

## **A684 Bedale, Aiskew, Leeming Bar Bypass**

### **Best and Final Funding Bid**

### **The Financial Case**

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## 1

## Introduction

### 1.1 Introduction

This report presents the Financial Case for the A684 Bedale, Aiskew, Leeming Bar Bypass (BALB) Best and Final Funding Bid (BAFFB).

In line with new departmental guidance the Financial Case provides evidence on the financial affordability of the proposal, looking at funding arrangements and technical accounting issues.

The report presents the financial profile of the preferred option and the impact of the proposal on the Department's budgets and accounts.

The Financial Case is structured as follows:

- **Chapter 2** looks at affordability of the scheme and costing of the scheme, also detailing the independent cost validation exercise that has been carried out;
- **Chapter 3** discusses the issue of inflation and **Chapter 4** presents an overview of financial risk;
- **Chapter 5** looks at how the scheme will be funded while **Chapter 6** presents a summary.

## 2 The Financial Case – Affordability and Costing

### 2.1 Introduction

This section of the Financial Case sets out affordability and costing of the scheme.

This chapter is structured as follows:

- **Affordability Assessment** – Details the approach that has been taken in order to assess affordability;
- **Costs** – Presents the costs of the scheme, when they will occur and who will be responsible for them; and
- **Independent Cost Validation** – Looks at the exercise carried out to ensure cost accuracy.

### 2.2 Affordability Assessment

An Engineering Review has been carried out by Jacobs based on an original scheme estimate prepared by NYCC’s former design partner Mouchel Parkman (MP). As part of the checking process Jacobs carried out a review of MP’s design and identified necessary amendments which have been included in the cost comparison. In particular, a review of the drainage design was carried out to incorporate environmental mitigation measures developed to deal with statutory objections raised as part of planning consultations.

In summary the Engineering Review included:

- The assimilation of historical design information;
- Amendments to the drainage design;
- Design check and recommended amendments;
- Potential Value Engineering considerations;
- Validation of Mouchel Parkman’s estimate including;
  - Check that all principal items have been included;
  - Check and adjust as required the principal quantities;
  - Check and adjust as required the rates;
- Co-ordinate the input from specialist sub-consultants such as structures and landscaping;
- Carry out a revised estimate for changes to drainage;
- Make adjustments for other recommended changes to the design;
- Check the assumed level of preliminaries and contingencies;
- Check the assumptions and allowance for risk; and
- Check the allowance for design fees.

Further to this Jacobs also undertook:

- Further assessment of requirements for the SABIC pipeline; and
- Commissioning of Site Investigation work to reduce project risk.

**2.3 Costs**

The total costs of the scheme consist of three elements, firstly the basic costs of the scheme before allowing for risks, though these do incorporate realistic assumptions of changes in real costs over time of 2.7% per annum as described in Section 3. The costs also contain an adjustment for risk which covers all the risks that have been identified, the majority of which have been assessed and quantified through a Quantified Risk Assessment (QRA). In addition an adjustment for an optimism bias of 20% has been applied; this reflects the well established and continuing systematic bias for estimated scheme costs and delivery times to be too low and too short respectively and results in the risk and optimism bias-adjusted cost estimate.

**Table 2.1**, below, demonstrates the Preferred Scheme base costs at 2009 Q2 prices with no inflation or optimism bias applied.

**Table 2.1: 2009 Q2 Base Costs (0% Optimism Bias)**

<b>2009 Q2 Base Costs (0% Optimism Bias)</b>	
<b>Task</b>	<b>Task Cost</b>
Civils (with Prelims 15%)	£21,164,917
Conventional Stats Cost	£1,620,000
SABIC Pipeline	£1,300,000
Land (excluding Part 1 Claims)	£2,235,000
NYCC Project Management	£950,000
Preparation	£2,308,039
Supervision	£1,549,502
Quantified Risk Assessment	£4,670,117
<b>Total</b>	<b>£35,797,575</b>

**Table 2.2** below, shows the breakdown of the undiscounted out turn costs from 2008 – to the opening year 2016. These costs are based on an annual inflation of 2.7% as described in Section 3 and include an optimism bias uplift of 20%.

**Table 2.2: Local Authority / Central Government Contributions**

	2008/09	2009/10	2010/11	2011/12	2012/13	2013/14	2014/15	2015/16	2016/17	Total
<b>LA Contribution</b>	0.620	1.021	0.255	0.179	0.028	0.079	1.198	1.894	0.980	<b>6.254</b>
<b>DfT Funding Requested</b>	0.000	0.000	0.000	0.000	0.296	0.826	12.530	19.810	10.258	<b>43.720</b>
<b>Total</b>	<b>0.620</b>	<b>1.021</b>	<b>0.255</b>	<b>0.179</b>	<b>0.324</b>	<b>0.905</b>	<b>13.728</b>	<b>21.704</b>	<b>11.238</b>	<b>49.974</b>

**2.4 Independent Cost Validation**

Grontmij was commissioned by North Yorkshire County Council to carry out an independent cost validation exercise on the initial A684 BALB costs produced by Jacobs as part of the 2008 MSBC. This built on work already carried out by Mouchel Parkman in 2005 to provide an accurate scheme cost as part of the 2006 MSBC that was submitted to DfT. Grontmij are currently working with the A1 Joint Venture Team as part of the delivery arm of the A1 Improvements and therefore have an excellent working knowledge of the local area.

The works to be considered were outlined on Jacobs drawing B 1055900/SK002 Rev 0, and comprise approximately 4.8km of 7.3m wide single lane carriageway (with 1m hardstrips), three roundabouts, one railway over bridge and one combined railway/beck over bridge. The bypass ties in to the proposed Leeming grade-separated junction, which is part of the proposed A1 improvement works.

The information provided to Grontmij on which to carry out the cost validation check included;

- A 1:5000 layout plan (Drawing Reference B 1055900/SK002 Rev 0);
- An outline MX model; and
- A draft Quantified Risk Assessment (QRA).

Based on the level of information received and the timescales for completion, the scope of the validation work carried out by Grontmij covered the following:

- Check accuracy of rates;
- Provide advice to the Jacobs design team based on experience gained from the A1 upgrade scheme regarding design assumptions;
- Global check of design assumptions;
- Check allowances for preparation, supervision and construction fees;
- Check that risk allowance is appropriate for this stage of the design process; and
- Make broad based checks on quantities.

Detailed rates applicable for the different categories of the scheme were obtained from various sources as shown. These include SPONs (20th Edition published 2006) and schemes where the rates are deemed to be representative; namely the following:-

- Morpeth to Felton (Highways Agency - 2001);
- A69 Haydon Bridge (Highways Agency – 2006); and
- A164 Improvement (East Riding of Yorkshire Council - 2007).

The basic costs for road-works and structures costs resulted in an estimate of £14,400,100 compared to Jacobs' estimate of £13,970,000 demonstrating a good level of fit between the estimates. No further independent cost validation has been undertaken as part of the BAFFB process, as the scheme characteristics have remained largely unchanged.

# 3 The Financial Case – Inflation

## 3.1 Introduction

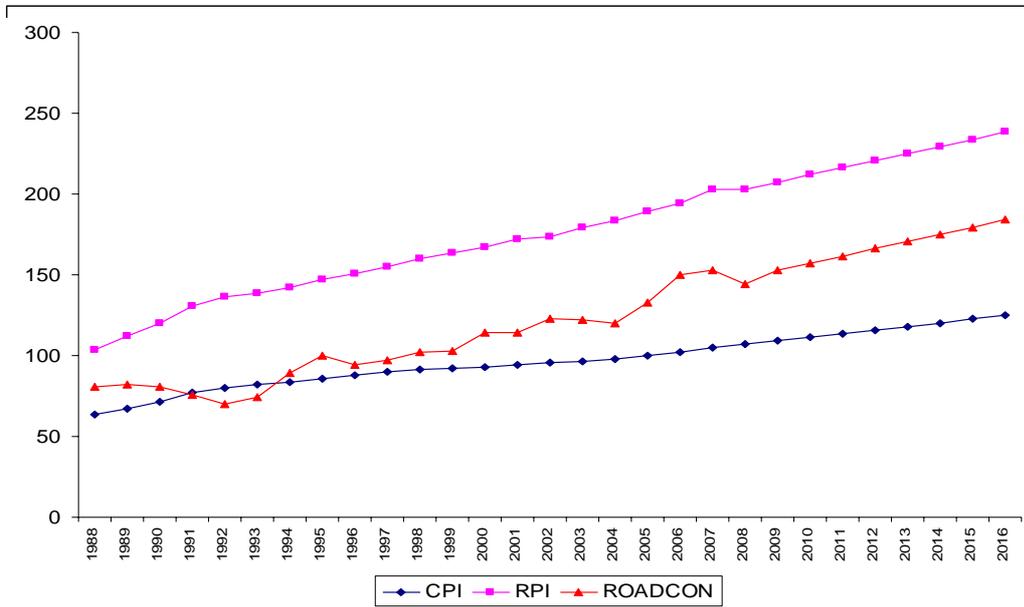
This section of the Financial Case discusses the impact of inflation on the scheme and sets out the associated assumptions that have been made.

## 3.2 Inflation

In line with WebTAG Unit 3.5.9 The Estimation and Treatment of Scheme Costs Para. 2.1.2 to 2.1.5, real cost changes have been considered and applied to scheme costs based on current and forecast inflation from industry sources and other sources of information to provide an accurate reflection of inflationary pressures over time.

The inflation takes into account the amount by which any of the elements of the scheme's cost are expected to increase at a different rate to the general rate of inflation across the economy, i.e. expressed in real prices.

The chart below illustrates the relationship between the Construction Price Index, Retail Price Index and the Road Construction Tender Price Index (scheme cost element). The Department of Trade and Industry compiles the Road Construction Tender Price Index from the bills of quantity received by the Highways Agency from its regional offices and from local authorities.



Care has been taken to form base cost estimates using realistic assumptions about real cost changes, e.g. cost increases above or below RPI growth. The inflation rates relevant to the delivery of transport schemes were higher than general inflation rates over the period 2006 to 2008. More recently, and related to the global recession, many commodity prices and scheme tenders have been falling, or rising at lower rates. Independent projections suggest immediate change is unlikely, and that significant cost increases may not occur for some

time. As such it is difficult to generalise and suggest inflation rates applicable to the scheme between 2009 and 2016.

It is therefore felt appropriate to assume an inflation rate of 2.7% per annum for all years and cost types.

To allow for the risk of inflation rising above 2.7% an allowance has been made in the QRA for the scheme.

**4 The Financial Case – Risk**

**4.1 QRA**

In order to adjust the base cost for the risks associated with the cost of the scheme a detailed risk assessment was undertaken in November 2008. This built on risk analysis already undertaken by Mouchel Parkman but introduced additional risks highlighted as part of the Engineering Review. The exercise was undertaken through a risk work shop on 9th October 2008 to which discipline leads from the client and consultant sides were invited. A Risk Register was produced to highlight particular issues, a risk manager was then appointed to each risk and cost and probability associated to each risk. A statistical analysis of risk was then undertaken using Highway’s Agency Risk Model (HARM). This risk model uses a Monte Carlo style analysis to produce a quantified risk assessment (QRA).

Between 2008 and 2011 the risk assessment has subsequently been reviewed and using a confidence of attainment level of 50% a maximum risk cost of £4,670,117 has been applied to the scheme costs.

**4.2 Optimism Bias**

The HM Treasury guidance on Optimism Bias states that “There is a demonstrated, systematic, tendency for project appraisers to be overly optimistic. To redress this tendency appraisers should make explicit, empirically based adjustments to the estimates of a project’s costs, benefits, and duration.”

For a roads based scheme the recommended optimism bias uplifts are 44% at programme entry, 15% for conditional approval and 3% for full approval.

Under the previous funding arrangements optimism bias was a shared risk 50:50 between the DfT and NYCC; it is therefore considered that whilst the optimism bias should remain at 44% a proportion of this should be included in the requested DfT funding.

At the EOI stage an uplift of 20% was applied in determining the DfT contribution; this has been used in the preparation of the scheme cost and any economic assessment of the scheme for the Best and Final Funding bid.

The remaining 24% of the optimism bias, not covered by this contingency, remains the County Council’s risk.

As part of the value for money assessment of the scheme a sensitivity test has been undertaken using an optimism bias of 44%.

**Table 4.1** overleaf, shows the scheme outturn cost estimates for a 0%, 20% and 44% optimism bias uplift.

**Table 4.1: Scheme Outturn Cost Estimate Including Optimism Bias Sensitivity**

<b>Outturn Scheme Costs</b>	<b>Optimism Bias</b>		
<b>Cost Element</b>	<b>0%</b>	<b>44%</b>	<b>20%</b>
Construction	£33,861,667	£48,301,680	£40,634,001
Land	£2,553,464	£3,642,367	£3,064,157
Preparation and Proj. Man.	£3,811,272	£4,396,735	£4,085,853
Supervision	£1,824,679	£2,602,798	£2,189,615
<b>Total</b>	<b>£42,051,082</b>	<b>£58,943,580</b>	<b>£49,973,625</b>

## **5 The Financial Case – Funding**

### **5.1 Introduction**

This section of the Financial Case presents the funding proposals for the A684 BALB scheme.

### **5.2 Funding Package**

The bypass scheme will have a three year construction profile where 25% of the construction costs will be spent in year 1 (2014), 50% in year 2 (2015) and 25% in year 3 (2016). Prior to this there will be four years (2008-2012) of preparation costs. All preparation costs up to the conditional approval of the scheme will be met by the Local Authority.

### **5.3 Revenue Funds**

The A684 BALB scheme is a highway scheme and has no ongoing operating costs. Maintenance of the scheme will provide an on-going obligation for NYCC. The financial sustainability of the scheme is high.

### **5.4 Section 151 Officer Sign Off**

The Financial Case is supported by the authority's Section 151 Officer (the Chief Finance Officer). The BAFFB proforma document includes confirmation supporting the accuracy of the cost estimates, that they represent the best estimates of cost based on the available information and that the authority has the means to accept the financial liability of the scheme going ahead as per the current guidance, including a commitment to meet the local authority contribution proposed.

### **5.5 Budgets / Funding Cover**

The preparation, land and construction costs of the scheme are to be met by local authority and DfT contributions only. There are no third party investments or funding sources associated with the scheme. All Part 1 Claims will be met by the Local Authority

**6****Summary**

This document has presented the Financial Case for the A684 Bedale, Aiskew, Leeming Bar Bypass (BALB) Best and Final Funding Bid (BAFFB).

It has provided evidence on the financial affordability of the proposal, looking at funding arrangements and technical accounting issues.

The financial profile of the preferred option has also been discussed.

The outturn scheme costs for the BALB bypass include a 20% optimism bias and an annual inflation rate of 2.7%. The outturn cost of the scheme, excluding Part 1 Claims is £49.974m of which the local authority contribution is £6.254m and the DfT funding contribution is £44.720m.