

## Appendix G – Technical Notes on Inflation and Optimism Bias

# Technical Note

<b>Project:</b> A6 to Manchester Airport Relief Road	<b>To:</b> SMBC
<b>Subject:</b> Inflation Impact on Scheme Costs	<b>From:</b> Atkins
<b>Date:</b> 17 September 2012	<b>cc:</b>

## 1. Introduction

### 1.1 Overview

Atkins is currently engaged by Stockport Metropolitan Borough Council (SMBC) to prepare the Programme Entry (PE) Major Scheme Business Case (MSBC) for the proposed A6 to Manchester Airport Relief Road.

SMBC requested that Atkins review the latest's trends in inflation, in respect of construction prices and estimate a likely outturn price, using the current Q2 2010 price base estimate.

## 2. The Effects of Inflation

### 2.1 Overview

The latest WebTAG guidance<sup>1</sup> on Construction Cost Inflation suggests that schemes do not need to allow for additional construction cost inflation for the period up to 2014, due to the effects of the recession. However, the costs that are used in the MSBC (outturn costs) require to be adjusted to take into account the effects of inflation from the cost estimate year to the final scheme spend year, to determine the likely outturn cost of the scheme.

The WebTAG guidance also states that *“Promoters may wish to make a case for assumptions other than this default. If so, they should consider current and forecast inflation from industry sources appropriate for their scheme and present the assumptions and sources of evidence used clearly in the appraisal information submitted to the Department.”* Atkins has reviewed the latest construction price and general inflation trend information available from a variety of sources and considered this information in conjunction with guidance provided by the DfT relating specifically to the preparation of costs for an MSBC.

### 2.2 Inflation Forecast – Construction Costs

EC Harris has reviewed the construction indexation compared to the WebTAG recommendations. Their view is summarised below and shows a broadly similar forecast to that recommended by WebTAG. As such, the WebTAG suggested indexation has been used to forecast future construction costs from the cost estimate base of Q2, 2010.

**Figure 2.1 – Construction Cost Indexation Summary**

Indexation Summary										EC HARRIS BUILT ASSET CONSULTANCY
Scenarios	2010 - 2011	2011 - 2012	2012 - 2013	2013 - 2014	2014 - 2015	2015 - 2016	2016 - 2017	2017 - 2018	2018 - 2019	
WebTAG Recommendation	2.70%	2.70%	2.70%	2.70%	3.40%	4.10%	4.60%	5.20%	5.20%	
EC Harris Most Likely	2.96%	3.15%	2.37%	2.94%	3.42%	3.84%	3.75%	3.00%	3.00%	
Cumulative Scenarios	2010 - 2011	2011 - 2012	2012 - 2013	2013 - 2014	2014 - 2015	2015 - 2016	2016 - 2017	2017 - 2018	2018 - 2019	
WebTAG Recommendation	2.70%	5.47%	8.32%	11.25%	15.03%	19.74%	25.25%	31.77%	38.62%	
EC Harris Most Likely	2.96%	6.20%	8.72%	11.92%	15.75%	20.19%	24.70%	28.44%	32.29%	

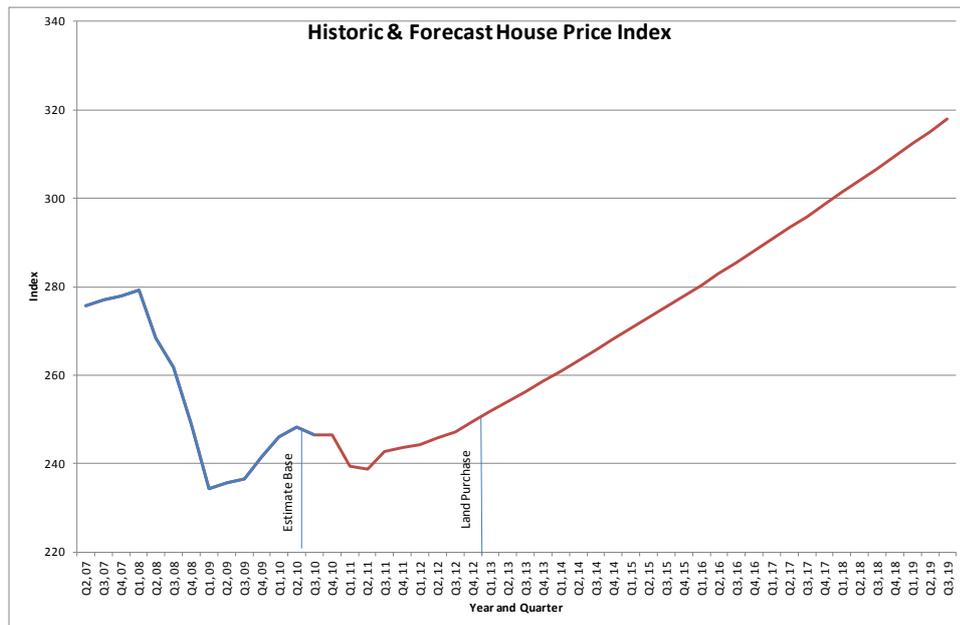
<sup>1</sup> The Estimation and Treatment of Scheme Costs – TAG Unit 3.5.9, Section 2.1, May 2012

## 2.3 Inflation Forecast – Land Costs

Land costs for the scheme have been estimated at £35.18m plus a risk cost of £9.6m at a price base of Q2 2010. As no specific figure for land price inflation is available, we have examined the House Price Index for Stockport between May 2007 and September 2011 to gain a view in relation to potential land price inflation.

From Q2, 2007 house price inflation peaked at Q2, 2008 and then declined to a low in Q1, 2009. It has since risen at a slow rate until the present day. Going forward, we have assumed a small 0.5% increase over the next 12 months and then rising to around 3.7% pa by Q3, 2013 and continuing to increase at this level until the scheme opening year as shown in Figure 2.3. Given that there is little sign of an imminent or major recovery in the housing market, we consider these assumptions to be robust for the development of the outturn land costs.

**Figure 2.3 – Historic and Forecast House Price Index**



## 3. Outturn Scheme Cost Forecast

The current<sup>2</sup> total scheme costs estimates produced by Corderoy have been developed using a Q2 2010 price base. A cost summary is shown in Table 3.1 below. Construction inflation is then expected to rise as shown in Figure 2.1.

**Table 3.1 – Scheme Cost Estimate (Q2, 2010)**

ITEM	2012/13	2013/14	2014/15	2015/16	2016/17	2017/18	2018/19	TOTAL
Preparation Costs	£1,990,567	£1,429,593	£532,181	£0	£0	£0	£0	£3,952,341
Construction	£0	£6,134,243	£28,217,518	£53,981,339	£34,351,761	£0	£0	£122,684,862
Site Supervision / Employers Agent Fees	£0	£181,156	£833,320	£1,594,177	£1,014,476	£0	£0	£3,623,130
Land Acquisition Cost	£1,471,119	£1,962,782	£8,341,822	£834,182	£834,182	£556,121	£556,121	£14,556,331
Value of Local Authority owned Land	£0	£0	£3,010,704	£0	£0	£0	£0	£3,010,704
Land Costs Over and Above Acquisition	£247,874	£330,715	£1,405,540	£140,554	£140,554	£93,703	£93,703	£2,452,642
Part 1 Claims including fees	£0	£0	£0	£0	£0	£15,157,328	£0	£15,157,328
Construction and Preparation Cost Risk	£0	£981,479	£4,514,803	£8,637,014	£5,496,282	£0	£0	£19,629,578
Land Risk	£514,260	£686,131	£2,916,057	£291,606	£291,606	£4,716,161	£194,404	£9,610,225
Poynton Relief Road Allowance	£0	£0	£185,701	£179,051	£0	£0	£0	£364,752
<b>TOTAL</b>	<b>£4,223,820</b>	<b>£11,706,099</b>	<b>£49,957,647</b>	<b>£65,657,923</b>	<b>£42,128,861</b>	<b>£20,523,313</b>	<b>£844,228</b>	<b>£195,041,891</b>

<sup>2</sup> February 2012 estimate

In applying the inflation forecast to the construction and land costs we need to take cognisance of the most current estimate of scheme spend profile<sup>3</sup>. Also, any spent costs up to the date of this assessment need to be excluded as those costs are not recoverable. The calculated construction cost inflation figures and land inflation forecast have been applied to the construction and land costs at the appropriate future point of spend and the overall costs are summarised in Table 3.2 below.

**Table 3.2 – Forecast Outturn Costs (Excluding Optimism Bias)**

Year	Construction Estimate	ECH WebTAG Construction Inflation	Outturn Construction	Land Estimate	Land Inflation	Outturn Land	Outturn Cost
2011/12	£0	5.47%	£0	£0	-1.52%	£0	£0
2012/13	£0	8.32%	£2,156,182	£2,233,253	0.26%	£2,239,136	£4,395,318
2013/14	£7,296,878	11.25%	£9,708,199	£2,979,628	3.93%	£3,096,819	£12,805,018
2014/15	£33,565,641	15.03%	£39,222,725	£15,674,124	7.74%	£16,886,835	£56,109,560
2015/16	£64,212,530	19.74%	£76,888,084	£1,266,342	11.68%	£1,414,253	£78,302,337
2016/17	£40,862,519	25.25%	£51,180,305	£1,266,342	15.77%	£1,466,015	£52,646,320
2017/18	£0	31.77%	£0	£20,523,313	20.00%	£24,628,958	£24,628,958
2018/19	£0	38.62%	£0	£844,228	24.40%	£1,050,194	£1,050,194
<b>Totals</b>	<b>£145,937,569</b>		<b>£179,155,495</b>	<b>£44,787,230</b>		<b>£50,782,211</b>	<b>£229,937,706</b>

A review of Table 3.2 shows that as a result of the combined effect of construction and land price inflation, scheme cost profile, the out turn scheme cost is approximately £229.9m compared with the original Q2 2010 estimate of £195.0m. It should be noted that this estimate does not include any allowance for Optimism Bias (OB) but includes an allowance for risk to both the contractor and employer as detailed in the Corderoy estimate.

### 3.1 Effect of Optimism Bias

The DfT's Transport Analysis Guidance (Unit 3.5.9) sets out the following optimism bias uplifts for Local Authority road schemes:

Stage 1 – Programme Entry	44%
Stage 2 – Conditional Approval	15%
Stage 2 – Full Approval	3%

The current scheme is at Stage 1 in the development process and as such the default level of optimism bias applicable is 44%.

Application of the 44% optimism bias results in the following outturn scheme cost estimate.

- Optimism Bias 44% **£331.1 million**

## 4. Costs for Economic Assessment

For scheme economic assessment, costs need to be converted to 2002 prices. Whilst this is done through the TUBA modelling software, it is necessary to input costs to TUBA in the appropriate years taking account of any expected increase in scheme inflation above the general RPI<sup>4</sup>. RPI is forecast to grow at 2.8% in 2012 and then at 2.5% per annum beyond 2012, but construction inflation is forecast to be higher than RPI and thus there is a small difference between the two sets of indices that needs to be applied to the costs prior to use in TUBA.

The actual calculation of the difference is shown in Table 4.1 below including 44% optimism bias. These costs will be used in the Economic Assessment (TUBA).

<sup>3</sup> February 2012 estimate

<sup>4</sup> WebTAG 3.5.9 – paragraph 5.2.3.

Table 4.1 – Forecast Outturn Costs

YEAR	Preparation Costs	Land Costs	Supervision Cost	Construction Cost	Inflation above RPI	Construction (inc Inflation)	Total
2011/12	£0	£0	£0	£0	0.976	£0	£0
2012/13	£2,866,416	£3,215,884	£0	£0	0.996	£0	£6,343,166
2013/14	£2,058,613	£4,290,665	£260,865	£10,246,640	1.000	£10,248,993	£18,065,660
2014/15	£766,341	£22,570,738	£1,467,390	£47,134,542	1.009	£47,537,491	£73,428,019
2015/16	£0	£1,823,532	£2,553,448	£90,170,429	1.015	£91,556,945	£94,841,323
2016/17	£0	£1,823,532	£1,460,846	£57,381,182	1.020	£58,543,354	£60,366,887
2017/18	£0	£29,553,571	£0	£0	1.026	£0	£29,553,571
2018/19	£0	£1,215,688	£0	£0	1.026	£0	£1,215,688
<b>Totals</b>	<b>£5,691,370</b>	<b>£64,493,611</b>	<b>£5,742,549</b>	<b>£204,932,793</b>		<b>£207,886,783</b>	<b>£283,814,314</b>

## 5. Summary and Conclusions

Construction inflation forecasts have been produced based on the WebTAG guidance. Forecasts for land cost inflation have been developed based on the historic local house price index but with clearly set out assumptions about the future trend.

Using a scheme cost estimate produced at Q2, 2010 prices and a scheme opening year of 2017, a net adjustment of about 18% is required to take cognisance of construction cost and land price inflation.

On this basis, Atkins estimates that the outturn cost of the scheme for an opening year of 2017 excluding optimism bias but including risk will be £229.9 million. With the standard figure of 44% optimism bias, the outturn scheme cost is £317.9 million. Both figures include the cost of land being made available to the scheme free of charge by Manchester City Council

The cost for economic appraisal, including 44% optimism bias is £283.8 million.

# Technical Note

<b>Project:</b> SEMMMS A6 to Manchester Airport Relief Road	<b>To:</b> SMBC
<b>Subject:</b> Application of Optimism Bias	<b>From:</b> Atkins
<b>Date:</b> 17 September 2012	<b>cc:</b>

## 1. Introduction

The DfT's Transport Analysis Guidance (Unit 3.5.9) provides guidance on the estimation and treatment of transport scheme costs within appraisal. There are three main elements of a scheme cost estimate:

1. The base cost – including an allowance for inflation between the cost base year and the anticipated year of spend;
2. Adjustment for risk – assessed and quantified through a Quantified Risk Assessment (QRA); and
3. Adjustment for optimism bias.

This note sets out the work undertaken to estimate and validate the scheme base costs as well as the detailed work undertaken around a quantified risk assessment. This combined with recent actual data from a local scheme is used to support the case for the application of an adjusted optimism bias uplift.

The estimated managed contribution to Optimism Bias has been independently verified by EC Harris on behalf of TfGM.

## 2. Base Costs

### 2.1 Overview

The base costs for the scheme have been estimated by Corderoy in July 2010 based on Design Freeze 3. These costs have been reviewed by Balfour Beatty Civil Engineering Ltd in October 2010 from a contractors' perspective and this therefore provides an increased level of confidence in the scheme cost estimate. Since, then, a number of small modifications have been made to the scheme (Design Freeze 6) and the cost implications of these have been taken into account through an adjustment to the scheme costs.

The construction cost estimate is detailed in Table 2.1 below for Design Freeze 6.

**Table 2.1 - Base Scheme Cost Estimate**

Item	Cost Q2, 2010
Preparation Costs	£3,952,341
Land Acquisition Cost	£20,019,667
Part 1 Claims including fees	£15,157,328
Land Risk	£9,610,225
Construction	£122,684,862
Construction and Preparation Cost Risk	£19,629,578
Site Supervision / Employers Agent Fees	£3,623,130
Poynton Relief Road Allowance	£364,752
	<b>£195,041,891</b>

### 2.2 Risk

The DfT expects scheme promoters to provide evidence that they have adopted a systematic approach to cost risk management.

The scheme risk management process has been set up in line with that described in the Highways Agency Risk Management Manual to provide a consistent and specific risk management approach to this major highway scheme. This approach is based on the OGC Management of Risk guidance and will serve to provide the Project Team with an industry recognised methodology.

The risk management process adopted is cyclical and consists of three key steps undertaken: risk identification; risk quantification; and risk management / control. The steps are broadly sequential and commence with identification and recording of potential risk events within the risk register followed by quantification and then management and / or control of each risk.

Risks have been assessed both qualitatively, for the purposes of initial risk prioritisation and quantitatively. The scheme has applied a three point range estimate for the minimum, most likely and maximum cost for each risk. This process has facilitated risk modelling, which has been carried out using a Monte Carlo based risk analysis tool. To date, risk modelling has been carried out on versions 1, 2 and 3 of the project risk register and version 3, 4 and 5 of the lands cost estimate and compensation risk register. Quantity Surveyors, Corderoy have been responsible for the risk modelling and the results of this analysis have been used to determine the P50 value for both the project risk register and lands cost risk register.

The Risk Management Plan sets out the overall strategy for actively managing risk to a level that is 'As Low As Reasonably Practicable' (ALARP) and ensuring that risk management is part of the development of the project.

Over the history of the scheme there have been several iterations of the risk register. Formal risk identification processes carried out by SMBC to date include:

- 25th May 2006 – Risk Register compiled and updated after a Risk Workshop and analysed to review the risk allowance for Design Freeze 4A estimate for the Bredbury to Manchester Airport scheme.
- 13th December 2007 - Risk Register rationalised for the southern section only (A6 to Manchester Airport).
- September 2009 – Risk Register updated by the SEMMMS Project Management Team.
- 16th October 2009 – Formal risk workshop carried out including members of the Project Board, Project Management Team, Core Management Team and Delivery Team.
- July 2010 – Project Risk Register and Lands Cost Estimate and Compensation Risk Register analysed by Quantity Surveyors, Corderoy.
- 25th October 2010 – Design review meeting to discuss value engineering including consideration of project risk.
- November 2010 – Revised Project Risk Register and Lands Cost Estimate and Compensation Risk Register analysed through @risk by Quantity Surveyors, Corderoy
- January 2011 – Independent review of the risk management process carried out by Atkins. This found the risk management to be fit for purpose.
- February 2012 – Revised Project Risk Register and Lands Risk Register completed in line with Design Freeze 5 and subjected to @risk QRA by Quantity Surveyors, Corderoy.
- September 2012 – Revised Project Risk Register completed in line with Design Freeze 6 and subjected to @risk QRA by Quantity Surveyors, Corderoy.

The Risk Management Plan sets out the full risk management process. In summary, the risk register is reviewed and key risks and projects issues reported to Project Board and CMT on a monthly basis. Risk workshops will continue to be held going forward to facilitate an ongoing review process of the project risks and opportunities.

This Risk Management Plan will be developed throughout the life of the project. Ownership of the risks will be allocated to those parties best able to manage them.

Risk Figures included in the scheme costs estimate are as follows:

- Project Risk (P50 Pre-Mitigation) = £19,629,578
- Lands Costs and Compensation Risk (P50 Pre-Mitigation) = £9,610,225

## 3. Optimism Bias

### 3.1 Introduction

The DfT's Transport Analysis Guidance (Unit 3.5.9) sets out the following optimism bias uplifts for Local Authority road schemes:

Stage 1 – Programme Entry	44%
Stage 2 – Conditional Approval	15%
Stage 2 – Full Approval	3%

The current SEMMMS scheme is theoretically at Stage 1 in the development process and as such the default level of optimism bias applicable is 44%.

The Green Book (HM Treasury, 2003) suggests that appraisers should make explicit, empirically based adjustments to the estimates of a project's costs, benefits and duration. The DfT guidance states that "Adjustments should be empirically based (e.g. using data from past projections or similar projects elsewhere) and adjusted for the unique characteristics of the project in hand."

The DfT guidance states that "Uplifts that deviate from the recommended uplifts will reflect both the stage of development of the option, the quality of the risk assessment provided, and the extent to which optimism bias may or may not have been mitigated. The Optimism Bias factors are applied to total costs including the quantified risk assessment costs.

### 3.2 Causes of Optimism Bias

Major highways projects are inherently risky due to the long planning horizon and complex interfaces. A number of factors exist that may impact on the final scheme costs but are not fully understood at an early stage of scheme preparation and are therefore not properly accounted for in developing the scheme cost estimate. Examples of such factors are:

- Change in project scope or ambition;
- Routing – changes to the route of the scheme;
- Technical standards – changes to design speed, road width, road type etc;
- Environment – tighter environmental standards;
- Complex interfaces – urban environment, existing infrastructure;
- Geotechnical conditions – complex or extensive works;
- Archaeology – unexpected archaeological finds.

Whilst the technical issues above are generally known to experienced planners, there is a view<sup>1</sup> that optimism bias could be caused by a combination of how the decision making process is organised and strategic behaviour of those involved in the decision making process. Furthermore, there is evidence that projects that have good early project management perform better in terms of outturn cost than those that have poor initial documentation and project management.

It is important to understand how all these factors could play a role in creating cost uncertainty in order to mitigate these effects as far as possible at any given stage of scheme development.

<sup>1</sup> The Department for Transport, Procedures for dealing with Optimism Bias in Transport Planning – Guidance Document, June 2004.

The Supplementary Green Book Guidance on Optimism Bias (HM Treasury) sets out the contributory factors to the upper bound optimism bias as shown below and also sets out the approach to adopt to adjust the upper bound optimism bias factor for use in scheme appraisal. The recommended approach has been adopted here as set out below.

**Table 3.1 – Contributory factors to Upper Bound Optimism Bias (%) for Standard Civil Engineering Project (HM Treasury)**

	<b>Contributory Factor</b>	<b>Contribution</b>
<b>Procurement</b>	Late Contractor Involvement in Design	3
	Dispute and Claims Occurred	21
<b>Project Specific</b>	Environmental Impact	22
	Other (specify)	18
<b>Client Specific</b>	Inadequacy of the Business Case	10
	Poor Project Intelligence	7
<b>Environment</b>	Public Relations	9
	Site Characteristics	3
<b>External Influences</b>	Economic	7

The Table below sets out the degree to which each of the contributory factors is considered to be mitigated through effective risk management strategies. Justification for the application of the adjustment factors is provided below.

**Table 3.2 – Managed Optimism Bias**

<b>Contributory Factor</b>	<b>Contribution to Optimism Bias</b>	<b>Mitigation Factor</b>	<b>Managed OB Contribution</b>
Late Contractor Involvement in Design	3	0.6	1.8
Dispute and Claims Occurred	21	0.3	6.3
Environmental Impact	22	0.4	8.8
Project Specific Other (specify)	18	0.1	1.8
Inadequacy of the Business Case	10	0.8	8
Poor Project Intelligence	7	0.6	4.2
Public Relations	9	0.5	4.5
Site Characteristics	3	0.2	0.6
Economic	7	0.4	2.8
	<b>100</b>		<b>38.8</b>

On the basis of the above, the managed optimism bias contribution is 39.0%. The cost of any associated risk management is included within the Quantified Risk Assessment or within the Scheme Preliminaries and thus a duplicate allowance is not required.

Therefore the resultant capital expenditure optimism bias is:

$$(100\% - 38.8\%) * 44 = \underline{\underline{27\%}}$$

### 3.3 Justification for Mitigation Factors

This section sets out the justification for the mitigation factors against each individual contributory factor.

#### Late Contractor Involvement in Design

The scheme has employed a consultant contractor throughout the development stage. The following reviews and reports have been completed by Balfour Beatty in their role as the consultant contractor:

- May 2006 – Full consultant contractor review of the Bredbury to Manchester Airport scheme considering:
  - access routes
  - quarry resources
  - temporary land requirements
  - traffic phasing
  - construction programme
  - risks and opportunities register
- March 2010 – **Airport Options Appraisal Report** - consultation with consultant contractor with regards scheme options at Manchester Airport for consideration during the optioneering stage. During their appraisal the consultant contractor supplied advice on:
  - construction programme duration
  - construction cost
  - operational safety and buildability
  - disruption to the travelling public
- September 2010 – consultation with consultant contractor with regards scheme options at the SEMMMS A6 to Manchester Airport Relief Road and Manchester Metrolink interface. Advice provided on aspects of buildability.
- October 2010 – **Cost Estimate Report – Assessment of Construction Costs** - consultant contractor provided a full review of the scheme cost estimate. This was in addition to the scheme cost estimate produced by Quantity Surveyors, Corderoy, providing assurance to the Project Team.

As a result of the early input from a contractor we are of the view that 60% of the optimism bias associated with this aspect is mitigated.

#### Dispute and Claims Occurred

This is one of the major elements contributing to optimism bias and covers items such as dispute over interim payments, claims for changes in scope and claims for late release of information by other stakeholders.

The Project Team has engaged with stakeholders throughout the scheme development. Key activities are identified below:

- Network Rail: Dedicated Project Manager appointed by Network Rail to liaise with the Project Team regarding rail crossing options. Site visits to proposed crossing locations and additional survey work completed to mitigation inaccuracies in design process.
- Independent review of structures options by consultant contractor, Balfour Beatty and designer, URS-Scott Wilson.
- Full appraisal of land and compensation costs by qualified valuation team at Norfolk Property Services. This has included an appraisal of and inclusion of lands related risks and opportunities in relation to the scheme cost estimate.

The scheme has actively consulted the public throughout the development process including the follow activities:

- Formal public consultation completed in 2004/2005 for the Bredbury to Manchester Airport section. Results from this process showed overwhelming public support for the scheme. Specific consultation and meetings held with major landowners and local businesses at the time.
- Continuation of public consultation with regards the A6 to Manchester Airport scheme including: a continually updated website; a publically available telephone hotline for scheme related queries; and, updated newsletters.
- Liaison with key user groups including local equestrian, cycle and pedestrian user groups.
- Consultation regarding local business interests through liaison with the local Chambers of Commerce.
- Consultation with Civil Engineering Contractors Association (CECA) discussing construction and procurement issues.
- Consultation with public transport bodies.
- Consultation with the Greater Manchester Freight partnership.

Because of this extensive engagement undertaken to date, we are confident that at least 30% of the optimism bias for this contributory element has been managed.

### **Environmental Impact**

A significant amount of environmental survey / monitoring and assessment work has been undertaken for the scheme corridor and design development over the last 8 years. Consultation was undertaken for the DMRB Stage 2 Environmental Assessment in March 2003 on the original full scheme to obtain data and views on the impact of the scheme. No specific concerns regarding the scheme were highlighted by any of the consultees who responded, however some consultees felt they were unable to comment in detail until the scheme design had progressed further. The results of the Environmental Assessment in a number of Constraints maps were made public during the Public Consultation.

Below is a brief chronology of data collection and consultation exercises undertaken historically to date:

- October 2003 Stage 1 Public Consultation exercise – 11,559 responses with 91.6% agreeing that the scheme was needed.
- A Stage 2 environmental consultation with Statutory and non statutory bodies and interest groups has also been concluded engaging 58 parties.
- A second stage Public Consultation exercise has also been concluded Nov 2003 – Jan 2004 with 9,398 responses with a 90% support rate for the scheme.
- A more detailed statutory and non statutory body consultation exercise has also been concluded during the detailed Stage 3 Environmental assessment programme has also been concluded, commencing from a Formal Scoping Consultation Forum on 7 July 2004.
- During the full scheme stage £ process detailed discussions / engagements took place with a number of interest group forums over detailed issues of data collection , methodology and on mitigation / design issues, these included:
  - Vulnerable Road User Group – pedestrians / cyclists, equestrians and disabled group representatives, June 2004 / Nov 2004 / March 2006.
  - A Nature Conservation Forums, including statutory and species interest groups Jan 2005 / July 2005 / March 2005 /
  - Health Impact Assessments March 2005
- This has been followed up by a further Scoping Exercise concluded in January 2010 for the current scheme and an update data collection exercise.

In parallel with the above data collection , consultation and Scoping exercises a full sweep of ecological, surveys were undertaken from 2004 – 2007 for the original SEMMMs scheme, with update surveys having been largely concluded this season. In addition a full sweep of other environmental site surveys covering the following were completed for the full scheme 'detailed' stage 3 EIA process, with results presented in working draft Environmental Statement formats prior to the schemes hold point in 2007. These included:

- Landscape surveys assessments and development of detailed mitigation measures, encompassing all other disciplines i.e. water, ecology and non motorised user requirements primarily.
- Noise and air quality baseline monitoring, assessment and modelling and mitigation development..
- Footpath surveys and development of 'agreed' mitigation strategies..
- Cultural heritage and archaeological data collection, field surveys and 'local 'exploratory investigations, leading to assessment analysis, mitigation strategy development and reporting.
- Initial geotechnical, water quality and hydrological investigations.
- Flood risk assessments and drainage design works, fed back into the EIA assessment and mitigation development, following discussion with key statutory bodies such as the Environment Agency and Natural England as well as the constituent local authorities.

- Agricultural land use surveys and commencement of engagement with local land owners and farmers on implications with respect to business and any mitigation / accommodation requirements.

The above summary of works undertaken on the full SEMMMS Scheme from Stage 2 to Stage 3 detailed assessment has been used to inform the current scheme environmental review, update survey and ongoing assessment work with many of the 'agreed' mitigation strategies adopted as a work baseline for the current DF4 scheme. Consequently, whilst the current scheme is at a DfT Stage 1 Programme Entry level a considerable amount of work has already been undertaken to give confidence that the optimism bias can be subject to review to reflect this advanced state of knowledge. Hence it is considered that this element of optimism bias is mitigated by 40%.

### **Project Specific Other**

The scheme has engaged extensively with the scheme's major stakeholders including Manchester Airport Group. A representative from Manchester Airport Group has held a position on the Project Board throughout the scheme's history and will continue to do so during future development.

The scheme has engaged with Network Rail at the development stage to discuss the design of the rail crossings. The early appointment of a dedicated project manager by Network Rail will serve to mitigate risks to the scheme's programme and budget.

Integrated design approach adopted with Manchester Metrolink to provide cost effective interface and reduce future programme risk. Both design teams have worked in close communication to date and will continue to do so throughout the design development.

In its previous iteration, the Bredbury to Manchester Airport scheme was subject to full public consultation. At that stage, local businesses were engaged and consulted on the development of the scheme. As the scheme has developed, taking forward the southern A6 to Manchester Airport Relief Road section, local businesses, including the proposed development at Woodford, have continued to be engaged and updated on the scheme's progress. This has been conducted through written communication in the form of dedicated letters and more general newsletters.

On the basis of the above, we are confident that at least 10% of the element of optimism bias has been mitigated.

### **Inadequacy of the Business Case**

There is a long history of business case development for this scheme. An Annex E submission was made to the DfT in 2004 for the original larger scheme between Manchester Airport and the M60. Over the last two years the business case has been further developed, supported by detailed transport modelling and economic assessments as well as scheme outline design and stakeholder engagement. Given the level of detailed work and buy-in to the current scheme proposals we consider that this element of optimism bias is substantially mitigated and we have adopted a figure of 80% mitigation.

### **Poor Project Intelligence**

Whilst a detailed ground investigation has not yet been completed for the scheme, the scheme has been developed over a number of years with a continuation of many of the key officers from the three local authorities and Manchester Airport. As such there is a very good degree of knowledge and information about the scheme corridor within the project board and the project team. On this basis, we consider justified in our view that 60% of this element of optimism bias is already mitigated.

## Public Relations

The scheme received a high degree of public support and was supported locally by the various local authorities and by the North West Regional Assembly.

This high level of support continued through the two-phase public consultation exercise that was undertaken regarding the scheme – 91.6% of respondents felt that the scheme was needed in order to bring traffic relief to the local communities and businesses.

The first phase ran from 10 October 2003 to 9 November 2003 and sought the public's views on the principles and route of the scheme, and potential locations for junctions. Some specific amendments to the scheme definition were made to take account of the responses.

The second phase of the consultation, which ran from 21 November 2003 to 9 January 2004, was targeted at residents and businesses closer to the scheme, plus those members of the public from phase 1 who had specifically requested for information to be supplied throughout the consultation exercise. Leaflets and direct mail were distributed to local residents and businesses, and staffed exhibitions were held at ten locations. As a result of views gained, further development work was considered at various specific locations.

The three promoting local authorities have engaged the DfT in dialogue since the submission of the Annex E in 2004, to ensure that scheme proposals meet funding criteria, and to inform the DfT of any changes to the scheme proposals. At the same time as these technical discussions, the scheme promoters have continued to engage the public, recognising that local residents and businesses need to be kept informed on the progress of the scheme.

Chapter 3 (of the Business Case) sets out details of the wider public relations strategy and process. This includes the following.

- SEMMMS A6 to Manchester Airport Relief Road Scheme Website ([www.semmms.info](http://www.semmms.info))
- Dedicated SEMMMS Telephone Line
- SEMMMS Newsletters

On the basis of the extensive public relations strategy and engagement, we consider this element of optimism bias to be mitigated by 50%.

## Site Characteristics

As identified above the environmental baseline for the corridor has been under collation update and review through the DMRB Stage 2 and detailed Stage 3 processes. Furthermore this level of data has been incorporated into the design development for the scheme at Stage 3 which has then subsequently informed the 'baseline design' for the current evolving DF4 for the current scheme. This level of detail has then been subject to update during the ongoing and nearly concluded update baseline ecological, landscape, air quality and noise monitoring and surveys. Similarly baseline engineering development and support services such as geotechnical investigations, drainage and flood studies have already been completed and or are under update / revaluation currently.

Consequently, as set out above, whilst the current scheme is at a DfT Stage 1 Programme Entry level a considerable amount of work in relation to site characteristics has already been undertaken. This therefore provides additional confidence that the optimism bias can be subject to review to reflect this advanced state of knowledge. Hence it is considered that this element of optimism bias is mitigated by an assumed 20% mitigation.

**Economic**

The economic situation has already changed and government funding priorities and funding availability has changed with this. Given the current situation, we consider that at least 40% of this element of optimism bias is already mitigated.

**Project Management**

Whilst not a specific contributory element to the optimism bias factors, evidence shows that schemes that have good initial documentation and strong project management tend to be more successful in cost control and scheme delivery. Chapter 7 (of the Business Case) sets out the Governance Structure for this scheme and the detailed project management, control and approvals process. Feedback from the DfT on the initial Project Initiation Documents has been incorporated into the current versions which are included as appendices to the MSBC.

## 4. Summary and Conclusion

Whilst this project is theoretically only at Stage 1 (programme Entry submission) of the scheme development programme, given the history of the project a substantial amount of technical feasibility, outline design, risk assessment and appraisal work has been undertaken. This note provides summary details of the extensive work undertaken on this project and how this provides a degree of confidence in scheme costs that justify the application of a reduced level of optimism bias to be applied to the scheme cost estimate to provide scheme out turn costs.

The detailed work undertaken demonstrates a degree of confidence which in turn justifies an optimism bias of 27% for use in the economic appraisal and for the determining the scheme funding requirement. For the value for Money assessment, a default value of optimism bias (44%) will also be tested.