

SEMMMS Internal Budget Reconciliation Notes No. 1 – Construction Costs

The independent review has recommended a total of £10.8m be added to the capital construction estimate.

This paper identifies items or parts of the original bill of quantities where these allowances should be added for ease of future revision. This does not necessarily infer that scope, quantity or work type has changed.

Prelims (£3.9m)

10/1/1 Contractors Site Staff increase by £ 3.9m

Design: (£0.9m)

10/1/2 Design increase by £ 0.9m

Earthworks: (£1.5m)

New Item Top Soil Storage and Double Handling 111,779.7m³ @ £2/m³
Increase by £ 223k

Disposal of Unacceptable Material Class U1A increase quantity by 2,536m³
Various Structures Bills (Schedule of Structures Increase by £55k
Available on request)

6/1/2 Excavation increase rate by £1.95/m³
Increase by £1,222k

Pavements: (£1.5m)

Asphalt concrete 20 dense 100/150 binder course 60 mm – increase by £1m
247,783m² in total – add £4/m² to the rate of £7.84/m²

Paved Area comprising Type 1 unbound mixture sub-base 150mm thk unreinforced 100mm
jointed concrete slab with surfaces sloping at 10 degrees or less to the horizontal as central
rese 51,148m³ in total – add £9.78/m² to the rate of £30.00/m³

Structures: (£0.15m)

In-situ Concrete – increase by £0.15m
14,560m³ in total – add £16.13/m³ to the rate of £127.59/m³

Fee: (£2.85m)

Add £2.85m to Contractors OH & P.
Percentage is recommended to be 9% however this needs to be applied to the correct
allowances to generate a total fee of £9,753,034

Rounding for report:

There is an additional £200k that is included within the calculation as a result of rounding the
findings of £10.8m upto £11m. It is suggested that for simplicity this is added to the
preliminaries section.

SEMMMS Internal Budget Reconciliation Notes No. 2 – Optimism Bias

The independent review has recommended an Optimism Bias allowance of 27% is applied to the scheme budget.

This paper identifies items or parts of the original bill of quantities where these allowances should be added for ease of future revision. This does not necessarily infer that scope, quantity or work type has changed.

The Tag Guidance recommends the following four stage process:

- Step 1: Determine the nature of the project
- Step 2: Identify the stage of scheme development
- Step 3: Apply the recommended uplift factors to the risk adjusted transport cost estimate
- Step 4: Provide sensitivity analysis around the central estimate

The initial review has shown that OB has not been applied to the risk adjusted estimate. Rather the highest recommended OB allowance has been applied to the base construction cost and land cost estimate. This is not recommended practice.

In step 3 it is recommended that adjustments are applied to the risk adjusted cost estimate between 44 and 15%. It is normal for the figure to be adjusted based upon the level of risk management and contingency already in place. TAG guidance recommends 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. Our recommendation is that risks to the project are split out into the categories that align contributory factors of Optimism Bias as defined by the HM Treasury in their Supplementary Green book Guidance Optimism Bias. Using these contributing factors as a guide, direct evidence can be captured showing the level of management in place to mitigate risks relating to the broad headings:

- Complexity of Contract Structure
- Project Specific Matters
- Client Specification
- Environment
- External Influences

Once the risk register is structured to support the optimism bias assessment, we recommend that the Mott MacDonald guidance in the form of the Supplementary Green book Guidance Optimism Bias is followed to derive a more reasonable factor. There are other methods available. TAG 3.5.9 sets out a simpler approach. The Highways Agency are following guidance where Optimism Bias is not captured but another measure, Uncertainty, is assessed.

Once the optimism bias uplift is derived this should be applied to all scheme costs including, works costs, risk allowances, land and adjustments for Non Recoverable VAT. Consideration of where this money is funded from is a matter that can only be resolved by TfGM. However based on experience elsewhere the following observations are made:

- It is unlikely that these funds will be called upon
- The costs are often associated with internal causes of cost escalation such as programme change or significant changes of scope outside of known risks
- Normally the allowances for optimism bias is not held as is it spans across programmes and is called upon only when required on individual projects
- Ultimately the responsibility for funding an overspend should lie with the project funders. Approval budgets need to be set at the level for the project costs combined with allowances for optimism bias.
- Once the contract is let the allowance for optimism bias falls significantly and the potential overspend is reduced.

Reviewing all of the factors listed above an OB allowance of 27% is recommended at this stage of the scheme.

SEMMMS Internal Budget Reconciliation Notes No. 3 – Risk

The independent review has recommended a risk allowance of 16% is applied to the scheme budget.

This paper identifies items or parts of the original bill of quantities where these allowances should be added for ease of future revision. This does not necessarily infer that scope, quantity or work type has changed.

We have considered the level of risk contingency relative to the base cost. Using the summated figures including the P80 allowance for construction risk we derive an overall percentage for construction risk for the full scheme of 12% (Construction Cost, Environmental Mitigation, NR Costs, SU Diversions & Complementary Measures). On A6 to Shadowmoss budgets, this reduces to 10.7%.

For comparison with other projects, it is deemed this project is between Stage 1 (Programme Entry) and Stage 2 (Conditional Approval). It is a standard project without complex structures such as major long bridges or tunnelling (except for Network Rail interfaces).

The overall risk contingency has been benchmarked against a number of similar non-complex highways projects at a similar development stage. The weighted average has been calculated to reflect the overall budget of this scheme. For comparison, we have benchmarked 21 (see appendix A) other non-complex major highways projects that were at the equivalent stage, which shows that a weighted average of around 16.6% would be deemed reasonable at this stage to reflect the construction risk.

An allowance of 10.7% is lower than what we would normally see for a project of this stage.

We have undertaken a review of the risk registers and believe that the following have not been included or while generic risks may apply and are recommended to be reviewed in further detail:

- Utilities diversions (Water, Gas, etc):
 - timing of these to fit into with project – seasonal constraints on when these works can be undertaken
 - control and performance of companies undertaking diversions
- Unforeseen / unidentified utilities found during works
- Public objections to planning
- Contractor / sub-contractors / consultant performance in delivering the works
- Loss of key staff: - Covered by Risk No. 49 in part.
 - Client
 - Partner
 - Stakeholder
 - Contractor / sub-contractors/ consultant
- Stakeholders:
 - All stakeholders not fully identified
 - Stakeholders not fully engaged
- Availability of specialist resources (staff, plant, etc)
- Design change / scope creep - due to political involvement
- Changes in ownership:
 - Land required for project
 - Adjacent land
- Railway Possessions (Surveys / Construction) - Covered by Risk No. 90 in part
 - Availability of required possessions
 - Timescales for booking not fully appreciated (blockades, etc)
 - Late cancellation
 - Changes required in design / construction methodology due to constrained possession availability

Within the register there are number of generic risks identified and assessed, which may be intended to cover the items identified above, but these generic risks aren't sufficiently detailed to confirm.

There are catch-all risks for delay to the schedule (i.e. planning stages ref 36 & construction stage ref 69); but these risks aren't explicit enough for assessment or management purposes.

A high level of review of the risks indicated that the following areas may benefit from additional funding support to reflect the progression of the scheme:

- Utilities diversions (Water, Gas, etc.) +£250k
- Unforeseen / unidentified utilities found during works +£250k
- Public objections to planning +£500k
- Contractor / sub-contractors / consultant performance in delivering the works +£100k
- Loss of key staff (Client, Partner, Stakeholder, Consultant, Contractor) +£100k
- Stakeholders +£500k
- Availability of specialist resources (staff, plant, etc.) +£250k
- Design change / scope creep - due to political involvement + £500k
- Railway Possessions (Surveys / Construction) +£1,000k
- Changes in ownership (Land required for project / Adjacent land)
- General delay to programme risks (this increase would take into account any delay associated with the above items):
 - Planning stage (potential to double current allowance to risk 36) i.e. + £600k
 - Construction stage (potential to increase current allowance to risk 69) i.e. + £900k

SEMMMS Internal Budget Reconciliation Notes No. 4 – Indexation


The SMBC project budget allows for a compounded indexation forecast supplied by Atkins (14th February 2012). Cumulatively this indexation forecast recommends a 25.4% compounded increase in construction costs between 2011 to 2019. This makes allowance for zero inflation from 2Q10 to 2Q11, from where the cost estimated is based.

DfT guidance contained within WebTAG 3.5.9 recommends a base inflation allowance of 2.7% per annum which should be applied up to 2014 (para 2.1.2 - 2.1.4) Furthermore, it is suggested that “the base cost projections should incorporate the most recent relevant actual indexation” and it suggests that promoters should “consider current and forecast inflation from industry sources appropriate for their scheme and present the assumptions” in the appraisal. This has been modelled and equates to 38.62% compounded inflation

EC Harris have developed a bespoke indexation forecast for the scheme, which relies upon market soundings as to future prices and published Baxter / NEDO indices. The comparable index to that detailed above is 32.29%.

The SMBC budget allows for a risk provision which models a -1% to +1.5% variance in compounded indexation forecasts. This is in comparison to the circa 13% difference between the Atkins model and the recommended WebTAG approach.

It is suggested that in order to provide a robust project budget indexation allowance, a range of indexations are calculated based upon best case, worst case and most likely and modelled using risk modelling techniques. At this stage however, it is recommended that the WebTAG recommended guidance is incorporated into the project budget. (Highlighted in yellow below)

<h1 style="margin: 0;">Indexation Summary</h1>									
									
Scenerios	2Q10 - 2Q11	2Q11 - 2Q12	2Q12 - 2Q13	2Q13 - 2Q14	2Q14 - 2Q15	2Q15 - 2Q16	2Q16 - 2Q17	2Q17 - 2Q18	2Q18 - 2Q19
DfT Base Case	5.20%	5.20%	5.20%	5.20%	5.20%	5.20%	5.20%	5.20%	5.20%
Atkins Construction	0.00%	0.60%	3.10%	2.20%	3.40%	4.10%	4.60%	2.50%	2.50%
Atkins Land	0.00%	-3.80%	3.00%	3.40%	3.70%	3.70%	3.70%	3.70%	3.70%
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 Scenerios	2Q10 - 2Q11	2Q11 - 2Q12	2Q12 - 2Q13	2Q13 - 2Q14	2Q14 - 2Q15	2Q15 - 2Q16	2Q16 - 2Q17	2Q17 - 2Q18	2Q18 - 2Q19
DfT Base Case	5.20%	10.67%	16.43%	22.48%	28.85%	35.55%	42.60%	50.01%	57.81%
Atkins Construction	0.00%	0.60%	3.72%	6.00%	9.60%	14.10%	19.35%	22.33%	25.39%
Atkins Land	0.00%	-3.80%	-0.91%	2.45%	6.25%	10.18%	14.25%	18.48%	22.86%
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%