2017	0	5,016	5,016	5,016	£5,016	1.10	£5,514	0.786	£4,334
2018	0	5,016	5,016	5,016	£5,016	1.12	£5,619	0.759	£4,267
2019	0	5,016	5,016	5,016	£5,016	1.14	£5,726	0.734	£4,201
2020	0	5,016	5,016	5,016	£5,016	1.16	£5,835	0.709	£4,136
2021	0	5,016	5,016	5,016	£5,016	1.19	£5,945	0.685	£4,072
2022	0	5,016	5,016	5,016	£5,016	1.21	£6,056	0.662	£4,008
2023	0	5,016	5,016	5,016	£5,016	1.23	£6,170	0.639	£3,945
2024	0	5,016	5,016	5,016	£5,016	1.25	£6,288	0.618	£3,884
2025	0	5,016	5,016	5,016	£5,016	1.28	£6,408	0.597	£3,825
2026	0	5,016	5,016	5,016	£5,016	1.30	£6,532	0.577	£3,767
2027	0	5,016	5,016	5,016	£5,016	1.33	£6,660	0.557	£3,711
2028	0	5,016	5,016	5,016	£5,016	1.35	£6,791	0.538	£3,656
2029	0	5,016	5,016	5,016	£5,016	1.38	£6,926	0.520	£3,603
2030	0	5,016	5,016	5,016	£5,016	1.41	£7,065	0.503	£3,551
2031	5,016	5,016	5,016	5,016	£5,016	1.44	£7,208	0.486	£3,500
2032	0	5,016	5,016	5,016	£5,016	1.47	£7,355	0.469	£3,450
2033	0	5,016	5,016	5,016	£5,016	1.50	£7,505	0.453	£3,402
2034	0	5,016	5,016	5,016	£5,016	1.53	£7,660	0.438	£3,355
2035	0	5,016	5,016	5,016	£5,016	1.56	£7,819	0.423	£3,309
2036	0	5,016	5,016	5,016	£5,016	1.59	£7,982	0.409	£3,263
2037	0	5,016	5,016	5,016	£5,016	1.62	£8,149	0.395	£3,219
2038	0	5,016	5,016	5,016	£5,016	1.66	£8,320	0.382	£3,175
2039	0	5,016	5,016	5,016	£5,016	1.69	£8,495	0.369	£3,133
2040	0	5,016	5,016	5,016	£5,016	1.73	£8,674	0.356	£3,090
2041	0	5,016	5,016	5,016	£5,016	1.77	£8,857	0.344	£3,049
2042	0	5,016	5,016	5,016	£5,016	1.80	£9,044	0.333	£3,008
2043	0	5,016	5,016	5,016	£5,016	1.84	£9,236	0.321	£2,968
2044	0	5,016	5,016	5,016	£5,016	1.88	£9,432	0.310	£2,929
2045	0	5,016	5,016	5,016	£5,016	1.92	£9,632	0.355	£3,423
2046	0	5,016	5,016	5,016	£5,016	1.96	£9,837	0.345	£3,394
2047	0	5,016	5,016	5,016	£5,016	2.00	£10,048	0.335	£3,366
2048	0	5,016	5,016	5,016	£5,016	2.05	£10,264	0.325	£3,338
2049	0	5,016	5,016	5,016	£5,016	2.09	£10,485	0.316	£3,311
2050	0	5,016	5,016	5,016	£5,016	2.14	£10,711	0.307	£3,283
2051	0	5,016	5,016	5,016	£5,016	2.18	£10,941	0.298	£3,256
2052	0	5,016	5,016	5,016	£5,016	2.23	£11,180	0.289	£3,231
2053	0	5,016	5,016	5,016	£5,016	2.28	£11,425	0.281	£3,205
2054	0	5,016	5,016	5,016	£5,016	2.33	£11,674	0.272	£3,180
2055	0	5,016	5,016	5,016	£5,016	2.38	£11,930	0.264	£3,155
2056	0	5,016	5,016	5,016	£5,016	2.43	£12,190	0.257	£3,130
2057	0	5,016	5,016	5,016	£5,016	2.48	£12,460	0.249	£3,106
2058	0	5,016	5,016	5,016	£5,016	2.54	£12,736	0.242	£3,082
2059	0	5,016	5,016	5,016	£5,016	2.60	£13,017	0.235	£3,058
2060	0	5,016	5,016	5,016	£5,016	2.65	£13,305	0.228	£3,035
2061	0	5,016	5,016	5,016	£5,016	2.71	£13,600	0.221	£3,012
2062	0	5,016	5,016	5,016	£5,016	2.77	£13,901	0.215	£2,989
2063	0	5,016	5,016	5,016	£5,016	2.83	£14,209	0.209	£2,966
2064	0	5,016	5,016	5,016	£5,016	2.90	£14,524	0.203	£2,944
2065	0	5,016	5,016	5,016	£5,016	2.96	£14,845	0.197	£2,921
2066	0	5,016	5,016	5,016	£5,016	3.03	£15,174	0.191	£2,899
2067	0	5,016	5,016	5,016	£5,016	3.09	£15,507	0.185	£2,876
2068	0	5,016	5,016	5,016	£5,016	3.16	£15,848	0.180	£2,854
2069	0	5,016	5,016	5,016	£5,016	3.23	£16,196	0.175	£2,831
2070	0	5,016	5,016	5,016	£5,016	3.30	£16,552	0.170	£2,809
2071	0	5,016	5,016	5,016	£5,016	3.37	£16,915	0.165	£2,787
2072	0	5,016	5,016	5,016	£5,016	3.45	£17,283	0.160	£2,765
2073	0	5,016	5,016	5,016	£5,016	3.52	£17,659	0.155	£2,743
2074	0	5,016	5,016	5,016	£5,016	3.60	£18,043	0.151	£2,721
2075	0	5,016	5,016	5,016	£5,016	3.68	£18,435	0.146	£2,699
2076	0	5,016	5,016	5,016	£0	3.76	£0	0.142	£0
2077	0	5,016	5,016	5,016	£0	3.84	£0	0.138	£0
2078	0	5,016	5,016	5,016	£0	3.92	£0	0.134	£0
2079	0	5,016	5,016	5,016	£0	4.00	£0	0.130	£0
2080	0	5,016	5,016	5,016	£0	4.09	£0	0.126	£0
2081	0	5,016	5,016	5,016	£0	4.18	£0	0.123	£0
2082	0	5,016	5,016	5,016	£0	4.27	£0	0.119	£0
2083	0	5,016	5,016	5,016	£0	4.36	£0	0.116	£0
2084	0	5,016	5,016	5,016	£0	4.46	£0	0.112	£0
2085	0	5,016	5,016	5,016	£0	4.55	£0	0.109	£0
2086	0	5,016	5,016	5,016	£0	4.65	£0	0.106	£0
2087	0	5,016	5,016	5,016	£0	4.75	£0	0.103	£0
2088	0	5,016	5,016	5,016	£0	4.86	£0	0.100	£0
2089	0	5,016	5,016	5,016	£0	4.96	£0	0.097	£0
2090	0	5,016	5,016	5,016	£0	5.07	£0	0.094	£0
2091	0	5,016	5,016	5,016	£0	5.18	£0	0.091	£0
2092	0	5,016	5,016	5,016	£0	5.30	£0	0.089	£0
2093	0	5,016	5,016	5,016	£0	5.41	£0	0.086	£0
2094	0	5,016	5,016	5,016	£0	5.53	£0	0.083	£0
2095	0	5,016	5,016	5,016	£0	5.65	£0	0.081	£0
2096	0	5,016	5,016	5,016	£0	5.77	£0	0.079	£0
2097	0	5,016	5,016	5,016	£0	5.90	£0	0.076	£0
2098	0	5,016	5,016	5,016	£0	6.02	£0	0.074	£0
2099	0	5,016	5,016	5,016	£0	6.15	£0	0.072	£0
2100	0	5,016	5,016	5,016	£0	6.29	£0	0.070	£0
	TOTAL				£300,958	N/A	£629,207	N/A	£198,578

Discount factor = 1/(1+Discount Rate)^n where n = year minus 2010. Discount rates are specified in the parameters above.

Marginal External Costs over appraisal period

Year	Discount Factor	late veh KM before opening	after design	benefits profil		Congestion	Discounted	Infrast.	Discounted	Accident	Discounted	Local Air Quality	Discounted	Noise	Discounted	Green Gases	Discounted	Indirect Taxation	Discounted
2014	0.000	0	0	220	0	£0	£0	£0	£0	£0	£0	£0	£0	£0	£0	£0	£0	£0	£0
2015	0.000	0	0	220	0	£0	£0	£0	£0	£0	£0	£0	£0	£0	£0	£0	£0	£0	£0
2016	0.814	220	220	220	220	£29	£23	£0	£0	£4	£3	£0	£0	£0	£0	£2	£1	-£11	-£9
2017	0.786	0	220	220	220	£30	£24	£0	£0	£4	£3	£0	£0	£0	£0	£2	£1	-£11	-£8
2018	0.759	0	220	220	220	£32	£24	£0	£0	£4	£3	£0	£0	£0	£0	£2	£1	-£10	-£8
2019	0.734	0	220	220	220	£33	£24	£0	£0	£4	£3	£0	£0	£0	£0	£2	£1	-£10	-£7
2020	0.709	0	220	220	220	£35	£25	£0	£0	£4	£3	£0	£0	£0	£0	£2	£1	-£10	-£7
2021	0.685	0	220	220	220	£37	£25	£0	£0	£4	£3	£0	£0	£0	£0	£2	£1	-£10	-£7
2022	0.662	0	220	220	220	£39	£26	£0	£0	£4	£3	£0	£0	£0	£0	£2	£1	-£9	-£6
2023	0.639	0	220	220	220	£41	£26	£0	£0	£4	£3	£0	£0	£0	£0	£2	£1	-£9	-£6
2024	0.618	0	220	220	220	£43	£27	£0	£0	£4	£3	£0	£0	£0	£0	£2	£1	-£9	-£5
2025	0.597	0	220	220	220	£45	£27	£0	£0	£4	£3	£0	£0	£0	£0	£2	£1	-£9	-£5
2026	0.577	0	220	220	220	£47	£27	£0	£0	£4	£3	£0	£0	£0	£0	£2	£1	-£8	-£5
2027	0.557	0	220	220	220	£49	£27	£0	£0	£5	£3	£0	£0	£0	£0	£2	£1	-£8	-£5
2028	0.538	0	220	220	220	£51	£27	£0	£0	£5	£3	£0	£0	£0	£0	£2	£1	-£8	-£4
2029	0.520	0	220	220	220	£53	£28	£0	£0	£5	£2	£0	£0	£0	£0	£2	£1	-£8	-£4
2030	0.503	0	220	220	220	£55	£28	£0	£0	£5	£2	£0	£0	£0	£0	£2	£1	-£8	-£4
2031	0.486	220	220	220	220	£58	£28	£0	£0	£5	£2	£0	£0	£0	£0	£2	£1	-£8	-£4
2032	0.469	0	220	220	220	£60	£28	£0	£0	£5	£2	£0	£0	£0	£0	£2	£1	-£8	-£4
2033	0.453	0	220	220	220	£63	£29	£0	£0	£5	£2	£0	£0	£0	£0	£2	£1	-£8	-£4
2034	0.438	0	220	220	220	£66	£29	£0	£0	£5	£2	£0	£0	£0	£0	£2	£1	-£8	-£3
2035	0.423	0	220	220	220	£69	£29	£0	£0	£5	£2	£0	£0	£0	£0	£2	£1	-£8	-£3
2036	0.409	0	220	220	220	£70	£29	£0	£0	£6	£2	£0	£0	£0	£0	£2	£1	-£8	-£3
2037	0.395	0	220	220	220	£71	£28	£0	£0	£6	£2	£0	£0	£0	£0	£2	£1	-£8	-£3
2038	0.382	0	220	220	220	£73	£28	£0	£0	£6	£2	£0	£0	£0	£0	£2	£1	-£8	-£3
2039	0.369	0	220	220	220	£74	£27	£0	£0	£6	£2	£0	£0	£0	£0	£2	£1	-£8	-£3
2040	0.356	0	220	220	220	£76	£27	£0	£0	£6	£2	£0	£0	£0	£0	£2	£1	-£8	-£3
2041	0.344	0	220	220	220	£77	£27	£0	£0	£6	£2	£0	£0	£0	£0	£2	£1	-£9	-£3
2042	0.333	0	220	220	220	£79	£26	£1	£0	£6	£2	£0	£0	£1	£0	£3	£1	-£9	-£3
2043	0.321	0	220	220	220	£80	£26	£1	£0	£6	£2	£0	£0	£1	£0	£3	£1	-£9	-£3
2044	0.310	0	220	220	220	£82	£25	£1	£0	£7	£2	£0	£0	£1	£0	£3	£1	-£9	-£3
2045	0.355	0	220	220	220	£84	£30	£1	£0	£7	£2	£0	£0	£1	£0	£3	£1	-£9	-£3
2046	0.345	0	220	220	220	£85	£29	£1	£0	£7	£2	£0	£0	£1	£0	£3	£1	-£10	-£3
2047	0.335	0	220	220	220	£87	£29	£1	£0	£7	£2	£0	£0	£1	£0	£3	£1	-£10	-£3
2048	0.325	0	220	220	220	£89	£29	£1	£0	£7	£2	£0	£0	£1	£0	£3	£1	-£10	-£3
2049	0.316	0	220	220	220	£91	£29	£1	£0	£7	£2	£0	£0	£1	£0	£3	£1	-£10	-£3
2050	0.307	0	220	220	220	£92	£28	£1	£0	£7	£2	£0	£0	£1	£0	£3	£1	-£10	-£3
2051	0.298	0	220	220	220	£94	£28	£1	£0	£8	£2	£0	£0	£1	£0	£3	£1	-£11	-£3
2052	0.289	0	220	220	220	£96	£28	£1	£0	£8	£2	£0	£0	£1	£0	£3	£1	-£11	-£3
2053	0.281	0	220	220	220	£98	£27	£1	£0	£8	£2	£0	£0	£1	£0	£3	£1	-£11	-£3
2054	0.272	0	220	220	220	£100	£27	£1	£0	£8	£2	£0	£0	£1	£0	£3	£1	-£11	-£3
2055	0.264	0	220	220	220	£102	£27	£1	£0	£8	£2	£0	£0	£1	£0	£3	£1	-£11	-£3
2056	0.257	0	220	220	220	£104	£27	£1	£0	£8	£2	£0	£0	£1	£0	£3	£1	-£12	-£3
2057	0.249	0	220	220	220	£106	£26	£1	£0	£9	£2	£0	£0	£1	£0	£3	£1	-£12	-£3
2058	0.242	0	220	220	220	£108	£26	£1	£0	£9	£2	£0	£0	£1	£0	£3	£1	-£12	-£3
2059	0.235	0	220	220	220	£110	£26	£1	£0	£9	£2	£0	£0	£1	£0	£4	£1	-£12	-£3
2060	0.228	0	220	220	220	£113	£26	£1	£0	£9	£2	£0	£0	£1	£0	£4	£1	-£13	-£3
2061	0.221	0	220	220	220	£115	£25	£1	£0	£9	£2	£0	£0	£1	£0	£4	£1	-£13	-£3
2062	0.215	0	220	220	220	£117	£25	£1	£0	£9	£2	£0	£0	£1	£0	£4	£1	-£13	-£3
2063	0.209	0	220	220	220	£119	£25	£1	£0	£10	£2	£0	£0	£1	£0	£4	£1	-£13	-£3
2064	0.203	0	220	220	220	£122	£25	£1	£0	£10	£2	£0	£0	£1	£0	£4	£1	-£14	-£3
2065	0.197	0	220	220	220	£124	£24	£1	£0	£10	£2	£0	£0	£1	£0	£4	£1	-£14	-£3
2066	0.191	0	220	220	220	£127	£24	£1	£0	£10	£2	£0	£0	£1	£0	£4	£1	-£14	-£3
2067	0.185	0	220	220	220	£129	£24	£1	£0	£10	£2	£0	£0	£1	£0	£4	£1	-£15	-£3
2068	0.180	0	220	220	220	£132	£24	£1	£0	£11	£2	£0	£0	£1	£0	£4	£1	-£15	-£3
2069	0.175	0	220	220	220	£135	£24	£1	£0	£11	£2	£0	£0	£1	£0	£4	£1	-£15	-£3
2070	0.170	0	220	220	220	£137	£23	£1	£0	£11	£2	£0	£0	£1	£0	£4	£1	-£15	-£3
2071	0.165	0	220	220	220	£140	£23	£1	£0	£11	£2	£0	£0	£1	£0	£4	£1	-£16	-£3
2072	0.160	0	220	220	220	£143	£23	£1	£0	£11	£2	£0	£0	£1	£0	£5	£1	-£16	-£3
2073	0.155	0	220	220	220	£146	£23	£1	£0	£12	£2	£0	£0	£1	£0	£5	£1	-£16	-£3
2074	0.151	0	220	220	220	£149	£22	£1	£0	£12	£2	£0	£0	£1	£0	£5	£1	-£17	-£3
2075	0.146	0	220	220	220	£152	£22	£1	£0	£12	£2	£0	£0	£1	£0	£5	£1	-£17	-£2
2076	0.142	0	220	220	220	£155	£22	£1	£0	£12	£2	£0	£0	£1	£0	£5	£1	-£17	-£2
2077	0.000	0	220	220	220	£0	£0	£0	£0	£0	£0	£0	£0	£0	£0	£0	£0	£0	£0
2078	0.000	0	220	220	220	£0	£0	£0	£0	£0	£0	£0	£0	£0	£0	£0	£0	£0	£0
2079	0.000	0	220	220	220	£0	£0	£0	£0	£0	£0	£0	£0	£0	£0	£0	£0	£0	£0
2080	0.000	0	220	220	220	£0	£0	£0	£0	£0	£0	£0	£0	£0	£0	£0	£0	£0	£0
2081	0.000	0	220	220	220	£0	£0	£0	£0	£0	£0	£0	£0	£0	£0	£0	£0	£0	£0
2082	0.000	0	220	220	220	£0	£0	£0	£0	£0	£0	£0	£0	£0	£0	£0	£0	£0	£0
2083	0.000	0	220	220	220	£0	£0	£0	£0	£0	£0	£0	£0	£0	£0	£0	£0	£0	£0
2084	0.000	0	220	220	220	£0	£0	£0	£0	£0	£0	£0	£0	£0	£0	£0	£0	£0	£0
2085	0.000	0	220	220	220	£0	£0	£0	£0	£0	£0	£0	£0	£0	£0	£0	£0	£0	£0
2086	0.000	0	220	220	220	£0	£0	£0	£0	£0	£0	£0	£0	£0	£0	£0	£0	£0	£0
2087	0.000	0	220	220	220	£0	£0	£0	£0	£0	£0	£0	£0	£0	£0	£0	£0	£0	£0
2088	0.000	0	220	220	220	£0	£0	£0	£0	£0	£0	£0	£0	£0	£0	£0	£0	£0	£0
2089	0.000	0	220	220	220	£0	£0	£0	£0	£0	£0	£0	£0	£0	£0	£0	£0	£0	£0
2090	0.000	0	220	220	220	£0	£0	£0	£0	£0	£0	£0	£0	£0	£0	£0	£0	£0	£0
2091	0.000	0	220	220	220	£0	£0	£0	£0	£0	£0	£0	£0	£0	£0	£0	£0	£0	£0
2092	0.000	0	220	220	220	£0	£0	£0	£0	£0	£0	£0	£0	£0	£0	£0	£0	£0	£0
2093	0.000	0	220	220	220	£0	£0	£0	£0	£0	£0	£0	£0	£0	£0	£0	£0	£0	£0
2094	0.000	0	220	220	220	£0	£0	£0	£0	£0	£0	£0	£0	£0	£0	£0	£0	£0	£0
2095	0.000	0	220	220	220	£0	£0	£0	£0	£0	£0	£0	£0	£0	£0	£0	£0	£0	£0
2096	0.000	0	220	220	220	£0	£0	£0	£0	£0	£0	£0	£0	£0	£0	£0	£0	£0	£0
2097	0.000	0	220	220	220	£0	£0	£0	£0	£0	£0	£0	£0	£0	£0	£0	£0	£0	£0
2098	0.000	0	220	220	220	£0	£0	£0	£0	£0	£0	£0	£0	£0	£0	£0	£0	£0	£0
2099	0.000	0	220	220	220	£0	£0	£0	£0	£0	£0	£0	£0	£0	£0	£0	£0	£0	£0
2100	0.000	0	220	220	220	£0	£0	£0	£0	£0	£0	£0	£0	£0	£0	£0	£0	£0	£0
TOTAL						£5,317	£1,595	£33	£10	£442	£139	£0	£0	£34	£10	£174	£54	-£669	-£228

Undiscounted	£5,332		Discounted	£1,580

Scheme Comparison: LCC East Lancashire Cycle Network		PVB	£684,435
Scheme Discription: Scheme A: Huncoat Greenway Mitigation Measures		PVC	£500,067
Cycle Improvements to provide new cycle routes and improvements to existing cycle routes around Huncoat Industrial Estate. Costs include 44% OB and allowance for risk. 30% growth applied.		NPV	£184,368
		BCR	1.369

Parameters & Inputs

Opening Year Total Time Savings (Veh Delay in hrs)

Opening Year time savings	£5,670

Forecast Year Total Time Savings (Veh Delay in hrs)

Forecast Year time savings	£5,670

Opening YearTotal Distance Saving (Veh KM in KM)

Annualised Total Veh KM	248.6

Design Year Total Distance Saving (Veh KM in KM)

Annualised Total Veh KM	248.6

MEC Parameters

Assessment Period (Years)	60
DM MEC Type:	Weighted Average
DS MEC Type:	Weighted Average
DM MEC Congestion Band:	Weighted Average
DS MEC Congestion Band:	Weighted Average
MEC growth post-2035?	2%

- Input Values (yellow)
- Default Values (orange)
- Output Values (green)

Assessment Parameters

Current year	2015
Scheme Opening Year	2016
Scheme Design Year	2031
Include VoT growth over time?	Yes
Include growth in benefits post-design year?	No

Scheme Cost Estimate Year	2014
Scheme Cost Discount Factor	3.5%
Discount Factor (0-30 years)	3.5%
Discount Factor (31-75 years)	3.0%

Estimation of Discounted Scheme Costs

Scheme Costs	Construction	Land	Preparation	Supervision	Maintenance	TOTAL
	£391,932	£0	£20,628	£0	£206,280	£412,560

Spend Profile (insert percentage profile)

Year	C %	L %	P %	S %	M %	C	L	P	S	M	Total	Deflation Factor	Total Costs (Undiscounted prices)	Discount Factor	Total Costs (2010 prices, discounted to 2010)	Resource Costs to Market Prices Factor	Total Costs (2010 prices, discounted to 2010) in Market Prices
2014						£0	£0	£0	£0	£0	£0	0.9289	£0	0.871	£0	1.19	£0
2015	1%		51%			£4,884	£0	£10,520	£0	£0	£15,404	0.9289	£14,309	0.842	£12,048	1.19	£14,337
2016	16%		52%			£64,047	£0	£10,731	£0	£0	£74,778	0.9289	£69,463	0.814	£56,508	1.19	£67,245
2017	24%					£95,088	£0	£0	£0	£0	£95,088	0.9289	£88,330	0.786	£69,427	1.19	£82,618
2018	0%					£0	£0	£0	£0	£0	£0	0.9289	£0	0.759	£0	1.19	£0
2019	66%					£260,541	£0	£0	£0	£0	£260,541	0.9289	£242,023	0.734	£177,580	1.19	£211,320
2020						£0	£0	£0	£0	£0	£0	0.9289	£0	0.709	£0	1.19	£0
2021						£0	£0	£0	£0	£0	£0	0.9289	£0	0.685	£0	1.19	£0
2022						£0	£0	£0	£0	£0	£0	0.9289	£0	0.662	£0	1.19	£0
2023						£0	£0	£0	£0	£0	£0	0.9289	£0	0.639	£0	1.19	£0
2024						£0	£0	£0	£0	£0	£0	0.9289	£0	0.618	£0	1.19	£0
2025						£0	£0	£0	£0	£0	£0	0.9289	£0	0.597	£0	1.19	£0
2026						£0	£0	£0	£0	£0	£0	0.9289	£0	0.577	£0	1.19	£0
2027						£0	£0	£0	£0	£0	£0	0.9289	£0	0.557	£0	1.19	£0
2028						£0	£0	£0	£0	£0	£0	0.9289	£0	0.538	£0	1.19	£0
2029						£0	£0	£0	£0	£0	£0	0.9289	£0	0.520	£0	1.19	£0
2030						£0	£0	£0	£0	£0	£0	0.9289	£0	0.503	£0	1.19	£0
2031						£0	£0	£0	£0	£0	£0	0.9289	£0	0.486	£0	1.19	£0
2032						£0	£0	£0	£0	£0	£0	0.9289	£0	0.469	£0	1.19	£0
2033						£0	£0	£0	£0	£0	£0	0.9289	£0	0.453	£0	1.19	£0
2034						£0	£0	£0	£0	£0	£0	0.9289	£0	0.438	£0	1.19	£0
2035						£0	£0	£0	£0	£0	£0	0.9289	£0	0.423	£0	1.19	£0
2036						£0	£0	£0	£0	£0	£0	0.9289	£0	0.409	£0	1.19	£0
2037						£0	£0	£0	£0	£0	£0	0.9289	£0	0.395	£0	1.19	£0
2038						£0	£0	£0	£0	£0	£0	0.9289	£0	0.382	£0	1.19	£0
2039						£0	£0	£0	£0	£0	£0	0.9289	£0	0.369	£0	1.19	£0
2040						£0	£0	£0	£0	£0	£0	0.9289	£0	0.356	£0	1.19	£0
2041						£0	£0	£0	£0	£0	£0	0.9289	£0	0.344	£0	1.19	£0
2042						£0	£0	£0	£0	£0	£0	0.9289	£0	0.333	£0	1.19	£0
2043						£0	£0	£0	£0	£0	£0	0.9289	£0	0.321	£0	1.19	£0
2044						£0	£0	£0	£0	£0	£0	0.9289	£0	0.310	£0	1.19	£0
2045						£0	£0	£0	£0	£0	£0	0.9289	£0	0.300	£0	1.19	£0
2046					188%	£0	£0	£0	£0	£388,743	£388,743	0.9289	£361,113	0.290	£104,662	1.19	£124,548
TOTAL	108%	0%	103%	0%	188%	£424,560	£0	£21,251	£0	£388,743	£834,554	N/A	£775,237	N/A	£420,224	N/A	£500,067

N.B. It is assumed that Preparation and Supervision costs are included within the above costs
N.B. Optimism Bias only applied to Construction costs, not Land

Applying the methodology below produces the discounted scheme cost (PVC):-
a) Assume the Construction costs are spread evenly over the construction period (assumed to be 2 years)
b) Assume land is bought in the first year of construction
c) All costs are in undiscounted Q1 prices, so need to be converted to undiscounted 2010 prices using the industry-standard method of RPIs
d) All costs discounted to 2010
e) All costs need to be converted to Market Prices

Estimation of Benefit to Cost Ratio (BCR) with MEC

Time Saving benefits (discounted)	£224,480
MEC Discounted (2016 to 2010 Prices)	£1,786
Mortality Benefits	£438,325
Absentee Benefits	£19,844

Total Benefits with MEC	£684,435
Total costs (discounted)	£500,067
BCR with Marginal External Costs	1.36869

Estimation of Benefits By User Class Over Appraisal Period

Year	gle Year Benefore opening	after design y	Benefits profile		Total Benefits (2010)	VoT Growth	VoT Adj.	Discount Factor	Total Benefits (2010 prices, discounted
2010	0	0	5,670	0	£0	1.00	£0	1.000	£0
2011	0	0	5,670	0	£0	1.01	£0	0.966	£0
2012	0	0	5,670	0	£0	1.01	£0	0.934	£0
2013	0	0	5,670	0	£0	1.02	£0	0.902	£0
2014	0	0	5,670	0	£0	1.04	£0	0.871	£0
2015	0	0	5,670	0	£0	1.06	£0	0.842	£0
2016	5,670	5,670	5,670	5,670	£5,670	1.08	£6,112	0.814	£4,972
2017	0	5,670	5,670	5,670	£5,670	1.10	£6,233	0.786	£4,899
2018	0	5,670	5,670	5,670	£5,670	1.12	£6,352	0.759	£4,824
2019	0	5,670	5,670	5,670	£5,670	1.14	£6,473	0.734	£4,749
2020	0	5,670	5,670	5,670	£5,670	1.16	£6,596	0.709	£4,676
2021	0	5,670	5,670	5,670	£5,670	1.19	£6,720	0.685	£4,603
2022	0	5,670	5,670	5,670	£5,670	1.21	£6,846	0.662	£4,530
2023	0	5,670	5,670	5,670	£5,670	1.23	£6,975	0.639	£4,460
2024	0	5,670	5,670	5,670	£5,670	1.25	£7,108	0.618	£4,391
2025	0	5,670	5,670	5,670	£5,670	1.28	£7,244	0.597	£4,324
2026	0	5,670	5,670	5,670	£5,670	1.30	£7,384	0.577	£4,259
2027	0	5,670	5,670	5,670	£5,670	1.33	£7,529	0.557	£4,195
2028	0	5,670	5,670	5,670	£5,670	1.35	£7,677	0.538	£4,133
2029	0	5,670	5,670	5,670	£5,670	1.38	£7,830	0.520	£4,073
2030	0	5,670	5,670	5,670	£5,670	1.41	£7,987	0.503	£4,014
2031	5,670	5,670	5,670	5,670	£5,670	1.44	£8,148	0.486	£3,956
2032	0	5,670	5,670	5,670	£5,670	1.47	£8,314	0.469	£3,900
2033	0	5,670	5,670	5,670	£5,670	1.50	£8,484	0.453	£3,846
2034	0	5,670	5,670	5,670	£5,670	1.53	£8,659	0.438	£3,792
2035	0	5,670	5,670	5,670	£5,670	1.56	£8,839	0.423	£3,740
2036	0	5,670	5,670	5,670	£5,670	1.59	£9,023	0.409	£3,689
2037	0	5,670	5,670	5,670	£5,670	1.62	£9,212	0.395	£3,639
2038	0	5,670	5,670	5,670	£5,670	1.66	£9,406	0.382	£3,590
2039	0	5,670	5,670	5,670	£5,670	1.69	£9,603	0.369	£3,541
2040	0	5,670	5,670	5,670	£5,670	1.73	£9,805	0.356	£3,493
2041	0	5,670	5,670	5,670	£5,670	1.77	£10,012	0.344	£3,446
2042	0	5,670	5,670	5,670	£5,670	1.80	£10,224	0.333	£3,400
2043	0	5,670	5,670	5,670	£5,670	1.84	£10,441	0.321	£3,355
2044	0	5,670	5,670	5,670	£5,670	1.88	£10,663	0.310	£3,310
2045	0	5,670	5,670	5,670	£5,670	1.92	£10,889	0.355	£3,870
2046	0	5,670	5,670	5,670	£5,670	1.96	£11,120	0.345	£3,837
2047	0	5,670	5,670	5,670	£5,670	2.00	£11,359	0.335	£3,805
2048	0	5,670	5,670	5,670	£5,670	2.05	£11,603	0.325	£3,774
2049	0	5,670	5,670	5,670	£5,670	2.09	£11,853	0.316	£3,743
2050	0	5,670	5,670	5,670	£5,670	2.14	£12,108	0.307	£3,712
2051	0	5,670	5,670	5,670	£5,670	2.18	£12,368	0.298	£3,681
2052	0	5,670	5,670	5,670	£5,670	2.23	£12,638	0.289	£3,652
2053	0	5,670	5,670	5,670	£5,670	2.28	£12,915	0.281	£3,623
2054	0	5,670	5,670	5,670	£5,670	2.33	£13,197	0.272	£3,595
2055	0	5,670	5,670	5,670	£5,670	2.38	£13,486	0.264	£3,566
2056	0	5,670	5,670	5,670	£5,670	2.43	£13,780	0.257	£3,538
2057	0	5,670	5,670	5,670	£5,670	2.48	£14,085	0.249	£3,511
2058	0	5,670	5,670	5,670	£5,670	2.54	£14,397	0.242	£3,484
2059	0	5,670	5,670	5,670	£5,670	2.60	£14,715	0.235	£3,457
2060	0	5,670	5,670	5,670	£5,670	2.65	£15,041	0.228	£3,431
2061	0	5,670	5,670	5,670	£5,670	2.71	£15,374	0.221	£3,405
2062	0	5,670	5,670	5,670	£5,670	2.77	£15,715	0.215	£3,379
2063	0	5,670	5,670	5,670	£5,670	2.83	£16,063	0.209	£3,353
2064	0	5,670	5,670	5,670	£5,670	2.90	£16,418	0.203	£3,327
2065	0	5,670	5,670	5,670	£5,670	2.96	£16,782	0.197	£3,302
2066	0	5,670	5,670	5,670	£5,670	3.03	£17,153	0.191	£3,277
2067	0	5,670	5,670	5,670	£5,670	3.09	£17,530	0.185	£3,251
2068	0	5,670	5,670	5,670	£5,670	3.16	£17,915	0.180	£3,226
2069	0	5,670	5,670	5,670	£5,670	3.23	£18,308	0.175	£3,201
2070	0	5,670	5,670	5,670	£5,670	3.30	£18,711	0.170	£3,176
2071	0	5,670	5,670	5,670	£5,670	3.37	£19,121	0.165	£3,151
2072	0	5,670	5,670	5,670	£5,670	3.45	£19,537	0.160	£3,126
2073	0	5,670	5,670	5,670	£5,670	3.52	£19,962	0.155	£3,101
2074	0	5,670	5,670	5,670	£5,670	3.60	£20,396	0.151	£3,076
2075	0	5,670	5,670	5,670	£5,670	3.68	£20,840	0.146	£3,051
2076	0	5,670	5,670	5,670	£0	3.76	£0	0.142	£0
2077	0	5,670	5,670	5,670	£0	3.84	£0	0.138	£0
2078	0	5,670	5,670	5,670	£0	3.92	£0	0.134	£0
2079	0	5,670	5,670	5,670	£0	4.00	£0	0.130	£0
2080	0	5,670	5,670	5,670	£0	4.09	£0	0.126	£0
2081	0	5,670	5,670	5,670	£0	4.18	£0	0.123	£0
2082	0	5,670	5,670	5,670	£0	4.27	£0	0.119	£0
2083	0	5,670	5,670	5,670	£0	4.36	£0	0.116	£0
2084	0	5,670	5,670	5,670	£0	4.46	£0	0.112	£0
2085	0	5,670	5,670	5,670	£0	4.55	£0	0.109	£0
2086	0	5,670	5,670	5,670	£0	4.65	£0	0.106	£0
2087	0	5,670	5,670	5,670	£0	4.75	£0	0.103	£0
2088	0	5,670	5,670	5,670	£0	4.86	£0	0.100	£0
2089	0	5,670	5,670	5,670	£0	4.96	£0	0.097	£0
2090	0	5,670	5,670	5,670	£0	5.07	£0	0.094	£0
2091	0	5,670	5,670	5,670	£0	5.18	£0	0.091	£0
2092	0	5,670	5,670	5,670	£0	5.30	£0	0.089	£0
2093	0	5,670	5,670	5,670	£0	5.41	£0	0.086	£0
2094	0	5,670	5,670	5,670	£0	5.53	£0	0.083	£0
2095	0	5,670	5,670	5,670	£0	5.65	£0	0.081	£0
2096	0	5,670	5,670	5,670	£0	5.77	£0	0.079	£0
2097	0	5,670	5,670	5,670	£0	5.90	£0	0.076	£0
2098	0	5,670	5,670	5,670	£0	6.02	£0	0.074	£0
2099	0	5,670	5,670	5,670	£0	6.15	£0	0.072	£0
2100	0	5,670	5,670	5,670	£0	6.29	£0	0.070	£0
TOTAL					£340,214	N/A	£711,277	N/A	£224,480

Discount factor = 1/(1+Discount Rate)^n where n = year minus 2010. Discount rates are specified in the parameters above.

Marginal External Costs over appraisal period

Year	Discount Factor					Congestion	Discounted	Infrast.	Discounted	Accident	Discounted	Local Air Quality	Discounted	Noise	Discounted	Green Gases	Discounted	Indirect Taxation	Discounted
2014	0.000	0	0	249	0	£0	£0	£0	£0	£0	£0	£0	£0	£0	£0	£0	£0	£0	£0
2015	0.000	0	0	249	0	£0	£0	£0	£0	£0	£0	£0	£0	£0	£0	£0	£0	£0	£0
2016	0.814	249	249	249	249	£32	£26	£0	£0	£4	£4	£0	£0	£0	£0	£2	£2	-£12	-£10
2017	0.786	0	249	249	249	£34	£27	£0	£0	£4	£3	£0	£0	£0	£0	£2	£1	-£12	-£9
2018	0.759	0	249	249	249	£36	£27	£0	£0	£5	£3	£0	£0	£0	£0	£2	£1	-£12	-£9
2019	0.734	0	249	249	249	£38	£28	£0	£0	£5	£3	£0	£0	£0	£0	£2	£1	-£11	-£8
2020	0.709	0	249	249	249	£39	£28	£0	£0	£5	£3	£0	£0	£0	£0	£2	£1	-£11	-£8
2021	0.685	0	249	249	249	£42	£29	£0	£0	£5	£3	£0	£0	£0	£0	£2	£1	-£11	-£7
2022	0.662	0	249	249	249	£44	£29	£0	£0	£5	£3	£0	£0	£0	£0	£2	£1	-£11	-£7
2023	0.639	0	249	249	249	£46	£30	£0	£0	£5	£3	£0	£0	£0	£0	£2	£1	-£10	-£7
2024	0.618	0	249	249	249	£49	£30	£0	£0	£5	£3	£0	£0	£0	£0	£2	£1	-£10	-£6
2025	0.597	0	249	249	249	£51	£30	£0	£0	£5	£3	£0	£0	£0	£0	£2	£1	-£10	-£6
2026	0.577	0	249	249	249	£53	£31	£0	£0	£5	£3	£0	£0	£0	£0	£2	£1	-£10	-£6
2027	0.557	0	249	249	249	£55	£31	£0	£0	£5	£3	£0	£0	£0	£0	£2	£1	-£9	-£5
2028	0.538	0	249	249	249	£58	£31	£0	£0	£5	£3	£0	£0	£0	£0	£2	£1	-£9	-£5
2029	0.520	0	249	249	249	£60	£31	£0	£0	£5	£3	£0	£0	£0	£0	£2	£1	-£9	-£5
2030	0.503	0	249	249	249	£62	£31	£0	£0	£5	£3	£0	£0	£0	£0	£2	£1	-£9	-£4
2031	0.486	249	249	249	249	£65	£32	£0	£0	£6	£3	£0	£0	£0	£0	£2	£1	-£9	-£4
2032	0.469	0	249	249	249	£68	£32	£0	£0	£6	£3	£0	£0	£0	£0	£2	£1	-£9	-£4
2033	0.453	0	249	249	249	£71	£32	£0	£0	£6	£3	£0	£0	£0	£0	£2	£1	-£9	-£4
2034	0.438	0	249	249	249	£74	£33	£0	£0	£6	£3	£0	£0	£0	£0	£2	£1	-£9	-£4
2035	0.423	0	249	249	249	£78	£33	£0	£0	£6	£3	£0	£0	£0	£0	£2	£1	-£9	-£4
2036	0.409	0	249	249	249	£79	£32	£1	£0	£6	£3	£0	£0	£1	£0	£3	£1	-£9	-£4
2037	0.395	0	249	249	249	£81	£32	£1	£0	£6	£3	£0	£0	£1	£0	£3	£1	-£9	-£4
2038	0.382	0	249	249	249	£82	£31	£1	£0	£7	£3	£0	£0	£1	£0	£3	£1	-£9	-£4
2039	0.369	0	249	249	249	£84	£31	£1	£0	£7	£2	£0	£0	£1	£0	£3	£1	-£9	-£3
2040	0.356	0	249	249	249	£86	£31	£1	£0	£7	£2	£0	£0	£1	£0	£3	£1	-£10	-£3
2041	0.344	0	249	249	249	£87	£30	£1	£0	£7	£2	£0	£0	£1	£0	£3	£1	-£10	-£3
2042	0.333	0	249	249	249	£89	£30	£1	£0	£7	£2	£0	£0	£1	£0	£3	£1	-£10	-£3
2043	0.321	0	249	249	249	£91	£29	£1	£0	£7	£2	£0	£0	£1	£0	£3	£1	-£10	-£3
2044	0.310	0	249	249	249	£93	£29	£1	£0	£7	£2	£0	£0	£1	£0	£3	£1	-£10	-£3
2045	0.355	0	249	249	249	£95	£34	£1	£0	£8	£3	£0	£0	£1	£0	£3	£1	-£11	-£4
2046	0.345	0	249	249	249	£96	£33	£1	£0	£8	£3	£0	£0	£1	£0	£3	£1	-£11	-£4
2047	0.335	0	249	249	249	£98	£33	£1	£0	£8	£3	£0	£0	£1	£0	£3	£1	-£11	-£4
2048	0.325	0	249	249	249	£100	£33	£1	£0	£8	£3	£0	£0	£1	£0	£3	£1	-£11	-£4
2049	0.316	0	249	249	249	£102	£32	£1	£0	£8	£3	£0	£0	£1	£0	£3	£1	-£11	-£4
2050	0.307	0	249	249	249	£104	£32	£1	£0	£8	£3	£0	£0	£1	£0	£3	£1	-£12	-£4
2051	0.298	0	249	249	249	£106	£32	£1	£0	£9	£3	£0	£0	£1	£0	£3	£1	-£12	-£4
2052	0.289	0	249	249	249	£109	£31	£1	£0	£9	£3	£0	£0	£1	£0	£3	£1	-£12	-£4
2053	0.281	0	249	249	249	£111	£31	£1	£0	£9	£2	£0	£0	£1	£0	£4	£1	-£12	-£3
2054	0.272	0	249	249	249	£113	£31	£1	£0	£9	£2	£0	£0	£1	£0	£4	£1	-£13	-£3
2055	0.264	0	249	249	249	£115	£30	£1	£0	£9	£2	£0	£0	£1	£0	£4	£1	-£13	-£3
2056	0.257	0	249	249	249	£118	£30	£1	£0	£9	£2	£0	£0	£1	£0	£4	£1	-£13	-£3
2057	0.249	0	249	249	249	£120	£30	£1	£0	£10	£2	£0	£0	£1	£0	£4	£1	-£13	-£3
2058	0.242	0	249	249	249	£122	£30	£1	£0	£10	£2	£0	£0	£1	£0	£4	£1	-£14	-£3
2059	0.235	0	249	249	249	£125	£29	£1	£0	£10	£2	£0	£0	£1	£0	£4	£1	-£14	-£3
2060	0.228	0	249	249	249	£127	£29	£1	£0	£10	£2	£0	£0	£1	£0	£4	£1	-£14	-£3
2061	0.221	0	249	249	249	£130	£29	£1	£0	£10	£2	£0	£0	£1	£0	£4	£1	-£15	-£3
2062	0.215	0	249	249	249	£132	£28	£1	£0	£11	£2	£0	£0	£1	£0	£4	£1	-£15	-£3
2063	0.209	0	249	249	249	£135	£28	£1	£0	£11	£2	£0	£0	£1	£0	£4	£1	-£15	-£3
2064	0.203	0	249	249	249	£138	£28	£1	£0	£11	£2	£0	£0	£1	£0	£4	£1	-£15	-£3
2065	0.197	0	249	249	249	£141	£28	£1	£0	£11	£2	£0	£0	£1	£0	£5	£1	-£16	-£3
2066	0.191	0	249	249	249	£143	£27	£1	£0	£11	£2	£0	£0	£1	£0	£5	£1	-£16	-£3
2067	0.185	0	249	249	249	£146	£27	£1	£0	£12	£2	£0	£0	£1	£0	£5	£1	-£16	-£3
2068	0.180	0	249	249	249	£149	£27	£1	£0	£12	£2	£0	£0	£1	£0	£5	£1	-£17	-£3
2069	0.175	0	249	249	249	£152	£27	£1	£0	£12	£2	£0	£0	£1	£0	£5	£1	-£17	-£3
2070	0.170	0	249	249	249	£155	£26	£1	£0	£12	£2	£0	£0	£1	£0	£5	£1	-£17	-£3
2071	0.165	0	249	249	249	£158	£26	£1	£0	£13	£2	£0	£0	£1	£0	£5	£1	-£18	-£3
2072	0.160	0	249	249	249	£161	£26	£1	£0	£13	£2	£0	£0	£1	£0	£5	£1	-£18	-£3
2073	0.155	0	249	249	249	£165	£26	£1	£0	£13	£2	£0	£0	£1	£0	£5	£1	-£18	-£3
2074	0.151	0	249	249	249	£168	£25	£1	£0	£13	£2	£0	£0	£1	£0	£5	£1	-£19	-£3
2075	0.146	0	249	249	249	£171	£25	£1	£0	£14	£2	£0	£0	£1	£0	£5	£1	-£19	-£3
2076	0.142	0	249	249	249	£175	£25	£1	£0	£14	£2	£0	£0	£1	£0	£6	£1	-£20	-£3
2077	0.000	0	249	249	249	£0	£0	£0	£0	£0	£0	£0	£0	£0	£0	£0	£0	£0	£0
2078	0.000	0	249	249	249	£0	£0	£0	£0	£0	£0	£0	£0	£0	£0	£0	£0	£0	£0
2079	0.000	0	249	249	249	£0	£0	£0	£0	£0	£0	£0	£0	£0	£0	£0	£0	£0	£0
2080	0.000	0	249	249	249	£0	£0	£0	£0	£0	£0	£0	£0	£0	£0	£0	£0	£0	£0
2081	0.000	0	249	249	249	£0	£0	£0	£0	£0	£0	£0	£0	£0	£0	£0	£0	£0	£0
2082	0.000	0	249	249	249	£0	£0	£0	£0	£0	£0	£0	£0	£0	£0	£0	£0	£0	£0
2083	0.000	0	249	249	249	£0	£0	£0	£0	£0	£0	£0	£0	£0	£0	£0	£0	£0	£0
2084	0.000	0	249	249	249	£0	£0	£0	£0	£0	£0	£0	£0	£0	£0	£0	£0	£0	£0
2085	0.000	0	249	249	249	£0	£0	£0	£0	£0	£0	£0	£0	£0	£0	£0	£0	£0	£0
2086	0.000	0	249	249	249	£0	£0	£0	£0	£0	£0	£0	£0	£0	£0	£0	£0	£0	£0
2087	0.000	0	249	249	249	£0	£0	£0	£0	£0	£0	£0	£0	£0	£0	£0	£0	£0	£0
2088	0.000	0	249	249	249	£0	£0	£0	£0	£0	£0	£0	£0	£0	£0	£0	£0	£0	£0
2089	0.000	0	249	249	249	£0	£0	£0	£0	£0	£0	£0	£0	£0	£0	£0	£0	£0	£0
2090	0.000	0	249	249	249	£0	£0	£0	£0	£0	£0	£0	£0	£0	£0	£0	£0	£0	£0
2091	0.000	0	249	249	249	£0	£0	£0	£0	£0	£0	£0	£0	£0	£0	£0	£0	£0	£0
2092	0.000	0	249	249	249	£0	£0	£0	£0	£0	£0	£0	£0	£0	£0	£0	£0	£0	£0
2093	0.000	0	249	249	249	£0	£0	£0	£0	£0	£0	£0	£0	£0	£0	£0	£0	£0	£0
2094	0.000	0	249	249	249	£0	£0	£0	£0	£0	£0	£0	£0	£0	£0	£0	£0	£0	£0
2095	0.000	0	249	249	249	£0	£0	£0	£0	£0	£0	£0	£0	£0	£0	£0	£0	£0	£0
2096	0.000	0	249	249	249	£0	£0	£0	£0	£0	£0	£0	£0	£0	£0	£0	£0	£0	£0
2097	0.000	0	249	249	249	£0	£0	£0	£0	£0	£0	£0	£0	£0	£0	£0	£0	£0	£0
2098	0.000	0	249	249	249	£0	£0	£0	£0	£0	£0	£0	£0	£0	£0	£0	£0	£0	£0
2099	0.000	0	249	249	249	£0	£0	£0	£0	£0	£0	£0	£0	£0	£0	£0	£0	£0	£0
2100	0.000	0	249	249	249	£0	£0	£0	£0	£0	£0	£0	£0	£0	£0	£0	£0	£0	£0
TOTAL						£6,010	£1,803	£37	£11	£500	£157	£0	£0	£39	£12	£196	£61	-£756	-£257

Undiscounted	£6,027		Discounted	£1,786

Scheme Comparison: LCC East Lancashire Cycle Network	PVB	£842,381
Scheme Discription: Scheme A: Huncoat Greenway Mitigation Measures	PVC	£500,067
Cycle Improvements to provide new cycle routes and improvements to existing cycle routes around Huncoat Industrial Estate. Costs include 44% OB and allowance for risk. 60% growth applied.	NPV	£342,314
	BCR	1.685

Parameters & Inputs

Opening Year Total Time Savings (Veh Delay in hrs)

Opening Year time savings	£6,979

Forecast Year Total Time Savings (Veh Delay in hrs)

Forecast Year time savings	£6,979

Opening YearTotal Distance Saving (Veh KM in KM)

Annualised Total Veh KM	306.0

Design Year Total Distance Saving (Veh KM in KM)

Annualised Total Veh KM	306.0

MEC Parameters

Assessment Period (Years)	60
DM MEC Type:	Weighted Average
DS MEC Type:	Weighted Average
DM MEC Congestion Band:	Weighted Average
DS MEC Congestion Band:	Weighted Average
MEC growth post-2035?	2%

- Input Values
- Default Values
- Output Values

Assessment Parameters

Current year	2015
Scheme Opening Year	2016
Scheme Design Year	2031
Include VoT growth over time?	Yes
Include growth in benefits post-design year?	No

Scheme Cost Estimate Year	2014
Scheme Cost Discount Factor	3.5%
Discount Factor (0-30 years)	3.5%
Discount Factor (31-75 years)	3.0%

Estimation of Discounted Scheme Costs

Scheme Costs

	Construction	Land	Preparation	Supervision	Maintenance	TOTAL
	£391,932	£0	£20,628	£0	£206,280	£412,560

Spend Profile (insert percentage profile)

Year	C%	L%	P%	S%	M%	C	L	P	S	M	Total	Deflation Factor	Total Costs (Undiscounted prices)	Discount Factor	Total Costs (2010 prices, discounted to 2010)	Resource Costs to Market Prices Factor	Total Costs (2010 prices, discounted to 2010) in Market Prices
2014						£0	£0	£0	£0	£0	£0	0.9289	£0	0.871	£0	1.19	£0
2015	1%		51%			£4,884	£0	£10,520	£0	£0	£15,404	0.9289	£14,309	0.842	£12,048	1.19	£14,337
2016	16%		52%			£64,047	£0	£10,731	£0	£0	£74,778	0.9289	£69,463	0.814	£56,508	1.19	£67,245
2017	24%					£95,088	£0	£0	£0	£0	£95,088	0.9289	£88,330	0.786	£69,427	1.19	£82,618
2018	0%					£0	£0	£0	£0	£0	£0	0.9289	£0	0.759	£0	1.19	£0
2019	66%					£260,541	£0	£0	£0	£0	£260,541	0.9289	£242,023	0.734	£177,580	1.19	£211,320
2020						£0	£0	£0	£0	£0	£0	0.9289	£0	0.709	£0	1.19	£0
2021						£0	£0	£0	£0	£0	£0	0.9289	£0	0.685	£0	1.19	£0
2022						£0	£0	£0	£0	£0	£0	0.9289	£0	0.662	£0	1.19	£0
2023						£0	£0	£0	£0	£0	£0	0.9289	£0	0.639	£0	1.19	£0
2024						£0	£0	£0	£0	£0	£0	0.9289	£0	0.618	£0	1.19	£0
2025						£0	£0	£0	£0	£0	£0	0.9289	£0	0.597	£0	1.19	£0
2026						£0	£0	£0	£0	£0	£0	0.9289	£0	0.577	£0	1.19	£0
2027						£0	£0	£0	£0	£0	£0	0.9289	£0	0.557	£0	1.19	£0
2028						£0	£0	£0	£0	£0	£0	0.9289	£0	0.538	£0	1.19	£0
2029						£0	£0	£0	£0	£0	£0	0.9289	£0	0.520	£0	1.19	£0
2030						£0	£0	£0	£0	£0	£0	0.9289	£0	0.503	£0	1.19	£0
2031						£0	£0	£0	£0	£0	£0	0.9289	£0	0.486	£0	1.19	£0
2032						£0	£0	£0	£0	£0	£0	0.9289	£0	0.469	£0	1.19	£0
2033						£0	£0	£0	£0	£0	£0	0.9289	£0	0.453	£0	1.19	£0
2034						£0	£0	£0	£0	£0	£0	0.9289	£0	0.438	£0	1.19	£0
2035						£0	£0	£0	£0	£0	£0	0.9289	£0	0.423	£0	1.19	£0
2036						£0	£0	£0	£0	£0	£0	0.9289	£0	0.409	£0	1.19	£0
2037						£0	£0	£0	£0	£0	£0	0.9289	£0	0.395	£0	1.19	£0
2038						£0	£0	£0	£0	£0	£0	0.9289	£0	0.382	£0	1.19	£0
2039						£0	£0	£0	£0	£0	£0	0.9289	£0	0.369	£0	1.19	£0
2040						£0	£0	£0	£0	£0	£0	0.9289	£0	0.356	£0	1.19	£0
2041						£0	£0	£0	£0	£0	£0	0.9289	£0	0.344	£0	1.19	£0
2042						£0	£0	£0	£0	£0	£0	0.9289	£0	0.333	£0	1.19	£0
2043						£0	£0	£0	£0	£0	£0	0.9289	£0	0.321	£0	1.19	£0
2044						£0	£0	£0	£0	£0	£0	0.9289	£0	0.310	£0	1.19	£0
2045						£0	£0	£0	£0	£0	£0	0.9289	£0	0.300	£0	1.19	£0
2046					188%	£0	£0	£0	£0	£388,743	£388,743	0.9289	£361,113	0.290	£104,662	1.19	£124,548
TOTAL	108%	0%	103%	0%	188%	£424,560	£0	£21,251	£0	£388,743	£834,554	N/A	£775,237	N/A	£420,224	N/A	£500,067

N.B. It is assumed that Preparation and Supervision costs are included within the above costs
N.B. Optimism Bias only applied to Construction costs, not Land

Applying the methodology below produces the discounted scheme cost (PVC):-
a) Assume the Construction costs are spread evenly over the construction period (assumed to be 2 years)
b) Assume land is bought in the first year of construction
c) All costs are in undiscounted Q1 prices, so need to be converted to undiscounted 2010 prices using the industry-standard method of RPIs
d) All costs discounted to 2010
e) All costs need to be converted to Market Prices

Estimation of Benefit to Cost Ratio (BCR) with MEC

Time Saving benefits (discounted)	£276,283
MEC Discounted (2016 to 2010 Prices)	£2,198
Mortality Benefits	£539,477
Absentee Benefits	£24,423

Total Benefits with MEC	£842,381
Total costs (discounted)	£500,067
BCR with Marginal External Costs	1.68454

Estimation of Benefits By User Class Over Appraisal Period

Year	gle Year Benefore opening	after design y	Benefits profile		Total Benefits (2010)	VoT Growth	VoT Adj.	Discount Factor	Total Benefits (2010 prices, discounted)
2010	0	0	6,979	0	£0	1.00	£0	1.000	£0
2011	0	0	6,979	0	£0	1.01	£0	0.966	£0
2012	0	0	6,979	0	£0	1.01	£0	0.934	£0
2013	0	0	6,979	0	£0	1.02	£0	0.902	£0
2014	0	0	6,979	0	£0	1.04	£0	0.871	£0
2015	0	0	6,979	0	£0	1.06	£0	0.842	£0
2016	6,979	6,979	6,979	6,979	£6,979	1.08	£7,522	0.814	£6,119
2017	0	6,979	6,979	6,979	£6,979	1.10	£7,672	0.786	£6,030
2018	0	6,979	6,979	6,979	£6,979	1.12	£7,817	0.759	£5,937
2019	0	6,979	6,979	6,979	£6,979	1.14	£7,967	0.734	£5,845
2020	0	6,979	6,979	6,979	£6,979	1.16	£8,118	0.709	£5,755
2021	0	6,979	6,979	6,979	£6,979	1.19	£8,271	0.685	£5,665
2022	0	6,979	6,979	6,979	£6,979	1.21	£8,426	0.662	£5,576
2023	0	6,979	6,979	6,979	£6,979	1.23	£8,585	0.639	£5,489
2024	0	6,979	6,979	6,979	£6,979	1.25	£8,748	0.618	£5,404
2025	0	6,979	6,979	6,979	£6,979	1.28	£8,916	0.597	£5,322
2026	0	6,979	6,979	6,979	£6,979	1.30	£9,088	0.577	£5,241
2027	0	6,979	6,979	6,979	£6,979	1.33	£9,266	0.557	£5,163
2028	0	6,979	6,979	6,979	£6,979	1.35	£9,448	0.538	£5,087
2029	0	6,979	6,979	6,979	£6,979	1.38	£9,636	0.520	£5,012
2030	0	6,979	6,979	6,979	£6,979	1.41	£9,830	0.503	£4,940
2031	6,979	6,979	6,979	6,979	£6,979	1.44	£10,028	0.486	£4,869
2032	0	6,979	6,979	6,979	£6,979	1.47	£10,232	0.469	£4,801
2033	0	6,979	6,979	6,979	£6,979	1.50	£10,442	0.453	£4,733
2034	0	6,979	6,979	6,979	£6,979	1.53	£10,658	0.438	£4,668
2035	0	6,979	6,979	6,979	£6,979	1.56	£10,879	0.423	£4,603
2036	0	6,979	6,979	6,979	£6,979	1.59	£11,105	0.409	£4,540
2037	0	6,979	6,979	6,979	£6,979	1.62	£11,338	0.395	£4,478
2038	0	6,979	6,979	6,979	£6,979	1.66	£11,576	0.382	£4,418
2039	0	6,979	6,979	6,979	£6,979	1.69	£11,820	0.369	£4,358
2040	0	6,979	6,979	6,979	£6,979	1.73	£12,068	0.356	£4,300
2041	0	6,979	6,979	6,979	£6,979	1.77	£12,322	0.344	£4,242
2042	0	6,979	6,979	6,979	£6,979	1.80	£12,584	0.333	£4,185
2043	0	6,979	6,979	6,979	£6,979	1.84	£12,851	0.321	£4,129
2044	0	6,979	6,979	6,979	£6,979	1.88	£13,123	0.310	£4,074
2045	0	6,979	6,979	6,979	£6,979	1.92	£13,402	0.355	£4,763
2046	0	6,979	6,979	6,979	£6,979	1.96	£13,686	0.345	£4,722
2047	0	6,979	6,979	6,979	£6,979	2.00	£13,980	0.335	£4,683
2048	0	6,979	6,979	6,979	£6,979	2.05	£14,281	0.325	£4,645
2049	0	6,979	6,979	6,979	£6,979	2.09	£14,588	0.316	£4,606
2050	0	6,979	6,979	6,979	£6,979	2.14	£14,902	0.307	£4,568
2051	0	6,979	6,979	6,979	£6,979	2.18	£15,222	0.298	£4,531
2052	0	6,979	6,979	6,979	£6,979	2.23	£15,555	0.289	£4,495
2053	0	6,979	6,979	6,979	£6,979	2.28	£15,895	0.281	£4,459
2054	0	6,979	6,979	6,979	£6,979	2.33	£16,243	0.272	£4,424
2055	0	6,979	6,979	6,979	£6,979	2.38	£16,598	0.264	£4,389
2056	0	6,979	6,979	6,979	£6,979	2.43	£16,961	0.257	£4,354
2057	0	6,979	6,979	6,979	£6,979	2.48	£17,336	0.249	£4,321
2058	0	6,979	6,979	6,979	£6,979	2.54	£17,719	0.242	£4,288
2059	0	6,979	6,979	6,979	£6,979	2.60	£18,111	0.235	£4,255
2060	0	6,979	6,979	6,979	£6,979	2.65	£18,512	0.228	£4,223
2061	0	6,979	6,979	6,979	£6,979	2.71	£18,921	0.221	£4,190
2062	0	6,979	6,979	6,979	£6,979	2.77	£19,341	0.215	£4,159
2063	0	6,979	6,979	6,979	£6,979	2.83	£19,769	0.209	£4,127
2064	0	6,979	6,979	6,979	£6,979	2.90	£20,207	0.203	£4,095
2065	0	6,979	6,979	6,979	£6,979	2.96	£20,655	0.197	£4,064
2066	0	6,979	6,979	6,979	£6,979	3.03	£21,112	0.191	£4,033
2067	0	6,979	6,979	6,979	£6,979	3.09	£21,575	0.185	£4,002
2068	0	6,979	6,979	6,979	£6,979	3.16	£22,049	0.180	£3,970
2069	0	6,979	6,979	6,979	£6,979	3.23	£22,534	0.175	£3,939
2070	0	6,979	6,979	6,979	£6,979	3.30	£23,028	0.170	£3,909
2071	0	6,979	6,979	6,979	£6,979	3.37	£23,534	0.165	£3,878
2072	0	6,979	6,979	6,979	£6,979	3.45	£24,046	0.160	£3,847
2073	0	6,979	6,979	6,979	£6,979	3.52	£24,569	0.155	£3,816
2074	0	6,979	6,979	6,979	£6,979	3.60	£25,103	0.151	£3,786
2075	0	6,979	6,979	6,979	£6,979	3.68	£25,649	0.146	£3,755
2076	0	6,979	6,979	6,979	£0	3.76	£0	0.142	£0
2077	0	6,979	6,979	6,979	£0	3.84	£0	0.138	£0
2078	0	6,979	6,979	6,979	£0	3.92	£0	0.134	£0
2079	0	6,979	6,979	6,979	£0	4.00	£0	0.130	£0
2080	0	6,979	6,979	6,979	£0	4.09	£0	0.126	£0
2081	0	6,979	6,979	6,979	£0	4.18	£0	0.123	£0
2082	0	6,979	6,979	6,979	£0	4.27	£0	0.119	£0
2083	0	6,979	6,979	6,979	£0	4.36	£0	0.116	£0
2084	0	6,979	6,979	6,979	£0	4.46	£0	0.112	£0
2085	0	6,979	6,979	6,979	£0	4.55	£0	0.109	£0
2086	0	6,979	6,979	6,979	£0	4.65	£0	0.106	£0
2087	0	6,979	6,979	6,979	£0	4.75	£0	0.103	£0
2088	0	6,979	6,979	6,979	£0	4.86	£0	0.100	£0
2089	0	6,979	6,979	6,979	£0	4.96	£0	0.097	£0
2090	0	6,979	6,979	6,979	£0	5.07	£0	0.094	£0
2091	0	6,979	6,979	6,979	£0	5.18	£0	0.091	£0
2092	0	6,979	6,979	6,979	£0	5.30	£0	0.089	£0
2093	0	6,979	6,979	6,979	£0	5.41	£0	0.086	£0
2094	0	6,979	6,979	6,979	£0	5.53	£0	0.083	£0
2095	0	6,979	6,979	6,979	£0	5.65	£0	0.081	£0
2096	0	6,979	6,979	6,979	£0	5.77	£0	0.079	£0
2097	0	6,979	6,979	6,979	£0	5.90	£0	0.076	£0
2098	0	6,979	6,979	6,979	£0	6.02	£0	0.074	£0
2099	0	6,979	6,979	6,979	£0	6.15	£0	0.072	£0
2100	0	6,979	6,979	6,979	£0	6.29	£0	0.070	£0
TOTAL					£418,725	N/A	£875,418	N/A	£276,283

Discount factor = 1/(1+Discount Rate)^n where n = year minus 2010. Discount rates are specified in the parameters above.

Marginal External Costs over appraisal period

Year	Discount Factor	late veh KM sfore opening	after design y3enefits profil			Congestion	Discounted	Infrast.	Discounted	Accident	Discounted	Local Air Quality	Discounted	Noise	Discounted	Green Gases	Discounted	Indirect Taxation	Discounted
2014	0.000	0	0	306	0	£0	£0	£0	£0	£0	£0	£0	£0	£0	£0	£0	£0	£0	£0
2015	0.000	0	0	306	0	£0	£0	£0	£0	£0	£0	£0	£0	£0	£0	£0	£0	£0	£0
2016	0.814	306	306	306	306	£40	£32	£0	£0	£5	£4	£0	£0	£0	£0	£2	£2	-£15	-£12
2017	0.786	0	306	306	306	£42	£33	£0	£0	£5	£4	£0	£0	£0	£0	£2	£2	-£15	-£12
2018	0.759	0	306	306	306	£44	£33	£0	£0	£6	£4	£0	£0	£0	£0	£2	£2	-£14	-£11
2019	0.734	0	306	306	306	£46	£34	£0	£0	£6	£4	£0	£0	£0	£0	£2	£2	-£14	-£10
2020	0.709	0	306	306	306	£48	£34	£0	£0	£6	£4	£0	£0	£0	£0	£2	£2	-£14	-£10
2021	0.685	0	306	306	306	£51	£35	£0	£0	£6	£4	£0	£0	£0	£0	£2	£1	-£13	-£9
2022	0.662	0	306	306	306	£54	£36	£0	£0	£6	£4	£0	£0	£0	£0	£2	£1	-£13	-£9
2023	0.639	0	306	306	306	£57	£36	£0	£0	£6	£4	£0	£0	£0	£0	£2	£1	-£13	-£8
2024	0.618	0	306	306	306	£60	£37	£0	£0	£6	£4	£0	£0	£0	£0	£2	£1	-£12	-£8
2025	0.597	0	306	306	306	£63	£37	£0	£0	£6	£4	£0	£0	£0	£0	£2	£1	-£12	-£7
2026	0.577	0	306	306	306	£65	£38	£0	£0	£6	£4	£0	£0	£0	£0	£2	£1	-£12	-£7
2027	0.557	0	306	306	306	£68	£38	£0	£0	£6	£4	£0	£0	£0	£0	£2	£1	-£12	-£6
2028	0.538	0	306	306	306	£71	£38	£0	£0	£6	£3	£0	£0	£0	£0	£2	£1	-£11	-£6
2029	0.520	0	306	306	306	£74	£38	£0	£0	£7	£3	£0	£0	£1	£0	£2	£1	-£11	-£6
2030	0.503	0	306	306	306	£77	£38	£0	£0	£7	£3	£0	£0	£1	£0	£2	£1	-£11	-£6
2031	0.486	306	306	306	306	£80	£39	£0	£0	£7	£3	£0	£0	£1	£0	£2	£1	-£11	-£5
2032	0.469	0	306	306	306	£84	£39	£0	£0	£7	£3	£0	£0	£1	£0	£3	£1	-£11	-£5
2033	0.453	0	306	306	306	£88	£40	£0	£0	£7	£3	£0	£0	£1	£0	£3	£1	-£11	-£5
2034	0.438	0	306	306	306	£92	£40	£1	£0	£7	£3	£0	£0	£1	£0	£3	£1	-£11	-£5
2035	0.423	0	306	306	306	£95	£40	£1	£0	£8	£3	£0	£0	£1	£0	£3	£1	-£11	-£5
2036	0.409	0	306	306	306	£97	£40	£1	£0	£8	£3	£0	£0	£1	£0	£3	£1	-£11	-£4
2037	0.395	0	306	306	306	£99	£39	£1	£0	£8	£3	£0	£0	£1	£0	£3	£1	-£11	-£4
2038	0.382	0	306	306	306	£101	£39	£1	£0	£8	£3	£0	£0	£1	£0	£3	£1	-£11	-£4
2039	0.369	0	306	306	306	£103	£38	£1	£0	£8	£3	£0	£0	£1	£0	£3	£1	-£12	-£4
2040	0.356	0	306	306	306	£105	£38	£1	£0	£8	£3	£0	£0	£1	£0	£3	£1	-£12	-£4
2041	0.344	0	306	306	306	£108	£37	£1	£0	£9	£3	£0	£0	£1	£0	£3	£1	-£12	-£4
2042	0.333	0	306	306	306	£110	£36	£1	£0	£9	£3	£0	£0	£1	£0	£4	£1	-£12	-£4
2043	0.321	0	306	306	306	£112	£36	£1	£0	£9	£3	£0	£0	£1	£0	£4	£1	-£13	-£4
2044	0.310	0	306	306	306	£114	£35	£1	£0	£9	£3	£0	£0	£1	£0	£4	£1	-£13	-£4
2045	0.355	0	306	306	306	£116	£41	£1	£0	£9	£3	£0	£0	£1	£0	£4	£1	-£13	-£5
2046	0.345	0	306	306	306	£119	£41	£1	£0	£10	£3	£0	£0	£1	£0	£4	£1	-£13	-£5
2047	0.335	0	306	306	306	£121	£41	£1	£0	£10	£3	£0	£0	£1	£0	£4	£1	-£14	-£5
2048	0.325	0	306	306	306	£124	£40	£1	£0	£10	£3	£0	£0	£1	£0	£4	£1	-£14	-£5
2049	0.316	0	306	306	306	£126	£40	£1	£0	£10	£3	£0	£0	£1	£0	£4	£1	-£14	-£4
2050	0.307	0	306	306	306	£129	£39	£1	£0	£10	£3	£0	£0	£1	£0	£4	£1	-£14	-£4
2051	0.298	0	306	306	306	£131	£39	£1	£0	£11	£3	£0	£0	£1	£0	£4	£1	-£15	-£4
2052	0.289	0	306	306	306	£134	£39	£1	£0	£11	£3	£0	£0	£1	£0	£4	£1	-£15	-£4
2053	0.281	0	306	306	306	£136	£38	£1	£0	£11	£3	£0	£0	£1	£0	£4	£1	-£15	-£4
2054	0.272	0	306	306	306	£139	£38	£1	£0	£11	£3	£0	£0	£1	£0	£4	£1	-£16	-£4
2055	0.264	0	306	306	306	£142	£38	£1	£0	£11	£3	£0	£0	£1	£0	£5	£1	-£16	-£4
2056	0.257	0	306	306	306	£145	£37	£1	£0	£12	£3	£0	£0	£1	£0	£5	£1	-£16	-£4
2057	0.249	0	306	306	306	£148	£37	£1	£0	£12	£3	£0	£0	£1	£0	£5	£1	-£17	-£4
2058	0.242	0	306	306	306	£151	£36	£1	£0	£12	£3	£0	£0	£1	£0	£5	£1	-£17	-£4
2059	0.235	0	306	306	306	£154	£36	£1	£0	£12	£3	£0	£0	£1	£0	£5	£1	-£17	-£4
2060	0.228	0	306	306	306	£157	£36	£1	£0	£13	£3	£0	£0	£1	£0	£5	£1	-£18	-£4
2061	0.221	0	306	306	306	£160	£35	£1	£0	£13	£3	£0	£0	£1	£0	£5	£1	-£18	-£4
2062	0.215	0	306	306	306	£163	£35	£1	£0	£13	£3	£0	£0	£1	£0	£5	£1	-£18	-£4
2063	0.209	0	306	306	306	£166	£35	£1	£0	£13	£3	£0	£0	£1	£0	£5	£1	-£19	-£4
2064	0.203	0	306	306	306	£170	£34	£1	£0	£14	£3	£0	£0	£1	£0	£5	£1	-£19	-£4
2065	0.197	0	306	306	306	£173	£34	£1	£0	£14	£3	£0	£0	£1	£0	£6	£1	-£19	-£4
2066	0.191	0	306	306	306	£176	£34	£1	£0	£14	£3	£0	£0	£1	£0	£6	£1	-£20	-£4
2067	0.185	0	306	306	306	£180	£33	£1	£0	£14	£3	£0	£0	£1	£0	£6	£1	-£20	-£4
2068	0.180	0	306	306	306	£184	£33	£1	£0	£15	£3	£0	£0	£1	£0	£6	£1	-£21	-£4
2069	0.175	0	306	306	306	£187	£33	£1	£0	£15	£3	£0	£0	£1	£0	£6	£1	-£21	-£4
2070	0.170	0	306	306	306	£191	£32	£1	£0	£15	£3	£0	£0	£1	£0	£6	£1	-£21	-£4
2071	0.165	0	306	306	306	£195	£32	£1	£0	£16	£3	£0	£0	£1	£0	£6	£1	-£22	-£4
2072	0.160	0	306	306	306	£199	£32	£1	£0	£16	£3	£0	£0	£1	£0	£6	£1	-£22	-£4
2073	0.155	0	306	306	306	£203	£31	£1	£0	£16	£3	£0	£0	£1	£0	£6	£1	-£23	-£4
2074	0.151	0	306	306	306	£207	£31	£1	£0	£17	£2	£0	£0	£1	£0	£7	£1	-£23	-£3
2075	0.146	0	306	306	306	£211	£31	£1	£0	£17	£2	£0	£0	£1	£0	£7	£1	-£24	-£3
2076	0.142	0	306	306	306	£215	£31	£1	£0	£17	£2	£0	£0	£1	£0	£7	£1	-£24	-£3
2077	0.000	0	306	306	306	£0	£0	£0	£0	£0	£0	£0	£0	£0	£0	£0	£0	£0	£0
2078	0.000	0	306	306	306	£0	£0	£0	£0	£0	£0	£0	£0	£0	£0	£0	£0	£0	£0
2079	0.000	0	306	306	306	£0	£0	£0	£0	£0	£0	£0	£0	£0	£0	£0	£0	£0	£0
2080	0.000	0	306	306	306	£0	£0	£0	£0	£0	£0	£0	£0	£0	£0	£0	£0	£0	£0
2081	0.000	0	306	306	306	£0	£0	£0	£0	£0	£0	£0	£0	£0	£0	£0	£0	£0	£0
2082	0.000	0	306	306	306	£0	£0	£0	£0	£0	£0	£0	£0	£0	£0	£0	£0	£0	£0
2083	0.000	0	306	306	306	£0	£0	£0	£0	£0	£0	£0	£0	£0	£0	£0	£0	£0	£0
2084	0.000	0	306	306	306	£0	£0	£0	£0	£0	£0	£0	£0	£0	£0	£0	£0	£0	£0
2085	0.000	0	306	306	306	£0	£0	£0	£0	£0	£0	£0	£0	£0	£0	£0	£0	£0	£0
2086	0.000	0	306	306	306	£0	£0	£0	£0	£0	£0	£0	£0	£0	£0	£0	£0	£0	£0
2087	0.000	0	306	306	306	£0	£0	£0	£0	£0	£0	£0	£0	£0	£0	£0	£0	£0	£0
2088	0.000	0	306	306	306	£0	£0	£0	£0	£0	£0	£0	£0	£0	£0	£0	£0	£0	£0
2089	0.000	0	306	306	306	£0	£0	£0	£0	£0	£0	£0	£0	£0	£0	£0	£0	£0	£0
2090	0.000	0	306	306	306	£0	£0	£0	£0	£0	£0	£0	£0	£0	£0	£0	£0	£0	£0
2091	0.000	0	306	306	306	£0	£0	£0	£0	£0	£0	£0	£0	£0	£0	£0	£0	£0	£0
2092	0.000	0	306	306	306	£0	£0	£0	£0	£0	£0	£0	£0	£0	£0	£0	£0	£0	£0
2093	0.000	0	306	306	306	£0	£0	£0	£0	£0	£0	£0	£0	£0	£0	£0	£0	£0	£0
2094	0.000	0	306	306	306	£0	£0	£0	£0	£0	£0	£0	£0	£0	£0	£0	£0	£0	£0
2095	0.000	0	306	306	306	£0	£0	£0	£0	£0	£0	£0	£0	£0	£0	£0	£0	£0	£0
2096	0.000	0	306	306	306	£0	£0	£0	£0	£0	£0	£0	£0	£0	£0	£0	£0	£0	£0
2097	0.000	0	306	306	306	£0	£0	£0	£0	£0	£0	£0	£0	£0	£0	£0	£0	£0	£0
2098	0.000	0	306	306	306	£0	£0	£0	£0	£0	£0	£0	£0	£0	£0	£0	£0	£0	£0
2099	0.000	0	306	306	306	£0	£0	£0	£0	£0	£0	£0	£0	£0	£0	£0	£0	£0	£0
2100	0.000	0	306	306	306	£0	£0	£0	£0	£0	£0	£0	£0	£0	£0	£0	£0	£0	£0
TOTAL						£7,397	£2.219	£46	£14	£615	£193	£1	£0	£48	£14	£242	£75	-£930	-£317

Undiscounted	£7,418		Discounted	£2,198

Scheme Comparison: LCC East Lancashire Cycle Network	PVB	£10,139,505
Scheme Discription: Scheme B: National Cycle Network Route 6 Improvements	PVC	£4,403,225
Cycle Improvements to NCN route between Accrington and Bacup	NPV	£5,736,280
Costs include 44% OB and allowance for risk.		
15% growth applied.	BCR	2.303

Parameters & Inputs

Opening Year Total Time Savings (Veh Delay in hrs)

Opening Year time savings	£41,306

Forecast Year Total Time Savings (Veh Delay in hrs)

Forecast Year time savings	£41,306

Opening YearTotal Distance Saving (Veh KM in KM)

Annualised Total Veh KM	1,113.5

Design Year Total Distance Saving (Veh KM in KM)

Annualised Total Veh KM	1,113.5

MEC Parameters

Assessment Period (Years)	60
DM MEC Type:	Weighted Average
DS MEC Type:	Weighted Average
DM MEC Congestion Band:	Weighted Average
DS MEC Congestion Band:	Weighted Average
MEC growth post-2035?	2%

- Input Values
- Default Values
- Output Values

Assessment Parameters

Current year	2015
Scheme Opening Year	2017
Scheme Design Year	2032
Include VoT growth over time?	Yes
Include growth in benefits post-design year?	No

Scheme Cost Estimate Year	2014
Scheme Cost Discount Factor	3.5%
Discount Factor (0-30 years)	3.5%
Discount Factor (31-75 years)	3.0%

Estimation of Discounted Scheme Costs

Scheme Costs	Construction	Land	Preparation	Supervision	Maintenance	TOTAL
	£3,434,344	£0	£180,755	£0	£1,807,549	£3,615,099

Spend Profile (insert percentage profile)

Year	C	L	P	S	M
2014					
2015	1%		51%		
2016	28%		52%		
2017	26%				
2018	9%				
2019	42%				
2046					188%
TOTAL	107%	0%	103%	0%	188%

Year	C	L	P	S	M	Total	Deflation Factor	Total Costs (Undiscounted prices)	Discount Factor	Total Costs (2010 prices, discounted to 2010)	Resource Costs to Market Prices Factor	Total Costs (2010 prices, discounted to 2010) in Market Prices
2014	£0	£0	£0	£0	£0	£0	0.9289	£0	0.871	£0	1.19	£0
2015	£48,633	£0	£92,185	£0	£0	£140,818	0.9289	£130,809	0.842	£110,138	1.19	£131,064
2016	£975,826	£0	£94,029	£0	£0	£1,069,854	0.9289	£993,813	0.814	£808,468	1.19	£962,076
2017	£876,777	£0	£0	£0	£0	£876,777	0.9289	£814,459	0.786	£640,157	1.19	£761,787
2018	£325,835	£0	£0	£0	£0	£325,835	0.9289	£302,676	0.759	£229,855	1.19	£273,528
2019	£1,459,047	£0	£0	£0	£0	£1,459,047	0.9289	£1,355,343	0.734	£994,457	1.19	£1,183,404
2020	£0	£0	£0	£0	£0	£0	0.9289	£0	0.709	£0	1.19	£0
2021	£0	£0	£0	£0	£0	£0	0.9289	£0	0.685	£0	1.19	£0
2022	£0	£0	£0	£0	£0	£0	0.9289	£0	0.662	£0	1.19	£0
2023	£0	£0	£0	£0	£0	£0	0.9289	£0	0.639	£0	1.19	£0
2024	£0	£0	£0	£0	£0	£0	0.9289	£0	0.618	£0	1.19	£0
2025	£0	£0	£0	£0	£0	£0	0.9289	£0	0.597	£0	1.19	£0
2026	£0	£0	£0	£0	£0	£0	0.9289	£0	0.577	£0	1.19	£0
2027	£0	£0	£0	£0	£0	£0	0.9289	£0	0.557	£0	1.19	£0
2028	£0	£0	£0	£0	£0	£0	0.9289	£0	0.538	£0	1.19	£0
2029	£0	£0	£0	£0	£0	£0	0.9289	£0	0.520	£0	1.19	£0
2030	£0	£0	£0	£0	£0	£0	0.9289	£0	0.503	£0	1.19	£0
2031	£0	£0	£0	£0	£0	£0	0.9289	£0	0.486	£0	1.19	£0
2032	£0	£0	£0	£0	£0	£0	0.9289	£0	0.469	£0	1.19	£0
2033	£0	£0	£0	£0	£0	£0	0.9289	£0	0.453	£0	1.19	£0
2034	£0	£0	£0	£0	£0	£0	0.9289	£0	0.438	£0	1.19	£0
2035	£0	£0	£0	£0	£0	£0	0.9289	£0	0.423	£0	1.19	£0
2036	£0	£0	£0	£0	£0	£0	0.9289	£0	0.409	£0	1.19	£0
2037	£0	£0	£0	£0	£0	£0	0.9289	£0	0.395	£0	1.19	£0
2038	£0	£0	£0	£0	£0	£0	0.9289	£0	0.382	£0	1.19	£0
2039	£0	£0	£0	£0	£0	£0	0.9289	£0	0.369	£0	1.19	£0
2040	£0	£0	£0	£0	£0	£0	0.9289	£0	0.356	£0	1.19	£0
2041	£0	£0	£0	£0	£0	£0	0.9289	£0	0.344	£0	1.19	£0
2042	£0	£0	£0	£0	£0	£0	0.9289	£0	0.333	£0	1.19	£0
2043	£0	£0	£0	£0	£0	£0	0.9289	£0	0.321	£0	1.19	£0
2044	£0	£0	£0	£0	£0	£0	0.9289	£0	0.310	£0	1.19	£0
2045	£0	£0	£0	£0	£0	£0	0.9289	£0	0.300	£0	1.19	£0
2046	£0	£0	£0	£0	£3,406,400	£3,406,400	0.9289	£3,164,286	0.290	£917,114	1.19	£1,091,365
TOTAL	£3,686,117	£0	£186,214	£0	£3,406,400	£7,278,731	N/A	£6,761,386	N/A	£3,700,189	N/A	£4,403,225

N.B. It is assumed that Preparation and Supervision costs are included within the above costs
N.B. Optimism Bias only applied to Construction costs, not Land

Applying the methodology below produces the discounted scheme cost (PVC):-
a) Assume the Construction costs are spread evenly over the construction period (assumed to be 2 years)
b) Assume land is bought in the first year of construction
c) All costs are in undiscounted Q1 prices, so need to be converted to undiscounted 2010 prices using the industry-standard method of RPIs
d) All costs discounted to 2010
e) All costs need to be converted to Market Prices

Estimation of Benefit to Cost Ratio (BCR) with MEC

Time Saving benefits (discounted)	£1,616,689
MEC Discounted (2016 to 2010 Prices)	£7,988
Mortality Benefits	£8,425,963
Absentee Benefits	£88,865

Total Benefits with MEC	£10,139,505
Total costs (discounted)	£4,403,225
BCR with Marginal External Costs	2.30275

Estimation of Benefits By User Class Over Appraisal Period

Year	gle Year Benefore opening	after design y	Benefits profile		Total Benefits (2010)	VoT Growth	VoT Adj.	Discount Factor	Total Benefits (2010 prices, discounted)
2010	0	0	41,306	0	£0	1.00	£0	1.000	£0
2011	0	0	41,306	0	£0	1.01	£0	0.966	£0
2012	0	0	41,306	0	£0	1.01	£0	0.934	£0
2013	0	0	41,306	0	£0	1.02	£0	0.902	£0
2014	0	0	41,306	0	£0	1.04	£0	0.871	£0
2015	0	0	41,306	0	£0	1.06	£0	0.842	£0
2016	0	0	41,306	0	£0	1.08	£0	0.814	£0
2017	41,306	41,306	41,306	41,306	£41,306	1.10	£45,406	0.786	£35,689
2018	0	41,306	41,306	41,306	£41,306	1.12	£46,269	0.759	£35,137
2019	0	41,306	41,306	41,306	£41,306	1.14	£47,154	0.734	£34,598
2020	0	41,306	41,306	41,306	£41,306	1.16	£48,048	0.709	£34,062
2021	0	41,306	41,306	41,306	£41,306	1.19	£48,953	0.685	£33,530
2022	0	41,306	41,306	41,306	£41,306	1.21	£49,870	0.662	£33,003
2023	0	41,306	41,306	41,306	£41,306	1.23	£50,811	0.639	£32,488
2024	0	41,306	41,306	41,306	£41,306	1.25	£51,777	0.618	£31,987
2025	0	41,306	41,306	41,306	£41,306	1.28	£52,770	0.597	£31,498
2026	0	41,306	41,306	41,306	£41,306	1.30	£53,792	0.577	£31,022
2027	0	41,306	41,306	41,306	£41,306	1.33	£54,843	0.557	£30,559
2028	0	41,306	41,306	41,306	£41,306	1.35	£55,923	0.538	£30,107
2029	0	41,306	41,306	41,306	£41,306	1.38	£57,035	0.520	£29,667
2030	0	41,306	41,306	41,306	£41,306	1.41	£58,179	0.503	£29,239
2031	0	41,306	41,306	41,306	£41,306	1.44	£59,355	0.486	£28,821
2032	41,306	41,306	41,306	41,306	£41,306	1.47	£60,563	0.469	£28,413
2033	0	41,306	41,306	41,306	£41,306	1.50	£61,805	0.453	£28,015
2034	0	41,306	41,306	41,306	£41,306	1.53	£63,080	0.438	£27,627
2035	0	41,306	41,306	41,306	£41,306	1.56	£64,389	0.423	£27,246
2036	0	41,306	41,306	41,306	£41,306	1.59	£65,730	0.409	£26,873
2037	0	41,306	41,306	41,306	£41,306	1.62	£67,104	0.395	£26,507
2038	0	41,306	41,306	41,306	£41,306	1.66	£68,516	0.382	£26,149
2039	0	41,306	41,306	41,306	£41,306	1.69	£69,957	0.369	£25,797
2040	0	41,306	41,306	41,306	£41,306	1.73	£71,429	0.356	£25,449
2041	0	41,306	41,306	41,306	£41,306	1.77	£72,932	0.344	£25,105
2042	0	41,306	41,306	41,306	£41,306	1.80	£74,479	0.333	£24,771
2043	0	41,306	41,306	41,306	£41,306	1.84	£76,059	0.321	£24,441
2044	0	41,306	41,306	41,306	£41,306	1.88	£77,673	0.310	£24,116
2045	0	41,306	41,306	41,306	£41,306	1.92	£79,321	0.300	£23,795
2046	0	41,306	41,306	41,306	£41,306	1.96	£81,004	0.345	£27,949
2047	0	41,306	41,306	41,306	£41,306	2.00	£82,746	0.335	£27,719
2048	0	41,306	41,306	41,306	£41,306	2.05	£84,526	0.325	£27,490
2049	0	41,306	41,306	41,306	£41,306	2.09	£86,343	0.316	£27,263
2050	0	41,306	41,306	41,306	£41,306	2.14	£88,200	0.307	£27,038
2051	0	41,306	41,306	41,306	£41,306	2.18	£90,097	0.298	£26,815
2052	0	41,306	41,306	41,306	£41,306	2.23	£92,067	0.289	£26,603
2053	0	41,306	41,306	41,306	£41,306	2.28	£94,079	0.281	£26,393
2054	0	41,306	41,306	41,306	£41,306	2.33	£96,136	0.272	£26,185
2055	0	41,306	41,306	41,306	£41,306	2.38	£98,238	0.264	£25,978
2056	0	41,306	41,306	41,306	£41,306	2.43	£100,385	0.257	£25,773
2057	0	41,306	41,306	41,306	£41,306	2.48	£102,606	0.249	£25,575
2058	0	41,306	41,306	41,306	£41,306	2.54	£104,876	0.242	£25,380
2059	0	41,306	41,306	41,306	£41,306	2.60	£107,196	0.235	£25,186
2060	0	41,306	41,306	41,306	£41,306	2.65	£109,568	0.228	£24,993
2061	0	41,306	41,306	41,306	£41,306	2.71	£111,992	0.221	£24,802
2062	0	41,306	41,306	41,306	£41,306	2.77	£114,476	0.215	£24,614
2063	0	41,306	41,306	41,306	£41,306	2.83	£117,010	0.209	£24,426
2064	0	41,306	41,306	41,306	£41,306	2.90	£119,601	0.203	£24,240
2065	0	41,306	41,306	41,306	£41,306	2.96	£122,249	0.197	£24,055
2066	0	41,306	41,306	41,306	£41,306	3.03	£124,956	0.191	£23,871
2067	0	41,306	41,306	41,306	£41,306	3.09	£127,700	0.185	£23,685
2068	0	41,306	41,306	41,306	£41,306	3.16	£130,505	0.180	£23,500
2069	0	41,306	41,306	41,306	£41,306	3.23	£133,371	0.175	£23,317
2070	0	41,306	41,306	41,306	£41,306	3.30	£136,300	0.170	£23,135
2071	0	41,306	41,306	41,306	£41,306	3.37	£139,293	0.165	£22,954
2072	0	41,306	41,306	41,306	£41,306	3.45	£142,322	0.160	£22,770
2073	0	41,306	41,306	41,306	£41,306	3.52	£145,417	0.155	£22,588
2074	0	41,306	41,306	41,306	£41,306	3.60	£148,579	0.151	£22,407
2075	0	41,306	41,306	41,306	£41,306	3.68	£151,810	0.146	£22,227
2076	0	41,306	41,306	41,306	£41,306	3.76	£155,112	0.142	£22,049
2077	0	41,306	41,306	41,306	£0	3.84	£0	0.138	£0
2078	0	41,306	41,306	41,306	£0	3.92	£0	0.134	£0
2079	0	41,306	41,306	41,306	£0	4.00	£0	0.130	£0
2080	0	41,306	41,306	41,306	£0	4.09	£0	0.126	£0
2081	0	41,306	41,306	41,306	£0	4.18	£0	0.123	£0
2082	0	41,306	41,306	41,306	£0	4.27	£0	0.119	£0
2083	0	41,306	41,306	41,306	£0	4.36	£0	0.116	£0
2084	0	41,306	41,306	41,306	£0	4.46	£0	0.112	£0
2085	0	41,306	41,306	41,306	£0	4.55	£0	0.109	£0
2086	0	41,306	41,306	41,306	£0	4.65	£0	0.106	£0
2087	0	41,306	41,306	41,306	£0	4.75	£0	0.103	£0
2088	0	41,306	41,306	41,306	£0	4.86	£0	0.100	£0
2089	0	41,306	41,306	41,306	£0	4.96	£0	0.097	£0
2090	0	41,306	41,306	41,306	£0	5.07	£0	0.094	£0
2091	0	41,306	41,306	41,306	£0	5.18	£0	0.091	£0
2092	0	41,306	41,306	41,306	£0	5.30	£0	0.089	£0
2093	0	41,306	41,306	41,306	£0	5.41	£0	0.086	£0
2094	0	41,306	41,306	41,306	£0	5.53	£0	0.083	£0
2095	0	41,306	41,306	41,306	£0	5.65	£0	0.081	£0
2096	0	41,306	41,306	41,306	£0	5.77	£0	0.079	£0
2097	0	41,306	41,306	41,306	£0	5.90	£0	0.076	£0
2098	0	41,306	41,306	41,306	£0	6.02	£0	0.074	£0
2099	0	41,306	41,306	41,306	£0	6.15	£0	0.072	£0
2100	0	41,306	41,306	41,306	£0	6.29	£0	0.070	£0
		TOTAL			£2,478,333	N/A	£5,291,984	N/A	£1,616,689

Discount factor = 1/(1+Discount Rate)^n where n = year minus 2010. Discount rates are specified in the parameters above.

Marginal External Costs over appraisal period

Year	Discount Factor					Congestion	Discounted	Infrast.	Discounted	Accident	Discounted	Local Air Quality	Discounted	Noise	Discounted	Green Gases	Discounted	Indirect Taxation	Discounted
2014	0.000	0	0	1,113	0	£0	£0	£0	£0	£0	£0	£0	£0	£0	£0	£0	£0	£0	£0
2015	0.000					£0	£0	£0	£0	£0	£0	£0	£0	£0	£0	£0	£0	£0	£0
2016	0.000	0	0	1,113	0	£0	£0	£0	£0	£0	£0	£0	£0	£0	£0	£0	£0	£0	£0
2017	0.786	1,113	1,113	1,113	1,113	£153	£120	£1	£1	£20	£16	£1	£1	£1	£1	£8	£7	-£53	-£42
2018	0.759	0	1,113	1,113	1,113	£160	£122	£1	£1	£20	£15	£0	£0	£1	£1	£8	£6	-£52	-£40
2019	0.734	0	1,113	1,113	1,113	£168	£123	£1	£1	£21	£15	£0	£0	£1	£1	£8	£6	-£51	-£38
2020	0.709	0	1,113	1,113	1,113	£176	£125	£1	£1	£21	£15	£0	£0	£1	£1	£8	£6	-£50	-£36
2021	0.685	0	1,113	1,113	1,113	£186	£128	£1	£1	£21	£15	£0	£0	£1	£1	£8	£5	-£49	-£33
2022	0.662	0	1,113	1,113	1,113	£197	£130	£1	£1	£22	£14	£0	£0	£1	£1	£8	£5	-£47	-£31
2023	0.639	0	1,113	1,113	1,113	£207	£133	£1	£1	£22	£14	£0	£0	£1	£1	£8	£5	-£46	-£29
2024	0.618	0	1,113	1,113	1,113	£218	£135	£1	£1	£22	£14	£0	£0	£1	£1	£8	£5	-£45	-£28
2025	0.597	0	1,113	1,113	1,113	£228	£136	£1	£1	£22	£13	£0	£0	£1	£1	£8	£5	-£43	-£26
2026	0.577	0	1,113	1,113	1,113	£238	£137	£1	£1	£23	£13	£0	£0	£1	£1	£8	£4	-£43	-£25
2027	0.557	0	1,113	1,113	1,113	£248	£138	£1	£1	£23	£13	£0	£0	£2	£1	£8	£4	-£42	-£23
2028	0.538	0	1,113	1,113	1,113	£258	£139	£1	£1	£24	£13	£0	£0	£2	£1	£8	£4	-£41	-£22
2029	0.520	0	1,113	1,113	1,113	£268	£140	£1	£1	£24	£13	£0	£0	£2	£1	£8	£4	-£41	-£21
2030	0.503	0	1,113	1,113	1,113	£278	£140	£1	£1	£24	£12	£0	£0	£2	£1	£8	£4	-£40	-£20
2031	0.486	0	1,113	1,113	1,113	£292	£142	£1	£1	£25	£12	£0	£0	£2	£1	£8	£4	-£40	-£19
2032	0.469	1,113	1,113	1,113	1,113	£306	£144	£2	£1	£26	£12	£0	£0	£2	£1	£9	£4	-£40	-£19
2033	0.453	0	1,113	1,113	1,113	£320	£145	£2	£1	£27	£12	£0	£0	£2	£1	£10	£4	-£39	-£18
2034	0.438	0	1,113	1,113	1,113	£334	£146	£2	£1	£27	£12	£0	£0	£2	£1	£10	£5	-£39	-£17
2035	0.423	0	1,113	1,113	1,113	£347	£147	£2	£1	£28	£12	£0	£0	£2	£1	£11	£5	-£39	-£16
2036	0.409	0	1,113	1,113	1,113	£354	£145	£2	£1	£28	£12	£0	£0	£2	£1	£11	£5	-£40	-£16
2037	0.395	0	1,113	1,113	1,113	£361	£143	£2	£1	£29	£11	£0	£0	£2	£1	£12	£5	-£41	-£16
2038	0.382	0	1,113	1,113	1,113	£369	£141	£2	£1	£30	£11	£0	£0	£2	£1	£12	£5	-£41	-£16
2039	0.369	0	1,113	1,113	1,113	£376	£139	£2	£1	£30	£11	£0	£0	£2	£1	£12	£4	-£42	-£16
2040	0.356	0	1,113	1,113	1,113	£384	£137	£2	£1	£31	£11	£0	£0	£2	£1	£12	£4	-£43	-£15
2041	0.344	0	1,113	1,113	1,113	£391	£135	£3	£1	£31	£11	£0	£0	£3	£1	£13	£4	-£44	-£15
2042	0.333	0	1,113	1,113	1,113	£399	£133	£3	£1	£32	£11	£0	£0	£3	£1	£13	£4	-£45	-£15
2043	0.321	0	1,113	1,113	1,113	£407	£131	£3	£1	£33	£10	£0	£0	£3	£1	£13	£4	-£46	-£15
2044	0.310	0	1,113	1,113	1,113	£415	£129	£3	£1	£33	£10	£0	£0	£3	£1	£13	£4	-£47	-£14
2045	0.300	0	1,113	1,113	1,113	£423	£127	£3	£1	£34	£10	£0	£0	£3	£1	£14	£4	-£48	-£14
2046	0.345	0	1,113	1,113	1,113	£432	£149	£3	£1	£35	£12	£0	£0	£3	£1	£14	£5	-£48	-£17
2047	0.335	0	1,113	1,113	1,113	£441	£148	£3	£1	£35	£12	£0	£0	£3	£1	£14	£5	-£49	-£17
2048	0.325	0	1,113	1,113	1,113	£449	£146	£3	£1	£36	£12	£0	£0	£3	£1	£14	£5	-£50	-£16
2049	0.316	0	1,113	1,113	1,113	£458	£145	£3	£1	£37	£12	£0	£0	£3	£1	£15	£5	-£51	-£16
2050	0.307	0	1,113	1,113	1,113	£468	£143	£3	£1	£37	£11	£0	£0	£3	£1	£15	£5	-£52	-£16
2051	0.298	0	1,113	1,113	1,113	£477	£142	£3	£1	£38	£11	£0	£0	£3	£1	£15	£5	-£53	-£16
2052	0.289	0	1,113	1,113	1,113	£486	£141	£3	£1	£39	£11	£0	£0	£3	£1	£16	£5	-£55	-£16
2053	0.281	0	1,113	1,113	1,113	£496	£139	£3	£1	£40	£11	£0	£0	£3	£1	£16	£4	-£56	-£16
2054	0.272	0	1,113	1,113	1,113	£506	£138	£3	£1	£41	£11	£0	£0	£3	£1	£16	£4	-£57	-£15
2055	0.264	0	1,113	1,113	1,113	£516	£137	£3	£1	£41	£11	£0	£0	£3	£1	£17	£4	-£58	-£15
2056	0.257	0	1,113	1,113	1,113	£527	£135	£3	£1	£42	£11	£0	£0	£3	£1	£17	£4	-£59	-£15
2057	0.249	0	1,113	1,113	1,113	£537	£134	£3	£1	£43	£11	£0	£0	£3	£1	£17	£4	-£60	-£15
2058	0.242	0	1,113	1,113	1,113	£548	£133	£4	£1	£44	£11	£0	£0	£4	£1	£18	£4	-£61	-£15
2059	0.235	0	1,113	1,113	1,113	£559	£131	£4	£1	£45	£11	£0	£0	£4	£1	£18	£4	-£63	-£15
2060	0.228	0	1,113	1,113	1,113	£570	£130	£4	£1	£46	£10	£0	£0	£4	£1	£18	£4	-£64	-£15
2061	0.221	0	1,113	1,113	1,113	£581	£129	£4	£1	£47	£10	£0	£0	£4	£1	£19	£4	-£65	-£14
2062	0.215	0	1,113	1,113	1,113	£593	£127	£4	£1	£48	£10	£0	£0	£4	£1	£19	£4	-£67	-£14
2063	0.209	0	1,113	1,113	1,113	£605	£126	£4	£1	£48	£10	£0	£0	£4	£1	£19	£4	-£68	-£14
2064	0.203	0	1,113	1,113	1,113	£617	£125	£4	£1	£49	£10	£0	£0	£4	£1	£20	£4	-£69	-£14
2065	0.197	0	1,113	1,113	1,113	£629	£124	£4	£1	£50	£10	£0	£0	£4	£1	£20	£4	-£71	-£14
2066	0.191	0	1,113	1,113	1,113	£642	£123	£4	£1	£51	£10	£0	£0	£4	£1	£21	£4	-£72	-£14
2067	0.185	0	1,113	1,113	1,113	£655	£121	£4	£1	£52	£10	£0	£0	£4	£1	£21	£4	-£73	-£14
2068	0.180	0	1,113	1,113	1,113	£668	£120	£4	£1	£54	£10	£0	£0	£4	£1	£21	£4	-£75	-£13
2069	0.175	0	1,113	1,113	1,113	£681	£119	£4	£1	£55	£10	£0	£0	£4	£1	£22	£4	-£76	-£13
2070	0.170	0	1,113	1,113	1,113	£695	£118	£4	£1	£56	£9	£0	£0	£4	£1	£22	£4	-£78	-£13
2071	0.165	0	1,113	1,113	1,113	£709	£117	£5	£1	£57	£9	£0	£0	£5	£1	£23	£4	-£79	-£13
2072	0.160	0	1,113	1,113	1,113	£723	£116	£5	£1	£58	£9	£0	£0	£5	£1	£23	£4	-£81	-£13
2073	0.155	0	1,113	1,113	1,113	£737	£115	£5	£1	£59	£9	£0	£0	£5	£1	£24	£4	-£83	-£13
2074	0.151	0	1,113	1,113	1,113	£752	£113	£5	£1	£60	£9	£0	£0	£5	£1	£24	£4	-£84	-£13
2075	0.146	0	1,113	1,113	1,113	£767	£112	£5	£1	£61	£9	£0	£0	£5	£1	£25	£4	-£86	-£13
2076	0.142	0	1,113	1,113	1,113	£782	£111	£5	£1	£63	£9	£0	£0	£5	£1	£25	£4	-£88	-£12
2077	0.138	0	1,113	1,113	1,113	£798	£110	£5	£1	£64	£9	£0	£0	£5	£1	£26	£4	-£90	-£12
2078	0.000	0	1,113	1,113	1,113	£0	£0	£0	£0	£0	£0	£0	£0	£0	£0	£0	£0	£0	£0
2079	0.000	0	1,113	1,113	1,113	£0	£0	£0	£0	£0	£0	£0	£0	£0	£0	£0	£0	£0	£0
2080	0.000	0	1,113	1,113	1,113	£0	£0	£0	£0	£0	£0	£0	£0	£0	£0	£0	£0	£0	£0
2081	0.000	0	1,113	1,113	1,113	£0	£0	£0	£0	£0	£0	£0	£0	£0	£0	£0	£0	£0	£0
2082	0.000	0	1,113	1,113	1,113	£0	£0	£0	£0	£0	£0	£0	£0	£0	£0	£0	£0	£0	£0
2083	0.000	0	1,113	1,113	1,113	£0	£0	£0	£0	£0	£0	£0	£0	£0	£0	£0	£0	£0	£0
2084	0.000	0	1,113	1,113	1,113	£0	£0	£0	£0	£0	£0	£0	£0	£0	£0	£0	£0	£0	£0
2085	0.000	0	1,113	1,113	1,113	£0	£0	£0	£0	£0	£0	£0	£0	£0	£0	£0	£0	£0	£0
2086	0.000	0	1,113	1,113	1,113	£0	£0	£0	£0	£0	£0	£0	£0	£0	£0	£0	£0	£0	£0
2087	0.000	0	1,113	1,113	1,113	£0	£0	£0	£0	£0	£0	£0	£0	£0	£0	£0	£0	£0	£0
2088	0.000	0	1,113	1,113	1,113	£0	£0	£0	£0	£0	£0	£0	£0	£0	£0	£0	£0	£0	£0
2089	0.000	0	1,113	1,113	1,113	£0	£0	£0	£0	£0	£0	£0	£0	£0	£0	£0	£0	£0	£0
2090	0.000	0	1,113	1,113	1,113	£0	£0	£0	£0	£0	£0	£0	£0	£0	£0	£0	£0	£0	£0
2091	0.000	0	1,113	1,113	1,113	£0	£0	£0	£0	£0	£0	£0	£0	£0	£0	£0	£0	£0	£0
2092	0.000	0	1,113	1,113	1,113	£0	£0	£0	£0	£0	£0	£0	£0	£0	£0	£0	£0	£0	£0
2093	0.000	0	1,113	1,113	1,113	£0	£0	£0	£0	£0	£0	£0	£0	£0	£0	£0	£0	£0	£0
2094	0.000	0	1,113	1,113	1,113	£0	£0	£0	£0	£0	£0	£0	£0	£0	£0	£0	£0	£0	£0
2095	0.000	0	1,113	1,113	1,113	£0	£0	£0	£0	£0	£0	£0	£0	£0	£0	£0	£0	£0	£0
2096	0.000	0	1,113	1,113	1,113	£0	£0	£0	£0	£0	£0	£0	£0	£0	£0	£0	£0	£0	£0
2097	0.000	0	1,113	1,113	1,113	£0	£0	£0	£0	£0	£0	£0	£0	£0	£0	£0	£0	£0	£0
2098	0.000	0	1,113	1,113	1,113	£0	£0	£0	£0	£0	£0	£0	£0	£0	£0	£0	£0	£0	£0
2099	0.000	0	1,113	1,113	1,113	£0	£0	£0	£0	£0	£0	£0	£0	£0	£0	£0	£0	£0	£0
2100	0.000	0	1,113	1,113	1,113	£0	£0	£0	£0	£0	£0	£0	£0	£0	£0	£0	£0	£0	£0
TOTAL						£27,568	£8,043	£172.	£49	£2,283	£693	£1	£1	£177	£52	£896	£268	-£3,420	-£1,118

Undiscounted	£27,678		Discounted	£7,988

Scheme Comparison: LCC East Lancashire Cycle Network		PVB	£11,462,049
Scheme Discription: Scheme B: National Cycle Network Route 6 Improvements		PVC	£4,403,225
Cycle Improvements to NCN route between Accrington and Bacup		NPV	£7,058,824
Costs include 44% OB and allowance for risk.			
30% growth applied.		BCR	**2.603**

Parameters & Inputs

Opening Year Total Time Savings (Veh Delay in hrs)

Opening Year time savings	£46,693

Forecast Year Total Time Savings (Veh Delay in hrs)

Forecast Year time savings	£46,693

Opening YearTotal Distance Saving (Veh KM in KM)

Annualised Total Veh KM	1,258.7

Design Year Total Distance Saving (Veh KM in KM)

Annualised Total Veh KM	1,258.7

MEC Parameters

Assessment Period (Years)	60
DM MEC Type:	Weighted Average
DS MEC Type:	Weighted Average
DM MEC Congestion Band:	Weighted Average
DS MEC Congestion Band:	Weighted Average
MEC growth post-2035?	2%

- Input Values
- Default Values
- Output Values

Assessment Parameters

Current year	2015
Scheme Opening Year	2017
Scheme Design Year	2032
Include VoT growth over time?	Yes
Include growth in benefits post-design year?	No
Scheme Cost Estimate Year	2014
Scheme Cost Discount Factor	3.5%
Discount Factor (0-30 years)	3.5%
Discount Factor (31-75 years)	3.0%

Estimation of Discounted Scheme Costs

Scheme Costs	Construction	Land	Preparation	Supervision	Maintenance	TOTAL
	£3,434,344	£0	£180,755	£0	£1,807,549	£3,615,099

Spend Profile (insert percentage profile)						C	L	P	S	M	Total	Deflation Factor	Total Costs (Undiscounted prices)	Discount Factor	Total Costs (2010 prices, discounted to 2010)	Resource Costs to Market Prices Factor	Total Costs (2010 prices, discounted to 2010) in Market Prices
2014						£0	£0	£0	£0	£0	£0	0.9289	£0	0.871	£0	1.19	£0
2015	1%		51%			£48,633	£0	£92,185	£0	£0	£140,818	0.9289	£130,809	0.842	£110,138	1.19	£131,064
2016	28%		52%			£975,826	£0	£94,029	£0	£0	£1,069,854	0.9289	£993,813	0.814	£808,468	1.19	£962,076
2017	26%					£876,777	£0	£0	£0	£0	£876,777	0.9289	£814,459	0.786	£640,157	1.19	£761,787
2018	9%					£325,835	£0	£0	£0	£0	£325,835	0.9289	£302,676	0.759	£229,855	1.19	£273,528
2019	42%					£1,459,047	£0	£0	£0	£0	£1,459,047	0.9289	£1,355,343	0.734	£994,457	1.19	£1,183,404
2020						£0	£0	£0	£0	£0	£0	0.9289	£0	0.709	£0	1.19	£0
2021						£0	£0	£0	£0	£0	£0	0.9289	£0	0.685	£0	1.19	£0
2022						£0	£0	£0	£0	£0	£0	0.9289	£0	0.662	£0	1.19	£0
2023						£0	£0	£0	£0	£0	£0	0.9289	£0	0.639	£0	1.19	£0
2024						£0	£0	£0	£0	£0	£0	0.9289	£0	0.618	£0	1.19	£0
2025						£0	£0	£0	£0	£0	£0	0.9289	£0	0.597	£0	1.19	£0
2026						£0	£0	£0	£0	£0	£0	0.9289	£0	0.577	£0	1.19	£0
2027						£0	£0	£0	£0	£0	£0	0.9289	£0	0.557	£0	1.19	£0
2028						£0	£0	£0	£0	£0	£0	0.9289	£0	0.538	£0	1.19	£0
2029						£0	£0	£0	£0	£0	£0	0.9289	£0	0.520	£0	1.19	£0
2030						£0	£0	£0	£0	£0	£0	0.9289	£0	0.503	£0	1.19	£0
2031						£0	£0	£0	£0	£0	£0	0.9289	£0	0.486	£0	1.19	£0
2032						£0	£0	£0	£0	£0	£0	0.9289	£0	0.469	£0	1.19	£0
2033						£0	£0	£0	£0	£0	£0	0.9289	£0	0.453	£0	1.19	£0
2034						£0	£0	£0	£0	£0	£0	0.9289	£0	0.438	£0	1.19	£0
2035						£0	£0	£0	£0	£0	£0	0.9289	£0	0.423	£0	1.19	£0
2036						£0	£0	£0	£0	£0	£0	0.9289	£0	0.409	£0	1.19	£0
2037						£0	£0	£0	£0	£0	£0	0.9289	£0	0.395	£0	1.19	£0
2038						£0	£0	£0	£0	£0	£0	0.9289	£0	0.382	£0	1.19	£0
2039						£0	£0	£0	£0	£0	£0	0.9289	£0	0.369	£0	1.19	£0
2040						£0	£0	£0	£0	£0	£0	0.9289	£0	0.356	£0	1.19	£0
2041						£0	£0	£0	£0	£0	£0	0.9289	£0	0.344	£0	1.19	£0
2042						£0	£0	£0	£0	£0	£0	0.9289	£0	0.333	£0	1.19	£0
2043						£0	£0	£0	£0	£0	£0	0.9289	£0	0.321	£0	1.19	£0
2044						£0	£0	£0	£0	£0	£0	0.9289	£0	0.310	£0	1.19	£0
2045						£0	£0	£0	£0	£0	£0	0.9289	£0	0.300	£0	1.19	£0
2046					188%	£0	£0	£0	£0	£3,406,400	£3,406,400	0.9289	£3,164,286	0.290	£917,114	1.19	£1,091,365
TOTAL	107%	0%	103%	0%	188%	£3,686,117	£0	£186,214	£0	£3,406,400	£7,278,731	N/A	£6,761,386	N/A	£3,700,189	N/A	£4,403,225

N.B. It is assumed that Preparation and Supervision costs are included within the above costs
N.B. Optimism Bias only applied to Construction costs, not Land

Applying the methodology below produces the discounted scheme cost (PVC):-
a) Assume the Construction costs are spread evenly over the construction period (assumed to be 2 years)
b) Assume land is bought in the first year of construction
c) All costs are in undiscounted Q1 prices, so need to be converted to undiscounted 2010 prices using the industry-standard method of RPIs
d) All costs discounted to 2010
e) All costs need to be converted to Market Prices

Estimation of Benefit to Cost Ratio (BCR) with MEC

Time Saving benefits (discounted)	£1,827,562
MEC Discounted (2016 to 2010 Prices)	£9,030
Mortality Benefits	£9,525,002
Absentee Benefits	£100,456

Total Benefits with MEC	£11,462,049
Total costs (discounted)	£4,403,225
BCR with Marginal External Costs	**2.60310**

Estimation of Benefits By User Class Over Appraisal Period

Year	gle Year Benefore opening	after design y	Benefits profile		Total Benefits (2010)	VoT Growth	VoT Adj.	Discount Factor	Total Benefits (2010 prices, discounted)
2010	0	0	46,693	0	£0	1.00	£0	1.000	£0
2011	0	0	46,693	0	£0	1.01	£0	0.966	£0
2012	0	0	46,693	0	£0	1.01	£0	0.934	£0
2013	0	0	46,693	0	£0	1.02	£0	0.902	£0
2014	0	0	46,693	0	£0	1.04	£0	0.871	£0
2015	0	0	46,693	0	£0	1.06	£0	0.842	£0
2016	0	0	46,693	0	£0	1.08	£0	0.814	£0
2017	46,693	46,693	46,693	46,693	£46,693	1.10	£51,329	0.786	£40,344
2018	0	46,693	46,693	46,693	£46,693	1.12	£52,304	0.759	£39,721
2019	0	46,693	46,693	46,693	£46,693	1.14	£53,304	0.734	£39,111
2020	0	46,693	46,693	46,693	£46,693	1.16	£54,315	0.709	£38,505
2021	0	46,693	46,693	46,693	£46,693	1.19	£55,338	0.685	£37,904
2022	0	46,693	46,693	46,693	£46,693	1.21	£56,375	0.662	£37,308
2023	0	46,693	46,693	46,693	£46,693	1.23	£57,438	0.639	£36,726
2024	0	46,693	46,693	46,693	£46,693	1.25	£58,531	0.618	£36,159
2025	0	46,693	46,693	46,693	£46,693	1.28	£59,653	0.597	£35,607
2026	0	46,693	46,693	46,693	£46,693	1.30	£60,808	0.577	£35,068
2027	0	46,693	46,693	46,693	£46,693	1.33	£61,996	0.557	£34,544
2028	0	46,693	46,693	46,693	£46,693	1.35	£63,218	0.538	£34,034
2029	0	46,693	46,693	46,693	£46,693	1.38	£64,475	0.520	£33,537
2030	0	46,693	46,693	46,693	£46,693	1.41	£65,767	0.503	£33,052
2031	0	46,693	46,693	46,693	£46,693	1.44	£67,097	0.486	£32,580
2032	46,693	46,693	46,693	46,693	£46,693	1.47	£68,463	0.469	£32,119
2033	0	46,693	46,693	46,693	£46,693	1.50	£69,867	0.453	£31,670
2034	0	46,693	46,693	46,693	£46,693	1.53	£71,308	0.438	£31,230
2035	0	46,693	46,693	46,693	£46,693	1.56	£72,787	0.423	£30,800
2036	0	46,693	46,693	46,693	£46,693	1.59	£74,303	0.409	£30,378
2037	0	46,693	46,693	46,693	£46,693	1.62	£75,857	0.395	£29,964
2038	0	46,693	46,693	46,693	£46,693	1.66	£77,453	0.382	£29,560
2039	0	46,693	46,693	46,693	£46,693	1.69	£79,082	0.369	£29,161
2040	0	46,693	46,693	46,693	£46,693	1.73	£80,746	0.356	£28,768
2041	0	46,693	46,693	46,693	£46,693	1.77	£82,444	0.344	£28,380
2042	0	46,693	46,693	46,693	£46,693	1.80	£84,194	0.333	£28,002
2043	0	46,693	46,693	46,693	£46,693	1.84	£85,980	0.321	£27,629
2044	0	46,693	46,693	46,693	£46,693	1.88	£87,805	0.310	£27,261
2045	0	46,693	46,693	46,693	£46,693	1.92	£89,668	0.300	£26,898
2046	0	46,693	46,693	46,693	£46,693	1.96	£91,570	0.345	£31,595
2047	0	46,693	46,693	46,693	£46,693	2.00	£93,539	0.335	£31,334
2048	0	46,693	46,693	46,693	£46,693	2.05	£95,551	0.325	£31,076
2049	0	46,693	46,693	46,693	£46,693	2.09	£97,606	0.316	£30,819
2050	0	46,693	46,693	46,693	£46,693	2.14	£99,705	0.307	£30,565
2051	0	46,693	46,693	46,693	£46,693	2.18	£101,849	0.298	£30,313
2052	0	46,693	46,693	46,693	£46,693	2.23	£104,075	0.289	£30,073
2053	0	46,693	46,693	46,693	£46,693	2.28	£106,350	0.281	£29,836
2054	0	46,693	46,693	46,693	£46,693	2.33	£108,675	0.272	£29,600
2055	0	46,693	46,693	46,693	£46,693	2.38	£111,051	0.264	£29,366
2056	0	46,693	46,693	46,693	£46,693	2.43	£113,479	0.257	£29,134
2057	0	46,693	46,693	46,693	£46,693	2.48	£115,989	0.249	£28,911
2058	0	46,693	46,693	46,693	£46,693	2.54	£118,556	0.242	£28,690
2059	0	46,693	46,693	46,693	£46,693	2.60	£121,178	0.235	£28,471
2060	0	46,693	46,693	46,693	£46,693	2.65	£123,859	0.228	£28,253
2061	0	46,693	46,693	46,693	£46,693	2.71	£126,599	0.221	£28,037
2062	0	46,693	46,693	46,693	£46,693	2.77	£129,407	0.215	£27,824
2063	0	46,693	46,693	46,693	£46,693	2.83	£132,273	0.209	£27,612
2064	0	46,693	46,693	46,693	£46,693	2.90	£135,201	0.203	£27,401
2065	0	46,693	46,693	46,693	£46,693	2.96	£138,195	0.197	£27,192
2066	0	46,693	46,693	46,693	£46,693	3.03	£141,254	0.191	£26,985
2067	0	46,693	46,693	46,693	£46,693	3.09	£144,357	0.185	£26,774
2068	0	46,693	46,693	46,693	£46,693	3.16	£147,527	0.180	£26,565
2069	0	46,693	46,693	46,693	£46,693	3.23	£150,767	0.175	£26,358
2070	0	46,693	46,693	46,693	£46,693	3.30	£154,078	0.170	£26,152
2071	0	46,693	46,693	46,693	£46,693	3.37	£157,462	0.165	£25,948
2072	0	46,693	46,693	46,693	£46,693	3.45	£160,886	0.160	£25,740
2073	0	46,693	46,693	46,693	£46,693	3.52	£164,385	0.155	£25,534
2074	0	46,693	46,693	46,693	£46,693	3.60	£167,959	0.151	£25,329
2075	0	46,693	46,693	46,693	£46,693	3.68	£171,612	0.146	£25,126
2076	0	46,693	46,693	46,693	£46,693	3.76	£175,344	0.142	£24,925
2077	0	46,693	46,693	46,693	£0	3.84	£0	0.138	£0
2078	0	46,693	46,693	46,693	£0	3.92	£0	0.134	£0
2079	0	46,693	46,693	46,693	£0	4.00	£0	0.130	£0
2080	0	46,693	46,693	46,693	£0	4.09	£0	0.126	£0
2081	0	46,693	46,693	46,693	£0	4.18	£0	0.123	£0
2082	0	46,693	46,693	46,693	£0	4.27	£0	0.119	£0
2083	0	46,693	46,693	46,693	£0	4.36	£0	0.116	£0
2084	0	46,693	46,693	46,693	£0	4.46	£0	0.112	£0
2085	0	46,693	46,693	46,693	£0	4.55	£0	0.109	£0
2086	0	46,693	46,693	46,693	£0	4.65	£0	0.106	£0
2087	0	46,693	46,693	46,693	£0	4.75	£0	0.103	£0
2088	0	46,693	46,693	46,693	£0	4.86	£0	0.100	£0
2089	0	46,693	46,693	46,693	£0	4.96	£0	0.097	£0
2090	0	46,693	46,693	46,693	£0	5.07	£0	0.094	£0
2091	0	46,693	46,693	46,693	£0	5.18	£0	0.091	£0
2092	0	46,693	46,693	46,693	£0	5.30	£0	0.089	£0
2093	0	46,693	46,693	46,693	£0	5.41	£0	0.086	£0
2094	0	46,693	46,693	46,693	£0	5.53	£0	0.083	£0
2095	0	46,693	46,693	46,693	£0	5.65	£0	0.081	£0
2096	0	46,693	46,693	46,693	£0	5.77	£0	0.079	£0
2097	0	46,693	46,693	46,693	£0	5.90	£0	0.076	£0
2098	0	46,693	46,693	46,693	£0	6.02	£0	0.074	£0
2099	0	46,693	46,693	46,693	£0	6.15	£0	0.072	£0
2100	0	46,693	46,693	46,693	£0	6.29	£0	0.070	£0
TOTAL					£2,801,594	N/A	£5,982,243	N/A	£1,827,562

Discount factor = 1/(1+Discount Rate)^n where n = year minus 2010. Discount rates are specified in the parameters above.

Marginal External Costs over appraisal period

Year	Discount Factor	late veh KM s	fore opening	after design	y3enefits profil	Congestion	Discounted	Infrast.	Discounted	Accident	Discounted	Local Air Quality	Discounted	Noise	Discounted	Green Gases	Discounted	Indirect Taxation	Discounted
2014	0.000	0	0	1,259	0	£0	£0	£0	£0	£0	£0	£0	£0	£0	£0	£0	£0	£0	£0
2015	0.000					£0	£0	£0	£0	£0	£0	£0	£0	£0	£0	£0	£0	£0	£0
2016	0.000	0	0	1,259	0	£0	£0	£0	£0	£0	£0	£0	£0	£0	£0	£0	£0	£0	£0
2017	0.786	1,259	1,259	1,259	1,259	£172	£136	£1	£1	£22	£18	£1	£1	£1	£1	£10	£8	-£60	-£47
2018	0.759	0	1,259	1,259	1,259	£181	£138	£1	£1	£23	£17	£1	£0	£1	£1	£9	£7	-£59	-£45
2019	0.734	0	1,259	1,259	1,259	£190	£139	£1	£1	£23	£17	£0	£0	£1	£1	£9	£7	-£58	-£42
2020	0.709	0	1,259	1,259	1,259	£199	£141	£1	£1	£24	£17	£0	£0	£1	£1	£9	£6	-£57	-£40
2021	0.685	0	1,259	1,259	1,259	£211	£144	£1	£1	£24	£17	£0	£0	£1	£1	£9	£6	-£55	-£38
2022	0.662	0	1,259	1,259	1,259	£223	£147	£1	£1	£24	£16	£0	£0	£1	£1	£9	£6	-£54	-£35
2023	0.639	0	1,259	1,259	1,259	£234	£150	£1	£1	£25	£16	£0	£0	£1	£1	£9	£6	-£52	-£33
2024	0.618	0	1,259	1,259	1,259	£246	£152	£1	£1	£25	£15	£0	£0	£1	£1	£9	£5	-£51	-£31
2025	0.597	0	1,259	1,259	1,259	£258	£154	£1	£1	£25	£15	£0	£0	£1	£1	£9	£5	-£49	-£29
2026	0.577	0	1,259	1,259	1,259	£269	£155	£1	£1	£26	£15	£0	£0	£2	£1	£9	£5	-£48	-£28
2027	0.557	0	1,259	1,259	1,259	£281	£156	£1	£1	£26	£15	£0	£0	£2	£1	£9	£5	-£48	-£27
2028	0.538	0	1,259	1,259	1,259	£292	£157	£1	£1	£27	£14	£0	£0	£2	£1	£9	£5	-£47	-£25
2029	0.520	0	1,259	1,259	1,259	£303	£158	£1	£1	£27	£14	£0	£0	£2	£1	£9	£5	-£46	-£24
2030	0.503	0	1,259	1,259	1,259	£315	£158	£1	£1	£28	£14	£0	£0	£3	£1	£9	£4	-£45	-£23
2031	0.486	0	1,259	1,259	1,259	£330	£160	£2	£1	£28	£14	£0	£0	£3	£1	£10	£5	-£45	-£22
2032	0.469	1,259	1,259	1,259	1,259	£346	£162	£2	£1	£29	£14	£0	£0	£3	£1	£10	£5	-£45	-£21
2033	0.453	0	1,259	1,259	1,259	£361	£164	£2	£1	£30	£14	£0	£0	£3	£1	£11	£5	-£45	-£20
2034	0.438	0	1,259	1,259	1,259	£377	£165	£2	£1	£31	£13	£0	£0	£3	£1	£12	£5	-£44	-£19
2035	0.423	0	1,259	1,259	1,259	£393	£166	£3	£1	£31	£13	£0	£0	£3	£1	£13	£5	-£44	-£19
2036	0.409	0	1,259	1,259	1,259	£401	£164	£3	£1	£32	£13	£0	£0	£3	£1	£13	£5	-£45	-£18
2037	0.395	0	1,259	1,259	1,259	£409	£161	£3	£1	£33	£13	£0	£0	£3	£1	£13	£5	-£46	-£18
2038	0.382	0	1,259	1,259	1,259	£417	£159	£3	£1	£33	£13	£0	£0	£3	£1	£13	£5	-£47	-£18
2039	0.369	0	1,259	1,259	1,259	£425	£157	£3	£1	£34	£13	£0	£0	£3	£1	£14	£5	-£48	-£18
2040	0.356	0	1,259	1,259	1,259	£434	£154	£3	£1	£35	£12	£0	£0	£3	£1	£14	£5	-£49	-£17
2041	0.344	0	1,259	1,259	1,259	£442	£152	£3	£1	£35	£12	£0	£0	£3	£1	£14	£5	-£50	-£17
2042	0.333	0	1,259	1,259	1,259	£451	£150	£3	£1	£36	£12	£0	£0	£3	£1	£14	£5	-£51	-£17
2043	0.321	0	1,259	1,259	1,259	£460	£148	£3	£1	£37	£12	£0	£0	£3	£1	£15	£5	-£52	-£17
2044	0.310	0	1,259	1,259	1,259	£469	£146	£3	£1	£38	£12	£0	£0	£3	£1	£15	£5	-£53	-£16
2045	0.300	0	1,259	1,259	1,259	£479	£144	£3	£1	£38	£12	£0	£0	£3	£1	£15	£5	-£54	-£16
2046	0.345	0	1,259	1,259	1,259	£488	£168	£3	£1	£39	£13	£0	£0	£3	£1	£16	£5	-£55	-£19
2047	0.335	0	1,259	1,259	1,259	£498	£167	£3	£1	£40	£13	£0	£0	£3	£1	£16	£5	-£56	-£19
2048	0.325	0	1,259	1,259	1,259	£508	£165	£3	£1	£41	£13	£0	£0	£3	£1	£16	£5	-£57	-£19
2049	0.316	0	1,259	1,259	1,259	£518	£164	£3	£1	£42	£13	£0	£0	£3	£1	£17	£5	-£58	-£18
2050	0.307	0	1,259	1,259	1,259	£529	£162	£3	£1	£42	£13	£0	£0	£3	£1	£17	£5	-£59	-£18
2051	0.298	0	1,259	1,259	1,259	£539	£160	£3	£1	£43	£13	£0	£0	£3	£1	£17	£5	-£60	-£18
2052	0.289	0	1,259	1,259	1,259	£550	£159	£4	£1	£44	£13	£0	£0	£4	£1	£18	£5	-£62	-£18
2053	0.281	0	1,259	1,259	1,259	£561	£157	£4	£1	£45	£13	£0	£0	£4	£1	£18	£5	-£63	-£18
2054	0.272	0	1,259	1,259	1,259	£572	£156	£4	£1	£46	£12	£0	£0	£4	£1	£18	£5	-£64	-£17
2055	0.264	0	1,259	1,259	1,259	£584	£154	£4	£1	£47	£12	£0	£0	£4	£1	£19	£5	-£65	-£17
2056	0.257	0	1,259	1,259	1,259	£595	£153	£4	£1	£48	£12	£0	£0	£4	£1	£19	£5	-£67	-£17
2057	0.249	0	1,259	1,259	1,259	£607	£151	£4	£1	£49	£12	£0	£0	£4	£1	£19	£5	-£68	-£17
2058	0.242	0	1,259	1,259	1,259	£619	£150	£4	£1	£50	£12	£0	£0	£4	£1	£20	£5	-£69	-£17
2059	0.235	0	1,259	1,259	1,259	£632	£148	£4	£1	£51	£12	£0	£0	£4	£1	£20	£5	-£71	-£17
2060	0.228	0	1,259	1,259	1,259	£644	£147	£4	£1	£52	£12	£0	£0	£4	£1	£21	£5	-£72	-£16
2061	0.221	0	1,259	1,259	1,259	£657	£146	£4	£1	£53	£12	£0	£0	£4	£1	£21	£5	-£74	-£16
2062	0.215	0	1,259	1,259	1,259	£670	£144	£4	£1	£54	£12	£0	£0	£4	£1	£21	£5	-£75	-£16
2063	0.209	0	1,259	1,259	1,259	£684	£143	£4	£1	£55	£11	£0	£0	£4	£1	£22	£5	-£77	-£16
2064	0.203	0	1,259	1,259	1,259	£697	£141	£4	£1	£56	£11	£0	£0	£4	£1	£22	£5	-£78	-£16
2065	0.197	0	1,259	1,259	1,259	£711	£140	£5	£1	£57	£11	£0	£0	£5	£1	£23	£4	-£80	-£16
2066	0.191	0	1,259	1,259	1,259	£726	£139	£5	£1	£58	£11	£0	£0	£5	£1	£23	£4	-£81	-£16
2067	0.185	0	1,259	1,259	1,259	£740	£137	£5	£1	£59	£11	£0	£0	£5	£1	£24	£4	-£83	-£15
2068	0.180	0	1,259	1,259	1,259	£755	£136	£5	£1	£60	£11	£0	£0	£5	£1	£24	£4	-£85	-£15
2069	0.175	0	1,259	1,259	1,259	£770	£135	£5	£1	£62	£11	£0	£0	£5	£1	£25	£4	-£86	-£15
2070	0.170	0	1,259	1,259	1,259	£785	£133	£5	£1	£63	£11	£0	£0	£5	£1	£25	£4	-£88	-£15
2071	0.165	0	1,259	1,259	1,259	£801	£132	£5	£1	£64	£11	£0	£0	£5	£1	£26	£4	-£90	-£15
2072	0.160	0	1,259	1,259	1,259	£817	£131	£5	£1	£65	£10	£0	£0	£5	£1	£26	£4	-£92	-£15
2073	0.155	0	1,259	1,259	1,259	£833	£129	£5	£1	£67	£10	£0	£0	£5	£1	£27	£4	-£93	-£15
2074	0.151	0	1,259	1,259	1,259	£850	£128	£5	£1	£68	£10	£0	£0	£5	£1	£27	£4	-£95	-£14
2075	0.146	0	1,259	1,259	1,259	£867	£127	£6	£1	£69	£10	£0	£0	£6	£1	£28	£4	-£97	-£14
2076	0.142	0	1,259	1,259	1,259	£884	£126	£6	£1	£71	£10	£0	£0	£6	£1	£28	£4	-£99	-£14
2077	0.138	0	1,259	1,259	1,259	£902	£125	£6	£1	£72	£10	£0	£0	£6	£1	£29	£4	-£101	-£14
2078	0.000	0	1,259	1,259	1,259	£0	£0	£0	£0	£0	£0	£0	£0	£0	£0	£0	£0	£0	£0
2079	0.000	0	1,259	1,259	1,259	£0	£0	£0	£0	£0	£0	£0	£0	£0	£0	£0	£0	£0	£0
2080	0.000	0	1,259	1,259	1,259	£0	£0	£0	£0	£0	£0	£0	£0	£0	£0	£0	£0	£0	£0
2081	0.000	0	1,259	1,259	1,259	£0	£0	£0	£0	£0	£0	£0	£0	£0	£0	£0	£0	£0	£0
2082	0.000	0	1,259	1,259	1,259	£0	£0	£0	£0	£0	£0	£0	£0	£0	£0	£0	£0	£0	£0
2083	0.000	0	1,259	1,259	1,259	£0	£0	£0	£0	£0	£0	£0	£0	£0	£0	£0	£0	£0	£0
2084	0.000	0	1,259	1,259	1,259	£0	£0	£0	£0	£0	£0	£0	£0	£0	£0	£0	£0	£0	£0
2085	0.000	0	1,259	1,259	1,259	£0	£0	£0	£0	£0	£0	£0	£0	£0	£0	£0	£0	£0	£0
2086	0.000	0	1,259	1,259	1,259	£0	£0	£0	£0	£0	£0	£0	£0	£0	£0	£0	£0	£0	£0
2087	0.000	0	1,259	1,259	1,259	£0	£0	£0	£0	£0	£0	£0	£0	£0	£0	£0	£0	£0	£0
2088	0.000	0	1,259	1,259	1,259	£0	£0	£0	£0	£0	£0	£0	£0	£0	£0	£0	£0	£0	£0
2089	0.000	0	1,259	1,259	1,259	£0	£0	£0	£0	£0	£0	£0	£0	£0	£0	£0	£0	£0	£0
2090	0.000	0	1,259	1,259	1,259	£0	£0	£0	£0	£0	£0	£0	£0	£0	£0	£0	£0	£0	£0
2091	0.000	0	1,259	1,259	1,259	£0	£0	£0	£0	£0	£0	£0	£0	£0	£0	£0	£0	£0	£0
2092	0.000	0	1,259	1,259	1,259	£0	£0	£0	£0	£0	£0	£0	£0	£0	£0	£0	£0	£0	£0
2093	0.000	0	1,259	1,259	1,259	£0	£0	£0	£0	£0	£0	£0	£0	£0	£0	£0	£0	£0	£0
2094	0.000	0	1,259	1,259	1,259	£0	£0	£0	£0	£0	£0	£0	£0	£0	£0	£0	£0	£0	£0
2095	0.000	0	1,259	1,259	1,259	£0	£0	£0	£0	£0	£0	£0	£0	£0	£0	£0	£0	£0	£0
2096	0.000	0	1,259	1,259	1,259	£0	£0	£0	£0	£0	£0	£0	£0	£0	£0	£0	£0	£0	£0
2097	0.000	0	1,259	1,259	1,259	£0	£0	£0	£0	£0	£0	£0	£0	£0	£0	£0	£0	£0	£0
2098	0.000	0	1,259	1,259	1,259	£0	£0	£0	£0	£0	£0	£0	£0	£0	£0	£0	£0	£0	£0
2099	0.000	0	1,259	1,259	1,259	£0	£0	£0	£0	£0	£0	£0	£0	£0	£0	£0	£0	£0	£0
2100	0.000	0	1,259	1,259	1,259	£0	£0	£0	£0	£0	£0	£0	£0	£0	£0	£0	£0	£0	£0
TOTAL						£31,164	£9,092	£194	£55	£2,581	£784	£2	£1	£201	£59	£1,013	£303	-£3,866	-£1,264

Undiscounted	£31,288		Discounted	£9,030

Scheme Comparison: LCC East Lancashire Cycle Network	PVB	£14,107,138
Scheme Discription: Scheme B: National Cycle Network Route 6 Improvements	PVC	£4,403,225
Cycle Improvements to NCN route between Accrington and Bacup	NPV	£9,703,913
Costs include 44% OB and allowance for risk.		
60% growth applied.	BCR	**3.204**

Parameters & Inputs

Opening Year Total Time Savings (Veh Delay in hrs)

Opening Year time savings	£57,469

Forecast Year Total Time Savings (Veh Delay in hrs)

Forecast Year time savings	£57,469

Opening YearTotal Distance Saving (Veh KM in KM)

Annualised Total Veh KM	1,549.2

Design Year Total Distance Saving (Veh KM in KM)

Annualised Total Veh KM	1,549.2

MEC Parameters

Assessment Period (Years)	60
DM MEC Type:	Weighted Average
DS MEC Type:	Weighted Average
DM MEC Congestion Band:	Weighted Average
DS MEC Congestion Band:	Weighted Average
MEC growth post-2035?	2%

- Input Values
- Default Values
- Output Values

Assessment Parameters

Current year	2015
Scheme Opening Year	2017
Scheme Design Year	2032
Include VoT growth over time?	Yes
Include growth in benefits post-design year?	No
Scheme Cost Estimate Year	2014
Scheme Cost Discount Factor	3.5%
Discount Factor (0-30 years)	3.5%
Discount Factor (31-75 years)	3.0%

Estimation of Discounted Scheme Costs

Scheme Costs	Construction	Land	Preparation	Supervision	Maintenance	TOTAL
	£3,434,344	£0	£180,755	£0	£1,807,549	£3,615,099

Spend Profile (insert percentage profile)

Year	C	P	M		C	L	P	S	M	Total	Deflation Factor	Total Costs (Undiscounted prices)	Discount Factor	Total Costs (2010 prices, discounted to 2010)	Resource Costs to Market Prices Factor	Total Costs (2010 prices, discounted to 2010) in Market Prices
2014					£0	£0	£0	£0	£0	£0	0.9289	£0	0.871	£0	1.19	£0
2015	1%	51%			£48,633	£0	£92,185	£0	£0	£140,818	0.9289	£130,809	0.842	£110,138	1.19	£131,064
2016	28%	52%			£975,826	£0	£94,029	£0	£0	£1,069,854	0.9289	£993,813	0.814	£808,468	1.19	£962,076
2017	26%				£876,777	£0	£0	£0	£0	£876,777	0.9289	£814,459	0.786	£640,157	1.19	£761,787
2018	9%				£325,835	£0	£0	£0	£0	£325,835	0.9289	£302,676	0.759	£229,855	1.19	£273,528
2019	42%				£1,459,047	£0	£0	£0	£0	£1,459,047	0.9289	£1,355,343	0.734	£994,457	1.19	£1,183,404
2020					£0	£0	£0	£0	£0	£0	0.9289	£0	0.709	£0	1.19	£0
2021					£0	£0	£0	£0	£0	£0	0.9289	£0	0.685	£0	1.19	£0
2022					£0	£0	£0	£0	£0	£0	0.9289	£0	0.662	£0	1.19	£0
2023					£0	£0	£0	£0	£0	£0	0.9289	£0	0.639	£0	1.19	£0
2024					£0	£0	£0	£0	£0	£0	0.9289	£0	0.618	£0	1.19	£0
2025					£0	£0	£0	£0	£0	£0	0.9289	£0	0.597	£0	1.19	£0
2026					£0	£0	£0	£0	£0	£0	0.9289	£0	0.577	£0	1.19	£0
2027					£0	£0	£0	£0	£0	£0	0.9289	£0	0.557	£0	1.19	£0
2028					£0	£0	£0	£0	£0	£0	0.9289	£0	0.538	£0	1.19	£0
2029					£0	£0	£0	£0	£0	£0	0.9289	£0	0.520	£0	1.19	£0
2030					£0	£0	£0	£0	£0	£0	0.9289	£0	0.503	£0	1.19	£0
2031					£0	£0	£0	£0	£0	£0	0.9289	£0	0.486	£0	1.19	£0
2032					£0	£0	£0	£0	£0	£0	0.9289	£0	0.469	£0	1.19	£0
2033					£0	£0	£0	£0	£0	£0	0.9289	£0	0.453	£0	1.19	£0
2034					£0	£0	£0	£0	£0	£0	0.9289	£0	0.438	£0	1.19	£0
2035					£0	£0	£0	£0	£0	£0	0.9289	£0	0.423	£0	1.19	£0
2036					£0	£0	£0	£0	£0	£0	0.9289	£0	0.409	£0	1.19	£0
2037					£0	£0	£0	£0	£0	£0	0.9289	£0	0.395	£0	1.19	£0
2038					£0	£0	£0	£0	£0	£0	0.9289	£0	0.382	£0	1.19	£0
2039					£0	£0	£0	£0	£0	£0	0.9289	£0	0.369	£0	1.19	£0
2040					£0	£0	£0	£0	£0	£0	0.9289	£0	0.356	£0	1.19	£0
2041					£0	£0	£0	£0	£0	£0	0.9289	£0	0.344	£0	1.19	£0
2042					£0	£0	£0	£0	£0	£0	0.9289	£0	0.333	£0	1.19	£0
2043					£0	£0	£0	£0	£0	£0	0.9289	£0	0.321	£0	1.19	£0
2044					£0	£0	£0	£0	£0	£0	0.9289	£0	0.310	£0	1.19	£0
2045					£0	£0	£0	£0	£0	£0	0.9289	£0	0.300	£0	1.19	£0
2046			188%		£0	£0	£0	£0	£3,406,400	£3,406,400	0.9289	£3,164,286	0.290	£917,114	1.19	£1,091,365
TOTAL	107%	0%	103%	0%	£3,686,117	£0	£186,214	£0	£3,406,400	£7,278,731	N/A	£6,761,386	N/A	£3,700,189	N/A	£4,403,225

N.B. It is assumed that Preparation and Supervision costs are included within the above costs
N.B. Optimism Bias only applied to Construction costs, not Land

Applying the methodology below produces the discounted scheme cost (PVC):-
a) Assume the Construction costs are spread evenly over the construction period (assumed to be 2 years)
b) Assume land is bought in the first year of construction
c) All costs are in undiscounted Q1 prices, so need to be converted to undiscounted 2010 prices using the industry-standard method of RPIs
d) All costs discounted to 2010
e) All costs need to be converted to Market Prices

Estimation of Benefit to Cost Ratio (BCR) with MEC

Time Saving benefits (discounted)	£2,249,307
MEC Discounted (2016 to 2010 Prices)	£11,114
Mortality Benefits	£11,723,079
Absentee Benefits	£123,638

Total Benefits with MEC	£14,107,138
Total costs (discounted)	£4,403,225
BCR with Marginal External Costs	3.20382

Estimation of Benefits By User Class Over Appraisal Period

Year	gle Year Benefore opening	after design y	Benefits profile		Total Benefits (2010)	VoT Growth	VoT Adj.	Discount Factor	Total Benefits (2010 prices, discounte
2010	0	0	57,469	0	£0	1.00	£0	1.000	£0
2011	0	0	57,469	0	£0	1.01	£0	0.966	£0
2012	0	0	57,469	0	£0	1.01	£0	0.934	£0
2013	0	0	57,469	0	£0	1.02	£0	0.902	£0
2014	0	0	57,469	0	£0	1.04	£0	0.871	£0
2015	0	0	57,469	0	£0	1.06	£0	0.842	£0
2016	0	0	57,469	0	£0	1.08	£0	0.814	£0
2017	57,469	57,469	57,469	57,469	£57,469	1.10	£63,174	0.786	£49,654
2018	0	57,469	57,469	57,469	£57,469	1.12	£64,375	0.759	£48,887
2019	0	57,469	57,469	57,469	£57,469	1.14	£65,605	0.734	£48,137
2020	0	57,469	57,469	57,469	£57,469	1.16	£66,850	0.709	£47,391
2021	0	57,469	57,469	57,469	£57,469	1.19	£68,109	0.685	£46,651
2022	0	57,469	57,469	57,469	£57,469	1.21	£69,384	0.662	£45,917
2023	0	57,469	57,469	57,469	£57,469	1.23	£70,693	0.639	£45,201
2024	0	57,469	57,469	57,469	£57,469	1.25	£72,038	0.618	£44,504
2025	0	57,469	57,469	57,469	£57,469	1.28	£73,420	0.597	£43,824
2026	0	57,469	57,469	57,469	£57,469	1.30	£74,841	0.577	£43,161
2027	0	57,469	57,469	57,469	£57,469	1.33	£76,303	0.557	£42,516
2028	0	57,469	57,469	57,469	£57,469	1.35	£77,807	0.538	£41,888
2029	0	57,469	57,469	57,469	£57,469	1.38	£79,353	0.520	£41,276
2030	0	57,469	57,469	57,469	£57,469	1.41	£80,944	0.503	£40,680
2031	0	57,469	57,469	57,469	£57,469	1.44	£82,581	0.486	£40,099
2032	57,469	57,469	57,469	57,469	£57,469	1.47	£84,262	0.469	£39,532
2033	0	57,469	57,469	57,469	£57,469	1.50	£85,990	0.453	£38,978
2034	0	57,469	57,469	57,469	£57,469	1.53	£87,764	0.438	£38,437
2035	0	57,469	57,469	57,469	£57,469	1.56	£89,584	0.423	£37,907
2036	0	57,469	57,469	57,469	£57,469	1.59	£91,450	0.409	£37,388
2037	0	57,469	57,469	57,469	£57,469	1.62	£93,362	0.395	£36,879
2038	0	57,469	57,469	57,469	£57,469	1.66	£95,326	0.382	£36,382
2039	0	57,469	57,469	57,469	£57,469	1.69	£97,332	0.369	£35,891
2040	0	57,469	57,469	57,469	£57,469	1.73	£99,379	0.356	£35,407
2041	0	57,469	57,469	57,469	£57,469	1.77	£101,470	0.344	£34,929
2042	0	57,469	57,469	57,469	£57,469	1.80	£103,623	0.333	£34,464
2043	0	57,469	57,469	57,469	£57,469	1.84	£105,822	0.321	£34,005
2044	0	57,469	57,469	57,469	£57,469	1.88	£108,067	0.310	£33,552
2045	0	57,469	57,469	57,469	£57,469	1.92	£110,360	0.300	£33,105
2046	0	57,469	57,469	57,469	£57,469	1.96	£112,702	0.345	£38,886
2047	0	57,469	57,469	57,469	£57,469	2.00	£115,125	0.335	£38,565
2048	0	57,469	57,469	57,469	£57,469	2.05	£117,601	0.325	£38,247
2049	0	57,469	57,469	57,469	£57,469	2.09	£120,130	0.316	£37,931
2050	0	57,469	57,469	57,469	£57,469	2.14	£122,713	0.307	£37,619
2051	0	57,469	57,469	57,469	£57,469	2.18	£125,352	0.298	£37,308
2052	0	57,469	57,469	57,469	£57,469	2.23	£128,093	0.289	£37,014
2053	0	57,469	57,469	57,469	£57,469	2.28	£130,893	0.281	£36,721
2054	0	57,469	57,469	57,469	£57,469	2.33	£133,754	0.272	£36,431
2055	0	57,469	57,469	57,469	£57,469	2.38	£136,678	0.264	£36,143
2056	0	57,469	57,469	57,469	£57,469	2.43	£139,666	0.257	£35,857
2057	0	57,469	57,469	57,469	£57,469	2.48	£142,756	0.249	£35,583
2058	0	57,469	57,469	57,469	£57,469	2.54	£145,914	0.242	£35,311
2059	0	57,469	57,469	57,469	£57,469	2.60	£149,143	0.235	£35,041
2060	0	57,469	57,469	57,469	£57,469	2.65	£152,442	0.228	£34,773
2061	0	57,469	57,469	57,469	£57,469	2.71	£155,814	0.221	£34,507
2062	0	57,469	57,469	57,469	£57,469	2.77	£159,271	0.215	£34,245
2063	0	57,469	57,469	57,469	£57,469	2.83	£162,797	0.209	£33,984
2064	0	57,469	57,469	57,469	£57,469	2.90	£166,402	0.203	£33,725
2065	0	57,469	57,469	57,469	£57,469	2.96	£170,086	0.197	£33,467
2066	0	57,469	57,469	57,469	£57,469	3.03	£173,852	0.191	£33,212
2067	0	57,469	57,469	57,469	£57,469	3.09	£177,670	0.185	£32,953
2068	0	57,469	57,469	57,469	£57,469	3.16	£181,572	0.180	£32,696
2069	0	57,469	57,469	57,469	£57,469	3.23	£185,559	0.175	£32,440
2070	0	57,469	57,469	57,469	£57,469	3.30	£189,634	0.170	£32,187
2071	0	57,469	57,469	57,469	£57,469	3.37	£193,799	0.165	£31,936
2072	0	57,469	57,469	57,469	£57,469	3.45	£198,013	0.160	£31,680
2073	0	57,469	57,469	57,469	£57,469	3.52	£202,319	0.155	£31,426
2074	0	57,469	57,469	57,469	£57,469	3.60	£206,719	0.151	£31,174
2075	0	57,469	57,469	57,469	£57,469	3.68	£211,214	0.146	£30,925
2076	0	57,469	57,469	57,469	£57,469	3.76	£215,808	0.142	£30,677
2077	0	57,469	57,469	57,469	£0	3.84	£0	0.138	£0
2078	0	57,469	57,469	57,469	£0	3.92	£0	0.134	£0
2079	0	57,469	57,469	57,469	£0	4.00	£0	0.130	£0
2080	0	57,469	57,469	57,469	£0	4.09	£0	0.126	£0
2081	0	57,469	57,469	57,469	£0	4.18	£0	0.123	£0
2082	0	57,469	57,469	57,469	£0	4.27	£0	0.119	£0
2083	0	57,469	57,469	57,469	£0	4.36	£0	0.116	£0
2084	0	57,469	57,469	57,469	£0	4.46	£0	0.112	£0
2085	0	57,469	57,469	57,469	£0	4.55	£0	0.109	£0
2086	0	57,469	57,469	57,469	£0	4.65	£0	0.106	£0
2087	0	57,469	57,469	57,469	£0	4.75	£0	0.103	£0
2088	0	57,469	57,469	57,469	£0	4.86	£0	0.100	£0
2089	0	57,469	57,469	57,469	£0	4.96	£0	0.097	£0
2090	0	57,469	57,469	57,469	£0	5.07	£0	0.094	£0
2091	0	57,469	57,469	57,469	£0	5.18	£0	0.091	£0
2092	0	57,469	57,469	57,469	£0	5.30	£0	0.089	£0
2093	0	57,469	57,469	57,469	£0	5.41	£0	0.086	£0
2094	0	57,469	57,469	57,469	£0	5.53	£0	0.083	£0
2095	0	57,469	57,469	57,469	£0	5.65	£0	0.081	£0
2096	0	57,469	57,469	57,469	£0	5.77	£0	0.079	£0
2097	0	57,469	57,469	57,469	£0	5.90	£0	0.076	£0
2098	0	57,469	57,469	57,469	£0	6.02	£0	0.074	£0
2099	0	57,469	57,469	57,469	£0	6.15	£0	0.072	£0
2100	0	57,469	57,469	57,469	£0	6.29	£0	0.070	£0
	TOTAL				£3,448,116	N/A	£7,362,760	N/A	£2,249,307

Discount factor = 1/(1+Discount Rate)^n where n = year minus 2010. Discount rates are specified in the parameters above.

Marginal External Costs over appraisal period

Year	Discount Factor	late veh KM s	before opening	after design	y3enefits profil	Congestion	Discounted	Infrast.	Discounted	Accident	Discounted	Local Air Quality	Discounted	Noise	Discounted	Green Gases	Discounted	Indirect Taxation	Discounted
2014	0.000	0	0	1,549	0	£0	£0	£0	£0	£0	£0	£0	£0	£0	£0	£0	£0	£0	£0
2015	0.000					£0	£0	£0	£0	£0	£0	£0	£0	£0	£0	£0	£0	£0	£0
2016	0.000	0	0	1,549	0	£0	£0	£0	£0	£0	£0	£0	£0	£0	£0	£0	£0	£0	£0
2017	0.786	1,549	1,549	1,549	1,549	£212	£167	£2	£1	£28	£22	£1	£1	£2	£1	£12	£9	-£74	-£58
2018	0.759	0	1,549	1,549	1,549	£223	£169	£2	£1	£28	£21	£1	£0	£2	£1	£11	£9	-£73	-£55
2019	0.734	0	1,549	1,549	1,549	£234	£172	£2	£1	£29	£21	£0	£0	£2	£1	£11	£8	-£71	-£52
2020	0.709	0	1,549	1,549	1,549	£245	£174	£2	£1	£29	£21	£0	£0	£2	£1	£11	£8	-£70	-£49
2021	0.685	0	1,549	1,549	1,549	£259	£178	£2	£1	£30	£20	£0	£0	£2	£1	£11	£7	-£68	-£46
2022	0.662	0	1,549	1,549	1,549	£274	£181	£2	£1	£30	£20	£0	£0	£2	£1	£11	£7	-£66	-£44
2023	0.639	0	1,549	1,549	1,549	£288	£184	£2	£1	£30	£19	£0	£0	£2	£1	£11	£7	-£64	-£41
2024	0.618	0	1,549	1,549	1,549	£303	£187	£2	£1	£31	£19	£0	£0	£2	£1	£11	£7	-£62	-£38
2025	0.597	0	1,549	1,549	1,549	£318	£190	£2	£1	£31	£18	£0	£0	£2	£1	£11	£6	-£60	-£36
2026	0.577	0	1,549	1,549	1,549	£332	£191	£2	£1	£32	£18	£0	£0	£2	£1	£11	£6	-£59	-£34
2027	0.557	0	1,549	1,549	1,549	£345	£192	£2	£1	£32	£18	£0	£0	£2	£1	£11	£6	-£59	-£33
2028	0.538	0	1,549	1,549	1,549	£359	£193	£2	£1	£33	£18	£0	£0	£2	£1	£11	£6	-£58	-£31
2029	0.520	0	1,549	1,549	1,549	£373	£194	£2	£1	£33	£17	£0	£0	£3	£1	£11	£6	-£57	-£29
2030	0.503	0	1,549	1,549	1,549	£387	£195	£2	£1	£34	£17	£0	£0	£3	£2	£11	£5	-£56	-£28
2031	0.486	0	1,549	1,549	1,549	£407	£197	£2	£1	£35	£17	£0	£0	£3	£2	£12	£6	-£55	-£27
2032	0.469	1,549	1,549	1,549	1,549	£426	£200	£2	£1	£36	£17	£0	£0	£3	£1	£13	£6	-£55	-£26
2033	0.453	0	1,549	1,549	1,549	£445	£202	£2	£1	£37	£17	£0	£0	£3	£1	£14	£6	-£55	-£25
2034	0.438	0	1,549	1,549	1,549	£464	£203	£3	£1	£38	£17	£0	£0	£3	£1	£15	£6	-£55	-£24
2035	0.423	0	1,549	1,549	1,549	£483	£205	£3	£1	£39	£16	£0	£0	£3	£1	£15	£7	-£54	-£23
2036	0.409	0	1,549	1,549	1,549	£493	£202	£3	£1	£40	£16	£0	£0	£3	£1	£16	£6	-£55	-£23
2037	0.395	0	1,549	1,549	1,549	£503	£199	£3	£1	£40	£16	£0	£0	£3	£1	£16	£6	-£56	-£22
2038	0.382	0	1,549	1,549	1,549	£513	£196	£3	£1	£41	£16	£0	£0	£3	£1	£16	£6	-£58	-£22
2039	0.369	0	1,549	1,549	1,549	£523	£193	£3	£1	£42	£15	£0	£0	£3	£1	£17	£6	-£59	-£22
2040	0.356	0	1,549	1,549	1,549	£534	£190	£3	£1	£43	£15	£0	£0	£3	£1	£17	£6	-£60	-£21
2041	0.344	0	1,549	1,549	1,549	£544	£187	£3	£1	£44	£15	£0	£0	£3	£1	£17	£6	-£61	-£21
2042	0.333	0	1,549	1,549	1,549	£555	£185	£4	£1	£44	£15	£0	£0	£4	£1	£18	£6	-£62	-£21
2043	0.321	0	1,549	1,549	1,549	£566	£182	£4	£1	£45	£15	£0	£0	£4	£1	£18	£6	-£64	-£20
2044	0.310	0	1,549	1,549	1,549	£578	£179	£4	£1	£46	£14	£0	£0	£4	£1	£19	£6	-£65	-£20
2045	0.300	0	1,549	1,549	1,549	£589	£177	£4	£1	£47	£14	£0	£0	£4	£1	£19	£6	-£66	-£20
2046	0.345	0	1,549	1,549	1,549	£601	£207	£4	£1	£48	£17	£0	£0	£4	£1	£19	£7	-£67	-£23
2047	0.335	0	1,549	1,549	1,549	£613	£205	£4	£1	£49	£16	£0	£0	£4	£1	£20	£7	-£69	-£23
2048	0.325	0	1,549	1,549	1,549	£625	£203	£4	£1	£50	£16	£0	£0	£4	£1	£20	£7	-£70	-£23
2049	0.316	0	1,549	1,549	1,549	£638	£201	£4	£1	£51	£16	£0	£0	£4	£1	£20	£6	-£72	-£23
2050	0.307	0	1,549	1,549	1,549	£651	£199	£4	£1	£52	£16	£0	£0	£4	£1	£21	£6	-£73	-£22
2051	0.298	0	1,549	1,549	1,549	£664	£197	£4	£1	£53	£16	£0	£0	£4	£1	£21	£6	-£74	-£22
2052	0.289	0	1,549	1,549	1,549	£677	£196	£4	£1	£54	£16	£0	£0	£4	£1	£22	£6	-£76	-£22
2053	0.281	0	1,549	1,549	1,549	£690	£194	£4	£1	£55	£16	£0	£0	£4	£1	£22	£6	-£77	-£22
2054	0.272	0	1,549	1,549	1,549	£704	£192	£5	£1	£56	£15	£0	£0	£5	£1	£23	£6	-£79	-£22
2055	0.264	0	1,549	1,549	1,549	£718	£190	£5	£1	£58	£15	£0	£0	£5	£1	£23	£6	-£81	-£21
2056	0.257	0	1,549	1,549	1,549	£733	£188	£5	£1	£59	£15	£0	£0	£5	£1	£23	£6	-£82	-£21
2057	0.249	0	1,549	1,549	1,549	£747	£186	£5	£1	£60	£15	£0	£0	£5	£1	£24	£6	-£84	-£21
2058	0.242	0	1,549	1,549	1,549	£762	£184	£5	£1	£61	£15	£0	£0	£5	£1	£24	£6	-£86	-£21
2059	0.235	0	1,549	1,549	1,549	£777	£183	£5	£1	£62	£15	£0	£0	£5	£1	£25	£6	-£87	-£20
2060	0.228	0	1,549	1,549	1,549	£793	£181	£5	£1	£64	£14	£0	£0	£5	£1	£25	£6	-£89	-£20
2061	0.221	0	1,549	1,549	1,549	£809	£179	£5	£1	£65	£14	£0	£0	£5	£1	£26	£6	-£91	-£20
2062	0.215	0	1,549	1,549	1,549	£825	£177	£5	£1	£66	£14	£0	£0	£5	£1	£26	£6	-£93	-£20
2063	0.209	0	1,549	1,549	1,549	£842	£176	£5	£1	£67	£14	£0	£0	£5	£1	£27	£6	-£94	-£20
2064	0.203	0	1,549	1,549	1,549	£858	£174	£6	£1	£69	£14	£0	£0	£6	£1	£28	£6	-£96	-£20
2065	0.197	0	1,549	1,549	1,549	£876	£172	£6	£1	£70	£14	£0	£0	£6	£1	£28	£6	-£98	-£19
2066	0.191	0	1,549	1,549	1,549	£893	£171	£6	£1	£72	£14	£0	£0	£6	£1	£29	£5	-£100	-£19
2067	0.185	0	1,549	1,549	1,549	£911	£169	£6	£1	£73	£14	£0	£0	£6	£1	£29	£5	-£102	-£19
2068	0.180	0	1,549	1,549	1,549	£929	£167	£6	£1	£74	£13	£0	£0	£6	£1	£30	£5	-£104	-£19
2069	0.175	0	1,549	1,549	1,549	£948	£166	£6	£1	£76	£13	£0	£0	£6	£1	£30	£5	-£106	-£19
2070	0.170	0	1,549	1,549	1,549	£967	£164	£6	£1	£77	£13	£0	£0	£6	£1	£31	£5	-£108	-£18
2071	0.165	0	1,549	1,549	1,549	£986	£162	£6	£1	£79	£13	£0	£0	£6	£1	£32	£5	-£111	-£18
2072	0.160	0	1,549	1,549	1,549	£1,006	£161	£6	£1	£81	£13	£0	£0	£6	£1	£32	£5	-£113	-£18
2073	0.155	0	1,549	1,549	1,549	£1,026	£159	£7	£1	£82	£13	£0	£0	£7	£1	£33	£5	-£115	-£18
2074	0.151	0	1,549	1,549	1,549	£1,046	£158	£7	£1	£84	£13	£0	£0	£7	£1	£34	£5	-£117	-£18
2075	0.146	0	1,549	1,549	1,549	£1,067	£156	£7	£1	£86	£13	£0	£0	£7	£1	£34	£5	-£120	-£18
2076	0.142	0	1,549	1,549	1,549	£1,089	£155	£7	£1	£87	£12	£0	£0	£7	£1	£35	£5	-£122	-£17
2077	0.138	0	1,549	1,549	1,549	£1,110	£153	£7	£1	£89	£12	£0	£0	£7	£1	£36	£5	-£125	-£17
2078	0.000	0	1,549	1,549	1,549	£0	£0	£0	£0	£0	£0	£0	£0	£0	£0	£0	£0	£0	£0
2079	0.000	0	1,549	1,549	1,549	£0	£0	£0	£0	£0	£0	£0	£0	£0	£0	£0	£0	£0	£0
2080	0.000	0	1,549	1,549	1,549	£0	£0	£0	£0	£0	£0	£0	£0	£0	£0	£0	£0	£0	£0
2081	0.000	0	1,549	1,549	1,549	£0	£0	£0	£0	£0	£0	£0	£0	£0	£0	£0	£0	£0	£0
2082	0.000	0	1,549	1,549	1,549	£0	£0	£0	£0	£0	£0	£0	£0	£0	£0	£0	£0	£0	£0
2083	0.000	0	1,549	1,549	1,549	£0	£0	£0	£0	£0	£0	£0	£0	£0	£0	£0	£0	£0	£0
2084	0.000	0	1,549	1,549	1,549	£0	£0	£0	£0	£0	£0	£0	£0	£0	£0	£0	£0	£0	£0
2085	0.000	0	1,549	1,549	1,549	£0	£0	£0	£0	£0	£0	£0	£0	£0	£0	£0	£0	£0	£0
2086	0.000	0	1,549	1,549	1,549	£0	£0	£0	£0	£0	£0	£0	£0	£0	£0	£0	£0	£0	£0
2087	0.000	0	1,549	1,549	1,549	£0	£0	£0	£0	£0	£0	£0	£0	£0	£0	£0	£0	£0	£0
2088	0.000	0	1,549	1,549	1,549	£0	£0	£0	£0	£0	£0	£0	£0	£0	£0	£0	£0	£0	£0
2089	0.000	0	1,549	1,549	1,549	£0	£0	£0	£0	£0	£0	£0	£0	£0	£0	£0	£0	£0	£0
2090	0.000	0	1,549	1,549	1,549	£0	£0	£0	£0	£0	£0	£0	£0	£0	£0	£0	£0	£0	£0
2091	0.000	0	1,549	1,549	1,549	£0	£0	£0	£0	£0	£0	£0	£0	£0	£0	£0	£0	£0	£0
2092	0.000	0	1,549	1,549	1,549	£0	£0	£0	£0	£0	£0	£0	£0	£0	£0	£0	£0	£0	£0
2093	0.000	0	1,549	1,549	1,549	£0	£0	£0	£0	£0	£0	£0	£0	£0	£0	£0	£0	£0	£0
2094	0.000	0	1,549	1,549	1,549	£0	£0	£0	£0	£0	£0	£0	£0	£0	£0	£0	£0	£0	£0
2095	0.000	0	1,549	1,549	1,549	£0	£0	£0	£0	£0	£0	£0	£0	£0	£0	£0	£0	£0	£0
2096	0.000	0	1,549	1,549	1,549	£0	£0	£0	£0	£0	£0	£0	£0	£0	£0	£0	£0	£0	£0
2097	0.000	0	1,549	1,549	1,549	£0	£0	£0	£0	£0	£0	£0	£0	£0	£0	£0	£0	£0	£0
2098	0.000	0	1,549	1,549	1,549	£0	£0	£0	£0	£0	£0	£0	£0	£0	£0	£0	£0	£0	£0
2099	0.000	0	1,549	1,549	1,549	£0	£0	£0	£0	£0	£0	£0	£0	£0	£0	£0	£0	£0	£0
2100	0.000	0	1,549	1,549	1,549	£0	£0	£0	£0	£0	£0	£0	£0	£0	£0	£0	£0	£0	£0
TOTAL						£38,355	£11,190	£239	£68	£3,177	£964	£2	£1	£247	£72	£1,247	£373	-£4,758	-£1,556

Undiscounted	£38,508		Discounted	£11,114

Scheme Comparison: LCC East Lancashire Cycle Network		PVB	£6,545,149
Scheme Discription: Scheme C: Valley of Stone Cycle Improvement		PVC	£3,032,938
Cycle Improvements to provide an improved cycle route between Bacup and Whitworth. Costs include 44% OB and allowance for risk. 15% growth applied.		NPV	£3,512,211
		BCR	2.158

Parameters & Inputs

Opening Year Total Time Savings (Veh Delay in hrs)

Opening Year time savings	£18,933

Forecast Year Total Time Savings (Veh Delay in hrs)

Forecast Year time savings	£18,933

Opening YearTotal Distance Saving (Veh KM in KM)

Annualised Total Veh KM	580.1

Design Year Total Distance Saving (Veh KM in KM)

Annualised Total Veh KM	580.1

MEC Parameters

Assessment Period (Years)	60
DM MEC Type:	Weighted Average
DS MEC Type:	Weighted Average
DM MEC Congestion Band:	Weighted Average
DS MEC Congestion Band:	Weighted Average
MEC growth post-2035?	2%

	- Input Values
	- Default Values
	- Output Values

Assessment Parameters

Current year	2015
Scheme Opening Year	2016
Scheme Design Year	2031
Include VoT growth over time?	Yes
Include growth in benefits post-design year?	No

Scheme Cost Estimate Year	2014
Scheme Cost Discount Factor	3.5%
Discount Factor (0-30 years)	3.5%
Discount Factor (31-75 years)	3.0%

Estimation of Discounted Scheme Costs

Scheme Costs	Construction	Land	Preparation	Supervision	Maintenance	TOTAL
	£2,346,968	£0	£123,525	£0	£1,235,246	£2,470,492

Spend Profile (insert percentage profile)

Year	C %	L %	P %	S %	M %	C	L	P	S	M	Total	Deflation Factor	Total Costs (Undiscounted prices)	Discount Factor	Total Costs (2010 prices, discounted to 2010)	Resource Costs to Market Prices Factor	Total Costs (2010 prices, discounted to 2010) in Market Prices
2014						£0	£0	£0	£0	£0	£0	0.9289	£0	0.871	£0	1.19	£0
2015	3%		51%			£72,587	£0	£62,998	£0	£0	£135,584	0.9289	£125,947	0.842	£106,044	1.19	£126,193
2016	65%		52%			£1,533,334	£0	£64,258	£0	£0	£1,597,592	0.9289	£1,484,041	0.814	£1,207,268	1.19	£1,436,649
2017	3%					£75,519	£0	£0	£0	£0	£75,519	0.9289	£70,152	0.786	£55,138	1.19	£65,615
2018	15%					£344,322	£0	£0	£0	£0	£344,322	0.9289	£319,849	0.759	£242,897	1.19	£289,047
2019	19%					£455,707	£0	£0	£0	£0	£455,707	0.9289	£423,317	0.734	£310,601	1.19	£369,615
2020						£0	£0	£0	£0	£0	£0	0.9289	£0	0.709	£0	1.19	£0
2021						£0	£0	£0	£0	£0	£0	0.9289	£0	0.685	£0	1.19	£0
2022						£0	£0	£0	£0	£0	£0	0.9289	£0	0.662	£0	1.19	£0
2023						£0	£0	£0	£0	£0	£0	0.9289	£0	0.639	£0	1.19	£0
2024						£0	£0	£0	£0	£0	£0	0.9289	£0	0.618	£0	1.19	£0
2025						£0	£0	£0	£0	£0	£0	0.9289	£0	0.597	£0	1.19	£0
2026						£0	£0	£0	£0	£0	£0	0.9289	£0	0.577	£0	1.19	£0
2027						£0	£0	£0	£0	£0	£0	0.9289	£0	0.557	£0	1.19	£0
2028						£0	£0	£0	£0	£0	£0	0.9289	£0	0.538	£0	1.19	£0
2029						£0	£0	£0	£0	£0	£0	0.9289	£0	0.520	£0	1.19	£0
2030						£0	£0	£0	£0	£0	£0	0.9289	£0	0.503	£0	1.19	£0
2031						£0	£0	£0	£0	£0	£0	0.9289	£0	0.486	£0	1.19	£0
2032						£0	£0	£0	£0	£0	£0	0.9289	£0	0.469	£0	1.19	£0
2033						£0	£0	£0	£0	£0	£0	0.9289	£0	0.453	£0	1.19	£0
2034						£0	£0	£0	£0	£0	£0	0.9289	£0	0.438	£0	1.19	£0
2035						£0	£0	£0	£0	£0	£0	0.9289	£0	0.423	£0	1.19	£0
2036						£0	£0	£0	£0	£0	£0	0.9289	£0	0.409	£0	1.19	£0
2037						£0	£0	£0	£0	£0	£0	0.9289	£0	0.395	£0	1.19	£0
2038						£0	£0	£0	£0	£0	£0	0.9289	£0	0.382	£0	1.19	£0
2039						£0	£0	£0	£0	£0	£0	0.9289	£0	0.369	£0	1.19	£0
2040						£0	£0	£0	£0	£0	£0	0.9289	£0	0.356	£0	1.19	£0
2041						£0	£0	£0	£0	£0	£0	0.9289	£0	0.344	£0	1.19	£0
2042						£0	£0	£0	£0	£0	£0	0.9289	£0	0.333	£0	1.19	£0
2043						£0	£0	£0	£0	£0	£0	0.9289	£0	0.321	£0	1.19	£0
2044						£0	£0	£0	£0	£0	£0	0.9289	£0	0.310	£0	1.19	£0
2045						£0	£0	£0	£0	£0	£0	0.9289	£0	0.300	£0	1.19	£0
2046					188%	£0	£0	£0	£0	£2,327,871	£2,327,871	0.9289	£2,162,415	0.290	£626,739	1.19	£745,819
TOTAL	106%	0%	103%	0%	188%	£2,481,469	£0	£127,255	£0	£2,327,871	£4,936,595	N/A	£4,585,720	N/A	£2,548,687	N/A	£3,032,938

N.B. It is assumed that Preparation and Supervision costs are included within the above costs
N.B. Optimism Bias only applied to Construction costs, not Land

Applying the methodology below produces the discounted scheme cost (PVC):-
a) Assume the Construction costs are spread evenly over the construction period (assumed to be 2 years)
b) Assume land is bought in the first year of construction
c) All costs are in undiscounted Q1 prices, so need to be converted to undiscounted 2010 prices using the industry-standard method of RPIs
d) All costs discounted to 2010
e) All costs need to be converted to Market Prices

Estimation of Benefit to Cost Ratio (BCR) with MEC

Time Saving benefits (discounted)	£749,534
MEC Discounted (2016 to 2010 Prices)	£4,167
Mortality Benefits	£5,745,151
Absentee Benefits	£46,296

Total Benefits with MEC	£6,545,149
Total costs (discounted)	£3,032,938
BCR with Marginal External Costs	2.15802

Estimation of Benefits By User Class Over Appraisal Period

Year	gle Year	Benefore opening	after design y	Benefits profile	Total Benefits (2010)	VoT Growth	VoT Adj.	Discount Factor	Total Benefits (2010 prices, discounted
2010	0	0	18,933	0	£0	1.00	£0	1.000	£0
2011	0	0	18,933	0	£0	1.01	£0	0.966	£0
2012	0	0	18,933	0	£0	1.01	£0	0.934	£0
2013	0	0	18,933	0	£0	1.02	£0	0.902	£0
2014	0	0	18,933	0	£0	1.04	£0	0.871	£0
2015	0	0	18,933	0	£0	1.06	£0	0.842	£0
2016	18,933	18,933	18,933	18,933	£18,933	1.08	£20,407	0.814	£16,601
2017	0	18,933	18,933	18,933	£18,933	1.10	£20,812	0.786	£16,358
2018	0	18,933	18,933	18,933	£18,933	1.12	£21,208	0.759	£16,106
2019	0	18,933	18,933	18,933	£18,933	1.14	£21,613	0.734	£15,858
2020	0	18,933	18,933	18,933	£18,933	1.16	£22,023	0.709	£15,613
2021	0	18,933	18,933	18,933	£18,933	1.19	£22,438	0.685	£15,369
2022	0	18,933	18,933	18,933	£18,933	1.21	£22,858	0.662	£15,127
2023	0	18,933	18,933	18,933	£18,933	1.23	£23,290	0.639	£14,891
2024	0	18,933	18,933	18,933	£18,933	1.25	£23,733	0.618	£14,662
2025	0	18,933	18,933	18,933	£18,933	1.28	£24,188	0.597	£14,437
2026	0	18,933	18,933	18,933	£18,933	1.30	£24,656	0.577	£14,219
2027	0	18,933	18,933	18,933	£18,933	1.33	£25,138	0.557	£14,007
2028	0	18,933	18,933	18,933	£18,933	1.35	£25,633	0.538	£13,800
2029	0	18,933	18,933	18,933	£18,933	1.38	£26,143	0.520	£13,598
2030	0	18,933	18,933	18,933	£18,933	1.41	£26,667	0.503	£13,402
2031	18,933	18,933	18,933	18,933	£18,933	1.44	£27,206	0.486	£13,210
2032	0	18,933	18,933	18,933	£18,933	1.47	£27,760	0.469	£13,024
2033	0	18,933	18,933	18,933	£18,933	1.50	£28,329	0.453	£12,841
2034	0	18,933	18,933	18,933	£18,933	1.53	£28,914	0.438	£12,663
2035	0	18,933	18,933	18,933	£18,933	1.56	£29,513	0.423	£12,488
2036	0	18,933	18,933	18,933	£18,933	1.59	£30,128	0.409	£12,317
2037	0	18,933	18,933	18,933	£18,933	1.62	£30,758	0.395	£12,150
2038	0	18,933	18,933	18,933	£18,933	1.66	£31,405	0.382	£11,986
2039	0	18,933	18,933	18,933	£18,933	1.69	£32,066	0.369	£11,824
2040	0	18,933	18,933	18,933	£18,933	1.73	£32,740	0.356	£11,665
2041	0	18,933	18,933	18,933	£18,933	1.77	£33,429	0.344	£11,507
2042	0	18,933	18,933	18,933	£18,933	1.80	£34,138	0.333	£11,354
2043	0	18,933	18,933	18,933	£18,933	1.84	£34,863	0.321	£11,203
2044	0	18,933	18,933	18,933	£18,933	1.88	£35,602	0.310	£11,054
2045	0	18,933	18,933	18,933	£18,933	1.92	£36,358	0.355	£12,921
2046	0	18,933	18,933	18,933	£18,933	1.96	£37,129	0.345	£12,811
2047	0	18,933	18,933	18,933	£18,933	2.00	£37,928	0.335	£12,705
2048	0	18,933	18,933	18,933	£18,933	2.05	£38,743	0.325	£12,600
2049	0	18,933	18,933	18,933	£18,933	2.09	£39,576	0.316	£12,496
2050	0	18,933	18,933	18,933	£18,933	2.14	£40,427	0.307	£12,393
2051	0	18,933	18,933	18,933	£18,933	2.18	£41,297	0.298	£12,291
2052	0	18,933	18,933	18,933	£18,933	2.23	£42,200	0.289	£12,194
2053	0	18,933	18,933	18,933	£18,933	2.28	£43,122	0.281	£12,098
2054	0	18,933	18,933	18,933	£18,933	2.33	£44,065	0.272	£12,002
2055	0	18,933	18,933	18,933	£18,933	2.38	£45,028	0.264	£11,907
2056	0	18,933	18,933	18,933	£18,933	2.43	£46,013	0.257	£11,813
2057	0	18,933	18,933	18,933	£18,933	2.48	£47,030	0.249	£11,723
2058	0	18,933	18,933	18,933	£18,933	2.54	£48,071	0.242	£11,633
2059	0	18,933	18,933	18,933	£18,933	2.60	£49,134	0.235	£11,544
2060	0	18,933	18,933	18,933	£18,933	2.65	£50,221	0.228	£11,456
2061	0	18,933	18,933	18,933	£18,933	2.71	£51,332	0.221	£11,368
2062	0	18,933	18,933	18,933	£18,933	2.77	£52,471	0.215	£11,282
2063	0	18,933	18,933	18,933	£18,933	2.83	£53,633	0.209	£11,196
2064	0	18,933	18,933	18,933	£18,933	2.90	£54,820	0.203	£11,110
2065	0	18,933	18,933	18,933	£18,933	2.96	£56,034	0.197	£11,026
2066	0	18,933	18,933	18,933	£18,933	3.03	£57,275	0.191	£10,942
2067	0	18,933	18,933	18,933	£18,933	3.09	£58,533	0.185	£10,856
2068	0	18,933	18,933	18,933	£18,933	3.16	£59,818	0.180	£10,771
2069	0	18,933	18,933	18,933	£18,933	3.23	£61,132	0.175	£10,687
2070	0	18,933	18,933	18,933	£18,933	3.30	£62,474	0.170	£10,604
2071	0	18,933	18,933	18,933	£18,933	3.37	£63,846	0.165	£10,521
2072	0	18,933	18,933	18,933	£18,933	3.45	£65,235	0.160	£10,437
2073	0	18,933	18,933	18,933	£18,933	3.52	£66,653	0.155	£10,353
2074	0	18,933	18,933	18,933	£18,933	3.60	£68,103	0.151	£10,270
2075	0	18,933	18,933	18,933	£18,933	3.68	£69,584	0.146	£10,188
2076	0	18,933	18,933	18,933	£0	3.76	£0	0.142	£0
2077	0	18,933	18,933	18,933	£0	3.84	£0	0.138	£0
2078	0	18,933	18,933	18,933	£0	3.92	£0	0.134	£0
2079	0	18,933	18,933	18,933	£0	4.00	£0	0.130	£0
2080	0	18,933	18,933	18,933	£0	4.09	£0	0.126	£0
2081	0	18,933	18,933	18,933	£0	4.18	£0	0.123	£0
2082	0	18,933	18,933	18,933	£0	4.27	£0	0.119	£0
2083	0	18,933	18,933	18,933	£0	4.36	£0	0.116	£0
2084	0	18,933	18,933	18,933	£0	4.46	£0	0.112	£0
2085	0	18,933	18,933	18,933	£0	4.55	£0	0.109	£0
2086	0	18,933	18,933	18,933	£0	4.65	£0	0.106	£0
2087	0	18,933	18,933	18,933	£0	4.75	£0	0.103	£0
2088	0	18,933	18,933	18,933	£0	4.86	£0	0.100	£0
2089	0	18,933	18,933	18,933	£0	4.96	£0	0.097	£0
2090	0	18,933	18,933	18,933	£0	5.07	£0	0.094	£0
2091	0	18,933	18,933	18,933	£0	5.18	£0	0.091	£0
2092	0	18,933	18,933	18,933	£0	5.30	£0	0.089	£0
2093	0	18,933	18,933	18,933	£0	5.41	£0	0.086	£0
2094	0	18,933	18,933	18,933	£0	5.53	£0	0.083	£0
2095	0	18,933	18,933	18,933	£0	5.65	£0	0.081	£0
2096	0	18,933	18,933	18,933	£0	5.77	£0	0.079	£0
2097	0	18,933	18,933	18,933	£0	5.90	£0	0.076	£0
2098	0	18,933	18,933	18,933	£0	6.02	£0	0.074	£0
2099	0	18,933	18,933	18,933	£0	6.15	£0	0.072	£0
2100	0	18,933	18,933	18,933	£0	6.29	£0	0.070	£0
TOTAL					£1,135,968	N/A	£2,374,942	N/A	£749,534

Discount factor = 1/(1+Discount Rate)^n where n = year minus 2010. Discount rates are specified in the parameters above.

Marginal External Costs over appraisal period

Year	Discount Factor	late veh KM before opening	after design y3enefits profile			Congestion	Discounted	Infrast.	Discounted	Accident	Discounted	Local Air Quality	Discounted	Noise	Discounted	Green Gases	Discounted	Indirect Taxation	Discounted
2014	0.000	0	0	580	0	£0	£0	£0	£0	£0	£0	£0	£0	£0	£0	£0	£0	£0	£0
2015	0.000	0	0	580	0	£0	£0	£0	£0	£0	£0	£0	£0	£0	£0	£0	£0	£0	£0
2016	0.814	580	580	580	580	£75	£61	£1	£0	£10	£8	£0	£0	£1	£0	£5	£4	-£28	-£23
2017	0.786	0	580	580	580	£79	£62	£1	£0	£10	£8	£0	£0	£1	£0	£4	£3	-£28	-£22
2018	0.759	0	580	580	580	£84	£63	£1	£0	£11	£8	£0	£0	£1	£0	£4	£3	-£27	-£21
2019	0.734	0	580	580	580	£88	£64	£1	£0	£11	£8	£0	£0	£1	£0	£4	£3	-£27	-£20
2020	0.709	0	580	580	580	£92	£65	£1	£0	£11	£8	£0	£0	£1	£0	£4	£3	-£26	-£19
2021	0.685	0	580	580	580	£97	£67	£1	£0	£11	£8	£0	£0	£1	£0	£4	£3	-£25	-£17
2022	0.662	0	580	580	580	£103	£68	£1	£0	£11	£7	£0	£0	£1	£0	£4	£3	-£25	-£16
2023	0.639	0	580	580	580	£108	£69	£1	£0	£11	£7	£0	£0	£1	£0	£4	£3	-£24	-£15
2024	0.618	0	580	580	580	£113	£70	£1	£0	£11	£7	£0	£0	£1	£0	£4	£3	-£23	-£14
2025	0.597	0	580	580	580	£119	£71	£1	£0	£12	£7	£0	£0	£1	£0	£4	£2	-£23	-£14
2026	0.577	0	580	580	580	£124	£72	£1	£0	£12	£7	£0	£0	£1	£0	£4	£2	-£22	-£13
2027	0.557	0	580	580	580	£129	£72	£1	£0	£12	£7	£0	£0	£1	£0	£4	£2	-£22	-£12
2028	0.538	0	580	580	580	£135	£72	£1	£0	£12	£7	£0	£0	£1	£0	£4	£2	-£22	-£12
2029	0.520	0	580	580	580	£140	£73	£1	£0	£13	£7	£0	£0	£1	£1	£4	£2	-£21	-£11
2030	0.503	0	580	580	580	£145	£73	£1	£0	£13	£6	£0	£0	£1	£1	£4	£2	-£21	-£10
2031	0.486	580	580	580	580	£152	£74	£1	£0	£13	£6	£0	£0	£1	£1	£4	£2	-£21	-£10
2032	0.469	0	580	580	580	£159	£75	£1	£0	£13	£6	£0	£0	£1	£1	£5	£2	-£21	-£10
2033	0.453	0	580	580	580	£167	£76	£1	£0	£14	£6	£0	£0	£1	£1	£5	£2	-£21	-£9
2034	0.438	0	580	580	580	£174	£76	£1	£0	£14	£6	£0	£0	£1	£1	£5	£2	-£20	-£9
2035	0.423	0	580	580	580	£181	£77	£1	£0	£15	£6	£0	£0	£1	£0	£6	£2	-£20	-£9
2036	0.409	0	580	580	580	£185	£75	£1	£0	£15	£6	£0	£0	£1	£0	£6	£2	-£21	-£8
2037	0.395	0	580	580	580	£188	£74	£1	£0	£15	£6	£0	£0	£1	£0	£6	£2	-£21	-£8
2038	0.382	0	580	580	580	£192	£73	£1	£0	£15	£6	£0	£0	£1	£0	£6	£2	-£22	-£8
2039	0.369	0	580	580	580	£196	£72	£1	£0	£16	£6	£0	£0	£1	£0	£6	£2	-£22	-£8
2040	0.356	0	580	580	580	£200	£71	£1	£0	£16	£6	£0	£0	£1	£0	£6	£2	-£22	-£8
2041	0.344	0	580	580	580	£204	£70	£1	£0	£16	£6	£0	£0	£1	£0	£7	£2	-£23	-£8
2042	0.333	0	580	580	580	£208	£69	£1	£0	£17	£6	£0	£0	£1	£0	£7	£2	-£23	-£8
2043	0.321	0	580	580	580	£212	£68	£1	£0	£17	£5	£0	£0	£1	£0	£7	£2	-£24	-£8
2044	0.310	0	580	580	580	£216	£67	£1	£0	£17	£5	£0	£0	£1	£0	£7	£2	-£24	-£8
2045	0.355	0	580	580	580	£221	£78	£1	£1	£18	£6	£0	£0	£1	£1	£7	£3	-£25	-£9
2046	0.345	0	580	580	580	£225	£78	£1	£0	£18	£6	£0	£0	£1	£0	£7	£2	-£25	-£9
2047	0.335	0	580	580	580	£230	£77	£1	£0	£18	£6	£0	£0	£1	£0	£7	£2	-£26	-£9
2048	0.325	0	580	580	580	£234	£76	£2	£0	£19	£6	£0	£0	£2	£0	£8	£2	-£26	-£9
2049	0.316	0	580	580	580	£239	£75	£2	£0	£19	£6	£0	£0	£2	£0	£8	£2	-£27	-£8
2050	0.307	0	580	580	580	£244	£75	£2	£0	£20	£6	£0	£0	£2	£0	£8	£2	-£27	-£8
2051	0.298	0	580	580	580	£248	£74	£2	£0	£20	£6	£0	£0	£2	£0	£8	£2	-£28	-£8
2052	0.289	0	580	580	580	£253	£73	£2	£0	£20	£6	£0	£0	£2	£0	£8	£2	-£28	-£8
2053	0.281	0	580	580	580	£258	£73	£2	£0	£21	£6	£0	£0	£2	£0	£8	£2	-£29	-£8
2054	0.272	0	580	580	580	£264	£72	£2	£0	£21	£6	£0	£0	£2	£0	£8	£2	-£30	-£8
2055	0.264	0	580	580	580	£269	£71	£2	£0	£22	£6	£0	£0	£2	£0	£9	£2	-£30	-£8
2056	0.257	0	580	580	580	£274	£70	£2	£0	£22	£6	£0	£0	£2	£0	£9	£2	-£31	-£8
2057	0.249	0	580	580	580	£280	£70	£2	£0	£22	£6	£0	£0	£2	£0	£9	£2	-£31	-£8
2058	0.242	0	580	580	580	£285	£69	£2	£0	£23	£6	£0	£0	£2	£0	£9	£2	-£32	-£8
2059	0.235	0	580	580	580	£291	£68	£2	£0	£23	£5	£0	£0	£2	£0	£9	£2	-£33	-£8
2060	0.228	0	580	580	580	£297	£68	£2	£0	£24	£5	£0	£0	£2	£0	£10	£2	-£33	-£8
2061	0.221	0	580	580	580	£303	£67	£2	£0	£24	£5	£0	£0	£2	£0	£10	£2	-£34	-£8
2062	0.215	0	580	580	580	£309	£66	£2	£0	£25	£5	£0	£0	£2	£0	£10	£2	-£35	-£7
2063	0.209	0	580	580	580	£315	£66	£2	£0	£25	£5	£0	£0	£2	£0	£10	£2	-£35	-£7
2064	0.203	0	580	580	580	£321	£65	£2	£0	£26	£5	£0	£0	£2	£0	£10	£2	-£36	-£7
2065	0.197	0	580	580	580	£328	£65	£2	£0	£26	£5	£0	£0	£2	£0	£11	£2	-£37	-£7
2066	0.191	0	580	580	580	£334	£64	£2	£0	£27	£5	£0	£0	£2	£0	£11	£2	-£38	-£7
2067	0.185	0	580	580	580	£341	£63	£2	£0	£27	£5	£0	£0	£2	£0	£11	£2	-£38	-£7
2068	0.180	0	580	580	580	£348	£63	£2	£0	£28	£5	£0	£0	£2	£0	£11	£2	-£39	-£7
2069	0.175	0	580	580	580	£355	£62	£2	£0	£28	£5	£0	£0	£2	£0	£11	£2	-£40	-£7
2070	0.170	0	580	580	580	£362	£61	£2	£0	£29	£5	£0	£0	£2	£0	£12	£2	-£41	-£7
2071	0.165	0	580	580	580	£369	£61	£2	£0	£30	£5	£0	£0	£2	£0	£12	£2	-£41	-£7
2072	0.160	0	580	580	580	£377	£60	£2	£0	£30	£5	£0	£0	£2	£0	£12	£2	-£42	-£7
2073	0.155	0	580	580	580	£384	£60	£2	£0	£31	£5	£0	£0	£2	£0	£12	£2	-£43	-£7
2074	0.151	0	580	580	580	£392	£59	£3	£0	£31	£5	£0	£0	£3	£0	£13	£2	-£44	-£7
2075	0.146	0	580	580	580	£400	£59	£3	£0	£32	£5	£0	£0	£3	£0	£13	£2	-£45	-£7
2076	0.142	0	580	580	580	£408	£58	£3	£0	£33	£5	£0	£0	£3	£0	£13	£2	-£46	-£6
2077	0.000	0	580	580	580	£0	£0	£0	£0	£0	£0	£0	£0	£0	£0	£0	£0	£0	£0
2078	0.000	0	580	580	580	£0	£0	£0	£0	£0	£0	£0	£0	£0	£0	£0	£0	£0	£0
2079	0.000	0	580	580	580	£0	£0	£0	£0	£0	£0	£0	£0	£0	£0	£0	£0	£0	£0
2080	0.000	0	580	580	580	£0	£0	£0	£0	£0	£0	£0	£0	£0	£0	£0	£0	£0	£0
2081	0.000	0	580	580	580	£0	£0	£0	£0	£0	£0	£0	£0	£0	£0	£0	£0	£0	£0
2082	0.000	0	580	580	580	£0	£0	£0	£0	£0	£0	£0	£0	£0	£0	£0	£0	£0	£0
2083	0.000	0	580	580	580	£0	£0	£0	£0	£0	£0	£0	£0	£0	£0	£0	£0	£0	£0
2084	0.000	0	580	580	580	£0	£0	£0	£0	£0	£0	£0	£0	£0	£0	£0	£0	£0	£0
2085	0.000	0	580	580	580	£0	£0	£0	£0	£0	£0	£0	£0	£0	£0	£0	£0	£0	£0
2086	0.000	0	580	580	580	£0	£0	£0	£0	£0	£0	£0	£0	£0	£0	£0	£0	£0	£0
2087	0.000	0	580	580	580	£0	£0	£0	£0	£0	£0	£0	£0	£0	£0	£0	£0	£0	£0
2088	0.000	0	580	580	580	£0	£0	£0	£0	£0	£0	£0	£0	£0	£0	£0	£0	£0	£0
2089	0.000	0	580	580	580	£0	£0	£0	£0	£0	£0	£0	£0	£0	£0	£0	£0	£0	£0
2090	0.000	0	580	580	580	£0	£0	£0	£0	£0	£0	£0	£0	£0	£0	£0	£0	£0	£0
2091	0.000	0	580	580	580	£0	£0	£0	£0	£0	£0	£0	£0	£0	£0	£0	£0	£0	£0
2092	0.000	0	580	580	580	£0	£0	£0	£0	£0	£0	£0	£0	£0	£0	£0	£0	£0	£0
2093	0.000	0	580	580	580	£0	£0	£0	£0	£0	£0	£0	£0	£0	£0	£0	£0	£0	£0
2094	0.000	0	580	580	580	£0	£0	£0	£0	£0	£0	£0	£0	£0	£0	£0	£0	£0	£0
2095	0.000	0	580	580	580	£0	£0	£0	£0	£0	£0	£0	£0	£0	£0	£0	£0	£0	£0
2096	0.000	0	580	580	580	£0	£0	£0	£0	£0	£0	£0	£0	£0	£0	£0	£0	£0	£0
2097	0.000	0	580	580	580	£0	£0	£0	£0	£0	£0	£0	£0	£0	£0	£0	£0	£0	£0
2098	0.000	0	580	580	580	£0	£0	£0	£0	£0	£0	£0	£0	£0	£0	£0	£0	£0	£0
2099	0.000	0	580	580	580	£0	£0	£0	£0	£0	£0	£0	£0	£0	£0	£0	£0	£0	£0
2100	0.000	0	580	580	580	£0	£0	£0	£0	£0	£0	£0	£0	£0	£0	£0	£0	£0	£0
TOTAL						£14,022	£4,206	£87	£26	£1,166	£366	£1	£1	£90	£27	£458	£142	-£1,764	-£601

Undiscounted	£14,062		Discounted	£4,167

Scheme Comparison: LCC East Lancashire Cycle Network	PVB	£7,398,864
Scheme Discription: Scheme C: Valley of Stone Cycle Improvement	PVC	£3,032,938
Cycle Improvements to provide an improved cycle route between Bacup and Whitworth. Costs include 44% OB and allowance for risk. 30% growth applied.	NPV	£4,365,926
	BCR	2.440

Parameters & Inputs

Opening Year Total Time Savings (Veh Delay in hrs)

Opening Year time savings	£21,402

Forecast Year Total Time Savings (Veh Delay in hrs)

Forecast Year time savings	£21,402

Opening YearTotal Distance Saving (Veh KM in KM)

Annualised Total Veh KM	655.8

Design Year Total Distance Saving (Veh KM in KM)

Annualised Total Veh KM	655.8

MEC Parameters

Assessment Period (Years)	60
DM MEC Type:	Weighted Average
DS MEC Type:	Weighted Average
DM MEC Congestion Band:	Weighted Average
DS MEC Congestion Band:	Weighted Average
MEC growth post-2035?	2%

- Input Values
- Default Values
- Output Values

Assessment Parameters

Current year	2015
Scheme Opening Year	2016
Scheme Design Year	2031
Include VoT growth over time?	Yes
Include growth in benefits post-design year?	No
Scheme Cost Estimate Year	2014
Scheme Cost Discount Factor	3.5%
Discount Factor (0-30 years)	3.5%
Discount Factor (31-75 years)	3.0%

Estimation of Discounted Scheme Costs

Scheme Costs	Construction	Land	Preparation	Supervision	Maintenance	TOTAL
	£2,346,968	£0	£123,525	£0	£1,235,246	£2,470,492

Spend Profile (insert percentage profile)

Year	C %	L %	P %	S %	M %	C	L	P	S	M	Total	Deflation Factor	Total Costs (Undiscounted prices)	Discount Factor	Total Costs (2010 prices, discounted to 2010)	Resource Costs to Market Prices Factor	Total Costs (2010 prices, discounted to 2010) in Market Prices
2014						£0	£0	£0	£0	£0	£0	0.9289	£0	0.871	£0	1.19	£0
2015	3%		51%			£72,587	£0	£62,998	£0	£0	£135,584	0.9289	£125,947	0.842	£106,044	1.19	£126,193
2016	65%		52%			£1,533,334	£0	£64,258	£0	£0	£1,597,592	0.9289	£1,484,041	0.814	£1,207,268	1.19	£1,436,649
2017	3%					£75,519	£0	£0	£0	£0	£75,519	0.9289	£70,152	0.786	£55,138	1.19	£65,615
2018	15%					£344,322	£0	£0	£0	£0	£344,322	0.9289	£319,849	0.759	£242,897	1.19	£289,047
2019	19%					£455,707	£0	£0	£0	£0	£455,707	0.9289	£423,317	0.734	£310,601	1.19	£369,615
2020						£0	£0	£0	£0	£0	£0	0.9289	£0	0.709	£0	1.19	£0
2021						£0	£0	£0	£0	£0	£0	0.9289	£0	0.685	£0	1.19	£0
2022						£0	£0	£0	£0	£0	£0	0.9289	£0	0.662	£0	1.19	£0
2023						£0	£0	£0	£0	£0	£0	0.9289	£0	0.639	£0	1.19	£0
2024						£0	£0	£0	£0	£0	£0	0.9289	£0	0.618	£0	1.19	£0
2025						£0	£0	£0	£0	£0	£0	0.9289	£0	0.597	£0	1.19	£0
2026						£0	£0	£0	£0	£0	£0	0.9289	£0	0.577	£0	1.19	£0
2027						£0	£0	£0	£0	£0	£0	0.9289	£0	0.557	£0	1.19	£0
2028						£0	£0	£0	£0	£0	£0	0.9289	£0	0.538	£0	1.19	£0
2029						£0	£0	£0	£0	£0	£0	0.9289	£0	0.520	£0	1.19	£0
2030						£0	£0	£0	£0	£0	£0	0.9289	£0	0.503	£0	1.19	£0
2031						£0	£0	£0	£0	£0	£0	0.9289	£0	0.486	£0	1.19	£0
2032						£0	£0	£0	£0	£0	£0	0.9289	£0	0.469	£0	1.19	£0
2033						£0	£0	£0	£0	£0	£0	0.9289	£0	0.453	£0	1.19	£0
2034						£0	£0	£0	£0	£0	£0	0.9289	£0	0.438	£0	1.19	£0
2035						£0	£0	£0	£0	£0	£0	0.9289	£0	0.423	£0	1.19	£0
2036						£0	£0	£0	£0	£0	£0	0.9289	£0	0.409	£0	1.19	£0
2037						£0	£0	£0	£0	£0	£0	0.9289	£0	0.395	£0	1.19	£0
2038						£0	£0	£0	£0	£0	£0	0.9289	£0	0.382	£0	1.19	£0
2039						£0	£0	£0	£0	£0	£0	0.9289	£0	0.369	£0	1.19	£0
2040						£0	£0	£0	£0	£0	£0	0.9289	£0	0.356	£0	1.19	£0
2041						£0	£0	£0	£0	£0	£0	0.9289	£0	0.344	£0	1.19	£0
2042						£0	£0	£0	£0	£0	£0	0.9289	£0	0.333	£0	1.19	£0
2043						£0	£0	£0	£0	£0	£0	0.9289	£0	0.321	£0	1.19	£0
2044						£0	£0	£0	£0	£0	£0	0.9289	£0	0.310	£0	1.19	£0
2045						£0	£0	£0	£0	£0	£0	0.9289	£0	0.300	£0	1.19	£0
2046					188%	£0	£0	£0	£0	£2,327,871	£2,327,871	0.9289	£2,162,415	0.290	£626,739	1.19	£745,819
TOTAL	106%	0%	103%	0%	188%	£2,481,469	£0	£127,255	£0	£2,327,871	£4,936,595	N/A	£4,585,720	N/A	£2,548,687	N/A	£3,032,938

N.B. It is assumed that Preparation and Supervision costs are included within the above costs
N.B. Optimism Bias only applied to Construction costs, not Land

Applying the methodology below produces the discounted scheme cost (PVC):-
a) Assume the Construction costs are spread evenly over the construction period (assumed to be 2 years)
b) Assume land is bought in the first year of construction
c) All costs are in undiscounted Q1 prices, so need to be converted to undiscounted 2010 prices using the industry-standard method of RPIs
d) All costs discounted to 2010
e) All costs need to be converted to Market Prices

Estimation of Benefit to Cost Ratio (BCR) with MEC

Time Saving benefits (discounted)	£847,300
MEC Discounted (2016 to 2010 Prices)	£4,711
Mortality Benefits	£6,494,518
Absentee Benefits	£52,335

Total Benefits with MEC	£7,398,864
Total costs (discounted)	£3,032,938
BCR with Marginal External Costs	2.43950

Year	gle Year Benefore opening	after design y	Benefits profile		Total Benefits (2010)	VoT Growth	VoT Adj.	Discount Factor	Total Benefits (2010 prices, discounted
2010	0	0	21,402	0	£0	1.00	£0	1.000	£0
2011	0	0	21,402	0	£0	1.01	£0	0.966	£0
2012	0	0	21,402	0	£0	1.01	£0	0.934	£0
2013	0	0	21,402	0	£0	1.02	£0	0.902	£0
2014	0	0	21,402	0	£0	1.04	£0	0.871	£0
2015	0	0	21,402	0	£0	1.06	£0	0.842	£0
2016	21,402	21,402	21,402	21,402	£21,402	1.08	£23,069	0.814	£18,766
2017	0	21,402	21,402	21,402	£21,402	1.10	£23,527	0.786	£18,492
2018	0	21,402	21,402	21,402	£21,402	1.12	£23,974	0.759	£18,206
2019	0	21,402	21,402	21,402	£21,402	1.14	£24,432	0.734	£17,927
2020	0	21,402	21,402	21,402	£21,402	1.16	£24,896	0.709	£17,649
2021	0	21,402	21,402	21,402	£21,402	1.19	£25,365	0.685	£17,374
2022	0	21,402	21,402	21,402	£21,402	1.21	£25,840	0.662	£17,100
2023	0	21,402	21,402	21,402	£21,402	1.23	£26,327	0.639	£16,834
2024	0	21,402	21,402	21,402	£21,402	1.25	£26,828	0.618	£16,574
2025	0	21,402	21,402	21,402	£21,402	1.28	£27,343	0.597	£16,321
2026	0	21,402	21,402	21,402	£21,402	1.30	£27,872	0.577	£16,074
2027	0	21,402	21,402	21,402	£21,402	1.33	£28,416	0.557	£15,834
2028	0	21,402	21,402	21,402	£21,402	1.35	£28,976	0.538	£15,600
2029	0	21,402	21,402	21,402	£21,402	1.38	£29,553	0.520	£15,372
2030	0	21,402	21,402	21,402	£21,402	1.41	£30,145	0.503	£15,150
2031	21,402	21,402	21,402	21,402	£21,402	1.44	£30,754	0.486	£14,933
2032	0	21,402	21,402	21,402	£21,402	1.47	£31,381	0.469	£14,722
2033	0	21,402	21,402	21,402	£21,402	1.50	£32,024	0.453	£14,516
2034	0	21,402	21,402	21,402	£21,402	1.53	£32,685	0.438	£14,315
2035	0	21,402	21,402	21,402	£21,402	1.56	£33,363	0.423	£14,117
2036	0	21,402	21,402	21,402	£21,402	1.59	£34,058	0.409	£13,924
2037	0	21,402	21,402	21,402	£21,402	1.62	£34,770	0.395	£13,734
2038	0	21,402	21,402	21,402	£21,402	1.66	£35,501	0.382	£13,549
2039	0	21,402	21,402	21,402	£21,402	1.69	£36,248	0.369	£13,366
2040	0	21,402	21,402	21,402	£21,402	1.73	£37,011	0.356	£13,186
2041	0	21,402	21,402	21,402	£21,402	1.77	£37,789	0.344	£13,008
2042	0	21,402	21,402	21,402	£21,402	1.80	£38,591	0.333	£12,835
2043	0	21,402	21,402	21,402	£21,402	1.84	£39,410	0.321	£12,664
2044	0	21,402	21,402	21,402	£21,402	1.88	£40,246	0.310	£12,495
2045	0	21,402	21,402	21,402	£21,402	1.92	£41,100	0.355	£14,606
2046	0	21,402	21,402	21,402	£21,402	1.96	£41,972	0.345	£14,482
2047	0	21,402	21,402	21,402	£21,402	2.00	£42,875	0.335	£14,362
2048	0	21,402	21,402	21,402	£21,402	2.05	£43,797	0.325	£14,244
2049	0	21,402	21,402	21,402	£21,402	2.09	£44,738	0.316	£14,126
2050	0	21,402	21,402	21,402	£21,402	2.14	£45,701	0.307	£14,010
2051	0	21,402	21,402	21,402	£21,402	2.18	£46,683	0.298	£13,894
2052	0	21,402	21,402	21,402	£21,402	2.23	£47,704	0.289	£13,784
2053	0	21,402	21,402	21,402	£21,402	2.28	£48,747	0.281	£13,676
2054	0	21,402	21,402	21,402	£21,402	2.33	£49,812	0.272	£13,568
2055	0	21,402	21,402	21,402	£21,402	2.38	£50,901	0.264	£13,460
2056	0	21,402	21,402	21,402	£21,402	2.43	£52,014	0.257	£13,354
2057	0	21,402	21,402	21,402	£21,402	2.48	£53,165	0.249	£13,252
2058	0	21,402	21,402	21,402	£21,402	2.54	£54,341	0.242	£13,150
2059	0	21,402	21,402	21,402	£21,402	2.60	£55,543	0.235	£13,050
2060	0	21,402	21,402	21,402	£21,402	2.65	£56,772	0.228	£12,950
2061	0	21,402	21,402	21,402	£21,402	2.71	£58,028	0.221	£12,851
2062	0	21,402	21,402	21,402	£21,402	2.77	£59,315	0.215	£12,754
2063	0	21,402	21,402	21,402	£21,402	2.83	£60,628	0.209	£12,656
2064	0	21,402	21,402	21,402	£21,402	2.90	£61,971	0.203	£12,560
2065	0	21,402	21,402	21,402	£21,402	2.96	£63,343	0.197	£12,464
2066	0	21,402	21,402	21,402	£21,402	3.03	£64,745	0.191	£12,369
2067	0	21,402	21,402	21,402	£21,402	3.09	£66,167	0.185	£12,272
2068	0	21,402	21,402	21,402	£21,402	3.16	£67,620	0.180	£12,176
2069	0	21,402	21,402	21,402	£21,402	3.23	£69,105	0.175	£12,081
2070	0	21,402	21,402	21,402	£21,402	3.30	£70,623	0.170	£11,987
2071	0	21,402	21,402	21,402	£21,402	3.37	£72,174	0.165	£11,894
2072	0	21,402	21,402	21,402	£21,402	3.45	£73,744	0.160	£11,798
2073	0	21,402	21,402	21,402	£21,402	3.52	£75,347	0.155	£11,704
2074	0	21,402	21,402	21,402	£21,402	3.60	£76,986	0.151	£11,610
2075	0	21,402	21,402	21,402	£21,402	3.68	£78,660	0.146	£11,517
2076	0	21,402	21,402	21,402	£0	3.76	£0	0.142	£0
2077	0	21,402	21,402	21,402	£0	3.84	£0	0.138	£0
2078	0	21,402	21,402	21,402	£0	3.92	£0	0.134	£0
2079	0	21,402	21,402	21,402	£0	4.00	£0	0.130	£0
2080	0	21,402	21,402	21,402	£0	4.09	£0	0.126	£0
2081	0	21,402	21,402	21,402	£0	4.18	£0	0.123	£0
2082	0	21,402	21,402	21,402	£0	4.27	£0	0.119	£0
2083	0	21,402	21,402	21,402	£0	4.36	£0	0.116	£0
2084	0	21,402	21,402	21,402	£0	4.46	£0	0.112	£0
2085	0	21,402	21,402	21,402	£0	4.55	£0	0.109	£0
2086	0	21,402	21,402	21,402	£0	4.65	£0	0.106	£0
2087	0	21,402	21,402	21,402	£0	4.75	£0	0.103	£0
2088	0	21,402	21,402	21,402	£0	4.86	£0	0.100	£0
2089	0	21,402	21,402	21,402	£0	4.96	£0	0.097	£0
2090	0	21,402	21,402	21,402	£0	5.07	£0	0.094	£0
2091	0	21,402	21,402	21,402	£0	5.18	£0	0.091	£0
2092	0	21,402	21,402	21,402	£0	5.30	£0	0.089	£0
2093	0	21,402	21,402	21,402	£0	5.41	£0	0.086	£0
2094	0	21,402	21,402	21,402	£0	5.53	£0	0.083	£0
2095	0	21,402	21,402	21,402	£0	5.65	£0	0.081	£0
2096	0	21,402	21,402	21,402	£0	5.77	£0	0.079	£0
2097	0	21,402	21,402	21,402	£0	5.90	£0	0.076	£0
2098	0	21,402	21,402	21,402	£0	6.02	£0	0.074	£0
2099	0	21,402	21,402	21,402	£0	6.15	£0	0.072	£0
2100	0	21,402	21,402	21,402	£0	6.29	£0	0.070	£0
		TOTAL			£1,284,138	N/A	£2,684,717	N/A	£847,300

Discount factor = 1/(1+Discount Rate)^n where n = year minus 2010. Discount rates are specified in the parameters above.

Marginal External Costs over appraisal period

Year	Discount Factor	late veh KM s[b]fore opening	after design	y[3]enefits profil		Congestion	Discounted	Infrast.	Discounted	Accident	Discounted	Local Air Quality	Discounted	Noise	Discounted	Green Gases	Discounted	Indirect Taxation	Discounted
2014	0.000	0	0	656	0	£0	£0	£0	£0	£0	£0	£0	£0	£0	£0	£0	£0	£0	£0
2015	0.000	0	0	656	0	£0	£0	£0	£0	£0	£0	£0	£0	£0	£0	£0	£0	£0	£0
2016	0.814	656	656	656	656	£85	£69	£1	£1	£11	£9	£1	£0	£1	£1	£5	£4	-£32	-£26
2017	0.786	0	656	656	656	£90	£71	£1	£1	£12	£9	£0	£0	£1	£1	£5	£4	-£31	-£25
2018	0.759	0	656	656	656	£94	£72	£1	£0	£12	£9	£0	£0	£1	£0	£5	£4	-£31	-£23
2019	0.734	0	656	656	656	£99	£73	£1	£0	£12	£9	£0	£0	£1	£0	£5	£3	-£30	-£22
2020	0.709	0	656	656	656	£104	£73	£1	£0	£12	£9	£0	£0	£1	£0	£5	£3	-£30	-£21
2021	0.685	0	656	656	656	£110	£75	£1	£0	£13	£9	£0	£0	£1	£0	£5	£3	-£29	-£20
2022	0.662	0	656	656	656	£116	£77	£1	£0	£13	£8	£0	£0	£1	£0	£5	£3	-£28	-£18
2023	0.639	0	656	656	656	£122	£78	£1	£0	£13	£8	£0	£0	£1	£0	£5	£3	-£27	-£17
2024	0.618	0	656	656	656	£128	£79	£1	£0	£13	£8	£0	£0	£1	£0	£5	£3	-£26	-£16
2025	0.597	0	656	656	656	£134	£80	£1	£0	£13	£8	£0	£0	£1	£0	£5	£3	-£26	-£15
2026	0.577	0	656	656	656	£140	£81	£1	£0	£13	£8	£0	£0	£1	£0	£5	£3	-£25	-£15
2027	0.557	0	656	656	656	£146	£81	£1	£0	£14	£8	£0	£0	£1	£1	£5	£3	-£25	-£14
2028	0.538	0	656	656	656	£152	£82	£1	£0	£14	£7	£0	£0	£1	£1	£5	£2	-£24	-£13
2029	0.520	0	656	656	656	£158	£82	£1	£0	£14	£7	£0	£0	£1	£1	£5	£2	-£24	-£12
2030	0.503	0	656	656	656	£164	£82	£1	£0	£14	£7	£0	£0	£1	£1	£5	£2	-£24	-£12
2031	0.486	656	656	656	656	£172	£84	£1	£0	£15	£7	£0	£0	£1	£1	£5	£2	-£23	-£11
2032	0.469	0	656	656	656	£180	£85	£1	£0	£15	£7	£0	£0	£1	£1	£5	£3	-£23	-£11
2033	0.453	0	656	656	656	£188	£85	£1	£0	£16	£7	£0	£0	£1	£1	£6	£3	-£23	-£11
2034	0.438	0	656	656	656	£196	£86	£1	£1	£16	£7	£0	£0	£1	£1	£6	£3	-£23	-£10
2035	0.423	0	656	656	656	£205	£87	£1	£1	£16	£7	£0	£0	£1	£1	£7	£3	-£23	-£10
2036	0.409	0	656	656	656	£209	£85	£1	£1	£17	£7	£0	£0	£1	£1	£7	£3	-£23	-£10
2037	0.395	0	656	656	656	£213	£84	£1	£1	£17	£7	£0	£0	£1	£1	£7	£3	-£24	-£9
2038	0.382	0	656	656	656	£217	£83	£1	£1	£17	£7	£0	£0	£1	£1	£7	£3	-£24	-£9
2039	0.369	0	656	656	656	£221	£82	£1	£1	£18	£7	£0	£0	£1	£1	£7	£3	-£25	-£9
2040	0.356	0	656	656	656	£226	£80	£1	£1	£18	£6	£0	£0	£1	£1	£7	£3	-£25	-£9
2041	0.344	0	656	656	656	£230	£79	£1	£1	£18	£6	£0	£0	£1	£1	£7	£3	-£26	-£9
2042	0.333	0	656	656	656	£235	£78	£2	£1	£19	£6	£0	£0	£2	£1	£8	£3	-£26	-£9
2043	0.321	0	656	656	656	£240	£77	£2	£0	£19	£6	£0	£0	£2	£0	£8	£2	-£27	-£9
2044	0.310	0	656	656	656	£245	£76	£2	£0	£20	£6	£0	£0	£2	£0	£8	£2	-£27	-£9
2045	0.355	0	656	656	656	£249	£89	£2	£1	£20	£7	£0	£0	£2	£1	£8	£3	-£28	-£10
2046	0.345	0	656	656	656	£254	£88	£2	£1	£20	£7	£0	£0	£2	£1	£8	£3	-£29	-£10
2047	0.335	0	656	656	656	£259	£87	£2	£1	£21	£7	£0	£0	£2	£1	£8	£3	-£29	-£10
2048	0.325	0	656	656	656	£265	£86	£2	£1	£21	£7	£0	£0	£2	£1	£8	£3	-£30	-£10
2049	0.316	0	656	656	656	£270	£85	£2	£1	£22	£7	£0	£0	£2	£1	£9	£3	-£30	-£10
2050	0.307	0	656	656	656	£275	£84	£2	£1	£22	£7	£0	£0	£2	£1	£9	£3	-£31	-£9
2051	0.298	0	656	656	656	£281	£84	£2	£1	£23	£7	£0	£0	£2	£1	£9	£3	-£32	-£9
2052	0.289	0	656	656	656	£286	£83	£2	£1	£23	£7	£0	£0	£2	£1	£9	£3	-£32	-£9
2053	0.281	0	656	656	656	£292	£82	£2	£1	£23	£7	£0	£0	£2	£1	£9	£3	-£33	-£9
2054	0.272	0	656	656	656	£298	£81	£2	£1	£24	£7	£0	£0	£2	£1	£10	£3	-£33	-£9
2055	0.264	0	656	656	656	£304	£80	£2	£1	£24	£6	£0	£0	£2	£1	£10	£3	-£34	-£9
2056	0.257	0	656	656	656	£310	£80	£2	£1	£25	£6	£0	£0	£2	£1	£10	£3	-£35	-£9
2057	0.249	0	656	656	656	£316	£79	£2	£1	£25	£6	£0	£0	£2	£1	£10	£3	-£35	-£9
2058	0.242	0	656	656	656	£323	£78	£2	£1	£26	£6	£0	£0	£2	£1	£10	£3	-£36	-£9
2059	0.235	0	656	656	656	£329	£77	£2	£0	£26	£6	£0	£0	£2	£0	£11	£2	-£37	-£9
2060	0.228	0	656	656	656	£336	£77	£2	£0	£27	£6	£0	£0	£2	£0	£11	£2	-£38	-£9
2061	0.221	0	656	656	656	£342	£76	£2	£0	£27	£6	£0	£0	£2	£0	£11	£2	-£38	-£9
2062	0.215	0	656	656	656	£349	£75	£2	£0	£28	£6	£0	£0	£2	£0	£11	£2	-£39	-£8
2063	0.209	0	656	656	656	£356	£74	£2	£0	£29	£6	£0	£0	£2	£0	£11	£2	-£40	-£8
2064	0.203	0	656	656	656	£363	£74	£2	£0	£29	£6	£0	£0	£2	£0	£12	£2	-£41	-£8
2065	0.197	0	656	656	656	£371	£73	£2	£0	£30	£6	£0	£0	£2	£0	£12	£2	-£42	-£8
2066	0.191	0	656	656	656	£378	£72	£2	£0	£30	£6	£0	£0	£2	£0	£12	£2	-£42	-£8
2067	0.185	0	656	656	656	£386	£72	£2	£0	£31	£6	£0	£0	£2	£0	£12	£2	-£43	-£8
2068	0.180	0	656	656	656	£393	£71	£3	£0	£32	£6	£0	£0	£3	£0	£13	£2	-£44	-£8
2069	0.175	0	656	656	0	£401	£70	£3	£0	£32	£6	£0	£0	£3	£0	£13	£2	-£45	-£8
2070	0.170	0	656	656	656	£409	£69	£3	£0	£33	£6	£0	£0	£3	£0	£13	£2	-£46	-£8
2071	0.165	656	656	656	656	£417	£69	£3	£0	£33	£6	£0	£0	£3	£0	£13	£2	-£47	-£8
2072	0.160	0	656	656	656	£426	£68	£3	£0	£34	£5	£0	£0	£3	£0	£14	£2	-£48	-£8
2073	0.155	0	656	656	656	£434	£67	£3	£0	£35	£5	£0	£0	£3	£0	£14	£2	-£49	-£8
2074	0.151	0	656	656	656	£443	£67	£3	£0	£35	£5	£0	£0	£3	£0	£14	£2	-£50	-£7
2075	0.146	0	656	656	656	£452	£66	£3	£0	£36	£5	£0	£0	£3	£0	£14	£2	-£51	-£7
2076	0.142	0	656	656	656	£461	£66	£3	£0	£37	£5	£0	£0	£3	£0	£15	£2	-£52	-£7
2077	0.000	0	656	656	656	£0	£0	£0	£0	£0	£0	£0	£0	£0	£0	£0	£0	£0	£0
2078	0.000	0	656	656	656	£0	£0	£0	£0	£0	£0	£0	£0	£0	£0	£0	£0	£0	£0
2079	0.000	0	656	656	656	£0	£0	£0	£0	£0	£0	£0	£0	£0	£0	£0	£0	£0	£0
2080	0.000	0	656	656	656	£0	£0	£0	£0	£0	£0	£0	£0	£0	£0	£0	£0	£0	£0
2081	0.000	0	656	656	656	£0	£0	£0	£0	£0	£0	£0	£0	£0	£0	£0	£0	£0	£0
2082	0.000	0	656	656	656	£0	£0	£0	£0	£0	£0	£0	£0	£0	£0	£0	£0	£0	£0
2083	0.000	0	656	656	656	£0	£0	£0	£0	£0	£0	£0	£0	£0	£0	£0	£0	£0	£0
2084	0.000	0	656	656	656	£0	£0	£0	£0	£0	£0	£0	£0	£0	£0	£0	£0	£0	£0
2085	0.000	0	656	656	656	£0	£0	£0	£0	£0	£0	£0	£0	£0	£0	£0	£0	£0	£0
2086	0.000	0	656	656	656	£0	£0	£0	£0	£0	£0	£0	£0	£0	£0	£0	£0	£0	£0
2087	0.000	0	656	656	656	£0	£0	£0	£0	£0	£0	£0	£0	£0	£0	£0	£0	£0	£0
2088	0.000	0	656	656	656	£0	£0	£0	£0	£0	£0	£0	£0	£0	£0	£0	£0	£0	£0
2089	0.000	0	656	656	656	£0	£0	£0	£0	£0	£0	£0	£0	£0	£0	£0	£0	£0	£0
2090	0.000	0	656	656	656	£0	£0	£0	£0	£0	£0	£0	£0	£0	£0	£0	£0	£0	£0
2091	0.000	0	656	656	656	£0	£0	£0	£0	£0	£0	£0	£0	£0	£0	£0	£0	£0	£0
2092	0.000	0	656	656	656	£0	£0	£0	£0	£0	£0	£0	£0	£0	£0	£0	£0	£0	£0
2093	0.000	0	656	656	656	£0	£0	£0	£0	£0	£0	£0	£0	£0	£0	£0	£0	£0	£0
2094	0.000	0	656	656	656	£0	£0	£0	£0	£0	£0	£0	£0	£0	£0	£0	£0	£0	£0
2095	0.000	0	656	656	656	£0	£0	£0	£0	£0	£0	£0	£0	£0	£0	£0	£0	£0	£0
2096	0.000	0	656	656	656	£0	£0	£0	£0	£0	£0	£0	£0	£0	£0	£0	£0	£0	£0
2097	0.000	0	656	656	656	£0	£0	£0	£0	£0	£0	£0	£0	£0	£0	£0	£0	£0	£0
2098	0.000	0	656	656	656	£0	£0	£0	£0	£0	£0	£0	£0	£0	£0	£0	£0	£0	£0
2099	0.000	0	656	656	656	£0	£0	£0	£0	£0	£0	£0	£0	£0	£0	£0	£0	£0	£0
2100	0.000	0	656	656	656	£0	£0	£0	£0	£0	£0	£0	£0	£0	£0	£0	£0	£0	£0
TOTAL						£15,851	£4,755	£99	£29	£1,318	£413	£1	£1	£102	£31	£518	£160	-£1,994	-£679

Undiscounted	£15,896		Discounted	£4,711

Scheme Comparison: LCC East Lancashire Cycle Network		PVB	£9,106,294
Scheme Discription: Scheme C: Valley of Stone Cycle Improvement		PVC	£3,032,938
Cycle Improvements to provide an improved cycle route between Bacup and Whitworth. Costs include 44% OB and allowance for risk. 60% growth applied.		NPV	£6,073,356
		BCR	3.002

Parameters & Inputs

Opening Year Total Time Savings (Veh Delay in hrs)

Opening Year time savings	£26,341

Forecast Year Total Time Savings (Veh Delay in hrs)

Forecast Year time savings	£26,341

Opening YearTotal Distance Saving (Veh KM in KM)

Annualised Total Veh KM	807.1

Design Year Total Distance Saving (Veh KM in KM)

Annualised Total Veh KM	807.1

MEC Parameters

Assessment Period (Years)	60
DM MEC Type:	Weighted Average
DS MEC Type:	Weighted Average
DM MEC Congestion Band:	Weighted Average
DS MEC Congestion Band:	Weighted Average
MEC growth post-2035?	2%

- Input Values
- Default Values
- Output Values

Assessment Parameters

Current year	2015
Scheme Opening Year	2016
Scheme Design Year	2031
Include VoT growth over time?	Yes
Include growth in benefits post-design year?	No
Scheme Cost Estimate Year	2014
Scheme Cost Discount Factor	3.5%
Discount Factor (0-30 years)	3.5%
Discount Factor (31-75 years)	3.0%

Estimation of Discounted Scheme Costs

Scheme Costs	Construction	Land	Preparation	Supervision	Maintenance	TOTAL
	£2,346,968	£0	£123,525	£0	£1,235,246	£2,470,492

Spend Profile (insert percentage profile)

Year	C	L	P	S	M		C	L	P	S	M	Total	Deflation Factor	Total Costs (Undiscounted prices)	Discount Factor	Total Costs (2010 prices, discounted to 2010)	Resource Costs to Market Prices Factor	Total Costs (2010 prices, discounted to 2010) in Market Prices
2014							£0	£0	£0	£0	£0	£0	0.9289	£0	0.871	£0	1.19	£0
2015	3%		51%				£72,587	£0	£62,998	£0	£0	£135,584	0.9289	£125,947	0.842	£106,044	1.19	£126,193
2016	65%		52%				£1,533,334	£0	£64,258	£0	£0	£1,597,592	0.9289	£1,484,041	0.814	£1,207,268	1.19	£1,436,649
2017	3%						£75,519	£0	£0	£0	£0	£75,519	0.9289	£70,152	0.786	£55,138	1.19	£65,615
2018	15%						£344,322	£0	£0	£0	£0	£344,322	0.9289	£319,849	0.759	£242,897	1.19	£289,047
2019	19%						£455,707	£0	£0	£0	£0	£455,707	0.9289	£423,317	0.734	£310,601	1.19	£369,615
2020							£0	£0	£0	£0	£0	£0	0.9289	£0	0.709	£0	1.19	£0
2021							£0	£0	£0	£0	£0	£0	0.9289	£0	0.685	£0	1.19	£0
2022							£0	£0	£0	£0	£0	£0	0.9289	£0	0.662	£0	1.19	£0
2023							£0	£0	£0	£0	£0	£0	0.9289	£0	0.639	£0	1.19	£0
2024							£0	£0	£0	£0	£0	£0	0.9289	£0	0.618	£0	1.19	£0
2025							£0	£0	£0	£0	£0	£0	0.9289	£0	0.597	£0	1.19	£0
2026							£0	£0	£0	£0	£0	£0	0.9289	£0	0.577	£0	1.19	£0
2027							£0	£0	£0	£0	£0	£0	0.9289	£0	0.557	£0	1.19	£0
2028							£0	£0	£0	£0	£0	£0	0.9289	£0	0.538	£0	1.19	£0
2029							£0	£0	£0	£0	£0	£0	0.9289	£0	0.520	£0	1.19	£0
2030							£0	£0	£0	£0	£0	£0	0.9289	£0	0.503	£0	1.19	£0
2031							£0	£0	£0	£0	£0	£0	0.9289	£0	0.486	£0	1.19	£0
2032							£0	£0	£0	£0	£0	£0	0.9289	£0	0.469	£0	1.19	£0
2033							£0	£0	£0	£0	£0	£0	0.9289	£0	0.453	£0	1.19	£0
2034							£0	£0	£0	£0	£0	£0	0.9289	£0	0.438	£0	1.19	£0
2035							£0	£0	£0	£0	£0	£0	0.9289	£0	0.423	£0	1.19	£0
2036							£0	£0	£0	£0	£0	£0	0.9289	£0	0.409	£0	1.19	£0
2037							£0	£0	£0	£0	£0	£0	0.9289	£0	0.395	£0	1.19	£0
2038							£0	£0	£0	£0	£0	£0	0.9289	£0	0.382	£0	1.19	£0
2039							£0	£0	£0	£0	£0	£0	0.9289	£0	0.369	£0	1.19	£0
2040							£0	£0	£0	£0	£0	£0	0.9289	£0	0.356	£0	1.19	£0
2041							£0	£0	£0	£0	£0	£0	0.9289	£0	0.344	£0	1.19	£0
2042							£0	£0	£0	£0	£0	£0	0.9289	£0	0.333	£0	1.19	£0
2043							£0	£0	£0	£0	£0	£0	0.9289	£0	0.321	£0	1.19	£0
2044							£0	£0	£0	£0	£0	£0	0.9289	£0	0.310	£0	1.19	£0
2045							£0	£0	£0	£0	£0	£0	0.9289	£0	0.300	£0	1.19	£0
2046					188%		£0	£0	£0	£0	£2,327,871	£2,327,871	0.9289	£2,162,415	0.290	£626,739	1.19	£745,819
TOTAL	106%	0%	103%	0%	188%		£2,481,469	£0	£127,255	£0	£2,327,871	£4,936,595	N/A	£4,585,720	N/A	£2,548,687	N/A	£3,032,938

N.B. It is assumed that Preparation and Supervision costs are included within the above costs
N.B. Optimism Bias only applied to Construction costs, not Land

Applying the methodology below produces the discounted scheme cost (PVC):-
a) Assume the Construction costs are spread evenly over the construction period (assumed to be 2 years)
b) Assume land is bought in the first year of construction
c) All costs are in undiscounted Q1 prices, so need to be converted to undiscounted 2010 prices using the industry-standard method of RPIs
d) All costs discounted to 2010
e) All costs need to be converted to Market Prices

Estimation of Benefit to Cost Ratio (BCR) with MEC

Time Saving benefits (discounted)	£1,042,830
MEC Discounted (2016 to 2010 Prices)	£5,798
Mortality Benefits	£7,993,253
Absentee Benefits	£64,413

Total Benefits with MEC	£9,106,294
Total costs (discounted)	£3,032,938
BCR with Marginal External Costs	3.00247

Estimation of Benefits By User Class Over Appraisal Period

Year	gle Year Benefore opening	after design y	Benefits profile		Total Benefits (2010)	VoT Growth	VoT Adj.	Discount Factor	Total Benefits (2010 prices, discounted
2010	0	0	26,341	0	£0	1.00	£0	1.000	£0
2011	0	0	26,341	0	£0	1.01	£0	0.966	£0
2012	0	0	26,341	0	£0	1.01	£0	0.934	£0
2013	0	0	26,341	0	£0	1.02	£0	0.902	£0
2014	0	0	26,341	0	£0	1.04	£0	0.871	£0
2015	0	0	26,341	0	£0	1.06	£0	0.842	£0
2016	26,341	26,341	26,341	26,341	£26,341	1.08	£28,392	0.814	£23,097
2017	0	26,341	26,341	26,341	£26,341	1.10	£28,956	0.786	£22,759
2018	0	26,341	26,341	26,341	£26,341	1.12	£29,507	0.759	£22,408
2019	0	26,341	26,341	26,341	£26,341	1.14	£30,071	0.734	£22,064
2020	0	26,341	26,341	26,341	£26,341	1.16	£30,641	0.709	£21,722
2021	0	26,341	26,341	26,341	£26,341	1.19	£31,218	0.685	£21,383
2022	0	26,341	26,341	26,341	£26,341	1.21	£31,803	0.662	£21,047
2023	0	26,341	26,341	26,341	£26,341	1.23	£32,403	0.639	£20,718
2024	0	26,341	26,341	26,341	£26,341	1.25	£33,019	0.618	£20,399
2025	0	26,341	26,341	26,341	£26,341	1.28	£33,653	0.597	£20,087
2026	0	26,341	26,341	26,341	£26,341	1.30	£34,304	0.577	£19,783
2027	0	26,341	26,341	26,341	£26,341	1.33	£34,974	0.557	£19,488
2028	0	26,341	26,341	26,341	£26,341	1.35	£35,663	0.538	£19,200
2029	0	26,341	26,341	26,341	£26,341	1.38	£36,372	0.520	£18,919
2030	0	26,341	26,341	26,341	£26,341	1.41	£37,102	0.503	£18,646
2031	26,341	26,341	26,341	26,341	£26,341	1.44	£37,852	0.486	£18,380
2032	0	26,341	26,341	26,341	£26,341	1.47	£38,622	0.469	£18,120
2033	0	26,341	26,341	26,341	£26,341	1.50	£39,414	0.453	£17,866
2034	0	26,341	26,341	26,341	£26,341	1.53	£40,228	0.438	£17,618
2035	0	26,341	26,341	26,341	£26,341	1.56	£41,062	0.423	£17,375
2036	0	26,341	26,341	26,341	£26,341	1.59	£41,917	0.409	£17,137
2037	0	26,341	26,341	26,341	£26,341	1.62	£42,794	0.395	£16,904
2038	0	26,341	26,341	26,341	£26,341	1.66	£43,694	0.382	£16,676
2039	0	26,341	26,341	26,341	£26,341	1.69	£44,613	0.369	£16,451
2040	0	26,341	26,341	26,341	£26,341	1.73	£45,552	0.356	£16,229
2041	0	26,341	26,341	26,341	£26,341	1.77	£46,510	0.344	£16,010
2042	0	26,341	26,341	26,341	£26,341	1.80	£47,497	0.333	£15,797
2043	0	26,341	26,341	26,341	£26,341	1.84	£48,504	0.321	£15,587
2044	0	26,341	26,341	26,341	£26,341	1.88	£49,534	0.310	£15,379
2045	0	26,341	26,341	26,341	£26,341	1.92	£50,585	0.355	£17,977
2046	0	26,341	26,341	26,341	£26,341	1.96	£51,658	0.345	£17,824
2047	0	26,341	26,341	26,341	£26,341	2.00	£52,769	0.335	£17,677
2048	0	26,341	26,341	26,341	£26,341	2.05	£53,904	0.325	£17,531
2049	0	26,341	26,341	26,341	£26,341	2.09	£55,063	0.316	£17,386
2050	0	26,341	26,341	26,341	£26,341	2.14	£56,247	0.307	£17,243
2051	0	26,341	26,341	26,341	£26,341	2.18	£57,456	0.298	£17,101
2052	0	26,341	26,341	26,341	£26,341	2.23	£58,712	0.289	£16,966
2053	0	26,341	26,341	26,341	£26,341	2.28	£59,996	0.281	£16,831
2054	0	26,341	26,341	26,341	£26,341	2.33	£61,308	0.272	£16,698
2055	0	26,341	26,341	26,341	£26,341	2.38	£62,648	0.264	£16,567
2056	0	26,341	26,341	26,341	£26,341	2.43	£64,017	0.257	£16,436
2057	0	26,341	26,341	26,341	£26,341	2.48	£65,434	0.249	£16,310
2058	0	26,341	26,341	26,341	£26,341	2.54	£66,881	0.242	£16,185
2059	0	26,341	26,341	26,341	£26,341	2.60	£68,361	0.235	£16,061
2060	0	26,341	26,341	26,341	£26,341	2.65	£69,873	0.228	£15,939
2061	0	26,341	26,341	26,341	£26,341	2.71	£71,419	0.221	£15,817
2062	0	26,341	26,341	26,341	£26,341	2.77	£73,003	0.215	£15,697
2063	0	26,341	26,341	26,341	£26,341	2.83	£74,620	0.209	£15,577
2064	0	26,341	26,341	26,341	£26,341	2.90	£76,272	0.203	£15,458
2065	0	26,341	26,341	26,341	£26,341	2.96	£77,960	0.197	£15,340
2066	0	26,341	26,341	26,341	£26,341	3.03	£79,687	0.191	£15,223
2067	0	26,341	26,341	26,341	£26,341	3.09	£81,437	0.185	£15,104
2068	0	26,341	26,341	26,341	£26,341	3.16	£83,225	0.180	£14,986
2069	0	26,341	26,341	26,341	£26,341	3.23	£85,053	0.175	£14,869
2070	0	26,341	26,341	26,341	£26,341	3.30	£86,921	0.170	£14,753
2071	0	26,341	26,341	26,341	£26,341	3.37	£88,830	0.165	£14,638
2072	0	26,341	26,341	26,341	£26,341	3.45	£90,761	0.160	£14,521
2073	0	26,341	26,341	26,341	£26,341	3.52	£92,735	0.155	£14,405
2074	0	26,341	26,341	26,341	£26,341	3.60	£94,752	0.151	£14,289
2075	0	26,341	26,341	26,341	£26,341	3.68	£96,812	0.146	£14,175
2076	0	26,341	26,341	26,341	£0	3.76	£0	0.142	£0
2077	0	26,341	26,341	26,341	£0	3.84	£0	0.138	£0
2078	0	26,341	26,341	26,341	£0	3.92	£0	0.134	£0
2079	0	26,341	26,341	26,341	£0	4.00	£0	0.130	£0
2080	0	26,341	26,341	26,341	£0	4.09	£0	0.126	£0
2081	0	26,341	26,341	26,341	£0	4.18	£0	0.123	£0
2082	0	26,341	26,341	26,341	£0	4.27	£0	0.119	£0
2083	0	26,341	26,341	26,341	£0	4.36	£0	0.116	£0
2084	0	26,341	26,341	26,341	£0	4.46	£0	0.112	£0
2085	0	26,341	26,341	26,341	£0	4.55	£0	0.109	£0
2086	0	26,341	26,341	26,341	£0	4.65	£0	0.106	£0
2087	0	26,341	26,341	26,341	£0	4.75	£0	0.103	£0
2088	0	26,341	26,341	26,341	£0	4.86	£0	0.100	£0
2089	0	26,341	26,341	26,341	£0	4.96	£0	0.097	£0
2090	0	26,341	26,341	26,341	£0	5.07	£0	0.094	£0
2091	0	26,341	26,341	26,341	£0	5.18	£0	0.091	£0
2092	0	26,341	26,341	26,341	£0	5.30	£0	0.089	£0
2093	0	26,341	26,341	26,341	£0	5.41	£0	0.086	£0
2094	0	26,341	26,341	26,341	£0	5.53	£0	0.083	£0
2095	0	26,341	26,341	26,341	£0	5.65	£0	0.081	£0
2096	0	26,341	26,341	26,341	£0	5.77	£0	0.079	£0
2097	0	26,341	26,341	26,341	£0	5.90	£0	0.076	£0
2098	0	26,341	26,341	26,341	£0	6.02	£0	0.074	£0
2099	0	26,341	26,341	26,341	£0	6.15	£0	0.072	£0
2100	0	26,341	26,341	26,341	£0	6.29	£0	0.070	£0
		TOTAL			£1,580,477	N/A	£3,304,267	N/A	£1,042,830

Discount factor = 1/(1+Discount Rate)^n where n = year minus 2010. Discount rates are specified in the parameters above.

Marginal External Costs over appraisal period

Year	Discount Factor	late veh KM s	fore opening	after design y	3enefits profile	Congestion	Discounted	Infrast.	Discounted	Accident	Discounted	Local Air Quality	Discounted	Noise	Discounted	Green Gases	Discounted	Indirect Taxation	Discounted
2014	0.000	0	0	807	0	£0	£0	£0	£0	£0	£0	£0	£0	£0	£0	£0	£0	£0	£0
2015	0.000	0	0	807	0	£0	£0	£0	£0	£0	£0	£0	£0	£0	£0	£0	£0	£0	£0
2016	0.814	807	807	807	807	£105	£85	£1	£1	£14	£11	£1	£1	£1	£1	£6	£5	-£40	-£32
2017	0.786	0	807	807	807	£111	£87	£1	£1	£14	£11	£0	£0	£1	£1	£6	£5	-£39	-£30
2018	0.759	0	807	807	807	£116	£88	£1	£1	£15	£11	£0	£0	£1	£1	£6	£5	-£38	-£29
2019	0.734	0	807	807	807	£122	£89	£1	£1	£15	£11	£0	£0	£1	£1	£6	£4	-£37	-£27
2020	0.709	0	807	807	807	£128	£90	£1	£1	£15	£11	£0	£0	£1	£1	£6	£4	-£36	-£26
2021	0.685	0	807	807	807	£135	£93	£1	£1	£15	£11	£0	£0	£1	£1	£6	£4	-£35	-£24
2022	0.662	0	807	807	807	£143	£94	£1	£1	£16	£10	£0	£0	£1	£1	£6	£4	-£34	-£23
2023	0.639	0	807	807	807	£150	£96	£1	£1	£16	£10	£0	£0	£1	£1	£6	£4	-£33	-£21
2024	0.618	0	807	807	807	£158	£98	£1	£0	£16	£10	£0	£0	£1	£0	£6	£3	-£32	-£20
2025	0.597	0	807	807	807	£165	£99	£1	£0	£16	£10	£0	£0	£1	£0	£6	£3	-£31	-£19
2026	0.577	0	807	807	807	£173	£100	£1	£0	£16	£9	£0	£0	£1	£1	£6	£3	-£31	-£18
2027	0.557	0	807	807	807	£180	£100	£1	£0	£17	£9	£0	£0	£1	£1	£6	£3	-£31	-£17
2028	0.538	0	807	807	807	£187	£101	£1	£0	£17	£9	£0	£0	£1	£1	£6	£3	-£30	-£16
2029	0.520	0	807	807	807	£195	£101	£1	£0	£17	£9	£0	£0	£1	£1	£6	£3	-£30	-£15
2030	0.503	0	807	807	807	£202	£101	£1	£0	£18	£9	£0	£0	£2	£1	£6	£3	-£29	-£15
2031	0.486	807	807	807	807	£212	£103	£1	£0	£18	£9	£0	£0	£2	£1	£6	£3	-£29	-£14
2032	0.469	0	807	807	807	£222	£104	£1	£1	£19	£9	£0	£0	£2	£1	£7	£3	-£29	-£13
2033	0.453	0	807	807	807	£232	£105	£1	£1	£19	£9	£0	£0	£2	£1	£7	£3	-£29	-£13
2034	0.438	0	807	807	807	£242	£106	£1	£1	£20	£9	£0	£0	£2	£1	£8	£3	-£28	-£12
2035	0.423	0	807	807	807	£252	£107	£2	£1	£20	£9	£0	£0	£2	£1	£8	£3	-£28	-£12
2036	0.409	0	807	807	807	£257	£105	£2	£1	£21	£8	£0	£0	£2	£1	£8	£3	-£29	-£12
2037	0.395	0	807	807	807	£262	£103	£2	£1	£21	£8	£0	£0	£2	£1	£8	£3	-£29	-£12
2038	0.382	0	807	807	807	£267	£102	£2	£1	£21	£8	£0	£0	£2	£1	£9	£3	-£30	-£11
2039	0.369	0	807	807	807	£273	£101	£2	£1	£22	£8	£0	£0	£2	£1	£9	£3	-£31	-£11
2040	0.356	0	807	807	807	£278	£99	£2	£1	£22	£8	£0	£0	£2	£1	£9	£3	-£31	-£11
2041	0.344	0	807	807	807	£284	£98	£2	£1	£23	£8	£0	£0	£2	£1	£9	£3	-£32	-£11
2042	0.333	0	807	807	807	£289	£96	£2	£1	£23	£8	£0	£0	£2	£1	£9	£3	-£32	-£11
2043	0.321	0	807	807	807	£295	£95	£2	£1	£24	£8	£0	£0	£2	£1	£9	£3	-£33	-£11
2044	0.310	0	807	807	807	£301	£93	£2	£1	£24	£7	£0	£0	£2	£1	£10	£3	-£34	-£10
2045	0.355	0	807	807	807	£307	£109	£2	£1	£25	£9	£0	£0	£2	£1	£10	£3	-£34	-£12
2046	0.345	0	807	807	807	£313	£108	£2	£1	£25	£9	£0	£0	£2	£1	£10	£3	-£35	-£12
2047	0.335	0	807	807	807	£319	£107	£2	£1	£26	£9	£0	£0	£2	£1	£10	£3	-£36	-£12
2048	0.325	0	807	807	807	£326	£106	£2	£1	£26	£8	£0	£0	£2	£1	£10	£3	-£37	-£12
2049	0.316	0	807	807	807	£332	£105	£2	£1	£27	£8	£0	£0	£2	£1	£11	£3	-£37	-£12
2050	0.307	0	807	807	807	£339	£104	£2	£1	£27	£8	£0	£0	£2	£1	£11	£3	-£38	-£12
2051	0.298	0	807	807	807	£346	£103	£2	£1	£28	£8	£0	£0	£2	£1	£11	£3	-£39	-£12
2052	0.289	0	807	807	807	£353	£102	£2	£1	£28	£8	£0	£0	£2	£1	£11	£3	-£40	-£11
2053	0.281	0	807	807	807	£360	£101	£2	£1	£29	£8	£0	£0	£2	£1	£12	£3	-£40	-£11
2054	0.272	0	807	807	807	£367	£100	£2	£1	£29	£8	£0	£0	£2	£1	£12	£3	-£41	-£11
2055	0.264	0	807	807	807	£374	£99	£2	£1	£30	£8	£0	£0	£2	£1	£12	£3	-£42	-£11
2056	0.257	0	807	807	807	£382	£98	£2	£1	£31	£8	£0	£0	£2	£1	£12	£3	-£43	-£11
2057	0.249	0	807	807	807	£389	£97	£2	£1	£31	£8	£0	£0	£2	£1	£12	£3	-£44	-£11
2058	0.242	0	807	807	807	£397	£96	£3	£1	£32	£8	£0	£0	£3	£1	£13	£3	-£45	-£11
2059	0.235	0	807	807	807	£405	£95	£3	£1	£32	£8	£0	£0	£3	£1	£13	£3	-£45	-£11
2060	0.228	0	807	807	807	£413	£94	£3	£1	£33	£8	£0	£0	£3	£1	£13	£3	-£46	-£11
2061	0.221	0	807	807	807	£421	£93	£3	£1	£34	£7	£0	£0	£3	£1	£14	£3	-£47	-£10
2062	0.215	0	807	807	807	£430	£92	£3	£1	£34	£7	£0	£0	£3	£1	£14	£3	-£48	-£10
2063	0.209	0	807	807	807	£438	£92	£3	£1	£35	£7	£0	£0	£3	£1	£14	£3	-£49	-£10
2064	0.203	0	807	807	807	£447	£91	£3	£1	£36	£7	£0	£0	£3	£1	£14	£3	-£50	-£10
2065	0.197	0	807	807	807	£456	£90	£3	£1	£37	£7	£0	£0	£3	£1	£15	£3	-£51	-£10
2066	0.191	0	807	807	807	£465	£89	£3	£1	£37	£7	£0	£0	£3	£1	£15	£3	-£52	-£10
2067	0.185	0	807	807	807	£475	£88	£3	£1	£38	£7	£0	£0	£3	£1	£15	£3	-£53	-£10
2068	0.180	0	807	807	807	£484	£87	£3	£1	£39	£7	£0	£0	£3	£1	£16	£3	-£54	-£10
2069	0.175	0	807	807	807	£494	£86	£3	£1	£40	£7	£0	£0	£3	£1	£16	£3	-£55	-£10
2070	0.170	0	807	807	807	£504	£85	£3	£1	£40	£7	£0	£0	£3	£1	£16	£3	-£56	-£10
2071	0.165	0	807	807	807	£514	£85	£3	£1	£41	£7	£0	£0	£3	£1	£16	£3	-£58	-£9
2072	0.160	0	807	807	807	£524	£84	£3	£1	£42	£7	£0	£0	£3	£1	£17	£3	-£59	-£9
2073	0.155	0	807	807	807	£534	£83	£3	£1	£43	£7	£0	£0	£3	£1	£17	£3	-£60	-£9
2074	0.151	0	807	807	807	£545	£82	£3	£1	£44	£7	£0	£0	£3	£1	£17	£3	-£61	-£9
2075	0.146	0	807	807	807	£556	£81	£4	£1	£45	£7	£0	£0	£4	£1	£18	£3	-£62	-£9
2076	0.142	0	807	807	807	£567	£81	£4	£1	£45	£6	£0	£0	£4	£1	£18	£3	-£64	-£9
2077	0.000	0	807	807	807	£0	£0	£0	£0	£0	£0	£0	£0	£0	£0	£0	£0	£0	£0
2078	0.000	0	807	807	807	£0	£0	£0	£0	£0	£0	£0	£0	£0	£0	£0	£0	£0	£0
2079	0.000	0	807	807	807	£0	£0	£0	£0	£0	£0	£0	£0	£0	£0	£0	£0	£0	£0
2080	0.000	0	807	807	807	£0	£0	£0	£0	£0	£0	£0	£0	£0	£0	£0	£0	£0	£0
2081	0.000	0	807	807	807	£0	£0	£0	£0	£0	£0	£0	£0	£0	£0	£0	£0	£0	£0
2082	0.000	0	807	807	807	£0	£0	£0	£0	£0	£0	£0	£0	£0	£0	£0	£0	£0	£0
2083	0.000	0	807	807	807	£0	£0	£0	£0	£0	£0	£0	£0	£0	£0	£0	£0	£0	£0
2084	0.000	0	807	807	807	£0	£0	£0	£0	£0	£0	£0	£0	£0	£0	£0	£0	£0	£0
2085	0.000	0	807	807	807	£0	£0	£0	£0	£0	£0	£0	£0	£0	£0	£0	£0	£0	£0
2086	0.000	0	807	807	807	£0	£0	£0	£0	£0	£0	£0	£0	£0	£0	£0	£0	£0	£0
2087	0.000	0	807	807	807	£0	£0	£0	£0	£0	£0	£0	£0	£0	£0	£0	£0	£0	£0
2088	0.000	0	807	807	807	£0	£0	£0	£0	£0	£0	£0	£0	£0	£0	£0	£0	£0	£0
2089	0.000	0	807	807	807	£0	£0	£0	£0	£0	£0	£0	£0	£0	£0	£0	£0	£0	£0
2090	0.000	0	807	807	807	£0	£0	£0	£0	£0	£0	£0	£0	£0	£0	£0	£0	£0	£0
2091	0.000	0	807	807	807	£0	£0	£0	£0	£0	£0	£0	£0	£0	£0	£0	£0	£0	£0
2092	0.000	0	807	807	807	£0	£0	£0	£0	£0	£0	£0	£0	£0	£0	£0	£0	£0	£0
2093	0.000	0	807	807	807	£0	£0	£0	£0	£0	£0	£0	£0	£0	£0	£0	£0	£0	£0
2094	0.000	0	807	807	807	£0	£0	£0	£0	£0	£0	£0	£0	£0	£0	£0	£0	£0	£0
2095	0.000	0	807	807	807	£0	£0	£0	£0	£0	£0	£0	£0	£0	£0	£0	£0	£0	£0
2096	0.000	0	807	807	807	£0	£0	£0	£0	£0	£0	£0	£0	£0	£0	£0	£0	£0	£0
2097	0.000	0	807	807	807	£0	£0	£0	£0	£0	£0	£0	£0	£0	£0	£0	£0	£0	£0
2098	0.000	0	807	807	807	£0	£0	£0	£0	£0	£0	£0	£0	£0	£0	£0	£0	£0	£0
2099	0.000	0	807	807	807	£0	£0	£0	£0	£0	£0	£0	£0	£0	£0	£0	£0	£0	£0
2100	0.000	0	807	807	807	£0	£0	£0	£0	£0	£0	£0	£0	£0	£0	£0	£0	£0	£0
TOTAL						£19,509	£5,852	£122.	£36	£1,623	£509	£2	£1	£126	£38	£637	£197	-£2,454	-£836

Undiscounted	£19,564		Discounted	£5,798

Scheme Comparison: LCC East Lancashire Cycle Network	PVB	£3,767,795
Scheme Discription: Weavers Wheel Improvement	PVC	£1,589,628
Cycle Improvements to provide 6 new 'spoke' and 'spur' cycle routes and improvements to cycle routes around Blackburn.	NPV	£2,178,167
Costs include 44% OB and allance for risk.		
15% growth applied.	BCR	2.370

Parameters & Inputs

Opening Year Total Time Savings (Veh Delay in hrs)

Opening Year time savings	£20,461

Forecast Year Total Time Savings (Veh Delay in hrs)

Forecast Year time savings	£20,461

Opening YearTotal Distance Saving (Veh KM in KM)

Annualised Total Veh KM	834.2

Design Year Total Distance Saving (Veh KM in KM)

Annualised Total Veh KM	834.2

MEC Parameters

Assessment Period (Years)	60
DM MEC Type:	Weighted Average
DS MEC Type:	Weighted Average
DM MEC Congestion Band:	Weighted Average
DS MEC Congestion Band:	Weighted Average
MEC growth post-2035?	2%

- Input Values (yellow)
- Default Values (orange)
- Output Values (green)

Assessment Parameters

Current year	2015
Scheme Opening Year	2016
Scheme Design Year	2031
Include VoT growth over time?	Yes
Include growth in benefits post-design year?	No
Scheme Cost Estimate Year	2014
Scheme Cost Discount Factor	3.5%
Discount Factor (0-30 years)	3.5%
Discount Factor (31-75 years)	3.0%

Estimation of Discounted Scheme Costs

Scheme Costs

	Construction	Land	Preparation	Supervision	Maintenance	TOTAL
	£1,198,241	£0	£90,190	£0	£644,216	£1,288,431

Spend Profile (insert percentage profile)

Year	C%	L%	P%	S%	M%	C	L	P	S	M	Total	Deflation Factor	Total Costs (Undiscounted prices)	Discount Factor	Total Costs (2010 prices, discounted to 2010)	Resource Costs to Market Prices Factor	Total Costs (2010 prices, discounted to 2010) in Market Prices
2014						£0	£0	£0	£0	£0	£0	0.9289	£0	0.871	£0	1.19	£0
2015	6%		102%			£70,485	£0	£91,994	£0	£0	£162,479	0.9289	£150,930	0.842	£127,079	1.19	£151,224
2016	80%					£953,321	£0	£0	£0	£0	£953,321	0.9289	£885,562	0.814	£720,405	1.19	£857,282
2017	6%					£74,799	£0	£0	£0	£0	£74,799	0.9289	£69,483	0.786	£54,613	1.19	£64,989
2018	6%					£76,295	£0	£0	£0	£0	£76,295	0.9289	£70,872	0.759	£53,821	1.19	£64,047
2019	6%					£77,821	£0	£0	£0	£0	£77,821	0.9289	£72,290	0.734	£53,041	1.19	£63,119
2020						£0	£0	£0	£0	£0	£0	0.9289	£0	0.709	£0	1.19	£0
2021						£0	£0	£0	£0	£0	£0	0.9289	£0	0.685	£0	1.19	£0
2022						£0	£0	£0	£0	£0	£0	0.9289	£0	0.662	£0	1.19	£0
2023						£0	£0	£0	£0	£0	£0	0.9289	£0	0.639	£0	1.19	£0
2024						£0	£0	£0	£0	£0	£0	0.9289	£0	0.618	£0	1.19	£0
2025						£0	£0	£0	£0	£0	£0	0.9289	£0	0.597	£0	1.19	£0
2026						£0	£0	£0	£0	£0	£0	0.9289	£0	0.577	£0	1.19	£0
2027						£0	£0	£0	£0	£0	£0	0.9289	£0	0.557	£0	1.19	£0
2028						£0	£0	£0	£0	£0	£0	0.9289	£0	0.538	£0	1.19	£0
2029						£0	£0	£0	£0	£0	£0	0.9289	£0	0.520	£0	1.19	£0
2030						£0	£0	£0	£0	£0	£0	0.9289	£0	0.503	£0	1.19	£0
2031						£0	£0	£0	£0	£0	£0	0.9289	£0	0.486	£0	1.19	£0
2032						£0	£0	£0	£0	£0	£0	0.9289	£0	0.469	£0	1.19	£0
2033						£0	£0	£0	£0	£0	£0	0.9289	£0	0.453	£0	1.19	£0
2034						£0	£0	£0	£0	£0	£0	0.9289	£0	0.438	£0	1.19	£0
2035						£0	£0	£0	£0	£0	£0	0.9289	£0	0.423	£0	1.19	£0
2036						£0	£0	£0	£0	£0	£0	0.9289	£0	0.409	£0	1.19	£0
2037						£0	£0	£0	£0	£0	£0	0.9289	£0	0.395	£0	1.19	£0
2038						£0	£0	£0	£0	£0	£0	0.9289	£0	0.382	£0	1.19	£0
2039						£0	£0	£0	£0	£0	£0	0.9289	£0	0.369	£0	1.19	£0
2040						£0	£0	£0	£0	£0	£0	0.9289	£0	0.356	£0	1.19	£0
2041						£0	£0	£0	£0	£0	£0	0.9289	£0	0.344	£0	1.19	£0
2042						£0	£0	£0	£0	£0	£0	0.9289	£0	0.333	£0	1.19	£0
2043						£0	£0	£0	£0	£0	£0	0.9289	£0	0.321	£0	1.19	£0
2044						£0	£0	£0	£0	£0	£0	0.9289	£0	0.310	£0	1.19	£0
2045						£0	£0	£0	£0	£0	£0	0.9289	£0	0.300	£0	1.19	£0
2046					188%	£0	£0	£0	£0	£1,214,051	£1,214,051	0.9289	£1,127,760	0.290	£326,862	1.19	£388,966
TOTAL	105%	0%	102%	0%	188%	£1,252,720	£0	£91,994	£0	£1,214,051	£2,558,765	N/A	£2,376,897	N/A	£1,335,822	N/A	£1,589,628

N.B. It is assumed that Preparation and Supervision costs are included within the above costs

N.B. Optimism Bias only applied to Construction costs, not Land

Applying the methodology below produces the discounted scheme cost (PVC):-
a) Assume the Construction costs are spread evenly over the construction period (assumed to be 2 years)
b) Assume land is bought in the first year of construction
c) All costs are in undiscounted Q1 prices, so need to be converted to undiscounted 2010 prices using the industry-standard method of RPIs
d) All costs discounted to 2010
e) All costs need to be converted to Market Prices

Estimation of Benefit to Cost Ratio (BCR) with MEC

Time Saving benefits (discounted)	£810,017
MEC Discounted (2016 to 2010 Prices)	£5,993
Mortality Benefits	£2,885,207
Absentee Benefits	£66,578

Total Benefits with MEC	£3,767,795
Total costs (discounted)	£1,589,628
BCR with Marginal External Costs	2.37024

Estimation of Benefits By User Class Over Appraisal Period

Year	gle Year Benefore opening	after design y	Benefits profile		Total Benefits (2010)	VoT Growth	VoT Adj.	Discount Factor	Total Benefits (2010 prices, discounted
2010	0	0	20,461	0	£0	1.00	£0	1.000	£0
2011	0	0	20,461	0	£0	1.01	£0	0.966	£0
2012	0	0	20,461	0	£0	1.01	£0	0.934	£0
2013	0	0	20,461	0	£0	1.02	£0	0.902	£0
2014	0	0	20,461	0	£0	1.04	£0	0.871	£0
2015	0	0	20,461	0	£0	1.06	£0	0.842	£0
2016	20,461	20,461	20,461	20,461	£20,461	1.08	£22,054	0.814	£17,941
2017	0	20,461	20,461	20,461	£20,461	1.10	£22,492	0.786	£17,678
2018	0	20,461	20,461	20,461	£20,461	1.12	£22,919	0.759	£17,405
2019	0	20,461	20,461	20,461	£20,461	1.14	£23,357	0.734	£17,138
2020	0	20,461	20,461	20,461	£20,461	1.16	£23,800	0.709	£16,873
2021	0	20,461	20,461	20,461	£20,461	1.19	£24,249	0.685	£16,609
2022	0	20,461	20,461	20,461	£20,461	1.21	£24,703	0.662	£16,348
2023	0	20,461	20,461	20,461	£20,461	1.23	£25,169	0.639	£16,093
2024	0	20,461	20,461	20,461	£20,461	1.25	£25,648	0.618	£15,845
2025	0	20,461	20,461	20,461	£20,461	1.28	£26,140	0.597	£15,603
2026	0	20,461	20,461	20,461	£20,461	1.30	£26,646	0.577	£15,367
2027	0	20,461	20,461	20,461	£20,461	1.33	£27,166	0.557	£15,137
2028	0	20,461	20,461	20,461	£20,461	1.35	£27,701	0.538	£14,913
2029	0	20,461	20,461	20,461	£20,461	1.38	£28,252	0.520	£14,696
2030	0	20,461	20,461	20,461	£20,461	1.41	£28,819	0.503	£14,483
2031	20,461	20,461	20,461	20,461	£20,461	1.44	£29,401	0.486	£14,276
2032	0	20,461	20,461	20,461	£20,461	1.47	£30,000	0.469	£14,074
2033	0	20,461	20,461	20,461	£20,461	1.50	£30,615	0.453	£13,877
2034	0	20,461	20,461	20,461	£20,461	1.53	£31,247	0.438	£13,685
2035	0	20,461	20,461	20,461	£20,461	1.56	£31,895	0.423	£13,496
2036	0	20,461	20,461	20,461	£20,461	1.59	£32,559	0.409	£13,311
2037	0	20,461	20,461	20,461	£20,461	1.62	£33,240	0.395	£13,130
2038	0	20,461	20,461	20,461	£20,461	1.66	£33,939	0.382	£12,953
2039	0	20,461	20,461	20,461	£20,461	1.69	£34,653	0.369	£12,778
2040	0	20,461	20,461	20,461	£20,461	1.73	£35,382	0.356	£12,606
2041	0	20,461	20,461	20,461	£20,461	1.77	£36,126	0.344	£12,436
2042	0	20,461	20,461	20,461	£20,461	1.80	£36,893	0.333	£12,270
2043	0	20,461	20,461	20,461	£20,461	1.84	£37,676	0.321	£12,107
2044	0	20,461	20,461	20,461	£20,461	1.88	£38,475	0.310	£11,946
2045	0	20,461	20,461	20,461	£20,461	1.92	£39,292	0.355	£13,964
2046	0	20,461	20,461	20,461	£20,461	1.96	£40,125	0.345	£13,845
2047	0	20,461	20,461	20,461	£20,461	2.00	£40,988	0.335	£13,730
2048	0	20,461	20,461	20,461	£20,461	2.05	£41,870	0.325	£13,617
2049	0	20,461	20,461	20,461	£20,461	2.09	£42,770	0.316	£13,505
2050	0	20,461	20,461	20,461	£20,461	2.14	£43,690	0.307	£13,393
2051	0	20,461	20,461	20,461	£20,461	2.18	£44,629	0.298	£13,283
2052	0	20,461	20,461	20,461	£20,461	2.23	£45,605	0.289	£13,178
2053	0	20,461	20,461	20,461	£20,461	2.28	£46,602	0.281	£13,074
2054	0	20,461	20,461	20,461	£20,461	2.33	£47,621	0.272	£12,971
2055	0	20,461	20,461	20,461	£20,461	2.38	£48,662	0.264	£12,868
2056	0	20,461	20,461	20,461	£20,461	2.43	£49,726	0.257	£12,766
2057	0	20,461	20,461	20,461	£20,461	2.48	£50,826	0.249	£12,669
2058	0	20,461	20,461	20,461	£20,461	2.54	£51,950	0.242	£12,572
2059	0	20,461	20,461	20,461	£20,461	2.60	£53,099	0.235	£12,476
2060	0	20,461	20,461	20,461	£20,461	2.65	£54,274	0.228	£12,380
2061	0	20,461	20,461	20,461	£20,461	2.71	£55,475	0.221	£12,286
2062	0	20,461	20,461	20,461	£20,461	2.77	£56,705	0.215	£12,192
2063	0	20,461	20,461	20,461	£20,461	2.83	£57,961	0.209	£12,099
2064	0	20,461	20,461	20,461	£20,461	2.90	£59,244	0.203	£12,007
2065	0	20,461	20,461	20,461	£20,461	2.96	£60,556	0.197	£11,915
2066	0	20,461	20,461	20,461	£20,461	3.03	£61,896	0.191	£11,824
2067	0	20,461	20,461	20,461	£20,461	3.09	£63,256	0.185	£11,732
2068	0	20,461	20,461	20,461	£20,461	3.16	£64,645	0.180	£11,641
2069	0	20,461	20,461	20,461	£20,461	3.23	£66,065	0.175	£11,550
2070	0	20,461	20,461	20,461	£20,461	3.30	£67,516	0.170	£11,460
2071	0	20,461	20,461	20,461	£20,461	3.37	£68,998	0.165	£11,370
2072	0	20,461	20,461	20,461	£20,461	3.45	£70,499	0.160	£11,279
2073	0	20,461	20,461	20,461	£20,461	3.52	£72,032	0.155	£11,189
2074	0	20,461	20,461	20,461	£20,461	3.60	£73,598	0.151	£11,099
2075	0	20,461	20,461	20,461	£20,461	3.68	£75,199	0.146	£11,010
2076	0	20,461	20,461	20,461	£0	3.76	£0	0.142	£0
2077	0	20,461	20,461	20,461	£0	3.84	£0	0.138	£0
2078	0	20,461	20,461	20,461	£0	3.92	£0	0.134	£0
2079	0	20,461	20,461	20,461	£0	4.00	£0	0.130	£0
2080	0	20,461	20,461	20,461	£0	4.09	£0	0.126	£0
2081	0	20,461	20,461	20,461	£0	4.18	£0	0.123	£0
2082	0	20,461	20,461	20,461	£0	4.27	£0	0.119	£0
2083	0	20,461	20,461	20,461	£0	4.36	£0	0.116	£0
2084	0	20,461	20,461	20,461	£0	4.46	£0	0.112	£0
2085	0	20,461	20,461	20,461	£0	4.55	£0	0.109	£0
2086	0	20,461	20,461	20,461	£0	4.65	£0	0.106	£0
2087	0	20,461	20,461	20,461	£0	4.75	£0	0.103	£0
2088	0	20,461	20,461	20,461	£0	4.86	£0	0.100	£0
2089	0	20,461	20,461	20,461	£0	4.96	£0	0.097	£0
2090	0	20,461	20,461	20,461	£0	5.07	£0	0.094	£0
2091	0	20,461	20,461	20,461	£0	5.18	£0	0.091	£0
2092	0	20,461	20,461	20,461	£0	5.30	£0	0.089	£0
2093	0	20,461	20,461	20,461	£0	5.41	£0	0.086	£0
2094	0	20,461	20,461	20,461	£0	5.53	£0	0.083	£0
2095	0	20,461	20,461	20,461	£0	5.65	£0	0.081	£0
2096	0	20,461	20,461	20,461	£0	5.77	£0	0.079	£0
2097	0	20,461	20,461	20,461	£0	5.90	£0	0.076	£0
2098	0	20,461	20,461	20,461	£0	6.02	£0	0.074	£0
2099	0	20,461	20,461	20,461	£0	6.15	£0	0.072	£0
2100	0	20,461	20,461	20,461	£0	6.29	£0	0.070	£0
TOTAL					£1,227,634	N/A	£2,566,586	N/A	£810,017

Discount factor = 1/(1+Discount Rate)^n where n = year minus 2010. Discount rates are specified in the parameters above.

Marginal External Costs over appraisal period

Year	Discount Factor	late veh KM before opening : after design y benefits profil				Congestion	Discounted	Infrast.	Discounted	Accident	Discounted	Local Air Quality	Discounted	Noise	Discounted	Green Gases	Discounted	Indirect Taxation	Discounted
2014	0.000	0	0	834	0	£0	£0	£0	£0	£0	£0	£0	£0	£0	£0	£0	£0	£0	£0
2015	0.000	0	0	834	0	£0	£0	£0	£0	£0	£0	£0	£0	£0	£0	£0	£0	£0	£0
2016	0.814	834	834	834	834	£108	£88	£1	£1	£15	£12	£1	£1	£1	£1	£7	£5	-£41	-£33
2017	0.786	0	834	834	834	£114	£90	£1	£1	£15	£12	£1	£0	£1	£1	£6	£5	-£40	-£31
2018	0.759	0	834	834	834	£120	£91	£1	£1	£15	£12	£0	£0	£1	£1	£6	£5	-£39	-£30
2019	0.734	0	834	834	834	£126	£92	£1	£1	£16	£11	£0	£0	£1	£1	£6	£4	-£38	-£28
2020	0.709	0	834	834	834	£132	£93	£1	£1	£16	£11	£0	£0	£1	£1	£6	£4	-£38	-£27
2021	0.685	0	834	834	834	£140	£96	£1	£1	£16	£11	£0	£0	£1	£1	£6	£4	-£37	-£25
2022	0.662	0	834	834	834	£147	£98	£1	£1	£16	£11	£0	£0	£1	£1	£6	£4	-£36	-£24
2023	0.639	0	834	834	834	£155	£99	£1	£1	£16	£10	£0	£0	£1	£1	£6	£4	-£35	-£22
2024	0.618	0	834	834	834	£163	£101	£1	£1	£17	£10	£0	£0	£1	£1	£6	£4	-£34	-£21
2025	0.597	0	834	834	834	£171	£102	£1	£0	£17	£10	£0	£0	£1	£0	£6	£3	-£33	-£19
2026	0.577	0	834	834	834	£179	£103	£1	£0	£17	£10	£0	£0	£1	£1	£6	£3	-£32	-£18
2027	0.557	0	834	834	834	£186	£104	£1	£0	£17	£10	£0	£0	£1	£1	£6	£3	-£32	-£18
2028	0.538	0	834	834	834	£194	£104	£1	£0	£18	£10	£0	£0	£1	£1	£6	£3	-£31	-£17
2029	0.520	0	834	834	834	£201	£105	£1	£0	£18	£9	£0	£0	£2	£1	£6	£3	-£31	-£16
2030	0.503	0	834	834	834	£209	£105	£1	£0	£18	£9	£0	£0	£2	£1	£6	£3	-£30	-£15
2031	0.486	834	834	834	834	£219	£106	£1	£0	£19	£9	£0	£0	£2	£1	£6	£3	-£30	-£15
2032	0.469	0	834	834	834	£229	£108	£1	£1	£19	£9	£0	£0	£2	£1	£7	£3	-£30	-£14
2033	0.453	0	834	834	834	£240	£109	£1	£1	£20	£9	£0	£0	£2	£1	£7	£3	-£30	-£13
2034	0.438	0	834	834	834	£250	£109	£2	£1	£20	£9	£0	£0	£2	£1	£8	£3	-£29	-£13
2035	0.423	0	834	834	834	£260	£110	£2	£1	£21	£9	£0	£0	£2	£1	£8	£4	-£29	-£12
2036	0.409	0	834	834	834	£265	£109	£2	£1	£21	£9	£0	£0	£2	£1	£9	£3	-£30	-£12
2037	0.395	0	834	834	834	£271	£107	£2	£1	£22	£9	£0	£0	£2	£1	£9	£3	-£30	-£12
2038	0.382	0	834	834	834	£276	£105	£2	£1	£22	£8	£0	£0	£2	£1	£9	£3	-£31	-£12
2039	0.369	0	834	834	834	£282	£104	£2	£1	£23	£8	£0	£0	£2	£1	£9	£3	-£32	-£12
2040	0.356	0	834	834	834	£287	£102	£2	£1	£23	£8	£0	£0	£2	£1	£9	£3	-£32	-£11
2041	0.344	0	834	834	834	£293	£101	£2	£1	£23	£8	£0	£0	£2	£1	£9	£3	-£33	-£11
2042	0.333	0	834	834	834	£299	£99	£2	£1	£24	£8	£0	£0	£2	£1	£10	£3	-£34	-£11
2043	0.321	0	834	834	834	£305	£98	£2	£1	£24	£8	£0	£0	£2	£1	£10	£3	-£34	-£11
2044	0.310	0	834	834	834	£311	£97	£2	£1	£25	£8	£0	£0	£2	£1	£10	£3	-£35	-£11
2045	0.355	0	834	834	834	£317	£113	£2	£1	£25	£9	£0	£0	£2	£1	£10	£4	-£36	-£13
2046	0.345	0	834	834	834	£324	£112	£2	£1	£26	£9	£0	£0	£2	£1	£10	£4	-£36	-£13
2047	0.335	0	834	834	834	£330	£111	£2	£1	£26	£9	£0	£0	£2	£1	£11	£4	-£37	-£12
2048	0.325	0	834	834	834	£337	£110	£2	£1	£27	£9	£0	£0	£2	£1	£11	£4	-£38	-£12
2049	0.316	0	834	834	834	£343	£108	£2	£1	£28	£9	£0	£0	£2	£1	£11	£3	-£39	-£12
2050	0.307	0	834	834	834	£350	£107	£2	£1	£28	£9	£0	£0	£2	£1	£11	£3	-£39	-£12
2051	0.298	0	834	834	834	£357	£106	£2	£1	£29	£9	£0	£0	£2	£1	£11	£3	-£40	-£12
2052	0.289	0	834	834	834	£364	£105	£2	£1	£29	£8	£0	£0	£2	£1	£12	£3	-£41	-£12
2053	0.281	0	834	834	834	£372	£104	£2	£1	£30	£8	£0	£0	£2	£1	£12	£3	-£42	-£12
2054	0.272	0	834	834	834	£379	£103	£2	£1	£30	£8	£0	£0	£2	£1	£12	£3	-£43	-£12
2055	0.264	0	834	834	834	£387	£102	£2	£1	£31	£8	£0	£0	£2	£1	£12	£3	-£43	-£11
2056	0.257	0	834	834	834	£394	£101	£3	£1	£32	£8	£0	£0	£3	£1	£13	£3	-£44	-£11
2057	0.249	0	834	834	834	£402	£100	£3	£1	£32	£8	£0	£0	£3	£1	£13	£3	-£45	-£11
2058	0.242	0	834	834	834	£410	£99	£3	£1	£33	£8	£0	£0	£3	£1	£13	£3	-£46	-£11
2059	0.235	0	834	834	834	£419	£98	£3	£1	£34	£8	£0	£0	£3	£1	£13	£3	-£47	-£11
2060	0.228	0	834	834	834	£427	£97	£3	£1	£34	£8	£0	£0	£3	£1	£14	£3	-£48	-£11
2061	0.221	0	834	834	834	£436	£96	£3	£1	£35	£8	£0	£0	£3	£1	£14	£3	-£49	-£11
2062	0.215	0	834	834	834	£444	£96	£3	£1	£36	£8	£0	£0	£3	£1	£14	£3	-£50	-£11
2063	0.209	0	834	834	834	£453	£95	£3	£1	£36	£8	£0	£0	£3	£1	£15	£3	-£51	-£11
2064	0.203	0	834	834	834	£462	£94	£3	£1	£37	£8	£0	£0	£3	£1	£15	£3	-£52	-£11
2065	0.197	0	834	834	834	£471	£93	£3	£1	£38	£7	£0	£0	£3	£1	£15	£3	-£53	-£10
2066	0.191	0	834	834	834	£481	£92	£3	£1	£39	£7	£0	£0	£3	£1	£15	£3	-£54	-£10
2067	0.185	0	834	834	834	£490	£91	£3	£1	£39	£7	£0	£0	£3	£1	£16	£3	-£55	-£10
2068	0.180	0	834	834	834	£500	£90	£3	£1	£40	£7	£0	£0	£3	£1	£16	£3	-£56	-£10
2069	0.175	0	834	834	834	£510	£89	£3	£1	£41	£7	£0	£0	£3	£1	£16	£3	-£57	-£10
2070	0.170	0	834	834	834	£521	£88	£3	£1	£42	£7	£0	£0	£3	£1	£17	£3	-£58	-£10
2071	0.165	0	834	834	834	£531	£87	£3	£1	£43	£7	£0	£0	£3	£1	£17	£3	-£60	-£10
2072	0.160	0	834	834	834	£542	£87	£3	£1	£43	£7	£0	£0	£3	£1	£17	£3	-£61	-£10
2073	0.155	0	834	834	834	£552	£86	£4	£1	£44	£7	£0	£0	£4	£1	£18	£3	-£62	-£10
2074	0.151	0	834	834	834	£563	£85	£4	£1	£45	£7	£0	£0	£4	£1	£18	£3	-£63	-£10
2075	0.146	0	834	834	834	£575	£84	£4	£1	£46	£7	£0	£0	£4	£1	£18	£3	-£64	-£9
2076	0.142	0	834	834	834	£586	£83	£4	£1	£47	£7	£0	£0	£4	£1	£19	£3	-£66	-£9
2077	0.000	0	834	834	834	£0	£0	£0	£0	£0	£0	£0	£0	£0	£0	£0	£0	£0	£0
2078	0.000	0	834	834	834	£0	£0	£0	£0	£0	£0	£0	£0	£0	£0	£0	£0	£0	£0
2079	0.000	0	834	834	834	£0	£0	£0	£0	£0	£0	£0	£0	£0	£0	£0	£0	£0	£0
2080	0.000	0	834	834	834	£0	£0	£0	£0	£0	£0	£0	£0	£0	£0	£0	£0	£0	£0
2081	0.000	0	834	834	834	£0	£0	£0	£0	£0	£0	£0	£0	£0	£0	£0	£0	£0	£0
2082	0.000	0	834	834	834	£0	£0	£0	£0	£0	£0	£0	£0	£0	£0	£0	£0	£0	£0
2083	0.000	0	834	834	834	£0	£0	£0	£0	£0	£0	£0	£0	£0	£0	£0	£0	£0	£0
2084	0.000	0	834	834	834	£0	£0	£0	£0	£0	£0	£0	£0	£0	£0	£0	£0	£0	£0
2085	0.000	0	834	834	834	£0	£0	£0	£0	£0	£0	£0	£0	£0	£0	£0	£0	£0	£0
2086	0.000	0	834	834	834	£0	£0	£0	£0	£0	£0	£0	£0	£0	£0	£0	£0	£0	£0
2087	0.000	0	834	834	834	£0	£0	£0	£0	£0	£0	£0	£0	£0	£0	£0	£0	£0	£0
2088	0.000	0	834	834	834	£0	£0	£0	£0	£0	£0	£0	£0	£0	£0	£0	£0	£0	£0
2089	0.000	0	834	834	834	£0	£0	£0	£0	£0	£0	£0	£0	£0	£0	£0	£0	£0	£0
2090	0.000	0	834	834	834	£0	£0	£0	£0	£0	£0	£0	£0	£0	£0	£0	£0	£0	£0
2091	0.000	0	834	834	834	£0	£0	£0	£0	£0	£0	£0	£0	£0	£0	£0	£0	£0	£0
2092	0.000	0	834	834	834	£0	£0	£0	£0	£0	£0	£0	£0	£0	£0	£0	£0	£0	£0
2093	0.000	0	834	834	834	£0	£0	£0	£0	£0	£0	£0	£0	£0	£0	£0	£0	£0	£0
2094	0.000	0	834	834	834	£0	£0	£0	£0	£0	£0	£0	£0	£0	£0	£0	£0	£0	£0
2095	0.000	0	834	834	834	£0	£0	£0	£0	£0	£0	£0	£0	£0	£0	£0	£0	£0	£0
2096	0.000	0	834	834	834	£0	£0	£0	£0	£0	£0	£0	£0	£0	£0	£0	£0	£0	£0
2097	0.000	0	834	834	834	£0	£0	£0	£0	£0	£0	£0	£0	£0	£0	£0	£0	£0	£0
2098	0.000	0	834	834	834	£0	£0	£0	£0	£0	£0	£0	£0	£0	£0	£0	£0	£0	£0
2099	0.000	0	834	834	834	£0	£0	£0	£0	£0	£0	£0	£0	£0	£0	£0	£0	£0	£0
2100	0.000	0	834	834	834	£0	£0	£0	£0	£0	£0	£0	£0	£0	£0	£0	£0	£0	£0
TOTAL						£20,164	£6,049	£126.	£37	£1,677	£526	£2	£1	£130	£39	£659	£204	-£2,536	-£864

Undiscounted	£20,222		Discounted	£5,993

Scheme Comparison: LCC East Lancashire Cycle Network	PVB	£5,242,149
Scheme Discription: Weavers Wheel Improvement	PVC	£1,589,628
Cycle Improvements to provide 6 new 'spoke' and 'spur' cycle routes and improvements to cycle routes around Blackburn. Costs include 44% OB and allance for risk. 60% growth applied.	NPV	£3,652,522
	BCR	3.298

Parameters & Inputs

Opening Year Total Time Savings (Veh Delay in hrs)
Opening Year time savings	£28,467

Forecast Year Total Time Savings (Veh Delay in hrs)
Forecast Year time savings	£28,467

Opening YearTotal Distance Saving (Veh KM in KM)
Annualised Total Veh KM	1,160.6

Design Year Total Distance Saving (Veh KM in KM)
Annualised Total Veh KM	1,160.6

MEC Parameters

Assessment Period (Years)	60
DM MEC Type:	Weighted Average
DS MEC Type:	Weighted Average
DM MEC Congestion Band:	Weighted Average
DS MEC Congestion Band:	Weighted Average
MEC growth post-2035?	2%

- Input Values
- Default Values
- Output Values

Assessment Parameters

Current year	2015
Scheme Opening Year	2016
Scheme Design Year	2031
Include VoT growth over time?	Yes
Include growth in benefits post-design year?	No
Scheme Cost Estimate Year	2014
Scheme Cost Discount Factor	3.5%
Discount Factor (0-30 years)	3.5%
Discount Factor (31-75 years)	3.0%

Estimation of Discounted Scheme Costs

Scheme Costs	Construction	Land	Preparation	Supervision	Maintenance	TOTAL
	£1,198,241	£0	£90,190	£0	£644,216	£1,288,431

Spend Profile (insert percentage profile)

Year	Construction	Land	Preparation	Supervision	Maintenance	C	L	P	S	M	Total	Deflation Factor	Total Costs (Undiscounted prices)	Discount Factor	Total Costs (2010 prices, discounted to 2010)	Resource Costs to Market Prices Factor	Total Costs (2010 prices, discounted to 2010) in Market Prices
2014						£0	£0	£0	£0	£0	£0	0.9289	£0	0.871	£0	1.19	£0
2015	6%		102%			£70,485	£0	£91,994	£0	£0	£162,479	0.9289	£150,930	0.842	£127,079	1.19	£151,224
2016	80%					£953,321	£0	£0	£0	£0	£953,321	0.9289	£885,562	0.814	£720,405	1.19	£857,282
2017	6%					£74,799	£0	£0	£0	£0	£74,799	0.9289	£69,483	0.786	£54,613	1.19	£64,989
2018	6%					£76,295	£0	£0	£0	£0	£76,295	0.9289	£70,872	0.759	£53,821	1.19	£64,047
2019	6%					£77,821	£0	£0	£0	£0	£77,821	0.9289	£72,290	0.734	£53,041	1.19	£63,119
2020						£0	£0	£0	£0	£0	£0	0.9289	£0	0.709	£0	1.19	£0
2021						£0	£0	£0	£0	£0	£0	0.9289	£0	0.685	£0	1.19	£0
2022						£0	£0	£0	£0	£0	£0	0.9289	£0	0.662	£0	1.19	£0
2023						£0	£0	£0	£0	£0	£0	0.9289	£0	0.639	£0	1.19	£0
2024						£0	£0	£0	£0	£0	£0	0.9289	£0	0.618	£0	1.19	£0
2025						£0	£0	£0	£0	£0	£0	0.9289	£0	0.597	£0	1.19	£0
2026						£0	£0	£0	£0	£0	£0	0.9289	£0	0.577	£0	1.19	£0
2027						£0	£0	£0	£0	£0	£0	0.9289	£0	0.557	£0	1.19	£0
2028						£0	£0	£0	£0	£0	£0	0.9289	£0	0.538	£0	1.19	£0
2029						£0	£0	£0	£0	£0	£0	0.9289	£0	0.520	£0	1.19	£0
2030						£0	£0	£0	£0	£0	£0	0.9289	£0	0.503	£0	1.19	£0
2031						£0	£0	£0	£0	£0	£0	0.9289	£0	0.486	£0	1.19	£0
2032						£0	£0	£0	£0	£0	£0	0.9289	£0	0.469	£0	1.19	£0
2033						£0	£0	£0	£0	£0	£0	0.9289	£0	0.453	£0	1.19	£0
2034						£0	£0	£0	£0	£0	£0	0.9289	£0	0.438	£0	1.19	£0
2035						£0	£0	£0	£0	£0	£0	0.9289	£0	0.423	£0	1.19	£0
2036						£0	£0	£0	£0	£0	£0	0.9289	£0	0.409	£0	1.19	£0
2037						£0	£0	£0	£0	£0	£0	0.9289	£0	0.395	£0	1.19	£0
2038						£0	£0	£0	£0	£0	£0	0.9289	£0	0.382	£0	1.19	£0
2039						£0	£0	£0	£0	£0	£0	0.9289	£0	0.369	£0	1.19	£0
2040						£0	£0	£0	£0	£0	£0	0.9289	£0	0.356	£0	1.19	£0
2041						£0	£0	£0	£0	£0	£0	0.9289	£0	0.344	£0	1.19	£0
2042						£0	£0	£0	£0	£0	£0	0.9289	£0	0.333	£0	1.19	£0
2043						£0	£0	£0	£0	£0	£0	0.9289	£0	0.321	£0	1.19	£0
2044						£0	£0	£0	£0	£0	£0	0.9289	£0	0.310	£0	1.19	£0
2045						£0	£0	£0	£0	£0	£0	0.9289	£0	0.300	£0	1.19	£0
2046					188%	£0	£0	£0	£0	£1,214,051	£1,214,051	0.9289	£1,127,760	0.290	£326,862	1.19	£388,966
TOTAL	105%	0%	102%	0%	188%	£1,252,720	£0	£91,994	£0	£1,214,051	£2,558,765	N/A	£2,376,897	N/A	£1,335,822	N/A	£1,589,628

N.B. It is assumed that Preparation and Supervision costs are included within the above costs
N.B. Optimism Bias only applied to Construction costs, not Land

Applying the methodology below produces the discounted scheme cost (PVC):-
a) Assume the Construction costs are spread evenly over the construction period (assumed to be 2 years)
b) Assume land is bought in the first year of construction
c) All costs are in undiscounted Q1 prices, so need to be converted to undiscounted 2010 prices using the industry-standard method of RPIs
d) All costs discounted to 2010
e) All costs need to be converted to Market Prices

Estimation of Benefit to Cost Ratio (BCR) with MEC

Time Saving benefits (discounted)	£1,126,981
MEC Discounted (2016 to 2010 Prices)	£8,338
Mortality Benefits	£4,014,201
Absentee Benefits	£92,630

Total Benefits with MEC	£5,242,149
Total costs (discounted)	£1,589,628
BCR with Marginal External Costs	3.29772

Estimation of Benefits By User Class Over Appraisal Period

Year	Single Year Before opening	after design y	Benefits profile		Total Benefits (2010)	VoT Growth	VoT Adj.	Discount Factor	Total Benefits (2010 prices, discounted)
2010	0	0	28,467	0	£0	1.00	£0	1.000	£0
2011	0	0	28,467	0	£0	1.01	£0	0.966	£0
2012	0	0	28,467	0	£0	1.01	£0	0.934	£0
2013	0	0	28,467	0	£0	1.02	£0	0.902	£0
2014	0	0	28,467	0	£0	1.04	£0	0.871	£0
2015	0	0	28,467	0	£0	1.06	£0	0.842	£0
2016	28,467	28,467	28,467	28,467	£28,467	1.08	£30,683	0.814	£24,961
2017	0	28,467	28,467	28,467	£28,467	1.10	£31,293	0.786	£24,596
2018	0	28,467	28,467	28,467	£28,467	1.12	£31,888	0.759	£24,216
2019	0	28,467	28,467	28,467	£28,467	1.14	£32,497	0.734	£23,844
2020	0	28,467	28,467	28,467	£28,467	1.16	£33,114	0.709	£23,475
2021	0	28,467	28,467	28,467	£28,467	1.19	£33,738	0.685	£23,108
2022	0	28,467	28,467	28,467	£28,467	1.21	£34,369	0.662	£22,745
2023	0	28,467	28,467	28,467	£28,467	1.23	£35,018	0.639	£22,390
2024	0	28,467	28,467	28,467	£28,467	1.25	£35,684	0.618	£22,045
2025	0	28,467	28,467	28,467	£28,467	1.28	£36,368	0.597	£21,708
2026	0	28,467	28,467	28,467	£28,467	1.30	£37,072	0.577	£21,380
2027	0	28,467	28,467	28,467	£28,467	1.33	£37,796	0.557	£21,060
2028	0	28,467	28,467	28,467	£28,467	1.35	£38,541	0.538	£20,749
2029	0	28,467	28,467	28,467	£28,467	1.38	£39,307	0.520	£20,446
2030	0	28,467	28,467	28,467	£28,467	1.41	£40,096	0.503	£20,151
2031	28,467	28,467	28,467	28,467	£28,467	1.44	£40,906	0.486	£19,863
2032	0	28,467	28,467	28,467	£28,467	1.47	£41,739	0.469	£19,582
2033	0	28,467	28,467	28,467	£28,467	1.50	£42,595	0.453	£19,308
2034	0	28,467	28,467	28,467	£28,467	1.53	£43,474	0.438	£19,040
2035	0	28,467	28,467	28,467	£28,467	1.56	£44,375	0.423	£18,777
2036	0	28,467	28,467	28,467	£28,467	1.59	£45,300	0.409	£18,520
2037	0	28,467	28,467	28,467	£28,467	1.62	£46,247	0.395	£18,268
2038	0	28,467	28,467	28,467	£28,467	1.66	£47,220	0.382	£18,022
2039	0	28,467	28,467	28,467	£28,467	1.69	£48,213	0.369	£17,778
2040	0	28,467	28,467	28,467	£28,467	1.73	£49,227	0.356	£17,539
2041	0	28,467	28,467	28,467	£28,467	1.77	£50,263	0.344	£17,302
2042	0	28,467	28,467	28,467	£28,467	1.80	£51,329	0.333	£17,072
2043	0	28,467	28,467	28,467	£28,467	1.84	£52,418	0.321	£16,844
2044	0	28,467	28,467	28,467	£28,467	1.88	£53,531	0.310	£16,620
2045	0	28,467	28,467	28,467	£28,467	1.92	£54,666	0.355	£19,428
2046	0	28,467	28,467	28,467	£28,467	1.96	£55,826	0.345	£19,262
2047	0	28,467	28,467	28,467	£28,467	2.00	£57,027	0.335	£19,103
2048	0	28,467	28,467	28,467	£28,467	2.05	£58,253	0.325	£18,945
2049	0	28,467	28,467	28,467	£28,467	2.09	£59,506	0.316	£18,789
2050	0	28,467	28,467	28,467	£28,467	2.14	£60,786	0.307	£18,634
2051	0	28,467	28,467	28,467	£28,467	2.18	£62,093	0.298	£18,481
2052	0	28,467	28,467	28,467	£28,467	2.23	£63,450	0.289	£18,335
2053	0	28,467	28,467	28,467	£28,467	2.28	£64,837	0.281	£18,190
2054	0	28,467	28,467	28,467	£28,467	2.33	£66,255	0.272	£18,046
2055	0	28,467	28,467	28,467	£28,467	2.38	£67,703	0.264	£17,903
2056	0	28,467	28,467	28,467	£28,467	2.43	£69,183	0.257	£17,762
2057	0	28,467	28,467	28,467	£28,467	2.48	£70,714	0.249	£17,626
2058	0	28,467	28,467	28,467	£28,467	2.54	£72,278	0.242	£17,491
2059	0	28,467	28,467	28,467	£28,467	2.60	£73,877	0.235	£17,357
2060	0	28,467	28,467	28,467	£28,467	2.65	£75,512	0.228	£17,225
2061	0	28,467	28,467	28,467	£28,467	2.71	£77,182	0.221	£17,093
2062	0	28,467	28,467	28,467	£28,467	2.77	£78,894	0.215	£16,963
2063	0	28,467	28,467	28,467	£28,467	2.83	£80,641	0.209	£16,834
2064	0	28,467	28,467	28,467	£28,467	2.90	£82,426	0.203	£16,705
2065	0	28,467	28,467	28,467	£28,467	2.96	£84,251	0.197	£16,578
2066	0	28,467	28,467	28,467	£28,467	3.03	£86,117	0.191	£16,451
2067	0	28,467	28,467	28,467	£28,467	3.09	£88,008	0.185	£16,323
2068	0	28,467	28,467	28,467	£28,467	3.16	£89,941	0.180	£16,196
2069	0	28,467	28,467	28,467	£28,467	3.23	£91,916	0.175	£16,069
2070	0	28,467	28,467	28,467	£28,467	3.30	£93,935	0.170	£15,944
2071	0	28,467	28,467	28,467	£28,467	3.37	£95,998	0.165	£15,819
2072	0	28,467	28,467	28,467	£28,467	3.45	£98,085	0.160	£15,693
2073	0	28,467	28,467	28,467	£28,467	3.52	£100,218	0.155	£15,567
2074	0	28,467	28,467	28,467	£28,467	3.60	£102,398	0.151	£15,442
2075	0	28,467	28,467	28,467	£28,467	3.68	£104,624	0.146	£15,318
2076	0	28,467	28,467	28,467	£0	3.76	£0	0.142	£0
2077	0	28,467	28,467	28,467	£0	3.84	£0	0.138	£0
2078	0	28,467	28,467	28,467	£0	3.92	£0	0.134	£0
2079	0	28,467	28,467	28,467	£0	4.00	£0	0.130	£0
2080	0	28,467	28,467	28,467	£0	4.09	£0	0.126	£0
2081	0	28,467	28,467	28,467	£0	4.18	£0	0.123	£0
2082	0	28,467	28,467	28,467	£0	4.27	£0	0.119	£0
2083	0	28,467	28,467	28,467	£0	4.36	£0	0.116	£0
2084	0	28,467	28,467	28,467	£0	4.46	£0	0.112	£0
2085	0	28,467	28,467	28,467	£0	4.55	£0	0.109	£0
2086	0	28,467	28,467	28,467	£0	4.65	£0	0.106	£0
2087	0	28,467	28,467	28,467	£0	4.75	£0	0.103	£0
2088	0	28,467	28,467	28,467	£0	4.86	£0	0.100	£0
2089	0	28,467	28,467	28,467	£0	4.96	£0	0.097	£0
2090	0	28,467	28,467	28,467	£0	5.07	£0	0.094	£0
2091	0	28,467	28,467	28,467	£0	5.18	£0	0.091	£0
2092	0	28,467	28,467	28,467	£0	5.30	£0	0.089	£0
2093	0	28,467	28,467	28,467	£0	5.41	£0	0.086	£0
2094	0	28,467	28,467	28,467	£0	5.53	£0	0.083	£0
2095	0	28,467	28,467	28,467	£0	5.65	£0	0.081	£0
2096	0	28,467	28,467	28,467	£0	5.77	£0	0.079	£0
2097	0	28,467	28,467	28,467	£0	5.90	£0	0.076	£0
2098	0	28,467	28,467	28,467	£0	6.02	£0	0.074	£0
2099	0	28,467	28,467	28,467	£0	6.15	£0	0.072	£0
2100	0	28,467	28,467	28,467	£0	6.29	£0	0.070	£0
TOTAL					£1,708,013	N/A	£3,570,903	N/A	£1,126,981

Discount factor = 1/(1+Discount Rate)^n where n = year minus 2010. Discount rates are specified in the parameters above.

Marginal External Costs over appraisal period

Year	Discount Factor					Congestion	Discounted	Infrast.	Discounted	Accident	Discounted	Local Air Quality	Discounted	Noise	Discounted	Green Gases	Discounted	Indirect Taxation	Discounted
2014	0.000		0	0	1,161	0	£0	£0	£0	£0	£0	£0	£0	£0	£0	£0	£0	£0	£0	£0
2015	0.000		0	0	1,161	0	£0	£0	£0	£0	£0	£0	£0	£0	£0	£0	£0	£0	£0	£0
2016	0.814	1,161	1,161	1,161	1,161	1,161	£151	£123	£1	£1	£20	£16	£1	£1	£1	£1	£9	£7	-£57	-£46
2017	0.786		0	1,161	1,161	1,161	£159	£125	£1	£1	£21	£16	£1	£1	£1	£1	£9	£7	-£56	-£44
2018	0.759		0	1,161	1,161	1,161	£167	£127	£1	£1	£21	£16	£0	£0	£1	£1	£9	£7	-£55	-£41
2019	0.734		0	1,161	1,161	1,161	£175	£129	£1	£1	£22	£16	£0	£0	£1	£1	£8	£6	-£53	-£39
2020	0.709		0	1,161	1,161	1,161	£183	£130	£1	£1	£22	£16	£0	£0	£1	£1	£8	£6	-£52	-£37
2021	0.685		0	1,161	1,161	1,161	£194	£133	£1	£1	£22	£15	£0	£0	£1	£1	£8	£6	-£51	-£35
2022	0.662		0	1,161	1,161	1,161	£205	£136	£1	£1	£23	£15	£0	£0	£1	£1	£8	£5	-£49	-£33
2023	0.639		0	1,161	1,161	1,161	£216	£138	£1	£1	£23	£15	£0	£0	£1	£1	£8	£5	-£48	-£31
2024	0.618		0	1,161	1,161	1,161	£227	£140	£1	£1	£23	£14	£0	£0	£1	£1	£8	£5	-£47	-£29
2025	0.597		0	1,161	1,161	1,161	£238	£142	£1	£1	£23	£14	£0	£0	£1	£1	£8	£5	-£45	-£27
2026	0.577		0	1,161	1,161	1,161	£248	£143	£1	£1	£24	£14	£0	£0	£1	£1	£8	£5	-£45	-£26
2027	0.557		0	1,161	1,161	1,161	£259	£144	£1	£1	£24	£13	£0	£0	£2	£1	£8	£5	-£44	-£24
2028	0.538		0	1,161	1,161	1,161	£269	£145	£1	£1	£25	£13	£0	£0	£2	£1	£8	£4	-£43	-£23
2029	0.520		0	1,161	1,161	1,161	£280	£145	£1	£1	£25	£13	£0	£0	£2	£1	£8	£4	-£42	-£22
2030	0.503		0	1,161	1,161	1,161	£290	£146	£1	£1	£26	£13	£0	£0	£2	£1	£8	£4	-£42	-£21
2031	0.486	1,161	1,161	1,161	1,161	1,161	£305	£148	£1	£1	£26	£13	£0	£0	£2	£1	£9	£4	-£42	-£20
2032	0.469		0	1,161	1,161	1,161	£319	£150	£2	£1	£27	£13	£0	£0	£2	£1	£10	£4	-£41	-£19
2033	0.453		0	1,161	1,161	1,161	£333	£151	£2	£1	£28	£13	£0	£0	£2	£1	£10	£5	-£41	-£19
2034	0.438		0	1,161	1,161	1,161	£348	£152	£2	£1	£28	£12	£0	£0	£2	£1	£11	£5	-£41	-£18
2035	0.423		0	1,161	1,161	1,161	£362	£153	£2	£1	£29	£12	£0	£0	£2	£1	£12	£5	-£41	-£17
2036	0.409		0	1,161	1,161	1,161	£369	£151	£2	£1	£30	£12	£0	£0	£2	£1	£12	£5	-£41	-£17
2037	0.395		0	1,161	1,161	1,161	£377	£149	£2	£1	£30	£12	£0	£0	£2	£1	£12	£5	-£42	-£17
2038	0.382		0	1,161	1,161	1,161	£384	£147	£2	£1	£31	£12	£0	£0	£2	£1	£12	£5	-£43	-£16
2039	0.369		0	1,161	1,161	1,161	£392	£145	£3	£1	£31	£12	£0	£0	£3	£1	£13	£5	-£44	-£16
2040	0.356		0	1,161	1,161	1,161	£400	£142	£3	£1	£32	£11	£0	£0	£3	£1	£13	£5	-£45	-£16
2041	0.344		0	1,161	1,161	1,161	£408	£140	£3	£1	£33	£11	£0	£0	£3	£1	£13	£4	-£46	-£16
2042	0.333		0	1,161	1,161	1,161	£416	£138	£3	£1	£33	£11	£0	£0	£3	£1	£13	£4	-£47	-£16
2043	0.321		0	1,161	1,161	1,161	£424	£136	£3	£1	£34	£11	£0	£0	£3	£1	£14	£4	-£48	-£15
2044	0.310		0	1,161	1,161	1,161	£433	£134	£3	£1	£35	£11	£0	£0	£3	£1	£14	£4	-£49	-£15
2045	0.355		0	1,161	1,161	1,161	£441	£157	£3	£1	£35	£13	£0	£0	£3	£1	£14	£5	-£50	-£18
2046	0.345		0	1,161	1,161	1,161	£450	£155	£3	£1	£36	£12	£0	£0	£3	£1	£14	£5	-£51	-£17
2047	0.335		0	1,161	1,161	1,161	£459	£154	£3	£1	£37	£12	£0	£0	£3	£1	£15	£5	-£52	-£17
2048	0.325		0	1,161	1,161	1,161	£468	£152	£3	£1	£38	£12	£0	£0	£3	£1	£15	£5	-£53	-£17
2049	0.316		0	1,161	1,161	1,161	£478	£151	£3	£1	£38	£12	£0	£0	£3	£1	£15	£5	-£54	-£17
2050	0.307		0	1,161	1,161	1,161	£487	£149	£3	£1	£39	£12	£0	£0	£3	£1	£16	£5	-£55	-£17
2051	0.298		0	1,161	1,161	1,161	£497	£148	£3	£1	£40	£12	£0	£0	£3	£1	£16	£5	-£56	-£17
2052	0.289		0	1,161	1,161	1,161	£507	£147	£3	£1	£41	£12	£0	£0	£3	£1	£16	£5	-£57	-£16
2053	0.281		0	1,161	1,161	1,161	£517	£145	£3	£1	£41	£12	£0	£0	£3	£1	£17	£5	-£58	-£16
2054	0.272		0	1,161	1,161	1,161	£528	£144	£3	£1	£42	£12	£0	£0	£3	£1	£17	£5	-£59	-£16
2055	0.264		0	1,161	1,161	1,161	£538	£142	£3	£1	£43	£11	£0	£0	£3	£1	£17	£5	-£60	-£16
2056	0.257		0	1,161	1,161	1,161	£549	£141	£4	£1	£44	£11	£0	£0	£4	£1	£18	£5	-£62	-£16
2057	0.249		0	1,161	1,161	1,161	£560	£140	£4	£1	£45	£11	£0	£0	£4	£1	£18	£4	-£63	-£16
2058	0.242		0	1,161	1,161	1,161	£571	£138	£4	£1	£46	£11	£0	£0	£4	£1	£18	£4	-£64	-£16
2059	0.235		0	1,161	1,161	1,161	£582	£137	£4	£1	£47	£11	£0	£0	£4	£1	£19	£4	-£65	-£15
2060	0.228		0	1,161	1,161	1,161	£594	£136	£4	£1	£48	£11	£0	£0	£4	£1	£19	£4	-£67	-£15
2061	0.221		0	1,161	1,161	1,161	£606	£134	£4	£1	£49	£11	£0	£0	£4	£1	£19	£4	-£68	-£15
2062	0.215		0	1,161	1,161	1,161	£618	£133	£4	£1	£50	£11	£0	£0	£4	£1	£20	£4	-£69	-£15
2063	0.209		0	1,161	1,161	1,161	£630	£132	£4	£1	£51	£11	£0	£0	£4	£1	£20	£4	-£71	-£15
2064	0.203		0	1,161	1,161	1,161	£643	£130	£4	£1	£52	£10	£0	£0	£4	£1	£21	£4	-£72	-£15
2065	0.197		0	1,161	1,161	1,161	£656	£129	£4	£1	£53	£10	£0	£0	£4	£1	£21	£4	-£74	-£14
2066	0.191		0	1,161	1,161	1,161	£669	£128	£4	£1	£54	£10	£0	£0	£4	£1	£21	£4	-£75	-£14
2067	0.185		0	1,161	1,161	1,161	£682	£127	£4	£1	£55	£10	£0	£0	£4	£1	£22	£4	-£77	-£14
2068	0.180		0	1,161	1,161	1,161	£696	£125	£4	£1	£56	£10	£0	£0	£4	£1	£22	£4	-£78	-£14
2069	0.175		0	1,161	1,161	1,161	£710	£124	£5	£1	£57	£10	£0	£0	£5	£1	£23	£4	-£80	-£14
2070	0.170		0	1,161	1,161	1,161	£724	£123	£5	£1	£58	£10	£0	£0	£5	£1	£23	£4	-£81	-£14
2071	0.165		0	1,161	1,161	1,161	£739	£122	£5	£1	£59	£10	£0	£0	£5	£1	£24	£4	-£83	-£14
2072	0.160		0	1,161	1,161	1,161	£753	£121	£5	£1	£60	£10	£0	£0	£5	£1	£24	£4	-£85	-£14
2073	0.155		0	1,161	1,161	1,161	£769	£119	£5	£1	£62	£10	£0	£0	£5	£1	£25	£4	-£86	-£13
2074	0.151		0	1,161	1,161	1,161	£784	£118	£5	£1	£63	£9	£0	£0	£5	£1	£25	£4	-£88	-£13
2075	0.146		0	1,161	1,161	1,161	£800	£117	£5	£1	£64	£9	£0	£0	£5	£1	£26	£4	-£90	-£13
2076	0.142		0	1,161	1,161	1,161	£816	£116	£5	£1	£65	£9	£0	£0	£5	£1	£26	£4	-£91	-£13
2077	0.000		0	1,161	1,161	1,161	£0	£0	£0	£0	£0	£0	£0	£0	£0	£0	£0	£0	£0	£0
2078	0.000		0	1,161	1,161	1,161	£0	£0	£0	£0	£0	£0	£0	£0	£0	£0	£0	£0	£0	£0
2079	0.000		0	1,161	1,161	1,161	£0	£0	£0	£0	£0	£0	£0	£0	£0	£0	£0	£0	£0	£0
2080	0.000		0	1,161	1,161	1,161	£0	£0	£0	£0	£0	£0	£0	£0	£0	£0	£0	£0	£0	£0
2081	0.000		0	1,161	1,161	1,161	£0	£0	£0	£0	£0	£0	£0	£0	£0	£0	£0	£0	£0	£0
2082	0.000		0	1,161	1,161	1,161	£0	£0	£0	£0	£0	£0	£0	£0	£0	£0	£0	£0	£0	£0
2083	0.000		0	1,161	1,161	1,161	£0	£0	£0	£0	£0	£0	£0	£0	£0	£0	£0	£0	£0	£0
2084	0.000		0	1,161	1,161	1,161	£0	£0	£0	£0	£0	£0	£0	£0	£0	£0	£0	£0	£0	£0
2085	0.000		0	1,161	1,161	1,161	£0	£0	£0	£0	£0	£0	£0	£0	£0	£0	£0	£0	£0	£0
2086	0.000		0	1,161	1,161	1,161	£0	£0	£0	£0	£0	£0	£0	£0	£0	£0	£0	£0	£0	£0
2087	0.000		0	1,161	1,161	1,161	£0	£0	£0	£0	£0	£0	£0	£0	£0	£0	£0	£0	£0	£0
2088	0.000		0	1,161	1,161	1,161	£0	£0	£0	£0	£0	£0	£0	£0	£0	£0	£0	£0	£0	£0
2089	0.000		0	1,161	1,161	1,161	£0	£0	£0	£0	£0	£0	£0	£0	£0	£0	£0	£0	£0	£0
2090	0.000		0	1,161	1,161	1,161	£0	£0	£0	£0	£0	£0	£0	£0	£0	£0	£0	£0	£0	£0
2091	0.000		0	1,161	1,161	1,161	£0	£0	£0	£0	£0	£0	£0	£0	£0	£0	£0	£0	£0	£0
2092	0.000		0	1,161	1,161	1,161	£0	£0	£0	£0	£0	£0	£0	£0	£0	£0	£0	£0	£0	£0
2093	0.000		0	1,161	1,161	1,161	£0	£0	£0	£0	£0	£0	£0	£0	£0	£0	£0	£0	£0	£0
2094	0.000		0	1,161	1,161	1,161	£0	£0	£0	£0	£0	£0	£0	£0	£0	£0	£0	£0	£0	£0
2095	0.000		0	1,161	1,161	1,161	£0	£0	£0	£0	£0	£0	£0	£0	£0	£0	£0	£0	£0	£0
2096	0.000		0	1,161	1,161	1,161	£0	£0	£0	£0	£0	£0	£0	£0	£0	£0	£0	£0	£0	£0
2097	0.000		0	1,161	1,161	1,161	£0	£0	£0	£0	£0	£0	£0	£0	£0	£0	£0	£0	£0	£0
2098	0.000		0	1,161	1,161	1,161	£0	£0	£0	£0	£0	£0	£0	£0	£0	£0	£0	£0	£0	£0
2099	0.000		0	1,161	1,161	1,161	£0	£0	£0	£0	£0	£0	£0	£0	£0	£0	£0	£0	£0	£0
2100	0.000		0	1,161	1,161	1,161	£0	£0	£0	£0	£0	£0	£0	£0	£0	£0	£0	£0	£0	£0
TOTAL							£28,055	£8,416	£175	£51	£2,334	£732	£2	£2	£181	£54	£916	£284	-£3,529	-£1,202

Undiscounted	£28,134		Discounted	£8,338

Scheme Comparison: LCC East Lancashire Cycle Network		PVB	£7,207,955
Scheme Discription: Weavers Wheel Improvement		PVC	£1,589,628
Cycle Improvements to provide 6 new 'spoke' and 'spur' cycle routes and improvements to cycle routes around Blackburn.		NPV	£5,618,328
Costs include 44% OB and allance for risk. 120% growth applied.		BCR	4.534

Parameters & Inputs

Opening Year Total Time Savings (Veh Delay in hrs)

Opening Year time savings	£39,142

Forecast Year Total Time Savings (Veh Delay in hrs)

Forecast Year time savings	£39,142

Opening YearTotal Distance Saving (Veh KM in KM)

Annualised Total Veh KM	1,595.9

Design Year Total Distance Saving (Veh KM in KM)

Annualised Total Veh KM	1,595.9

MEC Parameters

Assessment Period (Years)	60
DM MEC Type:	Weighted Average
DS MEC Type:	Weighted Average
DM MEC Congestion Band:	Weighted Average
DS MEC Congestion Band:	Weighted Average
MEC growth post-2035?	2%

- Input Values
- Default Values
- Output Values

Assessment Parameters

Current year	2015
Scheme Opening Year	2016
Scheme Design Year	2031
Include VoT growth over time?	Yes
Include growth in benefits post-design year?	No
Scheme Cost Estimate Year	2014
Scheme Cost Discount Factor	3.5%
Discount Factor (0-30 years)	3.5%
Discount Factor (31-75 years)	3.0%

Estimation of Discounted Scheme Costs

Scheme Costs	Construction	Land	Preparation	Supervision	Maintenance	TOTAL
	£1,198,241	£0	£90,190	£0	£644,216	£1,288,431

Spend Profile (insert percentage profile)

Year	C	L	P	S	M		C	L	P	S	M	Total	Deflation Factor	Total Costs (Undiscounted prices)	Discount Factor	Total Costs (2010 prices, discounted to 2010)	Resource Costs to Market Prices Factor	Total Costs (2010 prices, discounted to 2010) in Market Prices
2014							£0	£0	£0	£0	£0	£0	0.9289	£0	0.871	£0	1.19	£0
2015	6%		102%				£70,485	£0	£91,994	£0	£0	£162,479	0.9289	£150,930	0.842	£127,079	1.19	£151,224
2016	80%						£953,321	£0	£0	£0	£0	£953,321	0.9289	£885,562	0.814	£720,405	1.19	£857,282
2017	6%						£74,799	£0	£0	£0	£0	£74,799	0.9289	£69,483	0.786	£54,613	1.19	£64,989
2018	6%						£76,295	£0	£0	£0	£0	£76,295	0.9289	£70,872	0.759	£53,821	1.19	£64,047
2019	6%						£77,821	£0	£0	£0	£0	£77,821	0.9289	£72,290	0.734	£53,041	1.19	£63,119
2020							£0	£0	£0	£0	£0	£0	0.9289	£0	0.709	£0	1.19	£0
2021							£0	£0	£0	£0	£0	£0	0.9289	£0	0.685	£0	1.19	£0
2022							£0	£0	£0	£0	£0	£0	0.9289	£0	0.662	£0	1.19	£0
2023							£0	£0	£0	£0	£0	£0	0.9289	£0	0.639	£0	1.19	£0
2024							£0	£0	£0	£0	£0	£0	0.9289	£0	0.618	£0	1.19	£0
2025							£0	£0	£0	£0	£0	£0	0.9289	£0	0.597	£0	1.19	£0
2026							£0	£0	£0	£0	£0	£0	0.9289	£0	0.577	£0	1.19	£0
2027							£0	£0	£0	£0	£0	£0	0.9289	£0	0.557	£0	1.19	£0
2028							£0	£0	£0	£0	£0	£0	0.9289	£0	0.538	£0	1.19	£0
2029							£0	£0	£0	£0	£0	£0	0.9289	£0	0.520	£0	1.19	£0
2030							£0	£0	£0	£0	£0	£0	0.9289	£0	0.503	£0	1.19	£0
2031							£0	£0	£0	£0	£0	£0	0.9289	£0	0.486	£0	1.19	£0
2032							£0	£0	£0	£0	£0	£0	0.9289	£0	0.469	£0	1.19	£0
2033							£0	£0	£0	£0	£0	£0	0.9289	£0	0.453	£0	1.19	£0
2034							£0	£0	£0	£0	£0	£0	0.9289	£0	0.438	£0	1.19	£0
2035							£0	£0	£0	£0	£0	£0	0.9289	£0	0.423	£0	1.19	£0
2036							£0	£0	£0	£0	£0	£0	0.9289	£0	0.409	£0	1.19	£0
2037							£0	£0	£0	£0	£0	£0	0.9289	£0	0.395	£0	1.19	£0
2038							£0	£0	£0	£0	£0	£0	0.9289	£0	0.382	£0	1.19	£0
2039							£0	£0	£0	£0	£0	£0	0.9289	£0	0.369	£0	1.19	£0
2040							£0	£0	£0	£0	£0	£0	0.9289	£0	0.356	£0	1.19	£0
2041							£0	£0	£0	£0	£0	£0	0.9289	£0	0.344	£0	1.19	£0
2042							£0	£0	£0	£0	£0	£0	0.9289	£0	0.333	£0	1.19	£0
2043							£0	£0	£0	£0	£0	£0	0.9289	£0	0.321	£0	1.19	£0
2044							£0	£0	£0	£0	£0	£0	0.9289	£0	0.310	£0	1.19	£0
2045							£0	£0	£0	£0	£0	£0	0.9289	£0	0.300	£0	1.19	£0
2046					188%		£0	£0	£0	£0	£1,214,051	£1,214,051	0.9289	£1,127,760	0.290	£326,862	1.19	£388,966
TOTAL	105%	0%	102%	0%	188%		£1,252,720	£0	£91,994	£0	£1,214,051	£2,558,765	N/A	£2,376,897	N/A	£1,335,822	N/A	£1,589,628

N.B. It is assumed that Preparation and Supervision costs are included within the above costs
N.B. Optimism Bias only applied to Construction costs, not Land

Applying the methodology below produces the discounted scheme cost (PVC):-
a) Assume the Construction costs are spread evenly over the construction period (assumed to be 2 years)
b) Assume land is bought in the first year of construction
c) All costs are in undiscounted Q1 prices, so need to be converted to undiscounted 2010 prices using the industry-standard method of RPIs
d) All costs discounted to 2010
e) All costs need to be converted to Market Prices

Estimation of Benefit to Cost Ratio (BCR) with MEC

Time Saving benefits (discounted)	£1,549,598
MEC Discounted (2016 to 2010 Prices)	£11,464
Mortality Benefits	£5,519,527
Absentee Benefits	£127,366

Total Benefits with MEC	£7,207,955
Total costs (discounted)	£1,589,628
BCR with Marginal External Costs	4.53437

Estimation of Benefits By User Class Over Appraisal Period

Year	gle Year Benefore opening	after design y	Benefits profile		Total Benefits (2010)	VoT Growth	VoT Adj.	Discount Factor	Total Benefits (2010 prices, discounted
2010	0	0	39,142	0	£0	1.00	£0	1.000	£0
2011	0	0	39,142	0	£0	1.01	£0	0.966	£0
2012	0	0	39,142	0	£0	1.01	£0	0.934	£0
2013	0	0	39,142	0	£0	1.02	£0	0.902	£0
2014	0	0	39,142	0	£0	1.04	£0	0.871	£0
2015	0	0	39,142	0	£0	1.06	£0	0.842	£0
2016	39,142	39,142	39,142	39,142	£39,142	1.08	£42,189	0.814	£34,321
2017	0	39,142	39,142	39,142	£39,142	1.10	£43,028	0.786	£33,819
2018	0	39,142	39,142	39,142	£39,142	1.12	£43,846	0.759	£33,297
2019	0	39,142	39,142	39,142	£39,142	1.14	£44,684	0.734	£32,786
2020	0	39,142	39,142	39,142	£39,142	1.16	£45,531	0.709	£32,278
2021	0	39,142	39,142	39,142	£39,142	1.19	£46,389	0.685	£31,774
2022	0	39,142	39,142	39,142	£39,142	1.21	£47,258	0.662	£31,274
2023	0	39,142	39,142	39,142	£39,142	1.23	£48,149	0.639	£30,787
2024	0	39,142	39,142	39,142	£39,142	1.25	£49,065	0.618	£30,311
2025	0	39,142	39,142	39,142	£39,142	1.28	£50,006	0.597	£29,848
2026	0	39,142	39,142	39,142	£39,142	1.30	£50,974	0.577	£29,397
2027	0	39,142	39,142	39,142	£39,142	1.33	£51,970	0.557	£28,958
2028	0	39,142	39,142	39,142	£39,142	1.35	£52,994	0.538	£28,530
2029	0	39,142	39,142	39,142	£39,142	1.38	£54,048	0.520	£28,113
2030	0	39,142	39,142	39,142	£39,142	1.41	£55,131	0.503	£27,707
2031	39,142	39,142	39,142	39,142	£39,142	1.44	£56,246	0.486	£27,311
2032	0	39,142	39,142	39,142	£39,142	1.47	£57,391	0.469	£26,925
2033	0	39,142	39,142	39,142	£39,142	1.50	£58,568	0.453	£26,548
2034	0	39,142	39,142	39,142	£39,142	1.53	£59,776	0.438	£26,179
2035	0	39,142	39,142	39,142	£39,142	1.56	£61,016	0.423	£25,819
2036	0	39,142	39,142	39,142	£39,142	1.59	£62,287	0.409	£25,465
2037	0	39,142	39,142	39,142	£39,142	1.62	£63,589	0.395	£25,119
2038	0	39,142	39,142	39,142	£39,142	1.66	£64,927	0.382	£24,780
2039	0	39,142	39,142	39,142	£39,142	1.69	£66,293	0.369	£24,445
2040	0	39,142	39,142	39,142	£39,142	1.73	£67,688	0.356	£24,116
2041	0	39,142	39,142	39,142	£39,142	1.77	£69,111	0.344	£23,790
2042	0	39,142	39,142	39,142	£39,142	1.80	£70,578	0.333	£23,473
2043	0	39,142	39,142	39,142	£39,142	1.84	£72,075	0.321	£23,161
2044	0	39,142	39,142	39,142	£39,142	1.88	£73,605	0.310	£22,852
2045	0	39,142	39,142	39,142	£39,142	1.92	£75,166	0.355	£26,713
2046	0	39,142	39,142	39,142	£39,142	1.96	£76,761	0.345	£26,485
2047	0	39,142	39,142	39,142	£39,142	2.00	£78,412	0.335	£26,267
2048	0	39,142	39,142	39,142	£39,142	2.05	£80,098	0.325	£26,050
2049	0	39,142	39,142	39,142	£39,142	2.09	£81,821	0.316	£25,835
2050	0	39,142	39,142	39,142	£39,142	2.14	£83,580	0.307	£25,622
2051	0	39,142	39,142	39,142	£39,142	2.18	£85,378	0.298	£25,411
2052	0	39,142	39,142	39,142	£39,142	2.23	£87,244	0.289	£25,210
2053	0	39,142	39,142	39,142	£39,142	2.28	£89,151	0.281	£25,011
2054	0	39,142	39,142	39,142	£39,142	2.33	£91,100	0.272	£24,813
2055	0	39,142	39,142	39,142	£39,142	2.38	£93,092	0.264	£24,617
2056	0	39,142	39,142	39,142	£39,142	2.43	£95,127	0.257	£24,423
2057	0	39,142	39,142	39,142	£39,142	2.48	£97,232	0.249	£24,236
2058	0	39,142	39,142	39,142	£39,142	2.54	£99,383	0.242	£24,050
2059	0	39,142	39,142	39,142	£39,142	2.60	£101,581	0.235	£23,867
2060	0	39,142	39,142	39,142	£39,142	2.65	£103,829	0.228	£23,684
2061	0	39,142	39,142	39,142	£39,142	2.71	£106,126	0.221	£23,503
2062	0	39,142	39,142	39,142	£39,142	2.77	£108,480	0.215	£23,324
2063	0	39,142	39,142	39,142	£39,142	2.83	£110,881	0.209	£23,147
2064	0	39,142	39,142	39,142	£39,142	2.90	£113,336	0.203	£22,970
2065	0	39,142	39,142	39,142	£39,142	2.96	£115,846	0.197	£22,795
2066	0	39,142	39,142	39,142	£39,142	3.03	£118,411	0.191	£22,621
2067	0	39,142	39,142	39,142	£39,142	3.09	£121,011	0.185	£22,444
2068	0	39,142	39,142	39,142	£39,142	3.16	£123,669	0.180	£22,269
2069	0	39,142	39,142	39,142	£39,142	3.23	£126,385	0.175	£22,095
2070	0	39,142	39,142	39,142	£39,142	3.30	£129,160	0.170	£21,923
2071	0	39,142	39,142	39,142	£39,142	3.37	£131,997	0.165	£21,752
2072	0	39,142	39,142	39,142	£39,142	3.45	£134,867	0.160	£21,577
2073	0	39,142	39,142	39,142	£39,142	3.52	£137,800	0.155	£21,404
2074	0	39,142	39,142	39,142	£39,142	3.60	£140,797	0.151	£21,233
2075	0	39,142	39,142	39,142	£39,142	3.68	£143,859	0.146	£21,063
2076	0	39,142	39,142	39,142	£0	3.76	£0	0.142	£0
2077	0	39,142	39,142	39,142	£0	3.84	£0	0.138	£0
2078	0	39,142	39,142	39,142	£0	3.92	£0	0.134	£0
2079	0	39,142	39,142	39,142	£0	4.00	£0	0.130	£0
2080	0	39,142	39,142	39,142	£0	4.09	£0	0.126	£0
2081	0	39,142	39,142	39,142	£0	4.18	£0	0.123	£0
2082	0	39,142	39,142	39,142	£0	4.27	£0	0.119	£0
2083	0	39,142	39,142	39,142	£0	4.36	£0	0.116	£0
2084	0	39,142	39,142	39,142	£0	4.46	£0	0.112	£0
2085	0	39,142	39,142	39,142	£0	4.55	£0	0.109	£0
2086	0	39,142	39,142	39,142	£0	4.65	£0	0.106	£0
2087	0	39,142	39,142	39,142	£0	4.75	£0	0.103	£0
2088	0	39,142	39,142	39,142	£0	4.86	£0	0.100	£0
2089	0	39,142	39,142	39,142	£0	4.96	£0	0.097	£0
2090	0	39,142	39,142	39,142	£0	5.07	£0	0.094	£0
2091	0	39,142	39,142	39,142	£0	5.18	£0	0.091	£0
2092	0	39,142	39,142	39,142	£0	5.30	£0	0.089	£0
2093	0	39,142	39,142	39,142	£0	5.41	£0	0.086	£0
2094	0	39,142	39,142	39,142	£0	5.53	£0	0.083	£0
2095	0	39,142	39,142	39,142	£0	5.65	£0	0.081	£0
2096	0	39,142	39,142	39,142	£0	5.77	£0	0.079	£0
2097	0	39,142	39,142	39,142	£0	5.90	£0	0.076	£0
2098	0	39,142	39,142	39,142	£0	6.02	£0	0.074	£0
2099	0	39,142	39,142	39,142	£0	6.15	£0	0.072	£0
2100	0	39,142	39,142	39,142	£0	6.29	£0	0.070	£0
		TOTAL			£2,348,517	N/A	£4,909,991	N/A	£1,549,598

Discount factor = 1/(1+Discount Rate)^n where n = year minus 2010. Discount rates are specified in the parameters above.

Marginal External Costs over appraisal period

Year	Discount Factor	late veh KM before opening : after design y3enefits profile				Congestion	Discounted	Infrast.	Discounted	Accident	Discounted	Local Air Quality	Discounted	Noise	Discounted	Green Gases	Discounted	Indirect Taxation	Discounted
2014	0.000	0	0	1,596	0	£0	£0	£0	£0	£0	£0	£0	£0	£0	£0	£0	£0	£0	£0
2015	0.000	0	0	1,596	0	£0	£0	£0	£0	£0	£0	£0	£0	£0	£0	£0	£0	£0	£0
2016	0.814	1,596	1,596	1,596	1,596	£207	£169	£2	£1	£28	£23	£1	£1	£2	£1	£12	£10	-£78	-£64
2017	0.786	0	1,596	1,596	1,596	£219	£172	£2	£1	£28	£22	£1	£1	£2	£1	£12	£10	-£77	-£60
2018	0.759	0	1,596	1,596	1,596	£230	£175	£2	£1	£29	£22	£1	£0	£2	£1	£12	£9	-£75	-£57
2019	0.734	0	1,596	1,596	1,596	£241	£177	£2	£1	£30	£22	£0	£0	£2	£1	£11	£8	-£73	-£54
2020	0.709	0	1,596	1,596	1,596	£252	£179	£2	£1	£30	£21	£0	£0	£2	£1	£11	£8	-£72	-£51
2021	0.685	0	1,596	1,596	1,596	£267	£183	£2	£1	£31	£21	£0	£0	£2	£1	£11	£8	-£70	-£48
2022	0.662	0	1,596	1,596	1,596	£282	£187	£2	£1	£31	£20	£0	£0	£2	£1	£11	£7	-£68	-£45
2023	0.639	0	1,596	1,596	1,596	£297	£190	£2	£1	£31	£20	£0	£0	£2	£1	£11	£7	-£66	-£42
2024	0.618	0	1,596	1,596	1,596	£312	£193	£2	£1	£32	£20	£0	£0	£2	£1	£11	£7	-£64	-£40
2025	0.597	0	1,596	1,596	1,596	£327	£195	£2	£1	£32	£19	£0	£0	£2	£1	£11	£7	-£62	-£37
2026	0.577	0	1,596	1,596	1,596	£342	£197	£2	£1	£33	£19	£0	£0	£2	£1	£11	£6	-£61	-£35
2027	0.557	0	1,596	1,596	1,596	£356	£198	£2	£1	£33	£18	£0	£0	£2	£1	£11	£6	-£60	-£34
2028	0.538	0	1,596	1,596	1,596	£370	£199	£2	£1	£34	£18	£0	£0	£3	£1	£11	£6	-£59	-£32
2029	0.520	0	1,596	1,596	1,596	£385	£200	£2	£1	£34	£18	£0	£0	£3	£1	£11	£6	-£58	-£30
2030	0.503	0	1,596	1,596	1,596	£399	£201	£2	£1	£35	£18	£0	£0	£3	£2	£11	£6	-£57	-£29
2031	0.486	1,596	1,596	1,596	1,596	£419	£203	£2	£1	£36	£18	£0	£0	£3	£2	£12	£6	-£57	-£28
2032	0.469	0	1,596	1,596	1,596	£439	£206	£2	£1	£37	£17	£0	£0	£3	£1	£13	£6	-£57	-£27
2033	0.453	0	1,596	1,596	1,596	£458	£208	£3	£1	£38	£17	£0	£0	£3	£1	£14	£6	-£56	-£26
2034	0.438	0	1,596	1,596	1,596	£478	£209	£3	£1	£39	£17	£0	£0	£3	£1	£15	£7	-£56	-£25
2035	0.423	0	1,596	1,596	1,596	£498	£211	£3	£1	£40	£17	£0	£0	£3	£1	£16	£7	-£56	-£24
2036	0.409	0	1,596	1,596	1,596	£508	£208	£3	£1	£41	£17	£0	£0	£3	£1	£16	£7	-£57	-£23
2037	0.395	0	1,596	1,596	1,596	£518	£205	£3	£1	£42	£16	£0	£0	£3	£1	£17	£7	-£58	-£23
2038	0.382	0	1,596	1,596	1,596	£528	£202	£3	£1	£42	£16	£0	£0	£3	£1	£17	£6	-£59	-£23
2039	0.369	0	1,596	1,596	1,596	£539	£199	£3	£1	£43	£16	£0	£0	£3	£1	£17	£6	-£60	-£22
2040	0.356	0	1,596	1,596	1,596	£550	£196	£4	£1	£44	£16	£0	£0	£4	£1	£18	£6	-£62	-£22
2041	0.344	0	1,596	1,596	1,596	£561	£193	£4	£1	£45	£15	£0	£0	£4	£1	£18	£6	-£63	-£22
2042	0.333	0	1,596	1,596	1,596	£572	£190	£4	£1	£46	£15	£0	£0	£4	£1	£18	£6	-£64	-£21
2043	0.321	0	1,596	1,596	1,596	£583	£187	£4	£1	£47	£15	£0	£0	£4	£1	£19	£6	-£65	-£21
2044	0.310	0	1,596	1,596	1,596	£595	£185	£4	£1	£48	£15	£0	£0	£4	£1	£19	£6	-£67	-£21
2045	0.355	0	1,596	1,596	1,596	£607	£216	£4	£1	£49	£17	£0	£0	£4	£1	£19	£7	-£68	-£24
2046	0.345	0	1,596	1,596	1,596	£619	£214	£4	£1	£50	£17	£0	£0	£4	£1	£20	£7	-£69	-£24
2047	0.335	0	1,596	1,596	1,596	£631	£212	£4	£1	£51	£17	£0	£0	£4	£1	£20	£7	-£71	-£24
2048	0.325	0	1,596	1,596	1,596	£644	£209	£4	£1	£52	£17	£0	£0	£4	£1	£21	£7	-£72	-£23
2049	0.316	0	1,596	1,596	1,596	£657	£207	£4	£1	£53	£17	£0	£0	£4	£1	£21	£7	-£74	-£23
2050	0.307	0	1,596	1,596	1,596	£670	£205	£4	£1	£54	£16	£0	£0	£4	£1	£21	£7	-£75	-£23
2051	0.298	0	1,596	1,596	1,596	£684	£203	£4	£1	£55	£16	£0	£0	£4	£1	£22	£7	-£77	-£23
2052	0.289	0	1,596	1,596	1,596	£697	£201	£4	£1	£56	£16	£0	£0	£4	£1	£22	£6	-£78	-£23
2053	0.281	0	1,596	1,596	1,596	£711	£200	£5	£1	£57	£16	£0	£0	£5	£1	£23	£6	-£80	-£22
2054	0.272	0	1,596	1,596	1,596	£725	£198	£5	£1	£58	£16	£0	£0	£5	£1	£23	£6	-£81	-£22
2055	0.264	0	1,596	1,596	1,596	£740	£196	£5	£1	£59	£16	£0	£0	£5	£1	£24	£6	-£83	-£22
2056	0.257	0	1,596	1,596	1,596	£755	£194	£5	£1	£60	£16	£0	£0	£5	£1	£24	£6	-£85	-£22
2057	0.249	0	1,596	1,596	1,596	£770	£192	£5	£1	£62	£15	£0	£0	£5	£1	£25	£6	-£86	-£22
2058	0.242	0	1,596	1,596	1,596	£785	£190	£5	£1	£63	£15	£0	£0	£5	£1	£25	£6	-£88	-£21
2059	0.235	0	1,596	1,596	1,596	£801	£188	£5	£1	£64	£15	£0	£0	£5	£1	£26	£6	-£90	-£21
2060	0.228	0	1,596	1,596	1,596	£817	£186	£5	£1	£65	£15	£0	£0	£5	£1	£26	£6	-£92	-£21
2061	0.221	0	1,596	1,596	1,596	£833	£185	£5	£1	£67	£15	£0	£0	£5	£1	£27	£6	-£93	-£21
2062	0.215	0	1,596	1,596	1,596	£850	£183	£5	£1	£68	£15	£0	£0	£5	£1	£27	£6	-£95	-£20
2063	0.209	0	1,596	1,596	1,596	£867	£181	£6	£1	£69	£15	£0	£0	£6	£1	£28	£6	-£97	-£20
2064	0.203	0	1,596	1,596	1,596	£884	£179	£6	£1	£71	£14	£0	£0	£6	£1	£28	£6	-£99	-£20
2065	0.197	0	1,596	1,596	1,596	£902	£177	£6	£1	£72	£14	£0	£0	£6	£1	£29	£6	-£101	-£20
2066	0.191	0	1,596	1,596	1,596	£920	£176	£6	£1	£74	£14	£0	£0	£6	£1	£29	£6	-£103	-£20
2067	0.185	0	1,596	1,596	1,596	£938	£174	£6	£1	£75	£14	£0	£0	£6	£1	£30	£6	-£105	-£20
2068	0.180	0	1,596	1,596	1,596	£957	£172	£6	£1	£77	£14	£0	£0	£6	£1	£31	£6	-£107	-£19
2069	0.175	0	1,596	1,596	1,596	£976	£171	£6	£1	£78	£14	£0	£0	£6	£1	£31	£5	-£110	-£19
2070	0.170	0	1,596	1,596	1,596	£996	£169	£6	£1	£80	£14	£0	£0	£6	£1	£32	£5	-£112	-£19
2071	0.165	0	1,596	1,596	1,596	£1,016	£167	£7	£1	£81	£13	£0	£0	£7	£1	£33	£5	-£114	-£19
2072	0.160	0	1,596	1,596	1,596	£1,036	£166	£7	£1	£83	£13	£0	£0	£7	£1	£33	£5	-£116	-£19
2073	0.155	0	1,596	1,596	1,596	£1,057	£164	£7	£1	£85	£13	£0	£0	£7	£1	£34	£5	-£119	-£18
2074	0.151	0	1,596	1,596	1,596	£1,078	£163	£7	£1	£86	£13	£0	£0	£7	£1	£35	£5	-£121	-£18
2075	0.146	0	1,596	1,596	1,596	£1,099	£161	£7	£1	£88	£13	£0	£0	£7	£1	£35	£5	-£123	-£18
2076	0.142	0	1,596	1,596	1,596	£1,121	£159	£7	£1	£90	£13	£0	£0	£7	£1	£36	£5	-£126	-£18
2077	0.000	0	1,596	1,596	1,596	£0	£0	£0	£0	£0	£0	£0	£0	£0	£0	£0	£0	£0	£0
2078	0.000	0	1,596	1,596	1,596	£0	£0	£0	£0	£0	£0	£0	£0	£0	£0	£0	£0	£0	£0
2079	0.000	0	1,596	1,596	1,596	£0	£0	£0	£0	£0	£0	£0	£0	£0	£0	£0	£0	£0	£0
2080	0.000	0	1,596	1,596	1,596	£0	£0	£0	£0	£0	£0	£0	£0	£0	£0	£0	£0	£0	£0
2081	0.000	0	1,596	1,596	1,596	£0	£0	£0	£0	£0	£0	£0	£0	£0	£0	£0	£0	£0	£0
2082	0.000	0	1,596	1,596	1,596	£0	£0	£0	£0	£0	£0	£0	£0	£0	£0	£0	£0	£0	£0
2083	0.000	0	1,596	1,596	1,596	£0	£0	£0	£0	£0	£0	£0	£0	£0	£0	£0	£0	£0	£0
2084	0.000	0	1,596	1,596	1,596	£0	£0	£0	£0	£0	£0	£0	£0	£0	£0	£0	£0	£0	£0
2085	0.000	0	1,596	1,596	1,596	£0	£0	£0	£0	£0	£0	£0	£0	£0	£0	£0	£0	£0	£0
2086	0.000	0	1,596	1,596	1,596	£0	£0	£0	£0	£0	£0	£0	£0	£0	£0	£0	£0	£0	£0
2087	0.000	0	1,596	1,596	1,596	£0	£0	£0	£0	£0	£0	£0	£0	£0	£0	£0	£0	£0	£0
2088	0.000	0	1,596	1,596	1,596	£0	£0	£0	£0	£0	£0	£0	£0	£0	£0	£0	£0	£0	£0
2089	0.000	0	1,596	1,596	1,596	£0	£0	£0	£0	£0	£0	£0	£0	£0	£0	£0	£0	£0	£0
2090	0.000	0	1,596	1,596	1,596	£0	£0	£0	£0	£0	£0	£0	£0	£0	£0	£0	£0	£0	£0
2091	0.000	0	1,596	1,596	1,596	£0	£0	£0	£0	£0	£0	£0	£0	£0	£0	£0	£0	£0	£0
2092	0.000	0	1,596	1,596	1,596	£0	£0	£0	£0	£0	£0	£0	£0	£0	£0	£0	£0	£0	£0
2093	0.000	0	1,596	1,596	1,596	£0	£0	£0	£0	£0	£0	£0	£0	£0	£0	£0	£0	£0	£0
2094	0.000	0	1,596	1,596	1,596	£0	£0	£0	£0	£0	£0	£0	£0	£0	£0	£0	£0	£0	£0
2095	0.000	0	1,596	1,596	1,596	£0	£0	£0	£0	£0	£0	£0	£0	£0	£0	£0	£0	£0	£0
2096	0.000	0	1,596	1,596	1,596	£0	£0	£0	£0	£0	£0	£0	£0	£0	£0	£0	£0	£0	£0
2097	0.000	0	1,596	1,596	1,596	£0	£0	£0	£0	£0	£0	£0	£0	£0	£0	£0	£0	£0	£0
2098	0.000	0	1,596	1,596	1,596	£0	£0	£0	£0	£0	£0	£0	£0	£0	£0	£0	£0	£0	£0
2099	0.000	0	1,596	1,596	1,596	£0	£0	£0	£0	£0	£0	£0	£0	£0	£0	£0	£0	£0	£0
2100	0.000	0	1,596	1,596	1,596	£0	£0	£0	£0	£0	£0	£0	£0	£0	£0	£0	£0	£0	£0
TOTAL						£38,575	£11,572	£241	£71	£3,209	£1,006	£3	£3	£249	£75	£1,260	£390	-£4,852	-£1,652

Undiscounted	£38,685	Discounted	£11,464

Appendix L - Distributional Impact Appraisal Screening Proforma

Distributional Impact Appraisal Screening Proforma

Scheme description: East Lancashire Strategic Cycle Network.
Several elements make up the East Lancashire Strategic Cycle Network. These four elements have been appraised, the results of which are outlined in this Business Case documentation and supporting Technical Report of the GVA and Economic Appraisal methodology. These scheme elements have been identified to 'fill the gaps' of the existing cycle network, supporting existing infrastructure and providing additional connectivity to the National Cycle Network (NCN) as part of the wider East Lancashire Strategic Cycle Network. Should the scheme be given funding, together, these elements will provide a strategic 'backbone' of the network from which future funding will be sort, in stages, to further supplement the network and enhance cycle connectivity across Lancashire.

Indicator	(a) Appraisal output criteria	(b) Potential impact (yes / no, positive/negative if known)	(c) Qualitative Comments	(d) Proceed to Step 2
User benefits	Estimation of transport user benefits have been calculated from modal abstraction from private car to cycle modes through the use of a logit demand model. Time savings have been monetised using standard WebTAG approaches. set out in guidance and WebTAG (v1.3b: November 2014 release) values of time. The value of user benefits Transport Economic Efficiency (TEE) table is non-zero.	Yes - appraisal of the scheme has shown that there will be a positive impact on user benefits for business, commuting and other users. This is due to abstraction of existing transport users from private car to cycle modes, encouraged by the provision of new cycle infrastructure and new destination options by this mode of transport .	As this is a strategic, cross boundary (Lancashire County Council and Blackburn & Darwen local authorities) scheme, the impacts on transport users are expected to be diffused across the impacted geographies, minimally affecting a range of social and demographic groups.	Further analysis is considered disproportionate as the benefits are diffused across several local authorities and transport modes. The proposed scale of investment required and level of potential benefits accrued would also suggest that additional analysis is disproportionate to the funding sought.
Noise	No change in existing highway infrastructure is proposed. Reducing the impact of traffic noise is not a primary objective of the scheme.	No.	Whilst there is expected to be a marginal positive impact across the highways within the local authority areas, as the scheme abstracts highway trips to cycle mode. It is likely that this will be minimal and diffused across the proposed impacted geographies.	Further analysis is considered disproportionate to the potential scheme benefits.
Air quality	Any change in alignment of transport corridor or any links with significant changes in vehicle flow, speed or %HDV content: • No significant change in 24hr AADT is expected; • No change in 24hr AADT of HDV veh is expected; • No significant change in daily average. speed is expected; • No significant change in peak hour speed is expected; • No change in road alignment. Improving air quality is not a primary objective of the scheme.	No.	No significant change in local air quality due to transport is expected, however a minimal decrease in traffic is likely over the diffuse geographies of the scheme.	Further analysis is considered disproportionate to the potential scheme benefits.
Accidents	Accident savings have been calculated using the methodology outlined in WebTAG Unit A5-4, 'Marginal External Costs'. Quantification of accident saving benefits have been monetised calculated from the change in vehicle kilometres saved from journeys abstracting from private car to cycle. No analysis of the upgrading of cycle infrastructure from non-segregated to segregated or off-road infrastructure has been undertaken. Improving safety is not a primary objective of the scheme.	Yes - appraisal of the scheme has shown that there will be a minimal positive impact on accidents due to abstraction of existing transport users from private car to cycle modes.	No change to the existing highway network is proposed, however a minimal, diffuse reduction in traffic is likely. Certain sections of the proposed scheme are likely to increase the number of cyclists on 'on-road segregated' or 'off-road' cycle ways, upgrading these from existing 'on-road non-segregated' routes. This is likely to reduce the interaction of cycle and motorised users, therefore reducing the number of accidents likely to occur. These benefits have not need quantified within the assessment, however the change in vehicle kms travelled has, having a positive impact on vehicular accidents.	Further analysis is considered disproportionate to the potential scheme benefits.
Security	Any change in public transport waiting/interchange facilities including pedestrian access expected to affect user perceptions of personal security. Improving security is not a primary objective of the scheme.	No.	No security implications are expected as part of the scheme.	Further analysis is considered not necessary for this scheme.
Severance	Introduction or removal of barriers to pedestrian movement, either through changes to road crossing provision, or through introduction of new public transport or road corridors. Any areas with significant changes (>10%) in vehicle flow, speed, %HGV content.	No.	No issues of severance are expected as part of the scheme. However it is expected the improved cycle infrastructure will improve connectivity between adjoining land uses. No severance is directly caused by proposed cycle way improvements.	Further analysis is considered not necessary for this scheme.
Accessibility	No changes in routings or timings of current public transport services, changes to public transport provision, including routing, frequencies, waiting facilities (bus stops / rail stations) and rolling stock, or any indirect impacts on accessibility to services are proposed as part of the scheme. Improving access to public transport is not a primary objective of the scheme.	No.	No impact on public transport is expected from the scheme, across the local authority and PTE areas within the affected geographies, however it is expected that the scheme will have a positive impact on accessibility for existing and new cycle users, opening up new origins and destinations for cyclists across East Lancashire and tying into existing public transport services. Improvements are likely to improve bus patronage, should opportunities for integration, multi-modal travel and trip-chaining be accomplished.	Further analysis is considered disproportionate to the potential scheme benefits.
Affordability	No change in existing parking charges, car fuel, vehicle operating costs, road user charges, public transport fares or concessionary travel is proposed as part of the scheme.	Yes - No change in charges is expected.	The scheme is likely to present new route and cycling options encouraging a more healthy lifestyle. This is however likely to be related to the propensity of the local population likely to adopt greener lifestyle choices. Significant mortality and work absenteeism benefits have been calculated for the scheme; however there is no direct impact on affordability.	Further analysis is considered not necessary for this scheme.

Appendix M – S151 Officer Letters

County Councillor Mein   Phone: (01772) 534715

Chair of Transport for Lancashire   Email: damon.lawrenson@lancashire.gov.uk

Your ref:

Our ref: IDFR – DL/JA

Date: 30 March 2015

Dear County Councillor Mein

East Lancashire Strategic Cycleway Project

I can confirm that Lancashire County Council will fund the local contribution of £3m for this project and any subsequent cost increase above the level of grant already agreed. In doing this we allow for variables such as construction inflation and an allowance for the risk in the deviation of cost estimates.

Lancashire County Council has a well established procurement strategy which will be applied to the East Lancashire Cycleway Project. Our procurement strategy aims to protect the Authority from unecessary risk and challenge, while looking to secure the best possible value for money for the Council using Most Economically Advantageous Tender evaluation criteria (MEAT).

Our procurement procedures are transparent, accountable and auditable. To help improve efficiency, we also have framework agreements in key areas, a database of contracted suppliers in the form of a contracts register and a fully electronic procurement system.

Yours sincerely

Damon Lawrenson
Interim Director of Financial Resources

BLACKBURN DARWEN

Cllr Jennifer Mein
Lancashire County Council
PO Box 100
PRESTON
PR1 0LD

Date	23 March 2015
Ref:	LM/AS
Please ask for:	Louise Mattinson
Telephone:	01254 585600

Dear Cllr Mein

On behalf of Blackburn with Darwen Borough Council I would like to confirm that as scheme promoter of the **Weavers Wheel** element of the East Lancashire Strategic Cycle Network we are happy to comply with the Transport for Lancashire Assurance Framework and that we will fund the local contribution and any subsequent cost increases above the level of grant already agreed as set out in the attached document.

Yours sincerely

Louise Mattinson
Director of Finance and IT

Louise Mattinson – Director of Finance and IT
D Floor Tower Block Blackburn Lancashire BB1 7DY
Tel: 01254 585600 e-mail: louise.mattinson@blackburn.gov.uk

Major Scheme Business Case April 2015

Scheme Name:	East Lancashire Strategic Cycle Network (Weavers Wheel section)
Local Authority:	Blackburn with Darwen Borough Council

Scheme Cost Summary (£m)	
LA contribution capital (BwDBC)	£250k (2014 – 2019)
LGF	£600k
Total	£850k

Contact Details For Further Enquiries	
Lead contact: Position: Tel: Email:	James Syson Transport Strategy Team Leader 01254 585776 james.syson@blackburn.gov.uk
Alternative contact: Position: Tel: Email:	Mike Cliffe Strategic Transport Manager 01254 585310 mike.cliffe@blackburn.gov.uk

SECTION 151 OFFICER DECLARATION

As Section 151 Officer for Blackburn with Darwen Borough Council I declare that the scheme cost estimates quoted in this bid are accurate to the best of my knowledge and that Blackburn with Darwen Borough Council have the intention and the means to deliver this scheme on the basis of its proposed funding contribution highlighted in Section 3.3 (and above) covering the period 2014 -2019. Any cost overspends will also be met by BwDBC in accordance with the LEP's Accountability Framework.
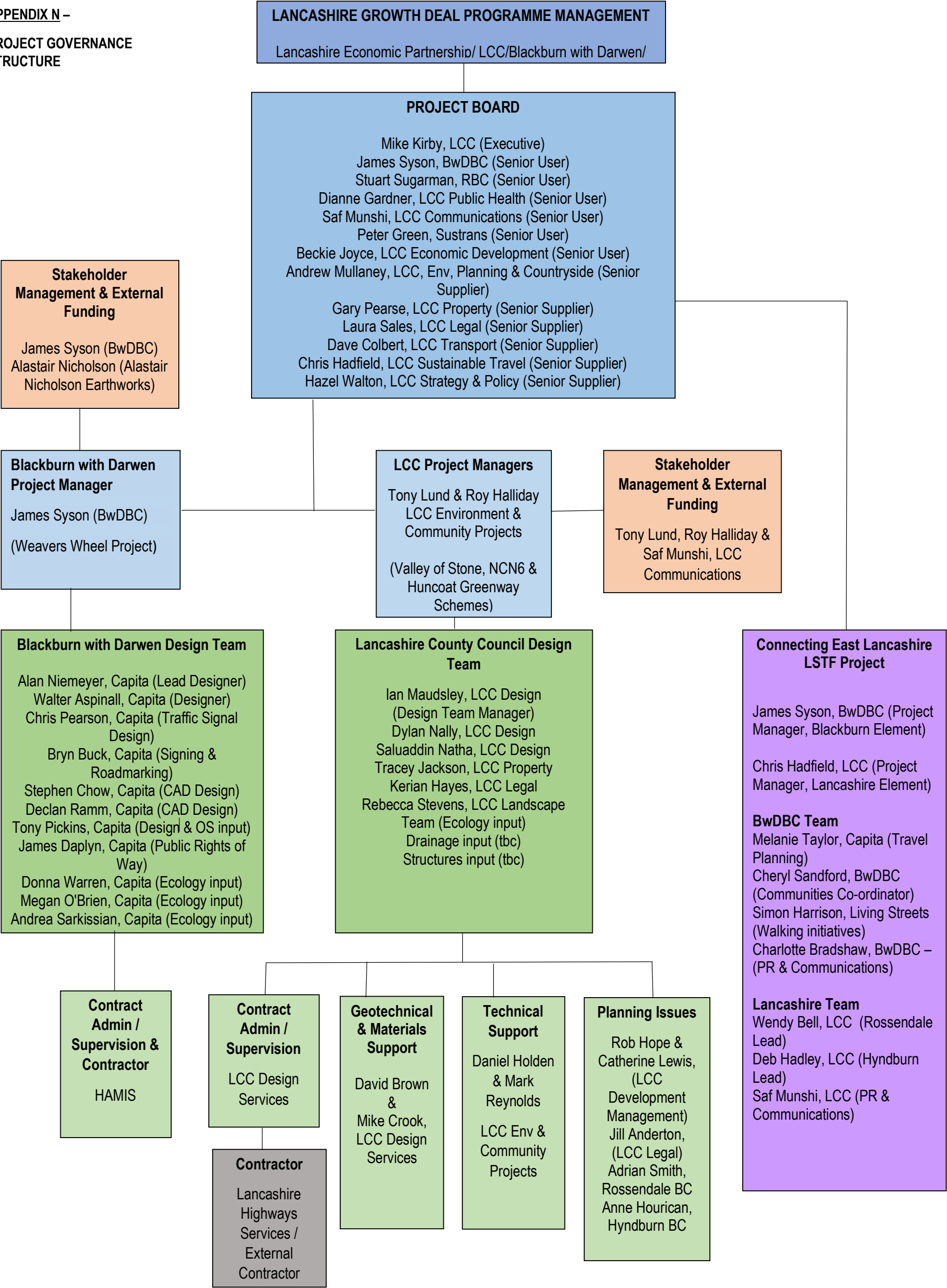
Name: LOUISE MATTINSON   Signed:

Blackburn with Darwen Borough Council

Appendix N – Project Governance Structure

LANCASHIRE GROWTH DEAL PROGRAMME MANAGEMENT

Lancashire Economic Partnership/ LCC/Blackburn with Darwen/

PROJECT BOARD

Mike Kirby, LCC (Executive)
James Syson, BwDBC (Senior User)
Stuart Sugarman, RBC (Senior User)
Dianne Gardner, LCC Public Health (Senior User)
Saf Munshi, LCC Communications (Senior User)
Peter Green, Sustrans (Senior User)
Beckie Joyce, LCC Economic Development (Senior User)
Andrew Mullaney, LCC, Env, Planning & Countryside (Senior Supplier)
Gary Pearse, LCC Property (Senior Supplier)
Laura Sales, LCC Legal (Senior Supplier)
Dave Colbert, LCC Transport (Senior Supplier)
Chris Hadfield, LCC Sustainable Travel (Senior Supplier)
Hazel Walton, LCC Strategy & Policy (Senior Supplier)

Stakeholder Management & External Funding

James Syson (BwDBC)
Alastair Nicholson (Alastair Nicholson Earthworks)

Blackburn with Darwen Project Manager

James Syson (BwDBC)

(Weavers Wheel Project)

LCC Project Managers

Tony Lund & Roy Halliday LCC Environment & Community Projects

(Valley of Stone, NCN6 & Huncoat Greenway Schemes)

Stakeholder Management & External Funding

Tony Lund, Roy Halliday & Saf Munshi, LCC Communications

Blackburn with Darwen Design Team

Alan Niemeyer, Capita (Lead Designer)
Walter Aspinall, Capita (Designer)
Chris Pearson, Capita (Traffic Signal Design)
Bryn Buck, Capita (Signing & Roadmarking)
Stephen Chow, Capita (CAD Design)
Declan Ramm, Capita (CAD Design)
Tony Pickins, Capita (Design & OS input)
James Daplyn, Capita (Public Rights of Way)
Donna Warren, Capita (Ecology input)
Megan O'Brien, Capita (Ecology input)
Andrea Sarkissian, Capita (Ecology input)

Lancashire County Council Design Team

Ian Maudsley, LCC Design (Design Team Manager)
Dylan Nally, LCC Design
Saluaddin Natha, LCC Design
Tracey Jackson, LCC Property
Kerian Hayes, LCC Legal
Rebecca Stevens, LCC Landscape Team (Ecology input)
Drainage input (tbc)
Structures input (tbc)

Connecting East Lancashire LSTF Project

James Syson, BwDBC (Project Manager, Blackburn Element)

Chris Hadfield, LCC (Project Manager, Lancashire Element)

BwDBC Team
Melanie Taylor, Capita (Travel Planning)
Cheryl Sandford, BwDBC (Communities Co-ordinator)
Simon Harrison, Living Streets (Walking initiatives)
Charlotte Bradshaw, BwDBC – (PR & Communications)

Lancashire Team
Wendy Bell, LCC (Rossendale Lead)
Deb Hadley, LCC (Hyndburn Lead)
Saf Munshi, LCC (PR & Communications)

Contract Admin / Supervision & Contractor

HAMIS

Contract Admin / Supervision

LCC Design Services

Geotechnical & Materials Support

David Brown & Mike Crook, LCC Design Services

Technical Support

Daniel Holden & Mark Reynolds

LCC Env & Community Projects

Planning Issues

Rob Hope & Catherine Lewis, (LCC Development Management)
Jill Anderton, (LCC Legal)
Adrian Smith, Rossendale BC
Anne Hourican, Hyndburn BC

Contractor

Lancashire Highways Services / External Contractor

Appendix O – Senior Responsible Owner Declaration

County Councillor Jennifer Mein
Leader of the County Council

Phone: (01772) 533285
Email: mike.kirby@lancashire.gov.uk
Your ref:
Our ref: ED/MK/JMW
Date: 30 March 2015

Dear Councillor Mein

SENIOR RESPONSIBLE OWNER DECLARATION

As senior responsible owner for the East Lancashire Strategic Network, I hereby submit this business case for approval to LEP on behalf of Lancashire County Council and confirm that I have the necessary authority to do so.

The contents of the business case are, to the best of my knowledge, true and accurate based on the information we currently have. I confirm that Lancashire County Council will have all the necessary powers in place to ensure the planned timescales in the application can be realised.

Yours sincerely

Mike Kirby BAHons MRTPI
Director of Transport and Environment

Enclosure

Steve Browne • Interim Executive Director for the Environment
Environment Directorate
PO Box 100 • County Hall • Preston • PR1 0LD

Beacon Authority

2008-2009
Improving Accessibility
2009-2010
Positive Engagement of Older People
Raising Economic Prosperity through Partnerships
Cohesive and Resilient Communities

Appendix P – Project Programme

Appendix P (i) - East Lancashire Strategic Cycleway Programme

ID		Task Name	Start	Finish
1		**Business Case Process**	**Tue 06/01/15**	**Tue 21/04/15**
2		Business Case Preparation	Tue 06/01/15	Mon 16/03/15
3		Independent Scrutiny of BC	Tue 17/03/15	Mon 06/04/15
4		Transport for Lancashire Assessment	Mon 13/04/15	Mon 13/04/15
5		LEP Assessment of Business Case	Tue 21/04/15	Tue 21/04/15
6				
7		**Valley of Stone**	**Mon 16/02/15**	**Thu 13/10/16**
8		Prioritistaion of Sections	Fri 13/03/15	Fri 13/03/15
9		Ecological Surveys	Mon 16/02/15	Fri 08/07/16
10		Detailed Design	Fri 13/03/15	Thu 13/10/16
11		1st Land and Legal Agreements Finalised	Mon 13/07/15	Fri 24/07/15
12		Tender Preparation & Assessment	Mon 27/07/15	Fri 14/08/15
13		Contractor for 1st section appointed	Fri 28/08/15	Fri 28/08/15
14		Work on 1st section starts (see delivery progra	Mon 14/09/15	Mon 14/09/15
15				
16		**National Cycle Route 6**	**Tue 31/03/15**	**Fri 16/12/16**
17		Prioritsiation of Sections	Tue 31/03/15	Tue 31/03/15
18		Ecological Surveys	Mon 13/04/15	Mon 11/07/16
19		Detailed Design	Mon 20/04/15	Fri 16/12/16
20		1st Land and Legal Agreements Finalised	Mon 13/07/15	Fri 24/07/15
21		Tender Preparation and Assessment	Mon 03/08/15	Fri 28/08/15
22		Contractor for 1st section appointed	Mon 07/09/15	Mon 07/09/15
23		Work on 1st section starts (see delivery progra	Mon 21/09/15	Mon 21/09/15
24				
25		**Weavers Wheel**	**Thu 05/03/15**	**Fri 10/06/16**
26		Completion of Detailed Design	Mon 09/03/15	Fri 29/05/15
27		1st Land and Legal Agreements finalised	Mon 01/06/15	Fri 12/06/15
28		Tender Preparation and Assessment	Mon 15/06/15	Fri 10/07/15
29		Contractor for 1st section appointed	Fri 17/07/15	Fri 17/07/15
30		Work on 1st section starts (see deliuvery prog	Mon 03/08/15	Mon 03/08/15
31				
32		Huncoat Greenway	Thu 05/03/15	Thu 05/03/15
33		Prioritsiation of Sections	Tue 31/03/15	Tue 31/03/15
34		Ecological Surveys	Mon 13/04/15	Thu 31/03/16
35		Detailed Design	Tue 31/03/15	Fri 10/06/16
36		1st Land and Legal Agreements Finalised	Mon 10/08/15	Fri 14/08/15
37		Tender Preparation and Assessment	Mon 24/08/15	Fri 11/09/15
38		Contractor for 1st section appointed	Fri 18/09/15	Fri 18/09/15
39		Work on 1st section starts (see delivery progra	Mon 05/10/15	Mon 05/10/15

Timeline markers: 13/04, 21/04, 13/03, 28/08, 14/09, 31/03, 07/09, 21/09, 17/07, 03/08, 31/03, 18/09, 05/10

Legend:
Task | Progress | Summary | External Tasks | Deadline
Split | Milestone | Project Summary | External Milestone

Project: East Lancashire Strategic Cyc
Date: Wed 08/04/15

East Lancashire Strategic Cycleway Programme
11/03/15

Page 1

Appendix P (ii) - East Lancashire Strategic Cycleway Network Delivery Programme

ID	Task Name	Start	Finish
1	**Valley of Stone Construction**	**Mon 14/09/15**	**Fri 07/09/18**
2	S1 - Rawtenstall Station to	Mon 12/10/15	Fri 11/12/15
3	S2 - Hill End Lane to Visito	Mon 05/10/15	Fri 22/01/16
4	S3 - Buckhurst Plant Gap	Mon 08/01/18	Fri 20/04/18
5	S4 - Buckhurst to Tunnels	Mon 22/08/16	Fri 18/11/16
6	S5 - Tunnels and Bridge	Mon 16/11/15	Fri 11/03/16
7	S6 - Thrutch Tunnel to Bkla	Mon 02/11/15	Fri 26/02/16
8	S7 - Blackwood Rd to Holm	Mon 01/05/17	Fri 18/08/17
9	S8- Ormerods Gap	Mon 12/06/17	Fri 06/10/17
10	S9 - Futures Park to Stubb	Mon 14/12/15	Fri 04/03/16
11	S10 - Stubby Lee to New Li	Mon 04/06/18	Fri 07/09/18
12	S11- Britannia Greenway	Mon 16/11/15	Fri 04/03/16
13	S12 - Old Lane to Oak Stre	Mon 28/09/15	Fri 20/11/15
14	S13 - Oak St - Station Rd	Mon 14/09/15	Fri 13/11/15
15	S14 - Station Road to Mas	Mon 16/11/15	Wed 02/03/16
16	S15 - Massey Croft to Land	Mon 11/01/16	Fri 18/03/16
17			
18	**National Cycle Route 6 Constr**	**Mon 21/09/15**	**Fri 16/11/18**
19	S1 - Woodnook Greenway	Mon 05/10/15	Fri 04/03/16
20	S2 - Baxenden - Rising Bric	Mon 20/08/18	Fri 16/11/18
21	S3 - Rising Bridge Road	Mon 16/11/15	Fri 22/01/16
22	S4 - Hud Hey Road	Mon 25/01/16	Fri 18/03/16
23	S5 - Hud Hey Rd - Booth St	Mon 14/05/18	Fri 07/09/18
24	S6 - Booth St - Commerce	Mon 13/08/18	Fri 26/10/18
25	S7 - Well Bank	Mon 14/05/18	Fri 28/09/18
26	S8 - Flip Road - Grane Roa	Mon 04/07/16	Fri 30/09/16
27	S9 - Swinnel & Ogden Broo	Mon 21/09/15	Fri 04/12/15
28	S10 - Helmshore Viaduct	Mon 12/09/16	Fri 20/01/17
29	S11 - Bridge End Close	Mon 19/10/15	Fri 18/12/15
30	S12 - Station Road	Mon 07/12/15	Fri 11/03/16
31	S13 - Snigg Hole	Mon 15/08/16	Fri 18/11/16
32	S14 - Irongate Lane	Mon 15/02/16	Fri 03/06/16
33	S15 - Irwell Vale	Mon 27/02/17	Fri 12/05/17
34	S16 - Lumb Viaduct	Mon 27/02/17	Fri 12/05/17
35	S17 - Lumb Mill	Mon 19/10/15	Fri 18/12/15
36	S18 - Alderbottom - Strongs	Mon 12/02/18	Fri 01/06/18
37	S19 - Strongstry - Stubbins	Mon 11/06/18	Fri 05/10/18
38			
39	**Weavers Wheel**	**Mon 03/08/15**	**Fri 06/07/18**
40	Wheel Section A - B	Mon 03/08/15	Fri 02/10/15
41	Wheel Section B -C	Mon 17/08/15	Fri 16/10/15
42	Wheel Section C - D	Mon 14/09/15	Fri 11/12/15
43	Wheel Section D - E	Mon 17/08/15	Fri 30/10/15
44	Wheel Section E - F	Mon 02/11/15	Fri 22/01/16
45	Wheel Section F - G	Mon 07/09/15	Fri 30/10/15

Timeline headers: 2016 | 2017 | 2018 | 2019
Quarters: Q2 '15, Q3 '15, Q4 '15, Q1 '16, Q2 '16, Q3 '16, Q4 '16, Q1 '17, Q2 '17, Q3 '17, Q4 '17, Q1 '18, Q2 '18, Q3 '18, Q4 '18, Q1 '19, Q2
Months: Mar, May, Jul, Sep, Nov, Jan, Mar, May, Jul, Sep, Nov, Jan, Mar, May, Jul, Sep, Nov, Jan, Mar

Project: East Lancs Cycleway Network
Date: Wed 08/04/15

Legend: Task | Progress | Summary | External Tasks | Deadline | Split | Milestone | Project Summary | External Milestone

East Lancashire Strategic Cycleway Network
Delivery Programme 11/03/15

EAs

Appendix P (ii) - East Lancashire Strategic Cycleway Network Delivery Programme

ID	Task Name	Start	Finish
46	Wheel Section G - H	Mon 14/09/15	Fri 11/12/15
47	Wheel Section H - I	Mon 11/01/16	Fri 18/03/16
48	Wheeel Section I - J	Mon 12/10/15	Fri 18/12/15
49	Wheel Section J - OR1	Mon 03/08/15	Fri 23/10/15
50	Wheel Section OR1 - OR2	Mon 12/10/15	Fri 18/12/15
51	Wheel Section OR1 - Start	Mon 18/01/16	Fri 18/03/16
52	Wheel section OR2 - Start	Mon 31/08/15	Fri 23/10/15
53	Spur A	Mon 08/05/17	Fri 04/08/17
54	Spur B	Mon 11/07/16	Fri 16/09/16
55	Spur C	Mon 12/06/17	Fri 01/09/17
56	Spur D	Mon 07/09/15	Fri 23/10/15
57	Spur E	Mon 09/04/18	Fri 06/07/18
58	Spur F	Mon 09/05/16	Fri 22/07/16
59	Spur G	Mon 07/05/18	Fri 06/07/18
60	Spur H	Mon 11/09/17	Fri 08/12/17
61	Spur I	Mon 23/05/16	Fri 05/08/16
62	Spur J	Mon 15/02/16	Fri 22/04/16
63	Spoke 1	Mon 23/11/15	Fri 12/02/16
64	Spoke 2	Mon 19/10/15	Fri 05/02/16
65	Spoke 3	Mon 08/05/17	Fri 14/07/17
66	Spoke 4	Mon 10/08/15	Fri 06/11/15
67	Spoke 5	Mon 14/09/15	Fri 09/10/15
68	Spoke 6	Mon 05/10/15	Fri 18/12/15
69			
70	**Huncoat Greenway**	**Mon 05/10/15**	**Fri 30/11/18**
71	S1 - cemetery Section	Mon 05/10/15	Fri 04/12/15
72	S2 - Huncoat Ind Estate	Mon 04/06/18	Fri 05/10/18
73	S3 - Bolton Avenue	Mon 13/06/16	Fri 19/08/16
74	S4 - Whitewell Road	Mon 03/09/18	Fri 30/11/18

Project: East Lancs Cycleway Network
Date: Wed 08/04/15

Task	Progress	Summary	External Tasks	Deadline
Split	Milestone	Project Summary	External Milestone	

East Lancashire Strategic Cycleway Network
Delivery Programme 11/03/15

EAs

Appendix Q – Monitoring and Evaluation Plan

Appendix Q –

East Lancashire Strategic Cycleway Monitoring and Evaluation Plan

1.0   Introduction

1.1   Scheme Overview:

The scheme provides the framework for the development of an East Lancashire Strategic Cycleway Network. In Blackburn this will involve the creation of the Weavers Wheel route circling the town with associated spokes into the town centre and spurs to outlying areas and development sites. In Rossendale and Hyndburn the scheme will be focused on three projects which involve turning disused railway lines in to creating strategic high quality cycleways, upon which future more local links and comprehensive networks can be built.

All of the projects which make up this programme have their origins from within with the local community as well as conforming to national and local strategies (as set out in S1.1 of the Business Case). In addition to their value as commuting routes these new cycleways will also act as multiuser greenways providing great additional value both for leisure, health and tourism; and are focused on connecting missing gaps in present networks, to maximise connectivity and deliver high-quality, end-to end cycle networks.

Evaluation for the East Lancashire Strategic Cycleway needs to show a proportionate and targeted approach to the assessment that can demonstrate that the scheme has achieved its objectives and that funding has been wisely invested.

1.2   Monitoring and Evaluation Requirements

The principal aims of monitoring and evaluation are to determine whether the scheme is delivered as planned and whether it delivers the expected benefits. Where the outcomes differ from expectation the evidence base needs to be able to identify the reasons why, and the lessons that can be learnt from this.

2.0   Monitoring of process

The project will be managed in line with the principles of PRINCE2.   This is a robust and widely adopted project management system which makes provision for continuous monitoring and evaluation of the project throughout its delivery.

This is achieved by having a clear project specific governance structure **(Appendix N),** combined with a Risk Register **(Appendix G)** and delivery programme **(Appendix P).** These tools will enable the project managers and ultimately the project board to keep track of the project's progress in relationship to delivering the scheme on time and to budget. These documents will be updated on a daily (weekly?) basis and reviewed at monthly project team meetings. Where appropriate, any deviations from either the budget or delivery timescale

will be identified and reported to the project board at their quarterly meetings or immediately if urgent, in order that mitigation measures can be agreed upon and implemented.

3.0　Intervention Logic and Monitoring Approach

The logic map in **Appendix R** which was developed at a Growth Deal Monitoring and Evaluation Workshop (February 2015) shows the causal links between the context, inputs, outputs, outcomes and impacts of the scheme and helps to focus where the evaluation assessment should be focussed.

The Monitoring and Evaluation plan builds from the logic map using it as a basis to establish an evaluation approach that targets resources and data collection to ensure effective monitoring of scheme progress through the stages and measurement of anticipated outcomes and impacts.

This approach has been agreed as the methodology to be used across all of the current Lancashire Growth Deal funded projects.

4.0　Scheme Outputs and Outcomes

The following outputs and outcomes agreed through the development of the logic map will be monitored for the East Lancashire Strategic Cycleway Scheme. Progress against the outputs and outcomes will be highlighted in quarterly reports to the Project Board.

4.1　Outputs

- x metres of new cycleway constructed
- x metres Length of cycleway improved
- x number of sites improved
- x number of events to encourage use
- Signage, artwork and local community activities
- x number of businesses and places of education/training and employment directly connected to the new network
- x number of businesses and places of education/training and employment within 1km of the new network

These are project outputs which will be easily measurable as the project progresses. We will be able to provide quarterly feedback on these outputs as well as cumulative totals.

The length of new and improved cycleway and sites improved will be monitored through the construction process and recorded when particular sections are officially open to the public to use.

The number of events, signage, artwork and local community activities will be recorded during the design and construction process, as well as incorporated into the requirements for any commission with artists, for example Alistair Nicholson **(Appendix H)**.

The number of businesses and education directly connected and within 1km of the route will be identified and reported within the quarterly monitoring reports issued to the board. As and when sections of the network are completed, GIS will be used to update the data and plans supplied in S1.1.3 of the Business Case and **Appendices C(i) – (v)**

4.2   Outcomes

The project outcomes identified as being measurable are as follows:

- Increase in numbers of people cycling and walking both for commuting and recreation.
- Reduction in car use
- Improved air quality
- Reduction in cycling/pedestrian related accidents
- Reduction in traffic accidents
- Improved cycling information and marketing
- Coherent well signed cycle network for East Lancashire
- Increased visitor spend
- Cost of commuting reduced

These will be collected using a variety of methods

Automatic cycle counters have been installed on many cycle routes across Lancashire in recent years and they provide accurate, daily data on the numbers using cycleways. There is an existing counter on sections of the National Cycle Route 6 and Valley of Stone routes and it is proposed to install a further 2 counters on each of these routes as well as a new counter on the Huncoat Greenway. There are also 2 existing counters on the Weavers Wheel and a further 2 proposed as part of this project.   These counters will provide a month by month picture of how use of the network is increasing as new sections are opened.

The number of car journeys and accidents will be recorded by utilising existing data captured by Lancashire and Blackburn with Darwen Councils. Each year cordon counts of traffic entering Blackburn and Darwen town centres are undertaken. This provides historic trend data for all modes including cyclists and will provide a useful source of annual monitoring data.
The councils also capture data on air quality and this will also be utilised to identify improvements to air quality, especially in the designated Air Quality Management Areas close to the proposed network (Appendix B).

Information regarding visitor spend in the area is captured by Marketing Lancashire and can be used to identify any increases in numbers in the area close to the new cycleways.

Monitoring the remaining outcomes including improved cycling information and a coherent and well signed network will be undertaken by organising annual user surveys. These surveys will use both questionnaires and on site interviews. This approach has been successfully used on other similar schemes recently including the Sustrans Connect 2 Evaluation of the Padiham Greenway and NCN6 routes in Bury. These surveys can identify changing trends in use of the routes on a year by year basis including gathering the following data:

- Number of cyclists/pedestrians per day
- Utility/leisure split
- Age profile
- Mode shift (previous journey mode)
- Previous journey route (if transferred)
- Journey time
- Origins and destinations
- Appropriate health/exercise data
- Suggested future improvements to the network

5.0   Scheme Impacts

The following impacts have been identified for the East Lancashire Strategic Cycleway Network scheme:

- Greater access for residents and visitors to employment, education and training opportunities
- Reduced levels of social and physical isolation
- Increased wages and income
- Economic growth
- Reduced levels of deprivation
- Healthier more sustainable local communities
- Reduced rates of absenteeism from local workforce
- Improved image for East Lancashire locally and nationally (Place shaping)
- Positive impact on tourism and visitor economy
- Cycling viewed as a viable/attractive means of transport
- Reduction in peak time congestion
- More attractive residential developments- helping to unlock sites through sustainable gateways

The above impacts will also be assessed through several methods:

As stated in 4.1 above, accessibility to places of employment and education will be measured using GIS data with regular monitoring as new sections of the network are opened. This can also be used to assess levels of physical isolation.

The impacts relating to health are to be monitored through existing surveys including the Annual Health profiles produced on a district footprint by Public Health England. Any increases to wages and income will be measured at a district level through the Annual Survey of Hours and Earnings (ONS). The Annual Population Survey from the ONS will help to identify increases in employment levels.

Impacts relating to the image of the area and positive tourism impacts are recorded by Visit Lancashire and Marketing Lancashire including the number of hits on their website and visitor nights. A new 'Cycle Lancashire' webpage has also been established in March 2015 within the main Visit Lancashire website which will also provide cycling specific data.

Impacts such as cycling viewed as a more attractive means of transport will be recorded as part of the surveys outlined in 4.2.

6.0 Impact Assessment Evaluation

The evaluation of scheme impacts will form part of an "Outcome Monitoring" assessment which will seek to evaluate whether the scheme has delivered its benefits and therefore its objectives. The Impact Assessment Evaluation will include and build upon the standard monitoring metrics for the scheme objectives.
The Impact Assessment Evaluation will extend the Standard Monitoring by reviewing or developing:

- Scheme delivery and outputs
- Evidence that the scheme has been delivered to the quality standard expected and meets the requirements set out in the business case, including the needs of stakeholders and end users
- Evidence that the scheme has been delivered as intended and is on track to deliver the intended outcomes
- An analysis of the change in defined outcome indicators
- An assessment of alternative explanations of observed change, leading to
- A "Contribution Analysis" of how much has been contributed to these changes by the East Lancashire Strategic Cycleway scheme.

This will involve a comparison of the scheme proposals included within the business case, detailed designs and outturn deliverables.

It is intended that a "Before and After" evaluation approach will be adopted, supported by a prescriptive and focused Contribution Analysis. The Contribution Analysis will be based primarily on data collected through user surveys and include questions specific to the use of the East Lancashire Cycleway but also seek to obtain information on wider issues including travel choice, mode choice, journey frequency and the reasons for any changes that may have occurred after the completion of the cycleway. The surveys undertaken will focus on users of the new cycleway; – however they will be able to demonstrate what percentage are new users thanks to the recent investment and improved cycling facilities.

It is important in terms of the Impact Evaluation that the key scheme objectives are tested on a regular basis to provide the basis for fuller evaluation.

7.0   Monitoring and Evaluation Costs

Lancashire County Council and Blackburn with Darwen Borough Council are aware that the costs of Monitoring and Evaluation cannot be included within the scheme costs. However, both Councils are committed to ensuring that the new cycle network is monitored and evaluated effectively to ensure that:

- The scheme can be improved, where possible
- Future schemes can be improved in terms of efficiency and effectiveness
- LCC /BwDBC / LEP have a more comprehensive knowledge of the Evaluation process which will help inform and guide future transport scheme decisions
- Robust evidence is developed surrounding the improved cycling network to help respond to any queries or criticism
- There is demonstrable evidence to others that the scheme is successful and offers good value for money
- Scheme benefits observed have been generated by the cycleway scheme rather than other, external factors
- There is knowledge of why the scheme worked.

Indicative costs to complete this exercise are based on the costs of the previous detailed surveys and costs include:

- Surveys of cycleway users to be collected via an independent research consultant. This will build on surveys previously undertaken
- Assimilation and analysis of data and production of reports bringing the data and research together
- For the bulk of data collection, no additional costs will be charged to the project as these will be undertaken either by the project team (as part of the project), partners in the project (i.e Sustrans), or by other sections of the Council i.e. business support, economic development teams, and environmental health teams.

We have estimated £7k to cover the survey/interview costs each year The costs of new cycle counter installation is £3K per counter so based on seven new counters this will require an initial £21K with a further £2K each year for monitoring and evaluation. These costs will be allocated from the Integrated Transport Block funding.

8.0   Project Governance

In terms of Monitoring and Evaluation this is detailed as follows:

Responsibility for the delivery of the Blackburn to Manchester Monitoring and Evaluation Plan lies with the Project Board.

Both Lancashire County Council and Blackburn with Darwen Borough Council have Senior Management representation on the Project Board which has the ultimate responsibility for sanctioning and approving the scope of material changes.

Development of the Monitoring and Evaluation Plan will be undertaken by the East Lancashire Strategic Cycleway project team.

Quality Assurance will be ensured by the Project Team:

- Checking progress against agreed project brief and programme
- Checking progress against agreed project milestones and deliverables
- Reporting at key milestone points to the Project Board i.e. in the initial data collection period in Summer 2016 (once the first sections of the cycleway are open), Summer 2019 (following the completion of all 4 routes in the network) and Summer 2024 (following collection of data for a period of 5 years after completion)
- Ensuring that regular dialogue takes place and that update reports are produced on a 6 monthly basis to ensure data is ready for collection in the right format, collated, analysed and evaluated
- Working with the Councils Audit Teams to regularly review the progress of the project, in terms of meeting LEP (DfT) requirements for major schemes.

Reporting to the Project Board, the Project Team will ensure the quality aspect of the Monitoring and Evaluation Plan in line with the agreed brief and specification. The detail of the Plan will be incorporated into the risk register and the Council's Corporate Risk Register and reviewed at regular intervals by the Project Team and Project Board.

Item	Stage	Data Collection timing	Rationale	Information Provided	Report
APPENDIX A - East Lancashire Strategic Cycleway Network Scheme Evaluation Plan					
Scheme Build	Input	During delivery (Summer 2015 – March 2019)	Knowledge	· Programme/project plan assessment, including measures of delivery at key milestones (e.g. implementation log); · Stakeholder management approaches and lessons learnt from this; · Risk management effectiveness (assessing impacts from the risk register); and, · Assessment of whether the scheme is on track to deliver the anticipated benefits and details of any benefits realised.	Quarterly Reports to board (from Summer 2015) One Year After Completion (Summer 2020)
Delivered Scheme	Output	During delivery / post opening (Baseline info. collected from 2015, usage and survey info collected one year after individual sections open (from Summer 2016)	Accountability	· A full description of implemented scheme outputs; including a clear map of the overall scheme and maps of individual elements if appropriate; · Identification of any changes to the scheme since funding approval. For example, changes to planned interventions and/or design of the scheme and details of the reasons for any such changes; · An assessment of whether the scheme has reached the intended beneficiaries; and,	One Year After (Summer 2020)
Costs	Input	During delivery / post opening (Summer 2015 – March 2019)	Accountability	· Outturn investment costs broken down into elements in a similar form as for the Major Scheme funding bid; · Analysis of manifestation of identified risk in the elements of investment costs; · Identification of cost elements with savings and identification of the reasons for cost savings; · Analysis of cost elements with overruns and identification of the reasons for cost overruns; · Outturn operating costs; including evidence of differences between outturn and forecasts and	One Year After and Final (Summer 2020)

				identification of any reasons for the differences, and, · Outturn maintenance or other capital costs compared with forecasts and any unanticipated costs identified. The causes of any variations from forecast costs should be analysed.	
Scheme Objectives (Maximum three)	Output / Outcome / Impact	Pre or during delivery / post opening (up to 5 years) (Summer 2016 – Summer 2025)	Accountability	Three of the key scheme objectives are: - Create an integrated network of high quality strategic cycle routes in East Lancashire by linking together sections of existing infrastructure and creating new links to form coherent, easily identifiable routes. - Provide increased opportunities for communities to access employment and education opportunities by providing connections to existing and proposed employment sites. - Create a significant increase in cycle use in East Lancashire following completion of the network.	One Year After and Final (Summer 2020 – Summer 2025)

Appendix R – Logic Map

Appendix R – Logic Model Template

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Project Title: **East Lancashire Strategic Cycleway Network**

ASSUMPTIONS	RESOURCES	PROCESSES/ ACTIVITIES	OUTPUTS	OUTCOMES	IMPACTS
- Low rates of cycling across East Lancashire (eg Rossendale has 7th lowest rate in the country) - Poor levels of health in East Lancashire compared to county and national average - Positive link between cycling and enhanced health & wellbeing - Suppressed cycling demand for commuter and leisure trips–British Cycling have been able to identify untapped markets in Blackburn with Darwen through a partnership approach - High demand for safe, convenient and well signed cycling routes for commuters and leisure users - Cycleway network will struggle to develop and expand at a rate to satisfy demand without the investment from the LGF - Restricted access to employment opportunities given low car ownership and limited public transport (i.e difficult access – shift patterns etc) - Cycling not currently seen as an attractive transport option – safety, lack of infrastructure etc. - A coherent cycle network will lead to greater numbers of visitors	- Designer/engineer/structures input - Construction management - Ecologist - Land agent and legal services - Planning support - Project management - Programme board - Political support - PR/Comms support - Ability to maintain routes - Stakeholder support – local cycling clubs/groups, British Cycling, Sustrans, CTC - Construction materials and labour - Business case development - Consultancy support	- Engineering design - Ecological assessment including surveys - Community Consultation and engagement - Publicity & promotion - Planning consent - Listed building consent needed for 2/3 structures - Consultation with local businesses - Habitat mitigation - Highway & other regulatory approvals - Land agreements & potential compulsory purchase	- x metres of new cycleway constructed - x metres Length of cycleway improved - x number of sites improved - Events to encourage use - Signage, artwork and local community activities - x number of businesses and places of education/training and employment directly connected to the new network - x number of businesses and places of education/training and employment within 1km of the new network	- Increase in numbers of people cycling and walking both for commuting and recreation. - Reduction in car use - Improved air quality - Reduction in cycling/pedestrian related accidents - Reduction in traffic accidents - Improved cycling information and marketing - Coherent well signed cycle network for East Lancashire - Increased visitor spend - Cost of commuting reduced	- Greater access for residents and visitors to employment, education and training opportunities - Reduced levels of social and physical isolation - Increased wages and income - Economic growth - Reduced levels of deprivation - Healthier more sustainable local communities - Reduced rates of absenteeism from local workforce - Improved image for East Lancashire locally and nationally (Place shaping) - Positive impact on tourism and visitor economy - Cycling viewed as a viable/attractive means of transport - Reduction in peak time congestion - More attractive residential developments- helping to unlock sites through sustainable gateways