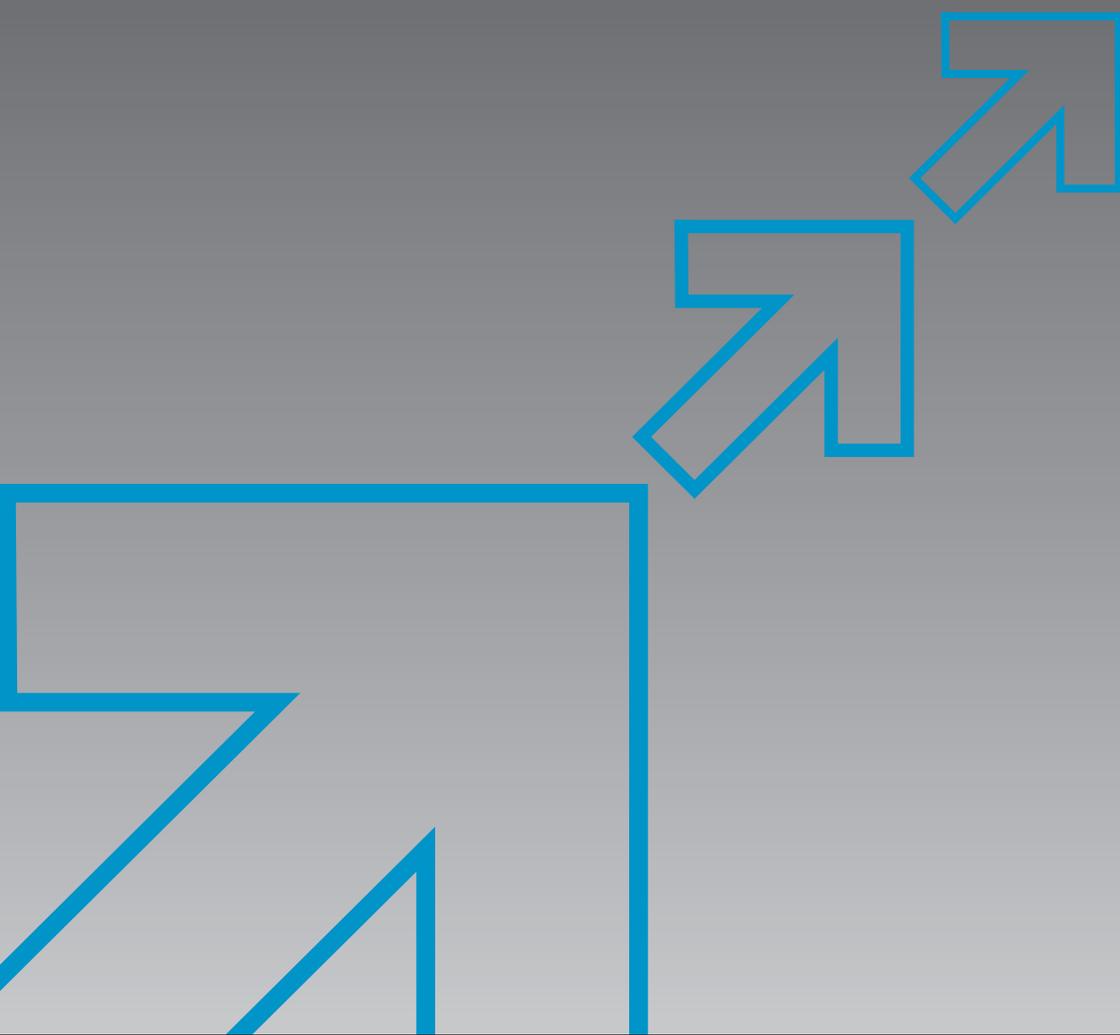


# A SUSTAINABLE JOURNEY TO WORK IN SOUTH YORKSHIRE

ANNEX 9: USER'S GUIDE TO  
TECHNICAL FOLDERS



SHEFFIELD  
**City Region**



SOUTH YORKSHIRE  
INTEGRATED TRANSPORT  
AUTHORITY

# CONTENTS

|       |   |    |
|-------|---|----|
| 1.    | Introduction.....   | 2  |
| 1.1.  | The Annex Documents.....                                  | 2  |
| 1.2.  | This Document.....  | 2  |
| 2.    | Folder A -Walking and Cycling analysis.....               | 3  |
| 2.1.  | Introduction.....   | 3  |
| 2.2.  | Cycling spreadsheet model.....                            | 3  |
| 2.3.  | Cycling and walking benefits discounting.....             | 4  |
| 3.    | Folder B - Greenhouse Gases Analysis.....                 | 5  |
| 3.1.  | Introduction.....   | 5  |
| 3.2.  | CO2 model.....  | 5  |
| 3.3.  | Carbon benefits discounting.....                          | 5  |
| 4.    | Folder C - Air Quality Analysis.....                      | 6  |
| 4.1.  | Introduction.....   | 6  |
| 4.2.  | Air quality model_strategy level.....                     | 6  |
| 4.3.  | Air quality valuation.....                                | 6  |
| 5.    | Folder D - Noise Benefits Analysis.....                   | 7  |
| 5.1.  | Introduction.....   | 7  |
| 5.2.  | Noise assessment.....                                     | 7  |
| 6.    | Folder E - GVA Analysis.....                              | 8  |
| 6.1.  | Introduction.....   | 8  |
| 6.2.  | UDM analysis.....   | 8  |
| 6.3.  | LSTF GVA Analysis.....                                    | 8  |
| 6.4.  | GVA deflation.....  | 9  |
| 6.5.  | GVA discounting.....                                      | 9  |
| 7.    | Folder F - Annualisation Factors.....                     | 10 |
| 7.1.  | Introduction.....   | 10 |
| 7.2.  | Annualisationcalcs.....                                   | 10 |
| 8.    | Folder G - Scheme Costs.....                              | 11 |
| 8.1.  | Introduction.....   | 11 |
| 8.2.  | Scheme Costs.....   | 11 |
| 9.    | Folder H - Risk Assessment.....                           | 13 |
| 9.1.  | Introduction.....   | 13 |
| 9.2.  | Risk Register without Inflation.....                      | 13 |
| 10.   | Folder I - TUBA and COBA input and output files.....      | 14 |
| 10.1. | Introduction.....   | 14 |
| 10.2. | COBA input and output files.....                          | 14 |
| 10.3. | COBA results processing and analysis.....                 | 14 |
| 10.4. | TUBA input and output files.....                          | 15 |
| 11.   | Folder J - Appraisal Tables.....                          | 16 |
| 11.1. | Introduction.....   | 16 |
| 11.2. | Appraisal summary Tables.....                             | 16 |
| 11.3. | Transport Economic Efficiency Tables.....                 | 16 |
| 11.4. | Public Accounts Tables.....                               | 17 |
| 11.5. | Analysis of Monetised Costs and Benefits Tables.....      | 17 |
| 12.   | Folder K - Economic Parameters.....                       | 18 |
| 12.1. | Introduction.....   | 18 |
| 12.2. | Economic Parameters SYSTM+ (WebTAG 3.5.6 - Apr 2011)..... | 18 |

# 1. INTRODUCTION

## 1.1. THE ANNEX DOCUMENTS

This document forms part of the series of Annex documents, which are presented here as an Annex to our Local Sustainable Transport Fund (LSTF) Business Case. This series of documents presents a substantial body of evidence we have compiled while developing the Business Case, which is the final submission to the Department for Transport, following our successful “key component” bid.

## 1.2. THIS DOCUMENT

This document presents a brief use guide to those reviewing the spreadsheets developed for the appraisal of our LSTF Programme. This document is strongly linked to the Economic Case chapter of the main Business Case documents and also the Value for Money Analysis Report (Annex 8). All the spreadsheets described in this document are included in the attached CD.

The annex is structured as follows:

- Chapter 2: Folder A -Walking and cycling analysis
- Chapter 3: Folder B - Greenhouse gases analysis
- Chapter 4: Folder C -Air quality analysis
- Chapter 5: Folder D - Noise benefit analysis
- Chapter 6: Folder E - GVA analysis
- Chapter 7: Folder F - Annualisation factors
- Chapter 8: Folder G - Scheme costs
- Chapter 9: Folder H - Risk assessment
- Chapter 10: Folder I -TUBA and COBA input/output files
- Chapter 11: Folder J -Appraisal tables
- Chapter 12: Folder K -Economic parameters

## 2. FOLDER A -WALKING AND CYCLING ANALYSIS

### 2.1. INTRODUCTION

This chapter of the annex provides a user guide to the Folder A on the attached CD which contains spreadsheets that perform the walking and cycling analysis. This folder includes the following spreadsheets:

- Cycling Spreadsheet Model
- Cycling and Walking Benefits Discounting

### 2.2. CYCLING SPREADSHEET MODEL

This model has been used to:

- calculate physical fitness benefits for cyclists and pedestrians
- calculate journey ambience benefits for new cycle parking and cycle routes
- calculate absenteeism benefits for cyclists and pedestrians and
- calculate accident disbenefits for cyclists.

This spreadsheet contains the following worksheets:

**Figure 2.1 Purpose of worksheets – Cycling Spreadsheet Model**

| Sheet                           | Purpose  |
|---------------------------------|--|
| Top Slice Information           | This worksheet displays the trips removed from the SYSTM+ highway matrices to account for cycling and walking schemes. The figures are presented by time period, for 2015 and 2026. The figures are annualised for each project corridor using the same annualisation factors as used in TUBA. |
| Summary of Benefits             | This worksheet summarises the calculations undertaken for the 60 year appraisal period ready for discounting.  |
| Physical Fitness New Cyclists   | This worksheet calculates physical fitness benefits for cyclists using the methodology outlined in Section 1.10 of WebTAG Unit 3.14.1  |
| Physical Fitness New Walkers    | This worksheet calculates physical fitness benefits for pedestrians using the methodology outlined in Section 1.10 of WebTAG Unit 3.14.1   |
| Journey Ambience - Parking      | This worksheet calculates journey ambience benefits associated with the provision of cycle parking using the methodology outlined in Section 1.9 of WebTAG Unit 3.14.1   |
| Journey Ambience - Cycle Routes | This worksheet calculates journey ambience benefits associated with the provision of cycle routes using the methodology outlined in Section 1.9 of WebTAG Unit 3.14.1  |
| Absenteeism Cyclists            | This worksheet calculates absenteeism benefits for new pedestrians using the methodology outlined in WebTAG Unit 3.14.1  |
| Absenteeism Walkers             | This worksheet calculates absenteeism benefits for new cyclists using the methodology outlined in WebTAG Unit 3.14.1   |
| Accidents                       | This worksheet calculates and values the number of additional cycle accidents likely to occur as a result of the LSTF Programme  |
| VOT and VOT Growth              | This worksheet outlines Values of Time and Values of Time Growth as taken from WebTAG Unit 3.5.6   |
| Casualty Values                 | This worksheet outlines the value of different casualties and the value of a life (including how these change over time in line with GDP growth per capita)  |
| Absenteeism VOT Growth Non Work | This worksheet outlines the value of absenteeism per day and how this grows over time in line with Value of Time Growth (non work) as taken from WebTAG Unit 3.5.6   |

### 2.3. CYCLING AND WALKING BENEFITS DISCOUNTING

This spreadsheet has been used to discount the benefits calculated for walking and cycling including physical fitness, journey ambience, absenteeism and accidents.

This spreadsheet contains the following worksheets:

**Figure 2.2 Purpose of worksheets – Cycling and Walking Benefits Discounting**

| Sheet                          | Purpose   |
|--------------------------------|---|
| Summary                        | This worksheet summarises the 60 year appraisal of walking and cycling benefits (disbenefits) including physical fitness, journey ambience, absenteeism and accidents.  |
| Physical Fitness Cyclists      | This worksheet summarises the benefits (£) relating to physical fitness for cyclists for the 60 year appraisal period and then discounts them to 2002.                  |
| Physical Fitness Walkers       | This worksheet summarises the benefits (£) relating to physical fitness for pedestrians for the 60 year appraisal period and then discounts them to 2002.               |
| Journey Ambience Cycle Parking | This worksheet summarises the journey ambience benefits (£) related to the provision of cycle parking for the 60 year appraisal period and then discounts them to 2002. |
| Journey Ambience Cycle Routes  | This worksheet summarises the journey ambience benefits (£) related to the provision of cycle routes for the 60 year appraisal period and then discounts them to 2002.  |
| Absenteeism Cyclists           | This worksheet summarises the absenteeism benefits (£) for cyclists for the 60 year appraisal period and then discounts them to 2002.                                   |
| Absenteeism Walkers            | This worksheet summarises the absenteeism benefits (£) for pedestrians for the 60 year appraisal period and then discounts them to 2002.                                |
| Accidents                      | This worksheet summarises the total cycle accident dibenefits (£) for the 60 year appraisal period and then discounts them to 2002.                                     |
| Fatal                          | This worksheet summarises the fatal cycle accident dibenefits (£) for the 60 year appraisal period and then discounts them to 2002.                                     |
| Serious                        | This worksheet summarises the serious cycle accident dibenefits (£) for the 60 year appraisal period and then discounts them to 2002.                                   |
| Slight                         | This worksheet summarises the slight cycle accident dibenefits (£) for the 60 year appraisal period and then discounts them to 2002.                                    |
| Discounting Assumptions        | This worksheet outlines the discounting assumptions utilised.   |

## 3. FOLDER B - GREENHOUSE GASES ANALYSIS

### 3.1. INTRODUCTION

This chapter of the annex provides a user guide to Folder B on the attached CD which contains the spreadsheets to perform the greenhouse gas analysis for those schemes not modelled in SYSTM+. This folder includes the following spreadsheets:

- CO2 Model
- Carbon Benefits Discounting

### 3.2. CO2 MODEL

This model has been used to calculate carbon savings of the following schemes which were not modelled in SYSTM+:

- Eco Academy - Eco Stars (BEST1),
- Eco Academy - Transport Academy (BEST1),
- Plugged in South Yorkshire (BARN3, DEAR6, DONV7, DONC5).

This spreadsheet contains the following worksheets:

**Figure 3.1 Purpose of worksheets – CO2 Model**

| Sheet                           | Purpose   |
|---------------------------------|---|
| 2015 Basic Calculations         | Assuming available evidence this worksheet calculates carbon savings for the three schemes for 2015.  |
| Eco Academy - Eco Stars         | This worksheet calculates the carbon savings over the 60 year appraisal period for the Eco Academy: Eco Stars scheme assuming a reduction in the savings over time to 2026.         |
| Eco Academy - Transport Academy | This worksheet calculates the carbon savings over the 60 year appraisal period for the Eco Academy: Transport Academy scheme assuming a reduction in the savings over time to 2026. |
| Plugged in South Yorkshire      | This worksheet calculates the carbon savings over the 60 year appraisal period for the Plugged In South Yorkshire scheme assuming a reduction in the savings over time to 2026.     |
| WebTAG Information Sources      | This worksheet summarises WebTAG values used in the assessment  |

### 3.3. CARBON BENEFITS DISCOUNTING

This spreadsheet has been used to discount the value of carbon savings calculated in the bespoke CO2 model. This spreadsheet contains the following worksheets:

**Figure 3.2 Purpose of worksheets – Carbon Benefits Discounting**

| Sheet                          | Purpose  |
|--------------------------------|--|
| Summary                        | This worksheet summarises the 60 year appraisal of carbon savings for Eco Academy - Eco Stars, Eco Academy- Transport Academy and Plugged in South Yorkshire schemes |
| Eco Academy: Eco Stars         | This worksheet discounts the carbon savings for Eco Academy - Eco Stars scheme   |
| Eco Academy: Transport Academy | This worksheet discounts the carbon savings for Eco Academy - Transport Academy scheme   |
| Plugged in South Yorkshire     | This worksheet discounts the carbon savings for Plugged in South Yorkshire scheme  |
| Discounting Assumptions        | This worksheet outlines the discounting assumptions utilised.  |

## 4. FOLDER C - AIR QUALITY ANALYSIS

### 4.1. INTRODUCTION

This chapter of the annex provides a user guide to Folder C on the attached CD which contains the spreadsheets to perform the air quality analysis. This folder includes the following spreadsheets:

- Air Quality Model \_Strategy Level
- Air Quality Valuation

### 4.2. AIR QUALITY MODEL\_STRATEGY LEVEL

This spreadsheet has been used to estimate NOx emissions at the strategy level. This model contains the following worksheets:

**Figure 4.1 Purpose of worksheets – Air Quality Model**

| Sheet                 | Purpose   |
|-----------------------|---|
| Bespoke Analysis 1    | This worksheet records the Do Minimum outputs of the DMRB 2007 Regional Spreadsheet for three schemes not included in the SYSTM+ (Eco Academy: Eco Stars, Eco Academy: Transport Academy, Plugged in South Yorkshire) |
| Bespoke Analysis 2    | This worksheet calculates the DS impact with the LSTF programme for the 60 year appraisal period  |
| SYSTM+ Outputs        | This worksheet summarises the NOx emissions from the SYSTM+ Models.   |
| Summary for Valuation | This worksheet combines the bespoke analysis with the outputs from the SYSTM+ models  |
| Local Worksheet       | This sheet completes the local air quality worksheet  |
| Regional Worksheet    | This sheet completes the regional air quality worksheet   |

### 4.3. AIR QUALITY VALUATION

This spreadsheet has been used to value the reduction in NOx emissions. It is based on the worksheet provided in WebTAG Unit 3.3.3c.

This spreadsheet contains the following worksheets:

**Figure 4.2 Purpose of worksheets – Air Quality Valuation**

| Sheet                         | Purpose   |
|-------------------------------|---|
| Air Quality Summary Worksheet | This provides a summary of the valuation of NOx emissions for the appraisal period.     |
| NOx Worksheet                 | This worksheet provides the inputs to the calculations taken from the Air Quality model |
| NOx values                    | This worksheet summarise the monetary values of NOx                                     |
| NPV Calculation - NOX         | This worksheet undertakes the NPV calculations for NOx                                  |

# 5. FOLDER D - NOISE BENEFITS ANALYSIS

## 5.1. INTRODUCTION

This chapter of the annex provides a user guide to Folder D on the attached CD which includes the spreadsheet to perform the noise benefits analysis. This folder includes the following spreadsheet "Noise Assessment".

## 5.2. NOISE ASSESSMENT

This spreadsheet has been used to calculate noise levels for the Key Component (Do Minimum) and LSTF Programme (Do Something). This spreadsheet contains the following worksheets:

**Figure 5.1 Purpose of worksheets – Noise Assessment**

| Sheet                  | Purpose  |
|------------------------|--|
| Key Component 2015 AM  | Calculation of noise levels for Key Component (Do Minimum) 2015 AM                         |
| Key Component 2026 AM  | Calculation of noise levels for Key Component (Do Minimum) 2026 AM                         |
| LSTF Programme 2015 AM | Calculation of noise levels for LSTF Programme (Do Something) 2015 AM                      |
| LSTF Programme 2026 AM | Calculation of noise levels for LSTF Programme (Do Something) 2015 AM                      |
| Summary                | This sheet compares the results of the Key Component and LSTF Programme for 2015 and 2026. |

## 6. FOLDER E - GVA ANALYSIS

### 6.1. INTRODUCTION

This chapter of the annex provides a user guide to Folder E on the attached CD which contains the spreadsheets that perform the GVA analysis. This folder includes the following spreadsheets:

- UDM Analysis
- LSTF GVA Analysis
- GVA Deflation
- GVA Discounting

### 6.2. UDM ANALYSIS

This spreadsheet has been used to calculate adjustments to the previous UDM model runs for use in our bespoke GVA analysis. This spreadsheet contains the following worksheets:

**Figure 6.1 Purpose of worksheets – UDM Analysis**

| Sheet                       |  |
|-----------------------------|--|
| Reduction Factors           | This worksheet illustrates how adjustment factors have been calculated taking into account the differing versions of TEMPRO and levels of investment between the Initial Proposal and the MSBC |
| Corridor Analysis           | This sheet summarises the UDM results for the Initial Proposal for the relevant zones and adjusts according to the factors calculated in the "Reduction Factors" worksheet                     |
| Corridor Job Valuation LSTF | The number of jobs calculated to be generated by the LSTF programme in the "Corridor Analysis" worksheet have been valued in this worksheet.   |
| Summary Tables              | Summary of the calculations in the preceding worksheets.   |

### 6.3. LSTF GVA ANALYSIS

This spreadsheet has been used to calculate the programme spend impact of all schemes and GVA impact of the Waterfront Regeneration and Adwick Sustainable Access schemes. This spreadsheet contains the following worksheets:

**Figure 6.2 Purpose of worksheets – LSTFGVAAnalysis**

| Sheet                   | Purpose  |
|-------------------------|--|
| Calculation Spreadsheet | This worksheet undertakes the calculations to estimate the programme spend impact and the post implementation GVA impact of the Waterfront Regeneration and Adwick Sustainable Access schemes. |
| Summary Sheet           | This worksheet provides a summary of the results ready for deflation and discounting.  |

#### 6.4. GVA DEFLATION

This spreadsheet has been used to deflate the calculated GVA benefits. This spreadsheet contains the following worksheets:

**Figure 6.3 Purpose of worksheets – GVA Deflation**

| Sheet              | Purpose   |
|--------------------|---|
| LSTF GVA Deflation | This worksheet lists the GVA benefits calculated by year and then deflates to 2002 prices for the appraisal period. |

#### 6.5. GVA DISCOUNTING

This spreadsheet has been used discount the total benefits achieved from the GVA analysis following their deflation. This spreadsheet contains the following worksheets:

**Figure 6.4 Purpose of worksheets – GVA Discounting**

| Sheet                   | Purpose   |
|-------------------------|---|
| GDP Analysis LSTF       | This worksheet discounts the GVA benefits for the 60 year appraisal period. |
| Discounting Assumptions | This worksheet outlines the discounting assumptions utilised.               |

# 7. FOLDER F - ANNUALISATION FACTORS

## 7.1. INTRODUCTION

This chapter of the annex provides a user guide to the spreadsheets performing the analysis to calculate the annualisation factors for TUBA and other appraisal methods. This analysis includes the spreadsheet "AnnualisationCalcs".

## 7.2. ANNUALISATIONCALCS

This spreadsheet contains the calculations made for the derivation of annualisation factors. There are three sections to this workbook as denoted by the worksheet tab colours as given below:

- RED - Data and calculations for the calculation of weekday peak period annualisation factors
- YELLOW - Data and calculations for the calculation of Highway weekend annualisation factors
- GREEN - Data and calculations for the calculation of Public Transport weekend annualisation factors

This spreadsheet contains the following worksheets:

**Figure 7.1 Purpose of worksheets – AnnualisationCalcs**

| Sheet                           | Purpose  |
|---------------------------------|--|
| Weekday Peak Period Calcs       | Start of highway weekday peak period annualisation calcs sheets  |
| Calibration Counts              | Database of "Calibration" counts used in the development of the SYSTM+ highway model.  |
| Validation Counts               | Database of "Validation" counts used in the development of the SYSTM+ highway model.   |
| Peak Period Annualisation Calcs | Details of final weekday peak period calculations  |
| HW weekend calcs                | Start of highway weekend annualisation calcs sheets  |
| xxxxxx.xls                      | Details of counts at a number of individual count sites in Sheffield/Rotherham/Don Valley area. This data was provided by Sheffield City Council and is for 2010 |
| Summary                         | Summary of counts and calculation for derivation of weekend annualisation factors.   |
| PT weekend calcs                | Start of PT weekend annualisation calcs.   |
| Data and Summary                | Detailed bus and tram passenger data and annualisation calculations.   |

## 8. FOLDER G - SCHEME COSTS

### 8.1. INTRODUCTION

This chapter of the annex provides a user guide to Folder G which contains the spreadsheet that performs the analysis to calculate the scheme appraisal costs. This analysis includes the following spreadsheet "Scheme Costs".

### 8.2. SCHEME COSTS

This spreadsheet has been used to convert the project and maintenance costs into a suitable format for inputting into TUBA. This spreadsheet contains the following worksheets:

**Figure 8.1 Purpose of worksheets – Scheme Costs**

| Sheet                                    | Purpose  |
|--|--|
| Scheme Costs and Risk Value              | Summary of LSTF and local contribution cost by scheme.   |
| Summary Sheet                            | Summary of cost per year by mode and sensitivity test. The inputs for this sheet are sourced from the scheme tabs.   |
| TUBA Dmin Inputs                         | TUBA inputs for the Do minimum scenario. This contains cost that would have to be incurred if LSTF funding is not made available.  |
| TUBA Dsomething Inputs                   | TUBA inputs for the Do something scenario. This includes the central case and three sensitivity tests.   |
| Key Bus Routes                           | Profile for Woodhouse to Sheffield and Parkgate Key Bus Routes and Targetted Corridor Enhancements (Bus element). This includes the cost profile (LSTF and local contribution), risk value proportioned across the financial contributors and the cost profile by central case and sensitivity test. |
| Elsecar Park and Ride                    | Profile for Elsecar Park and Ride. This includes the cost profile (LSTF and local contribution), risk value proportioned across the financial contributors and the cost profile by central case and sensitivity test.  |
| Development of Cycle Routes              | Profile for all cycle routes. This includes the cost profile (LSTF and local contribution), risk value proportioned across the financial contributors and the cost profile by central case and sensitivity test.   |
| Cycleboost infrastructure                | Profile for infrastructure elements of Cycleboost. This includes the cost profile (LSTF and local contribution), risk value proportioned across the financial contributors and the cost profile by central case and sensitivity test.  |
| Malin Bridge and Tram Stop Upgrades      | Profile for Jobconnector Malin Bridge and Don Valley Tram Stop Upgrades. This includes the cost profile (LSTF and local contribution), risk value proportioned across the financial contributors and the cost profile by central case and sensitivity test.  |
| Targetted Corridor Enhancements          | Profile for Targetted Corridor Enhancements (road element). This includes the cost profile (LSTF and local contribution), risk value proportioned across the financial contributors and the cost profile by central case and sensitivity test.   |
| Waterfront and Adwick Sustainable Access | Profile for Waterfront Regeneration and Awick Sustainable Access. This includes the cost profile (LSTF and local contribution), risk value proportioned across the financial contributors and the cost profile by central case and sensitivity test.   |
| Plugged in                               | Profile for Plugged in South Yorkshire. This includes the cost profile (LSTF and local contribution), risk value proportioned across the financial contributors and the cost profile by central case and sensitivity test.   |
| X19 Wentworth to Shortwood rev           | Profile for Job connector X19 and Jobconnector Wentworth to Shortwood. This includes the cost profile (LSTF and local contribution), risk value proportioned across the financial contributors and the cost profile by central case and sensitivity test.  |

|                       |  |
|-----------------------|--|
| Busboost revenue      | Profile for Busboost. This includes the cost profile (LSTF and local contribution), risk value proportioned across the financial contributors and the cost profile by central case and sensitivity test.   |
| Revenue other scheme  | Profile for Marketing and Communications, Travel Training, Walkboost and Cycleboost (except the infrastructure elements). This includes the cost profile (LSTF and local contribution), risk value proportioned across the financial contributors and the cost profile by central case and sensitivity test. |
| ECO Academy Bus       | Profile for ECO Academy (bus elements). This includes the cost profile (LSTF and local contribution), risk value proportioned across the financial contributors and the cost profile by central case and sensitivity test.   |
| ECO Academy other     | Profile for ECO Academy remainder. This includes the cost profile (LSTF and local contribution), risk value proportioned across the financial contributors and the cost profile by central case and sensitivity test.  |
| Maintenance Summary   | Summarises the maintenance costs by year with and without the scheme. The with scheme cost feeds into the TUBA Do Something scenario and the without scheme feeds into the TUBA Do Minimum scenario.   |
| Maintenance by scheme | The amount of money required for maintenance with and without the scheme in place by year.   |

## 9. FOLDER H - RISK ASSESSMENT

### 9.1. INTRODUCTION

This chapter of the annex provides a user guide to Folder H which includes the spreadsheet related to the risk register. This analysis includes the following spreadsheet "Risk Register without inflation".

### 9.2. RISK REGISTER WITHOUT INFLATION

This spreadsheet contains the calculation of risk by scheme (based upon scheme costs without inflation). The process for the assessment of each risk is to identify the effects of its occurrence together with the likelihood of the occurrence being realised.

The financial impact of each risk can be analysed by estimating the most likely cost outcome associated with the risk, together with an estimate of the range of possible costs, to carry out a quantitative analysis of the risks.

The generic risk listed at the top of each infrastructure, service and BEST tab contains the total value of the risks that are apparent in all schemes. The value calculated for the generic risk is proportionate to the total cost of the schemes within the infrastructure, service and BEST activities. This value has then been apportioned across the schemes in Scheme Costs (discussed in Chapter 8).

This spreadsheet contains the following worksheets:

**Figure 9.1 Purpose of worksheets – Risk register without inflation**

| Sheet                           | Purpose   |
|---------------------------------|---|
| Summary of package + risk value | This tab summaries the following tabs, containing the calculation of risk |
| Costs without inflation         | Presentation of the base costs of the schemes                             |
| Infrastructure                  | Risks identified for the infrastructure schemes.                          |
| Service                         | Risks identified for the service schemes.                                 |
| Best                            | Risks identified for the BEST schemes.                                    |
| Calculation                     | Calculation for impact and likelihood of risk occurring                   |

# 10. FOLDER I - TUBA AND COBA INPUT AND OUTPUT FILES

## 10.1. INTRODUCTION

This chapter of the annex provides a user guide to Folder I which contains the TUBA and COBA input and output files and COBA results processing spreadsheet. This chapter includes the following files:

- COBA input and output files
- COBA results processing and analysis (spreadsheet)
- TUBA input and output files

## 10.2. COBA INPUT AND OUTPUT FILES

COBA assessments are carried out separately for the Do-Minimum and Do-Something scenarios with the results extracted and analysed in a spreadsheet (COBA results analysis). The “pure” COBA input and output files are as follows:

- **Do Minimum (i.e. Key Component scenario)**

Input:

KC\_2015\_v2.dat  
KC\_2026\_224.dat

Output

KC\_2015\_V2.prn  
KC\_2026\_224.prn

- **Full Programme (i.e. Preferred Option)**

Input

PA\_2015\_v2.dat  
PA\_2026\_324.dat

Output

PA\_2015\_V2.prn  
PA\_2026\_324.prn

## 10.3. COBA RESULTS PROCESSING AND ANALYSIS

COBA results are processed and analysed in the spreadsheet contained in “COBA RESULTS ANALYSIS.zip”. This spreadsheet undertakes the following tasks:

- Assigns each link in the COBA outputs to the correct priority corridor.
- Sums accident numbers and costs for all links within each priority corridor.
- Compares the DM and DS accident costs and numbers for each priority corridor.
- Converts results into an overall benefit stream and total benefit for the full appraisal period.

The spreadsheet in “COBA RESULTS ANALYSIS.zip” contains the following worksheets:

**Figure 10.1 Purpose of worksheets – COBA results analysis**

| Sheet                    | Purpose  |
|--------------------------|--|
| Assumptions 1            | Basic assumptions concerning the processing of COBA output results.  |
| Benefit Stream           | Final stream of results year by year throughout the appraisal period. Fundamental accident numbers and costs information extracted from PIVOT sheet in discounted form for 2015 and 2026. This information is "undiscounted" for each year and then used to create a simple stream of benefits for the entire appraisal period which is then discounted and summed to provide full discounted benefits for 2015 - 2074 in the correct 2002 price base. |
| PIVOT                    | Comparisons of accident numbers and costs for 2015 and 2026 at individual corridor level. These pivot tables are fed from the Detailed Results sheets below.   |
| DetailedResults_Base2015 | COBA outputs for appropriate scenario. This is formed from link by link COBA outputs with a simple lookup to assign each link to the appropriate Priority Corridor. Accident numbers and costs information is then used to feed into the tables in the PIVOT sheet.  |
| DetailedResults_KC2015   |  |
| DetailedResults_FP2015   |  |
| DetailedResults_Base2026 |  |
| DetailedResults_KC2026   |  |
| DetailedResults_FP2026   |  |
| SECTOR LOOKUPS           | Target sheet for lookups used in the detailed results sheets.  |

#### 10.4. TUBA INPUT AND OUTPUT FILES

The TUBA input and output files are as follows:

- **Highway Preferred option**

Scheme file: HW\_FULL\_PROGRAMME.txt

Output file: HW\_FULL\_PROGRAMME.OUT

- **Public Transport Preferred option**

Scheme file: PT\_FULL\_PROGRAMME.txt

Output file: PT\_FULL\_PROGRAMME.OUT

- **Cost Calculation Run: Central**

Scheme file: COST\_RUN\_PA\_CC.txt

Output file: COST\_RUN\_PA\_CC.OUT

The cost calculation run was performed "standalone" with identical input matrices used for the DM and DS scenarios to allow production of the appraisal tables (discussed in next chapters) that take into account scheme costs only.

- **Economic File**

std\_economics\_1.8\_Apr11\_LSTF.txt

Modified version of the standard economic file and used for both Highway and Public Transport runs.

# 11. FOLDER J - APPRAISAL TABLES

## 11.1. INTRODUCTION

This chapter of the annex provides a user guide to Folder J which contains the appraisal tables in spreadsheet form. This folder includes the following spreadsheets:

- Appraisal Summary Tables
- Transport Economic Efficiency Tables
- Public Accounts Tables
- Analysis of Monetised Costs and Benefits Tables

The AST is provided for the preferred option only while the Transport Economic Efficiency Tables, Public Accounts Tables and Analysis of Monetised Costs and Benefits Tables are provided for all options and sensitivity tests.

## 11.2. APPRAISAL SUMMARY TABLES

This spreadsheet has been used to show the Appraisal Summary Table (AST) of our preferred option. The AST includes both qualitative and quantitative information. The spreadsheet contains the following worksheets:

**Figure 11.1 Purpose of worksheets – Appraisal summary tables**

| Sheet            | Purpose   |
|------------------|---|
| Preferred Option | This worksheet displays AST to present all the main impacts of our preferred option. For our preferred option, we provide detailed justification in the Strategic Case and for which GVA impacts and other benefits are estimated |

## 11.3. TRANSPORT ECONOMIC EFFICIENCY TABLES

This spreadsheet has been used to show the Economic Efficiency of the Transport System (TEE) tables related to our preferred option, Low Cost option and sensitivity tests.

The TEE tables present the net user benefits disaggregated by trip purpose (i.e. Business, including transport operators on the one hand, and Non-business, split into "Commuting" and "Other" trip purposes, on the other), by mode of transport and by impact (time, vehicle operating costs, etc). All the impacts in the TEE table are expressed in money terms.

This spreadsheet contains the following worksheets:

**Figure 11.2 Purpose of worksheets – TEE tables**

| Sheet  | Purpose   |
|--|---|
| Preferred Option   | This worksheet displays the TEE table of our preferred option. For our preferred option, we provide detailed justification in the Strategic Case and for which GVA impacts and other benefits are estimated |
| Low Cost Option  | This worksheet displays the TEE table of an option which includes a subset of the schemes in the LSTF programme   |
| Sensitivity Test 1: Low Demand Growth                              | This worksheet displays the TEE table of a test which examines the impact of assuming lower level of growth in the demand for transport   |
| Sensitivity Test 2: High Demand Growth                             | This worksheet displays the TEE table of a test which examines the impact of assuming higher level of growth in the demand for transport  |
| Sensitivity Test 3a: Underestimate Benefits in Don Valley Corridor | This worksheet displays the TEE table of a test which examines the impact of the uncertainty around the model fit by underestimating benefits in Don Valley Corridor  |
| Sensitivity Test 3b: Overestimate Benefits in Don Valley Corridor  | This worksheet displays the TEE table of a test which examines the impact of the uncertainty around the model fit by overestimating benefits in Don Valley Corridor   |
| Sensitivity Test 4a: Optimism Bias - Low                           | This worksheet displays the TEE table of a test which investigates the impact of the lower end of uncertainty around scheme costs   |
| Sensitivity Test 4b: Optimism Bias - Mid                           | This worksheet displays the TEE table of a test which investigates the impact of the middle point of uncertainty around scheme costs  |
| Sensitivity Test 4c: Optimism Bias - High                          | This worksheet displays the TEE table of a test which investigates the impact of the higher end of uncertainty around scheme costs  |

#### 11.4. PUBLIC ACCOUNTS TABLES

This workbook has been used to show the Public Accounts (PA) tables related to our preferred option, Low Cost option and sensitivity tests.

The PA tables calculate the impact on the Broad Transport Budget and on Wider Public Finances.

The PA tables provide costs as positive numbers while revenues as negative numbers. All amounts in the PA table are discounted to the Department's standard base year using the Department's standard discount rates. They are then converted to the market price unit of account and presented in £m in prices in the Department's standard base year.

This spreadsheet contains the same number of worksheets for all options and sensitivity tests as reported in Figure 11.2.

#### 11.5. ANALYSIS OF MONETISED COSTS AND BENEFITS TABLES

This workbook has been used to show the Analysis of Monetised Costs and Benefits (AMCB) tables related to our preferred option, Low Cost option and sensitivity tests.

The AMCB tables include costs and benefits which are presented in monetised form in transport appraisals.

This spreadsheet contains the same number of worksheets for all options and sensitivity tests as reported in Figure 11.2.

# 12. FOLDER K - ECONOMIC PARAMETERS

## 12.1. INTRODUCTION

This chapter of the annex provides a user guide to Folder K which illustrates the calculations undertaken to update the economic parameters within the SYSTM+ model in preparation for use in assessing the LSTF Programme. This folder contains the following spreadsheet “Economic Parameters SYSTM+ (WebTAG 3.5.6 - Apr 2011)”.

## 12.2. ECONOMIC PARAMETERS SYSTM+ (WEBTAG 3.5.6 - APR 2011)

This spreadsheet has been used to estimate the generalised cost coefficients. This covers the value of time, fuel and non-fuel vehicle operating costs. This spreadsheet contains the following worksheets:

**Figure 12.1 Purpose of worksheets – “Economic Parameters SYSTM+ (WebTAG 3.5.6 - Apr 2011)”**

| Sheet                        | Purpose  |
|------------------------------|--|
| Demand for average weighting | This worksheet displays the average demand values across time periods  |
| RPI                          | This worksheet displays the RPI values which are taken from DMRB V13 S1 Ch7 Table 7/1 Values of RPF and RPI  |
| Value of Time                | This worksheet displays the VoT estimated for each time period and vehicle type  |
| WebTAG 3.5.6 Table 3         | This worksheet displays the forecast growth in the working and non-working VoT extracted from webTAG 3.5.6 Table 3   |
| WebTAG 3.5.6 Tables 1,2      | This worksheet displays the values of working and non-working time per person extracted from webTAG 3.5.6 Tables 1 and 2   |
| WebTAG 3.5.6 Tables 4, 5 & 6 | This worksheet displays the values of car occupancies, vehicle occupancies and annual % change in car passenger occupancy up to 2036 extracted from webTAG 3.5.6 Tables 4, 5 and 6 |
| WebTAG 3.5.6 Table 7         | This worksheet displays the proportion of travel in work and non-work time extracted from webTAG 3.5.6 Table 7   |
| Results (SATURN)             | This worksheet displays the VoT estimated for each time period and vehicle type for the base year and future years   |
| Results (RDM)                | This worksheet displays the macro run for base year  |
| WebTAG 3.5.6 Tables 10-14    | This worksheet displays the values used to estimate the fuel vehicle operating costs extracted from webTAG 3.5.6 Tables 10-14  |
| WebTAG 3.5.6 Table 15        | This worksheet displays the values used to estimate the non-fuel vehicle operating costs extracted from webTAG 3.5.6 Table 15  |

Note: The Intellectual Property Rights of this spreadsheet remain with AECOM therefore it cannot be used by SYPTTE except in relation to SYSTM+. It must not be passed on to any third parties except in this case it can be shared with DfT providing the same restrictions are passed on to them.

