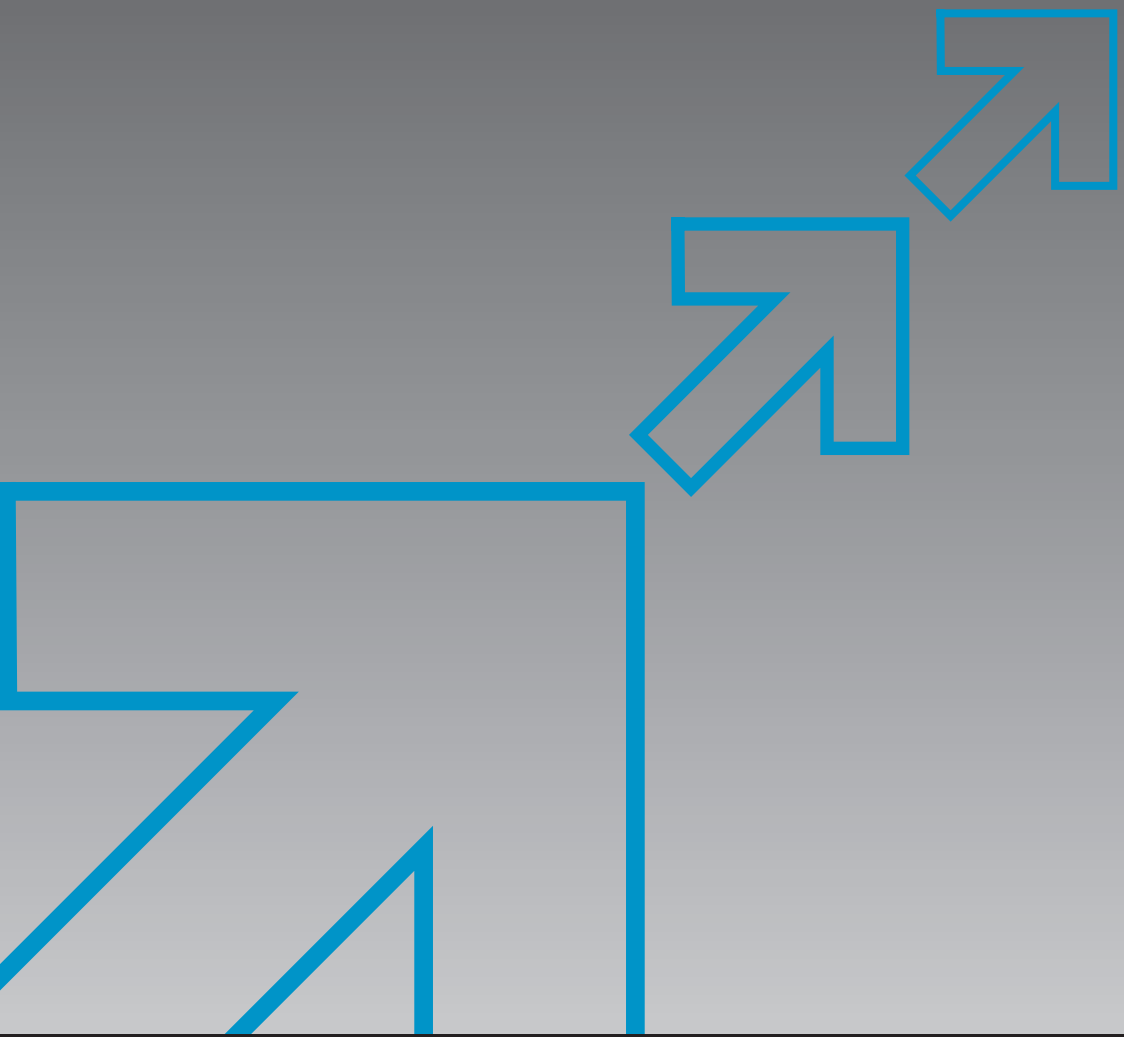
A SUSTAINABLE JOURNEY TO WORK IN SOUTH YORKSHIRE

ANNEX 11: RISK AND BIAS ASSESSMENT



SHEFFIELD
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INTEGRATED TRANSPORT
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CONTENTS

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 focuses on the calculation of Risk and Optimism Bias. It presents the risks calculated for each activity in our LSTF programme, the optimism bias and sensitivity tests undertaken for each scheme.

Chapter Two outlines provides details of the risk assessments and calculations, Chapter Three presents the optimism bias that has been applied to each scheme. Chapter Four provides some conclusions.

2 RISK ASSESSMENT

2.1 OVERVIEW

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.

In the LSTF programme context, not all risks identified have a financial impact. We have defined some strategic risks that may impact on the delivery or feasibility of the programme or parts of it. Although these risks do not contribute to the Quantified Risk Allowance, there is still a need to identify and manage appropriate measures to mitigate their effect. Similarly, some risks impact on the operational phase of the programme and are not included in the Quantified Risk Allowance, but will still be managed by the programme team.

The risk values presented in this annex are based upon the costs post inflation, as presented in the Financial Case. The risk register provided in Folder H on the attached CD is calculated using base scheme costs and does not include allowance for inflation since this has been used in the development of appraisal scheme costs for the economic appraisal of the LSTF programme.

As discussed in the Management Case, the probability of occurrence, as identified for each risk, has been converted into a percentage based on the key provided in **Figure 2.1**. The financial impact of each risk has been estimated as a percentage of the total programme cost, based on the structure presented in **Figure 2.2**.

Figure 2.1: Assessment of Risk Probability

Assessment	Probability
Almost Certain	80%
Likely	60%
Possible	40%
Unlikely	20%
Rare	10%

Figure 1.2: Assessment of Risk Impact

Assessment	Probability
Catastrophic	100%
Major	25%
Moderate	15%
Minor	10%
Insignificant	5%

Nearly 100 risks are currently identified in the Risk Register. Applying these factors to attach a cost to each risk, and adding up the risk costs across the entire programme, has resulted in a risk allowance of £12,709,380. This equates to 34% of the programme cost.

The following three chapters present the risk values for different. Where there are a number of risks that are the same for each scheme, these have been presented as 'generic risks'. To ensure the risk value of the 'generic risks' is proportionate, the schemes have been split by infrastructure, service and BEST. This makes certain that the risk value assigned to the 'generic risks' that are categorised as infrastructure is higher than for the revenue schemes. Schemes that are predominantly capital have a greater number of unknowns and these can come with a higher cost impact.

2.2 RISK VALUES BY SCHEME

Capital Investment

The main overriding risk for the capital investment activities is the potential that the cost estimates are inaccurate and inflation rates change from those assumed. The cost estimates provided for each scheme are based upon experience of delivering similar investment and current operating costs. Of the total LSTF Programme risk value, £4,110,640 is from inaccurate cost estimates and changes to inflation rates impacting upon the infrastructure activities. This is 32% of the risk value for capital investment schemes. **Figure 2.3** lists the infrastructure activity risks.

Figure 2.3: Risk Value by Capital Scheme

Risk	Likelihood	Cost Impact	Risk Value	Mitigation
Generic Infrastructure Activity Risks				
Risk of inflation differing from assumed inflation rate	Likely	Moderate	1,947,145	Monitor inflation and adjust cost plan and risk assessment. Discuss issue with DfT and/or other projects to seek guidance on treatment of inflation.
Accuracy of cost estimates - capital and revenue (operating)	possible	Major	2,163,495	Independent audit of capital costs. Benchmark operating costs.
Unforeseen obstacles at design stages	possible	Moderate	1,298,097	Undertake full consultation with all appropriate parties to develop designs that take account of all likely requirements.
Other contributions not realised	Possible	Moderate	1,298,097	A significant contribution to our match funding sources is from in-kind contributions, such as officer time. The security of our match funding is a significant part of our appraisal process and unsecure match funding will not be included in the assessment.
Delay in delivery	unlikely	minor	432,699	Strong project management and programme governance processes are in place to support on-time delivery.
Conflict between delivery partners	unlikely	minor	432,699	To ensure a strong Governance structure is in place to deal with such conflicts.
Insufficient political public support for schemes	unlikely	minor	432,699	Undertake full consultation with all appropriate parties to develop and tailor schemes to fulfil all partner requirements
TOTAL			**8,004,931**	
Woodhouse to Sheffield and Parkgate Key Bus Routes DONV2				

Risk	Likelihood	Cost Impact	Risk Value	Mitigation
Failure to secure TROs	Unlikely	Major	156,914	Early involvement of public and other stakeholders
Statutory Undertakers taking longer	Unlikely	Moderate	94,149	Regular meetings and exchange/co-ordination of programmes
Unsatisfactory ground conditions	Rare	Major	78,457	Detailed ground investigations will be undertaken and modifications made to scheme design to overcome any issues
TOTAL			**329,520**	
Targeted Corridor Enhancements BARN1, DEAR1, DONV1, DONC1				
Failure to secure TROs	Unlikely	Major	176,870	Early involvement of public and other stakeholders
Unsatisfactory ground conditions	Rare	Major	79,054	Detailed ground investigations will be undertaken and modifications made to scheme design to overcome any issues
There are insufficient experienced staff available to SY partners to carry out the work	rare	Insignificant	19,561	Experienced staff are currently available, if there is any shortfall in resource it would be filled by use of consultant staff from existing framework arrangements and Yorconsult
Difficulty finding interested commercial partners	unlikely	minor	59,491	A UK company already working in the area has expressed interest, as has a well known European motor manufacturer who is wanting to work with city regions in the UK and Europe. If no commercial partner can be secured a demonstration project for private vehicles can be set up at little cost, and the emphasis switched to working solely with public transport operators.
TOTAL			**334,976**	
Elsecar Park and Ride DEAR3				
Approvals not obtained from NR for pedestrian access to platform	unlikely	Moderate	15,147	The responsibility for obtaining these approvals in a timely manner will be transferred the designer once appointed and when funding is confirmed. Detailed consultation with Network Rail and Northern Rail has already been undertaken as part of the preparation of cost estimate and scheme development. This consultation indicates strong support for the scheme.
Unavailability of land	not applicable	Not applicable	-	The land transfer issues are close to completion with respect to a small area of the former school site (BMBC owned) being transferred to SYPTE in exchange for land on which the access road and some proposed housing land (SYPTE) to BMBC. Land extents and valuations have been agreed and the sales documents are being processed by the relevant legal departments.

Risk	Likelihood	Cost Impact	Risk Value	Mitigation
Planning permission not obtained	not applicable	Not applicable	-	Full planning permission exists (with conditions) for the park and ride site and access ramp. Outline planning exists for the associated housing development. The risk associated with delivering the housing element of the scheme and meeting the aspirations of the residents will lie with the developer when BMBC sell the land.
Unsatisfactory ground conditions	unlikely	Moderate	15,147	A detailed ground investigation of the whole site has already been undertaken and indicated no significant risk of ground issues impacting on the delivery of the park and ride site.
TOTAL			**30,293**	
Cycle Boost (infrastructure only) BEST4				
Lack of Take up by SMEs	Unlikely	Moderate	6,401	Would require further promotion, potential to include other businesses and organisations
Failure to install by recipient/ SMEs	unlikely	insignificant	2,134	This is dealt with by the provider who would take the stands back and reallocate
TOTAL			**8,535**	
Cycle Routes BARN2, DEAR3, DEAR4, DONV5, DONV6				
Land not in council ownership and consent required	likely	Moderate	647,140	There is one section of a cycle route not currently in council ownership. Permission will need to be sought, this should be ok. However, if there is a problem, al alternative route can be proposed
TOTAL			**647,140**	
Adwick Sustainable Access DONC3				
Breakdown of plant in possession and delays in the process	Unlikely	major	120,498	Spares and on-call arrangements to be put in place.
Increased Noise pollution e.g. night working	likely	minor	144,598	Inform local residents in advance of works to be undertaken and duration
Presence and damage of unrecorded services during removal of Permanent Way	rare	Moderate	36,149	Services to be located prior to works using a NR approved CAT scanning device.
Existing structures and surrounding areas provide nesting areas for wildlife	unlikely	minor	48,199	A habitat survey has been carried out. No evidence of wildlife identified.

Risk	Likelihood	Cost Impact	Risk Value	Mitigation
Lack of availability of road closures	unlikely	Moderate	72,299	Book road closures for works well in advance.
Land Ownership issues in surrounding area	likely	minor	144,598	Network Rail to liaise with DMBC to determine most appropriate approval of the adjacent landowners.
Cover requirements for services	Possible	minor	96,399	Principal contractor and Form B designer to liaise with the utility suppliers regarding the required cover for services.
Existing waterproofing found to be in poor condition and requires replacing	Possible	Moderate	144,598	Existing waterproofing to be examined upon removal of the existing surfacing.
TOTAL			**807,339**	
Waterfront Regeneration DONC2				
National Grid will not allow access to their land.	unlikely	Moderate	96,458	Continued dialogue with National Grid to formalise agreement to allow DMBC to undertake works. Work in close partnership with National Grid to ensure the scheme constructed is in accordance with National Grid's agreed scheme. Extensive negotiations have been undertaken to date and National Grid has designed their development scheme currently being considered by DMBC Planning Authority in accordance with the Holmes Market scheme design layout.
Loss of key DMBC project staff due to Change Programme	Possible	minor	128,611	Re-allocation of staff in relevant DMBC teams and identifies additional resource to procure external staff assistance if deemed necessary.
Construction will cause environmental contamination of the local areas such as site run-off contaminating local water courses.	Unlikely	insignificant	32,153	Transfer risk to contractor. Contractor to implement a Construction Impact Management Plan.
Unforeseen increased costs in disposal of site waste.	Unlikely	insignificant	32,153	Transfer risk to contractor. Contractor to implement a Site Waste Management Plan.
Unforeseen ground conditions encountered within the site.	unlikely	Moderate	96,458	Take account of ground investigation reports on adjacent sites. Provide all Site Information available. Further ground investigations to be undertaken prior to commencement of works. Preliminaries cost element includes for mitigation of potential unforeseen ground issues.

Risk	Likelihood	Cost Impact	Risk Value	Mitigation
The completed scheme does not provide sufficient traffic capacity to enable full development of the Waterfront site	Unlikely	Major	160,764	Detailed Strategic Modelling work undertaken in respect of the junction and its capacity to support development at Waterfront. Conclusion of the work was that 100% of the 15ha target development site could be supported by the proposed junction improvement scheme.
Changes to temporary traffic management arrangements during construction imposed on the Contractor.	Possible	minor	128,611	Ensure through liaison with DMBC Network Manager's Team and work in partnership with contractor to develop clear traffic management plan for the construction phase.
Significant archaeological finds within the construction site	rare	Major	80,382	Timely consultation with Planning and South Yorkshire Architectural Services and inclusion in the programme of works of time period to undertake any necessary investigations.
TOTAL			**755,590**	
Plugged in South Yorkshire BARN3, DEAR6, DONV6, DONC4				
There are not enough high quality responses to out PQQ and ITT	Unlikely	Major	52,503	We are aware of a vast number of charging point suppliers and have had substantial contact with a number of them. We are aware of a number of dealers of electric vehicles that have expressed an interest in being on a panel. We are also aware of several green leasing companies who see electric vehicles as a key market to enter.
There isn't sufficient demand from SMEs	Unlikely	Moderate	31,502	Developing a pipeline of interested SMEs before the scheme starts. CO2Sense has already secured interest from three companies, one of which is very high-profile and has indicated their desire to help attract other SMEs to the project.
The co-ordination of vehicle and charging point supply is not sufficient and efficient	Unlikely	minor	21,001	The web portal will provide detailed advice to SMEs on compatibility but we will also provide SMEs with a fully managed service if needed. CO2Sense has deliberately designed the projects delivery model to minimise this likelihood of this risk occurring.
The returned tenders are more costly than the budget we have earmarked	Possible	Moderate	63,004	Undertaking commercial research to understand the costs involved in supplying electric vehicles and charging points. CO2Sense has undertaken detailed research on the costs suppliers will incur in delivering the scheme.

Risk	Likelihood	Cost Impact	Risk Value	Mitigation
Dissatisfaction with quality of service offered by suppliers results in negative press and MP involvement	Possible	Moderate	63,004	CO2Sense will carefully manage suppliers using a Prince2 methodology. We will also perform a quality control role by contacting SMEs during the trails o pick up any concerns about service quality before they become major concerns.
TOTAL			**231,015**	

Figure 2.3 lists the risks identified for the capital schemes in our programme and their mitigations. The main risks relate to the cost estimates being inaccurate and there being unforeseen obstacles at design stage. Cost estimates may change if rates of inflation are not as proposed in the Financial Case. Detailed work has been undertaken to ensure the cost estimates are as accurate as possible at the time of writing this Business Case. To reduce the impact of inaccurate cost estimates upon the delivery of the capital schemes in our programme, the rates of inflation will be monitored constantly to understand likely changes at the earliest possible opportunity.

Furthermore, unforeseen obstacles at design stage can have implications upon the cost of a scheme. Where it has not taken place already, full consultation with scheme designers and stakeholders will take place to ensure all likely requirements of each scheme are taken into account. This will work to ensure that the cost of the scheme takes into account all likely obstacles that may be incurred during the implementation of the scheme.

Public Transport

The greatest risk for the public transport activities is that patronage does not fulfil aspirations causing the service to not run commercially and dis-continue. This risk accounts for £135,996 of the total risk value for Public Transport schemes. **Figure 2.4** below lists the risks, their likelihood and risk value identified for each of the service activities.

Figure 2.4: Risk Value by Public Transport Activity

Risk	Likelihood	Impact	Risk Value	Mitigation
Generic Service Activity Risks				
Risk of inflation differing from assumed inflation rate	possible	Moderate	34,157	Monitor inflation and adjust cost plan and risk assessment. Discuss issue with DfT and/or other projects to seek guidance on treatment of inflation.
Accuracy of cost estimates - capital and revenue (operating)	unlikely	Moderate	17,078	Independent audit of capital costs. Benchmark operating costs.
Unforeseen obstacles at design stages	possible	minor	22,771	Undertake full consultation with all appropriate parties to develop designs that take account of all likely requirements.
Other contributions not realised	rare	insignificant	2,846	A significant contribution to our match funding sources is from in-kind contributions, such as officer time. The security of our match funding is a significant part of our appraisal process and unsecure match funding will not be included in the assessment.
Delay in delivery	unlikely	minor	11,386	Strong project management and programme governance processes are in place to support on-time delivery.
Conflict between delivery partners	unlikely	minor	11,386	To ensure a strong Governance structure is in place to deal with such conflicts.
Insufficient public support for schemes	unlikely	minor	11,386	Undertake full consultation with all appropriate parties to develop and tailor schemes to fulfil all partner requirements
TOTAL			**111,010**	
Jobconnector: Wentworth to Shortwood DEAR5				
Staff changes within SYPTE or the partner organisations.	Possible	minor	10,376	SYPTE and its partners are accustomed to dealing with grant funded projects, with flexible and reactive working practices.
Current economic influences impact on delivery.	Possible	minor	10,376	The project has been developed mindful of the challenging financial situation. The bid has been designed to minimise external factors as much as possible and services would be reactive to market fluctuations and designed to keep within overall budget.

Risk	Likelihood	Impact	Risk Value	Mitigation
Failure to achieve anticipated project outputs and outcomes.	Unlikely	moderate	7,782	Effective programme management and monitoring and robust contract arrangements should ensure delays or slippage are avoided in terms of delivering outputs and key milestones. Should passenger loadings not develop as anticipated, the design of the project ensures that there is minimal liability. Services would be reactive to market fluctuations and, if necessary, vehicles will be re-integrated into the Community Transport Vehicle Replacement Programme.
TOTAL			**28,535**	
Jobconnector: X19 BARN4				
Projected passenger numbers not materialised	Unlikely	major	62,295	Consider adjusting the timetable service times and stops
Change in Commercial Market - through increased competition	Unlikely	major	62,295	Consider adjusting the timetable service times and stops
Operators withdraw commercial core	Unlikely	major	62,295	Consider alternative funding sources
TOTAL			**186,885**	
Jobconnector: Malin Bridge DONV4				
The bus service is dis-continued commercially	Possible	moderate	73,701	Guarantee from operator to be sought
Unable to obtain Highways authority approval	Unlikely	insignificant	12,283	Close working with Highway Authority (for example, commissioning design from them)
TOTAL			**85,984**	
Don Valley Tram Stop Upgrades DONV3				
Unable to agree on Maintenance Responsibility with supplier	Unlikely	major	74,411	Start early negotiation. Do not progress until agreement is in placed.
Specification for equipment not clear enough	Unlikely	moderate	44,646	Clear brief and programme sufficient time to discuss with designer and stakeholder
Poor Co-ordinations of various contractor on site to implement different "bits of works"	Unlikely	moderate	44,646	Early involvement with contractors. Careful consideration to be given to procurement process.
Poor Interface with the public during implementation	Unlikely	insignificant	14,882	Transfer to Contractor
Change of spec due to Additional	Possible	moderate	89,293	To be monitored. Initial discussion with PM for Additional Tram

Risk	Likelihood	Impact	Risk Value	Mitigation
Tram Vehicles/Tram Train require the removal of the 2 "inner" boarding points of each platform				Vehicle identifies no major issue for the trial scheme. (Continue liaison with PM for both projects).
TOTAL			**267,878**	

Figure 2.4 lists the risks identified and their mitigations for the Public Transport Schemes. The main risk is that patronage does not fulfil expectations and the service does not become commercially viable. Detailed work has been undertaken with the Operators to ensure that all Jobconnector services fulfil a requirement and can therefore become commercially viable by the end of the LSTF period. Service timetables and stopping locations can be changed to ensure they meet the needs of the passengers if this is the cause of the reduced patronage figures.

Business and Employer Sustainability Toolbox (BEST)

The biggest risk overall to the BEST interventions is the potential that elements require more promotion and marketing than originally anticipated to reach their target. The risk value for limited awareness of the scheme is £130,838. **Figure 2.5** summarises the risk value of each BEST scheme.

Figure 2.5 Risk Value by BEST Activity

Risk	Likelihood	Impact	Risk Value	Mitigation
Generic BEST Activity risks				
Risk of inflation differing from assumed inflation rate	rare	minor	44,927	Monitor inflation and adjust cost plan and risk assessment. Discuss issue with DfT and/or other projects to seek guidance on treatment of inflation.
Unforeseen obstacles at design stages	rare	minor	22,464	Undertake full consultation with all appropriate parties to develop designs that take account of all likely requirements.
Other contributions not realised	rare	minor	29,951	Significant contributions of our match funding sources are from in-kind contributions, such as officer time. The security of our match funding is a significant part of our appraisal process and unsecure match funding will not be included in the assessment.
Delay in delivery	rare	insignificant	22,464	Strong project management and programme governance processes are in place to support on-time delivery.
Conflict between delivery partners	rare	minor	14,967	To ensure a strong Governance structure is in place to deal with such conflicts.
TOTAL			**134,773**	
ECO Academy BEST1				
Failure to implement measures to meet Government standards regarding Air Quality and carbon reduction.	unlikely	minor	35,634	Resource allocation and funding shifted to meet short term priorities. Management Resource and funding allocated to complete identified actions.
Failure to achieve required marketing levels– maintaining the Scheme profile is essential to maintain scheme growth and maximise contribution towards Improving air quality and supporting economic growth in South Yorkshire.	unlikely	moderate	61,934	A Communications and Marketing plan is developed and agreed by the ECO Stars Steering group to maintain Scheme profile.
fund all of the training of ADIs and they then do not deliver the training to their learner drivers.	rare	moderate	22,483	This is very unlikely as this programme fits with the Modernisation of Driver Training agenda of the Driving Standards Agency. The ADI training would not be compulsory and the ADIs would have to invest

Risk	Likelihood	Impact	Risk Value	Mitigation
				their own time free of charge in it. It would therefore be unlikely that they would not use it.
Lack of buy-in by bus companies	unlikely	moderate	61,934	Early and extensive engagement with businesses to ensure they fully understand the benefits of the initiative. First are already well engaged and have been running the scheme for some time
TOTAL			**181,985**	
Bus Boost BEST2				
Demand is lower than supply so we underspend	unlikely	moderate	44,133	Increased effort would be put into promoting the benefits of taking up scheme
The scheme requires more promotion than expected	unlikely	moderate	44,133	Ensure effective promotion throughout the process
TOTAL			**88,267**	
Walk Boost BEST3				
The scheme requires more promotion than expected	unlikely	minor	42,720	This issue of awareness can be mitigated by linking the promotion of walk boost with other incentive schemes, such as Cycle Boost and Bus Boost to strengthen the offer
The results of the pedestrian audits and identified improvement works cannot be predicted. If complex improvement works are identified as being needed to improve the pedestrian environment these may not be affordable or deliverable within the LSTF period/funding.	possible	Moderate	124,352	Experience indicates that pedestrian audits identify minor improvements. Where more complex improvement works are identified additional funding will be sought to carry these out as soon as is practical.
TOTAL			**167,072**	
Cycleboost BEST4				
Take-up doesn't match available resources	unlikely	moderate	36,207	Setting appropriate selection criteria in the procurement process and proper vetting of tenderers, to ensure they are able to successfully recruit participants. Regular (monthly) progress meetings with service provider. Set review points within the contract so that underperformance can be identified and addressed (if necessary by changing service provider). If demand is too high, it will be managed by levying a small user charge, thus raising revenue to expand provision. If demand is too low, SCC will activate networks of contacts within local organisations (e.g. Healthy Cross, contacts in 'Travel Plan' organisations etc) to publicise the service more widely

Risk	Likelihood	Impact	Risk Value	Mitigation
TOTAL			**36,207**	
Travel Training BEST5				
Lack of buy-in from partners/colleges	possible	moderate	76,275	Ensure effective consultation and promotion of scheme
Changes to student pass qualification (Foundation Learning) transfer burden of financial support to concessions pot, leading to lack of interest in the scheme amongst a key user group (16 to 18 year olds)	unlikely	moderate	32,130	Ensure effective consultation and forward planning to ensure all known plans to change student pass qualifications are known well in advance
TOTAL			**108,405**	
Marketing and Communications BEST6				
Poor mechanisms in which to sell the product	unlikely	minor	48,397	A flexible and effective marketing plan needs to be developed to allow for unsuccessful delivery. Alternative plans may be most effective
Limited awareness raised through scheme	unlikely	minor	49,397	Monitoring of the effectiveness of the communications programme is on-going to ensure effective delivery
Resources not being used how programme managers had envisaged	unlikely	moderate	65,259	Strong engagement between programme managers and marketing team is in place early to ensure marketing is effective
TOTAL			**163,053**	

Figure 2.5 lists the risk that have been identified and their mitigations for the BEST schemes. The main risk is that more promotion and marketing of certain elements of BEST is required to ensure the scheme meets its anticipated target. This could impact upon the cost of the project. The mitigation in place to prevent this being a risk to the deliverability of our LSTF programme has two elements. The take-up of all BEST activities will be monitored at strategic times to ensure they are reaching the required number of people in the respective locations. Secondly, the marketing strategy for BEST activities can be adjusted to ensure that schemes that are struggling to achieve their targets are marketed more closely with those that are achieving their requirements. Together, this should ensure that any impact of this risk is minimised.

3 OPTIMISM BIAS

3.1 INTRODUCTION

This section summarises the steps undertaken to determine a suitable level of optimism bias to apply to the different elements of the scheme costs. The approach adopted is based upon the guidance within WebTAG Unit 3.5.9 for the capital scheme elements. As no guidance is available for applying optimism bias to revenue schemes we have determined this using local evidence from similar schemes.

This section is based upon the note "Approach to Optimism Bias, Risk, Inflation, Annualisation and Calculation of Interim Year Benefits" we sent to the Department for Transport for comment on the 28th October 2011.

3.2 CAPITAL SCHEMES

The following steps have been used to determine the level of optimism bias for capital schemes:

Step 1: Determine the Nature of the Project

In accordance with WebTAG Unit 3.5.9, the nature of the capital scheme elements has been determined using the project categories listed in Table 7 of this WebTAG Unit, acknowledging the risk of cost overruns within these categories can be treated as statistically similar. This process has established that other than the Don Valley Tram Stop Upgrades, which fall under the rail category, all other capital schemes have been categorised as road projects. However, as Plugged in South Yorkshire will provide charging equipment and vehicles, it is a non-standard form of transport infrastructure so has been considered separately. Therefore, it is felt this scheme would be better assessed using the Supplementary Green Book Guidance – Optimism Bias.

Step 2: Identify the Stage of Scheme Development

Following on from Step 1, the stage of scheme development for each of the capital schemes has been established. The stages of development set out in Table 8 of Unit 3.5.9, the quality of the risk assessment and cost estimates for each scheme element have been used to determine where a scheme sits in the development process. The extent to which optimism bias may or may not have been mitigated has also been considered.

Most capital schemes are assumed to fall into the Stage 1 category acknowledging the stage of the development of these elements, the quality of risk assessment conducted thus far and the quality of the cost estimate. However, it has been assumed two capital schemes fall into the Stage 2 category due to their more advanced stage of scheme development, the robustness of the cost estimate and the mitigation of scheme risks that have already occurred. These schemes are Elsecar Park and Ride and the infrastructure element of Cycleboost.

Elsecar Park and Ride is assumed to be a Stage 2 scheme as it is ready for implementation as soon as funding becomes available. The land for the scheme has been secured following completion of the transfer of land between SYPTE and Barnsley Metropolitan Borough Council. The site also has full planning permission and a detailed ground investigation of the whole site, indicating that there are no significant delivery risks. Cost estimates have been independently established by SYPTE Quantity Surveyors and cross checked with estimates made by the Network Rail delivery team. It only remains for the scheme to be procured in accordance with SYPTE Standing Orders and the restricted tender process.

The infrastructure element of Cycleboost has also been assumed to be a Stage 2 scheme. The scheme will provide up to 1,000 cycle stands during the LSTF period. However, the provision of the stands will be undertaken by a third party service provider and installation will be undertaken by the recipients of the stands. Consequently, no statutory permissions or consents are required by SYPTE and District Partners. The risk of providing the stands and managing the scheme is transferred to the third party service provider through contractual arrangements. If the stands are not installed within a set timeframe the third party service provider will reclaim the delivered stands to be used elsewhere. Furthermore, the costs for the scheme are robust being based on similar costs used by one of the providers of this service in another area of the country.

Two other schemes are thought to lie between Stage 1 and Stage 2. These are Adwick Sustainable Access and Waterfront Regeneration. It would be unsuitable for these schemes to be placed in the Stage 2 category as District Partners have not yet been granted the powers required to implement them e.g TROs etc. The procurement strategy is also yet to be formally agreed. However, their design is sufficiently detailed, the cost estimates are robust and externally verified, site survey work has been completed and detailed risk registers established and regularly updated. It is therefore felt these projects lie between Stage 1 and Stage 2 and adjustments to the recommended uplift factors have been calculated.

Step 3: Apply Recommended Uplift Factors

The uplift factors have been determined using those presented in Table 9 of WebTAG Unit 3.5.9 using the scheme stages identified above. Where it was determined in Step 2 that a project falls between stages it has been necessary to establish alternative optimism bias uplifts to those presented in Table 9. The guidance indicates that appraisers should use suitable judgement in deciding applicable uplifts. To assist in this process the Supplementary Green Book Guidance – Optimism Bias has been referred to in order to understand how evidence on contributory factors can be used to reduce the uplift for selected schemes. A similar process that draws on this supplementary guidance has also been used to estimate an optimism bias uplift for Plugged in South Yorkshire as noted above.

Waterfront Regeneration is a standard civil engineering scheme according to the classification presented in paragraph 3.10 of the Supplementary Green Book Guidance – Optimism Bias. Table 3 of this document has therefore been utilised to establish the extent to which the contributory factors have been managed in order to calculate a new optimism bias uplift value.

Adwick Sustainable Access is also a standard civil engineering scheme according to the classification presented in paragraph 3.10 of the Supplementary Green Book Guidance – Optimism Bias. Table 3 of this document has then been utilised to establish the extent to which the contributory factors have been managed in order to calculate a new optimism bias uplift value.

As noted above, Plugged in South Yorkshire can be considered a separate scheme as it does not provide traditional transport infrastructure. It is felt this should be dealt with as an outsourcing project according to the classification presented in paragraph 3.10 of the Supplementary Green Book Guidance – Optimism Bias. This is because CO2Sense will source the charging points from a supplier who will supply and install on a service basis. Table 4 of the document has therefore been utilised to establish the extent to which the contributory factors have been managed in order to calculate a new optimism bias uplift value. The calculations and supplementary evidence were provided in the note we submitted to DfT on 28th October 2011 and supplied if necessary.

Step 4: Perform Sensitivity Analysis

In order to satisfy the requirement for sensitivity analysis around the uplift used we have also identified a range around the core level of optimism bias determined using the procedures outlined above. The process for calculating an optimism bias and sensitivity tests for the capital schemes is summarised by **Figure 4.1**.

Figure 4.1: Optimism Bias and Sensitivity Tests by Capital Scheme

Scheme	Type	Nature of Capital Project	Scheme Development Stage	Proposed Core Level of Optimism Bias	Sensitivity Tests		
					High	Mid	Low
Woodhouse to Sheffield and Parkgate Key Bus Routes DONV2		Road	Stage 1	44%	66%	30%	15%
Targeted Corridor Enhancements BARN1, DEAR1, DONV1, DONC1	Bus	Road	Stage 1	44%	66%	30%	15%
	Road	Road	Stage 1	44%	44%	10%	3%
Elsecar Park and Ride DEAR3		Road	Stage 2	15%	66%	30%	15%
Cycle Routes BARN2, DEAR2, DEAR4, DONV5, DONV6	Development of Cycle Routes	Road	Stage 1	44%	44%	10%	3%
	Cycle boost infrastructure elements	Road	Stage 2	15%	66%	30%	15%
Jobconnector - Malin Bridge Feeder DONV4		Road	Stage 1	44%	66%	30%	15%
Don Valley Tram Stop Upgrade DONV3		Rail/Road	Stage 1	44%	66%	30%	15%
Adwick Sustainable Access DONC3		Road	Between Stage 1 and Stage 2.	30%	44%	22%	15%
Waterfront Regeneration DONC2		Road	Between Stage 1 and Stage 2.	30%	44%	22%	15%
Plugged In South Yorkshire BARN3, DEAR6, DONV6, DONC4		Outsourcing	n/a	17%	41%	10%	3%

3.3 REVENUE SCHEMES

As noted in paragraph 3.7.3 of WebTAG Unit 3.5.9 there is currently insufficient evidence available for the Department of Transport to recommend any specific optimism bias uplifts for operating costs. However, as DfT expects scheme promoters to consider the sensitivity of their scheme's business case to changes in operating costs from those forecast, local data on previous revenue project costs has been collated. This information is summarised in **Figure 4.2** below and relates to previous revenue schemes similar to those included in the LSTF programme. It has been assembled by project partners and provides a summary of all available information obtained during the short allotted timescales.

Figure 4.2: Comparison of Estimated and Actual Costs for Previous Revenue Projects

Project	Estimated Costs (£)	Actual Costs (£)	% Difference
Give it a Go	12,000	8,100	-32.5
Hillsborough TravelSmart	100,000	91,000	-9.0
Bus Boost	4,500	3,300	-26.7
Lower Don Valley Website	7,000	6,200	-11.43
Bike Boost	100,000	100,000	0
SIMP Website	90,000	90,000	0
Carbon Quids Campaign	65,000	80,000	+23.08
Average			**91.93**

Figure 4.2 indicates that on the whole revenue projects tend to over estimate costs or meet budget estimates. This is to be expected given the flexibility of revenue schemes to deliver efficiencies that bring about cost savings, but do not reduce the scope or impact of the scheme. Consequently, it is proposed that no uplift factor is applied to the revenue projects within the LSTF programme. This is thought particularly appropriate as the LSTF revenue projects are initiatives that have been specifically tailored to local conditions based on the success of previous revenue projects some of which are included in **Figure 4.2** (and there is therefore a high level of confidence in the cost estimates).

4 CONCLUSIONS

This annex document has been presented to show the risk and optimism bias applied to each element of our LSTF programme. The information presented in this document has been used in both the Management and Financial Cases of our main submission document.

The total risk value or quantified risk value (QRA) for our LSTF programme is £12,709,380 (including inflation). **Figure 5.1** summarises how this is apportioned across the infrastructure, service and BEST activities:

Table 5.1: Summary of Risk Value by Activity

Activity	Risk Value (£)
Capital Investment	11,149,336
Public Transport	680,292
BEST	879,752
Total Risk value (with inflation)	**12,709,380**

The risk assessment has shown that the capital investment activities carry the highest risk and as such have been apportioned the greatest risk values. The greatest risk in the delivery of our LSTF programme is the potential for the cost estimates to be inaccurate and that inflation rates will change from those assumed. The cost estimates provided for each scheme are based upon previous experience of designing and delivering similar schemes and current operating costs used for existing procurement activities. On the basis of the work that has been undertaken to define the cost we are confident that the specifications are as robust as possible at this stage of scheme development.

The application of optimism bias to each scheme has been undertaken in accordance with WebTAG Unit 3.5.9. For capital schemes, 4 percentage uplifts have been provided to cover a range of scenarios. For revenue schemes, no uplift factor is provided as local evidence suggests that revenue schemes generally tend to over-estimate their costs or meet their budgets.