



Appendix B

Best and Final Bid

Value Engineering Report and
Scheme Costs

Document: Version: 001

North Fringe to Hengrove Package

Bristol City Council and South
Gloucestershire

01 September 2011





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Document history

Value Engineering

North Fringe to Hengrove Package

Bristol City Council and South Gloucestershire

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Appendix

Appendix A Cyril Sweett Cost Verification Reports

1 Introduction

The purpose of this report is to describe the detail and outcome of the recent value engineering undertaken by Bristol Engineering Consultancy team, South Gloucestershire Council and Halcrow on the seven individual route sections of the North Fringe to Hengrove (NFH) Package. The project has recently been through a value management process to identify those traffic management or bus priority measures that are critical for the delivery of journey time and reliability benefits to Rapid Transit services. Once these key measures were identified, a revised set of route measures and interventions were designed and costed at a significantly lower overall cost to that in the Major Scheme Business Case (MSBC) of March 2010.

Throughout this process, the aim has been to keep the image and quality of the route but to focus measures on the key congested areas where the Rapid Transit vehicles could be delayed and provide more cost effective measures where less delay occurs. We have also focused on the deliverability of the route and apportioned the works into manageable contracts using a mixture of existing and new contract frameworks to maximise value and provide a robust delivery mechanism for the works.

This results in a programme that continues to meet the original delivery timescales of the scheme in spite of the slight delays to the approval programme outlined in the comprehensive spending review.

2 Background

In March 2010 the project submitted a Major Scheme Business Case (MSBC) to the Department for Transport (DfT) for consideration.

The scheme was placed in the “development pool” which is defined as “value for money confirmed but not all will be affordable. Subject to further analysis, consultation and revised funding offers from Local Authorities, decisions are expected by the end of 2011 on which of these will be funded.”

The Expression of Interest (EoI) to the DfT confirmed the West of England’s intent to continue to promote the scheme and their intent to reduce the bid to DfT for scheme funding. To support this, a value engineering workshop identified those elements of the scheme that could potentially be reduced or removed to provide a Rapid Transit scheme that delivered most of the original scheme benefits for a reduced capital costs.

The project team has now prepared a Best and Final Bid (BAFB) for submission to DfT by 9 September 2011. As part of this process Bristol Engineering Consultancy team, South Gloucestershire Council and Halcrow have produced revised drawings (BAFB Appendix A) together with revised costings (Chapter 5 of this report).

3 Route Sections

3.1 Cribbs Causeway

Drawings CTR-AEA-01-301 to 306 - The improvements at Pegasus Road are no longer required due to the realignment of Charlton Hayes spine road (as part of a development), which will reduce traffic flows on Pegasus Road. Highwood Road will also be converted to a bus-only link with the opening of the spine road.

Drawings CTR-AEA-01-307 to 310 - The Rapid Transit has been re-routed to follow the A38, utilising the existing Greater Bristol Bus Network (GBBN) northbound bus lane on approach to Aztec West roundabout. Rapid Transit stops will be located on A38 at/adjacent to existing bus stops to provide continuity.

3.2 Bradley Stoke Way

Drawing CTR-AEA-02-301 - Widening is to be provided to allow bus lanes on both approaches to Woodlands Lane junction. The westbound bus lane has been extended to provide a lane by which Rapid Transit Vehicle can bypass the Aztec West Roundabout

Drawing CTR-AEA-02-302 - Bradley Stoke Way will be widened to provide a north/westbound bus lane along Bradley Stoke Way between Woodlands Lane and Patchway Brook roundabout. Rapid Transit stops will be located adjacent to the roundabout.

Drawings CTR-AEA-02-303 and 304 - Through this section Bradley Stoke Way will be widened to provide a north/westbound bus lane between Savages Wood and Patchway Brook roundabouts.

Drawing CTR-AEA-02-305 - Within the existing carriageway, a northbound lane would be provided with Rapid Transit stops serving the Leisure Centre and Willow Brook Centre shops.

Drawing CTR-AEA-02-306 to 309 - Rapid Transit will run along Bradley Stoke Way with-traffic; stops will be provided.

Drawing CTR-AEA-02-310 - Bradley Stoke Way will be widened to provide a southbound bus lane on the approach to Great Stoke roundabout (Winterbourne Road). Widening of Great Stoke Way will allow for a northbound bus lane on the approach to Great Stoke roundabout.

Drawing CTR-AEA-02-311 - Bus Lane will be provided northbound along Great Stoke Way from its junction with Trevelyan Walk. Rapid Transit stops will be provided between Trevelyan Walk and the Parkway North Roundabout.

Drawing CTR-AEA-02-312 - Rapid Transit stops will be provided adjacent to the Park & Ride site at Hunts Ground Road.

Drawing CTR-AEA-02-313 - A Rapid Transit stop is to be provided outside Bristol Parkway Rail Station.

3.3 Stoke Gifford Transport Link

Drawing CTR-AEA-03-301 - The Stoke Gifford Transport Link [SGTL] will consist of a single carriageway compliant with 40mph design standards with a parallel footway and cycle way; the total carriageway width will be 11m (3-lanes), flaring to 15m (4-lanes) on the approach to Parkway roundabout. A northbound bus lane will be provided from the railway crossing to Parkway roundabout, set-back from the junction. Southbound lanes reduce from 2 to 1 (i.e. merge in-turn) and the structures will be 'future-proofed' by provided for 4-lanes.

Drawing CTR-AEA-03-302 - Throughout this section the SGTL will be a single carriageway construction at 40mph design standards with a parallel footway and cycle way; carriageway of 11m width (3-lanes) over new railway bridge, flaring to 15m (4-lanes) on the approaches to the Hambrook Lane junction, which will be signal controlled. A southbound bus lane will be provided from the railway crossing to Hambrook Lane junction, set-back from the junction. Southbound lanes will reduce from 2 to 1.

Drawing CTR-AEA-03-303 - Throughout this section the SGTL will be a single carriageway construction at 40mph design standards with a parallel footway and cycle way; carriageway of 11m width (3-lanes). A southbound bus lane will start towards Harry Stoke roundabout; a northbound bus lane starting towards Hambrook Lane junction.

Drawing CTR-AEA-03-304 and 305 - SGTL a single carriageway at 40mph design standards with a parallel foot/cycle way; carriageway 15m width (4-lanes), flaring to 15m (7-lanes) on approaches to A4174 Ring Road junction. A set-back southbound bus lane will be provided on the approaches to junctions.

Drawing CTR-AEA-03-306 to 310 - The route will use GBBN infrastructure.

Drawing CTR-AEA-03-311 – Coldharbour Lane. the route will use a GBBN northbound Priority Vehicle Lane with new stops serving University of the West of England.

Drawing CTR-AEA-03-312 to 313 – As per the MSBC Central Case, widening to Coldharbour and Stoke Lanes to provide north- and southbound bus lanes (giving priority access to the new junction with the M32).

3.4 East Fringe

Drawing CTR-AEA-04-301 to 303 - Through this section there is no change to what was proposed in the MSBC Central Case. A new bus lane is being provided eastbound between Hambrook Crossroads and Bromley Heath Roundabout.

Drawing CTR-AEA-04-304 - The signalised bus gateway west of the existing Frome viaduct has been removed (in favour of a merge-in-turn) along with the westbound bus lane, east of Bromley Heath roundabout.

Drawing CTR-AEA-04-305 to 306 - The westbound bus lane has been removed as Rapid Transit will gain the same benefit from the use of the existing Priority Vehicle Lane through this section. The proposed eastbound bus lane between Bromley Heath and Wick Wick roundabouts remains.

Drawing CTR-AEA-04-307 and 308 - Plans include for an eastbound bus lane as in the MSBC Central case.

Drawings CTR-AEA-04-309 to 311 - The plans allow for Rapid Transit stops at Emerald Park, the Science Park, Emerson's Green Park and Ride and Emerson's Green District Centre as was proposed in the MSBC Central Case.

3.5 **M32 Bus Lane, M32 Rapid Transit Junction and Stoke Lane**

CTR-AEA-05-301 to 303 - The extent of the M32 bus lane will remain as per MSBC Central Case providing priority for Rapid Transit travelling to the centre. Southbound, a 60mph speed limit is proposed from Junction 19 of the M4. This speed limit will continue all of the way to the start of the proposed bus lane near to the nosing at the merge of the M32 junction southbound on-slip at which point the speed limit would drop to 30mph and continue at that level to the exiting Cabot Circus junction which would be unaltered in form. Northbound, starting from the Cabot Circus junction, the speed limit will continue at 30mph and will change to 60mph immediately by the northern over bridge at Junction 3 of the M32 as per the existing arrangements. This 60mph speed limit would continue along the entire length of the M32 until Junction 19 of the M4. The design of the central reservation has been altered and will be constructed from back to back trief kerb between Newfoundland Road and the Gatton Road pedestrian footbridge.

CTR-AEA-05-305 to 310 - The M32 Park & Ride grade separated junction has been re-designed to allow the north & southbound movements of the RT (and where appropriate, compliant bus services) only, with the Park & Ride site and associated slip roads deferred to a later date for funding. The junction of Stoke Lane and Frenchay Park Road has been improved with limited road widening to cater for currently congested movements with the provision of signalled pedestrian crossings/additional footways.

The new bridge spanning the M32 has been designed with extra width to allow for maintenance and potential provision of the future Park & Ride.

CTR-AEA-05-311 to 313 - The south bound bus lane commences at the junction with Filton Cemetery and continues to a signalised Bus Gate. This has moved southwards towards the junction with the farm entrance. The northbound bus lane commences at Lancelot Road and continues to the junction with the UWE roundabout.

3.6 **City Centre**

CTR-AEA-06-301 to 305 - The route taken by the Rapid Transit around the centre remains as in the MSBC Central Case but a number of the works have been de-scoped in order to provide a more cost effective solution. The works around the Haymarket have been reduced with the southbound bus lane being reduced in width to 3m, allowing the retention of the existing central reservation.

The extent of works on The Centre has been refocused on a lower cost design that includes closing Colston Avenue (East) to provide for a large pedestrianised area on The Centre and provide for the works around the Hippodrome required to allow for the Rapid Transit proposals. A new interchange area for Rapid Transit and existing bus services has been provided on Colston Avenue (West). The number of pedestrian crossings across the City Centre scheme has also been reduced to take account of the revised layout and the extent of public domain improvements revised.

3.7 South Bristol

CTR-AEA-07-301 to 306 - A double stop will be provided at Hengrove Park where the Rapid Transit system will run on-street along The Boulevard and out on to Whitchurch Lane. It will then proceed along Whitchurch Lane to its junction with Bamfield where the priority junction will be amended to a mini roundabout with enhanced pedestrian facilities..

CTR-AEA-07-307 to 308 - The Rapid Transit vehicle will continuing running on street along Bamfield with additional parking bays being provided to mitigate against any loss of parking through additional waiting restrictions. The vehicles will then continue across the junction with Airport Road and along Creswicke Road.

CTR-AEA-07-309 to 313 - The Rapid Transit vehicle will then continue on street along Creswicke Road with the junction with Broadbury Road being amended from a roundabout to a priority junction in favour of Creswicke Road. The roundabout junction with Novers Lane and Leinster Avenue will be widened to accommodate the Rapid Transit vehicles.

CTR-AEA-07-314 to 320 - The Rapid Transit vehicle will then continue on street along Novers Lane to its junction with Hartcliffe Way. Hartcliffe Way will be upgraded to accommodate the Rapid Transit vehicle. A northbound bus lane will be provided between Novers Lane and Highbury Road and a bus gate will be installed at Highbury Road. A southbound bus lane will be provided between Novers Lane and Vale Lane.

CTR-AEA-07-321 to 326 - The existing bus lane arrangements at Parson Street will be used to provide priority through the gyratory. The Rapid Transit vehicle will then proceed on street along West Street to its junction with East Street and Sheene Lane. This junction will be reconfigured for inbound Rapid Transit vehicles to proceed along East Street to its junction with Lombard Street. On the return loop the vehicle will proceed from Lombard Street along along Dalby Avenue, Malago Road and Sheene Lane. The junction with Malago Road and Sheene Lane will also be reconfigured to reduce Rapid Transit delays.

CTR-AEA-07-327 to 329 - The junction with Lombard Street, East Street and Dalby Avenue will undergo minor amendments to allow the reopening of Lombard Street to Rapid Transit vehicles only. The Rapid Transit vehicles then proceed along Lombard Street and St John's Road on street to the junction with Coronation Road which will be reconfigured to allow for the addition of the New Cut Bridge. This will span the River Avon between Coronation Road and Commercial Road and be for guided buses only. The Rapid Transit will proceed along Commercial Road to its junction with Cumberland Road and Wapping Road where the junction will be reconfigured from a roundabout to a priority junction. The junction will then proceed along Wapping Road into the City Centre.

4 Quantitative Risk Assessment

4.1 Introduction

As part of Halcrow's commission, a further Quantitative Risk Assessment (QRA) has been carried out on the North Fringe to Hengrove Package. The main purpose of the QRA is to support the Best and Final Bid Offer submission to the DfT by predicting the level of Capex contribution having a high level of confidence to cover the construction of the system, with an allowance made for uncertainty and risk. This confidence is further enhanced through greater certainty around specific costs as a result of additional design work undertaken since the submission of the EoI.

The QRA has only been run on the capital elements of the scheme. The risks associated with the operational costs, performance and revenues have not been quantified as these are dealt with separately.

The risk model has been constructed by Halcrow using a Microsoft Excel spreadsheet and the @Risk software package. The modelling has been configured to use Monte-Carlo simulation theory, replicating the project being implemented ten thousand times. Confidence levels relating to the cost of the scheme are obtained from the distribution of the results produced by the simulations.

4.2 Baseline Capital Expenditure

The current capital costs for the scheme can be seen in the table below and are exclusive of risk allowance and are in Q4 2010 prices.

Item	Capital Cost
Construction including ITS infrastructure	£56.0m
Land	£10.4m
Sub-total	£66.4m

4.3 Risk Model Inputs

The risks that are inputted in the risk analysis consist of baseline estimates on the capital costs, the tolerances associated to each of the elements of the scheme broken down to the seven corridors and split into Main Works, Statutory Undertakers, Environmental, Stop/Ticketing Infrastructure, IT / Information and Land.

The uncertainty ranges and discrete risks to the cost of the project were reviewed at a BCC/SGC/consultant project team meeting on the 27th of June 2011 at Halcrow's office in Bristol.

4.3.1 Cost Estimation Tolerance

The baseline costs that are shown in section 5.2 show the most likely costs for the construction of the scheme. In order to take into account the uncertainty in the current costs ranges are applied to the individual costs elements and the input into the risk model as discrete risks. The uncertainty ranges applied to each of the costs elements are shown in the table below.

Route Section	Cost Element	Low	High
Cribbs Causeway Extension	Main Works	90%	110%
	Statutory Undertakers	85%	120%
	Environmental	0%	0%
	Stop / Ticketing Infrastructure	50%	100%
	IT / Information	80%	110%
	Land	20%	100%
Aztec West to Parkway	Main Works	80%	120%
	Statutory Undertakers	20%	200%
	Environmental	0%	0%
	Stop / Ticketing Infrastructure	50%	100%
	IT / Information	80%	100%
	Land	20%	100%
Stoke Gifford Transport Link	Main Works	80%	140%
	Statutory Undertakers	70%	130%
	Environmental	75%	125%
	Stop / Ticketing Infrastructure	50%	100%
	IT / Information	80%	110%
	Land	70%	110%
Stoke Gifford Transport Link to M32 Bus Only Link	Main Works	80%	120%
	Statutory Undertakers	70%	130%
	Environmental	75%	125%
	Stop / Ticketing Infrastructure	50%	100%
	IT / Information	80%	110%
	Land	100%	120%

Route Section	Cost Element	Low	High
M32 Bus Lane Extension & M32 Bus Only Link	Main Works	80%	140%
	Statutory Undertakers	20%	110%
	Environmental	80%	120%
	Stop / Ticketing Infrastructure	50%	100%
	IT / Information	80%	110%
	Land	70%	110%
East Fringe	Main Works	80%	120%
	Statutory Undertakers	70%	130%
	Environmental	75%	125%
	Stop / Ticketing Infrastructure	50%	100%
	IT / Information	80%	110%
	Land	80%	120%
City Centre	Main Works	80%	130%
	Statutory Undertakers	30%	100%
	Environmental	75%	125%
	Stop / Ticketing Infrastructure	50%	100%
	IT / Information	90%	110%
	Land	0%	0%
South Bristol	Main Works	80%	130%
	Statutory Undertakers	50%	200%
	Environmental	75%	125%
	Stop / Ticketing Infrastructure	50%	100%
	IT / Information	80%	110%
	Land	70%	200%

4.3.2 Discrete Risks

At the QRA review meeting of the 27th of June the participants reviewed and updated the risk log to illustrate the increased level of design that had taken place as part of the Best and Final Bid process.

The risks were placed into Halcrow's QRA spreadsheet and thus input into the risk model.

4.4 Risk Model Outputs

4.4.1 Cost Results (excluding inflation)

Confidence Level	Risk Values (£m)
10%	0.8
20%	2.3
30%	3.5
40%	4.5
50%	5.5
60%	6.6
70%	7.8
80%	9.5
90%	12.4

The table above shows the output of the risk model. It illustrates the possible outcomes against confidence levels between 10% and 90%. These values are all at quarter 4 2010 values.

The 5 main risks identified by the sensitivity testing were;

- The risk of cost inflation being either higher or lower than anticipated;
- The risk of the costs of the works of the M32 Bus Only Link and M32 Bus Lane Extension being either higher or lower than anticipated;
- The risk of the costs of the works of the Stoke Gifford Transport Link being either higher or lower than anticipated;
- The risk of the costs of the works of the South Bristol route being either higher or lower than anticipated;
- The risk of the costs of the land at the Stoke Gifford Transport Link being either higher or lower than anticipated.

4.4.2 Cost Results (with Inflation)

On the granting of funding the risk of inflation relating to construction costs is carried by the authority that owns the scheme.

The uncertainty surrounding construction cost inflation has been modelled using the input ranges as shown in the table below.

	2012	2013	2014	2015	2016	2017	2018
Low	1.79%	1.79%	1.79%	1.79%	1.79%	1.79%	1.79%
Medium	2.79%	2.79%	6.00%	6.00%	6.00%	6.00%	6.00%
High	8.80%	8.80%	8.80%	8.80%	8.80%	8.80%	8.80%

The table below shows the risk values including the construction inflation risk from the project modelled at a 50 percent chance of either higher or lower inflation. This is based on the assumption that inflation is at 2.79 percent until 2014 when it rises to 6 percent for the remainder of the construction programme.

The inflation assumptions for construction risk are based on a percentage of 1.79 % flat for low assumptions and 8.8 % flat for the high assumptions.

This reflects a figure of around 19.9 % of base works costs, 16.9 % of out turn works costs or around 11 percent total out turn costs.

Confidence Level	Risk Values (£m)
P(20)	2,691.03
P(50)	6,418.59
P(80)	11,162.77
P(mean)	7,186.62

5 Revised costs and method of measurement

A cost summary table detailing the works costs for each of the sections has been appended to this note. This defines the individual classes of works in accordance with the Design Manual for Roads and Bridges (DMRB) standard method of measurement that has been used for the scheme.

All rates have been fully rebased to quarter four 2010 base costs which have been independently verified by Cyril Sweett cost consultants and quantity surveyors.

Revised costs spreadsheets are detailed below.

5.1 Cribbs Causeway

North Fringe to Hengrove Package Section 01: Cribbs Causeway and Aztec West
BAFB Capital Cost Estimate

August 2011 Estimate

Works Cost				
Drawing Reference Numbers	CTR-AEA-01-301	CTR-AEA-01-304	CTR-AEA-01-306	
Series 0100: Traffic Safety & Management	£ -	£ -	£ -	
Series 0200: Site Clearance	£ -	£ -	£ -	
Series 0300: Fencing & Steps	£ -	£ -	£ -	
Series 0400: Highway Restraint System	£ -	£ -	£ -	
Series 0500: Drainage	£ -	£ -	£ -	
Series 0600: Earthworks	£ -	£ -	£ -	
Series 0700: Pavements	£ -	£ -	£ -	
Series 1100: Kerbs, Footways and Paved Areas	£ -	£ -	£ -	
Series 1200: Traffic Signs and Road Markings	£ 90,000.00	£ 102,135.20	£ 102,255.20	
Series 1300: Street Lighting and Electrical Works	£ -	£ -	£ -	
Series 1700: Structures	£ -	£ -	£ -	
Series 2400: Brickwork, Blockwork and Stone Work	£ -	£ -	£ -	
Series 3000: Landscaping and Ecology	£ -	£ -	£ -	
Series: Accommodation Works	£ 16,140.72	£ 26,699.95	£ 20,365.12	
Series: Miscellaneous	£ -	£ -	£ -	
Restricted Working				
Utilities				
Estimating Tolerance (5%)	£ 5,307.04	£ 6,441.76	£ 6,131.02	
ITS Costs (Signalised Junctions)				
Preliminaries (15%)	£ 16,717.16	£ 20,291.54	£ 19,312.70	
SUB-TOTAL ENGINEERING WORKS	£ 128,164.92	£ 155,568.44	£ 148,064.03	
Environmental Mitigation				
Ticket Machine	£ 10,000.00	£ 20,000.00	£ 20,000.00	
ADSL	£ 1,250.00	£ 2,500.00	£ 2,500.00	
TOTAL	£ 139,414.92	£ 178,068.44	£ 170,564.03	
ROUTE TOTAL				£ 488,047.39

5.2 Bradley Stoke Way

North Fringe to Hengrove Package Section 02: Bradley Stoke Way and Parkway Station 1 of 2
BAFB Capital Cost Estimate

August 2011 Estimate

Works Cost								
Drawing Reference Numbers	CTR-AEA-02-301 - Aztec West Stops	CTR-AEA-02-301	CTR-AEA-02-302	CTR-AEA-02-303	CTR-AEA-02-304	CTR-AEA-02-305	CTR-AEA-02-306	CTR-AEA-02-307
Series 0100: Traffic Safety & Management		£ -	£ -	£ -	£ -	£ -	£ -	£ -
Series 0200: Site Clearance		£ 55,500.00	£ 50,900.00	£ 17,650.00	£ 15,950.00	£ -	£ -	£ -
Series 0300: Fencing & Steps		£ 1,040.00	£ -	£ -	£ -	£ -	£ -	£ -
Series 0400: Highway Restraint System								
Series 0500: Drainage		£ 85,500.00	£ 95,500.00	£ 117,500.00	£ 97,650.00	£ -	£ -	£ -
Series 0600: Earthworks		£ 94,855.50	£ 48,691.00	£ 73,549.00	£ 72,649.00	£ -	£ -	£ -
Series 0700: Pavements		£ 189,522.04	£ 135,230.17	£ 132,249.29	£ 132,235.42	£ -	£ -	£ -
Series 1100: Kerbs, Footways and Paved Areas	£ -	£ 50,306.00	£ 15,812.00	£ 8,440.00	£ 8,836.00	£ -	£ -	£ -
Series 1200: Traffic Signs and Road Markings	£ 102,135.20	£ 115,851.33	£ 158,272.06	£ 20,700.00	£ 20,700.00	£ 109,600.20	£ -	£ -
Series 1300: Street Lighting and Electrical Works		£ 26,085.27	£ 29,470.96	£ 23,633.62	£ 24,950.31	£ -	£ -	£ -
Series 1700: Structures		£ -	£ -	£ -	£ -	£ -	£ -	£ -
Series 2400: Brickwork, Blockwork and Stone Work		£ -	£ -	£ -	£ -	£ -	£ -	£ -
Series 3000: Landscaping and Ecology		£ 15,300.00	£ 3,168.00	£ 10,298.00	£ 10,298.00	£ -	£ -	£ -
Series: Rogues		£ -	£ -	£ -	£ -	£ 32,548.88	£ -	£ -
Restricted Working		£ 79,245.02	£ 134,261.05	£ 101,004.98	£ 95,817.18	£ -	£ -	£ -
Utilities		£ 906,528.00	£ -	£ 40,000.00	£ 40,000.00	£ 28,429.82	£ -	£ -
Estimating Tolerance (5%)	£ 5,106.76	£ 31,698.01	£ 26,852.21	£ 20,201.00	£ 19,163.44	£ 7,107.45	£ -	£ -
ITS Costs (Signalised Junctions)		£ 70,449.31	£ 41,454.09	£ -	£ 23,000.00	£ 44,000.00	£ -	£ -
Preliminaries (15%)	£ 16,086.29	£ 110,416.12	£ 90,802.57	£ 63,633.14	£ 63,814.82	£ 28,988.48	£ -	£ -
SUB-TOTAL ENGINEERING WORKS	£ 136,095.15	£ 1,832,296.59	£ 830,414.10	£ 628,859.02	£ 625,064.17	£ 250,674.83	£ -	£ -
Environmental Mitigation	£ -	£ -	£ 21,000.00	£ 25,000.00	£ 25,000.00	£ -	£ -	£ -
Ticket Machine	£ 20,000.00	£ -	£ 20,000.00	£ -	£ -	£ 20,000.00	£ -	£ -
ADSL	£ 2,500.00	£ -	£ 2,500.00	£ -	£ -	£ 2,500.00	£ -	£ -
TOTAL	£ 158,595.15	£ 1,832,296.59	£ 873,914.10	£ 653,859.02	£ 650,064.17	£ 273,174.83	£ -	£ -
ROUTE TOTAL								

North Fringe to Hengrove Package Section 02: Bradley Stoke Way and Parkway Station 2 of 2
BAFB Capital Cost Estimate

August 2011 Estimate

CTR-AEA-02-308	CTR-AEA-02-309	CTR-AEA-02-010	CTR-AEA-02-311	CTR-AEA-02-312	CTR-AEA-02-313	
£ -	£ -	£ -	£ -	£ -	£ -	
£ -	£ 37,050.00	£ 47,450.00	£ 46,600.00	£ 2,850.00	£ -	
£ -	£ 11,000.00	£ -	£ 20,000.00	£ 2,000.00	£ -	
				£ -		
£ -	£ 85,500.00	£ 95,500.00	£ 54,800.00	£ 56,000.00	£ -	
£ -	£ 22,735.50	£ 23,735.50	£ 39,829.00	£ 101,000.00	£ -	
£ -	£ 44,452.95	£ 44,452.95	£ 88,246.58	£ 169,200.00	£ -	
£ -	£ 10,608.00	£ 10,608.00	£ 42,294.00	£ 3,360.00	£ -	
£ 104,255.20	£ 117,515.20	£ 14,870.00	£ 111,420.20	£ 106,245.20	£ 51,067.60	
£ -	£ 29,754.19	£ 15,647.16	£ 15,201.86	£ 16,305.00	£ -	
£ -	£ -	£ -	£ -	£ -	£ -	
£ -	£ -	£ -	£ -	£ -	£ -	
£ -	£ 936.00	£ 1,936.00	£ 3,888.00	£ -	£ -	
£ 32,989.90	£ -	£ -	£ -	£ 11,825.97	£ 28,967.27	
£ 34,311.27	£ 89,887.96	£ 63,549.90	£ 52,784.96			
£ 27,449.02	£ -	£ 57,000.00	£ 400,000.00	£ 70,317.92	£ 12,005.23	
£ 6,862.25	£ 17,977.59	£ 12,709.98	£ 21,113.98	£ 23,439.31	£ 4,001.74	
£ -	£ -	£ -	£ -	£ 61,460.00		
£ 21,616.10	£ 56,629.41	£ 40,036.44	£ 66,509.04	£ 83,052.82	£ 12,605.49	
£ 227,483.75	£ 524,046.81	£ 427,495.93	£ 962,687.62	£ 707,056.22	£ 108,647.33	
£ -	£ -	£ 17,000.00	£ -	£ 10,000.00		
£ 20,000.00	£ 20,000.00	£ -	£ 20,000.00	£ 20,000.00	£ 10,000.00	
£ 2,500.00	£ 2,500.00	£ -	£ 2,500.00	£ 2,500.00	£ 1,250.00	
£ 249,983.75	£ 546,546.81	£ 444,495.93	£ 985,187.62	£ 739,556.22	£ 119,897.33	
						£ 7,527,571.52

5.3 Stoke Gifford Transport Link

North Fringe to Hengrove Package Section 03: Stoke Gifford Transport Link and Coldharbour Lane
BAFB Capital Cost Estimate

August 2011 Estimate

Works Cost							
Drawing Reference Numbers	CTR-AEA-03-301 to 304	CTR-AEA-03-302 - Stoke Gifford Railway Bridge	CTR-AEA-03-303 - Stoke Gifford Stream Bridge	CTR-AEA-03-311	CTR-AEA-03-312	CTR-AEA-03- 313	
Series 0100: Traffic Safety & Management	£ 120,000.00	£ -	£ -	£ -	£ -	£ -	
Series 0200: Site Clearance	£ 40,500.00	£ -	£ -	£ -	£ 39,350.00	£ 19,695.00	
Series 0300: Fencing & Steps	£ 236,440.00	£ -	£ -	£ -	£ 7,200.00	£ 7,200.00	
Series 0400: Highway Restraint System							
Series 0500: Drainage	£ 331,200.00	£ -	£ -	£ -	£ 15,480.00	£ 39,460.00	
Series 0600: Earthworks	£ 2,389,989.00	£ -	£ -	£ -	£ 21,758.25	£ 128,687.90	
Series 0700: Pavements	£ 1,409,232.00	£ -	£ -	£ -	£ 151,412.22	£ 55,051.55	
Series 1100: Kerbs, Footways and Paved Areas	£ 372,310.00	£ -	£ -	£ -	£ 53,206.40	£ 6,900.00	
Series 1200: Traffic Signs and Road Markings	£ 312,884.17	£ -	£ -	£ 180,000.00	£ 148,218.77	£ 23,218.00	
Series 1300: Street Lighting and Electrical Works	£ 290,700.00	£ -	£ -	£ -	£ 59,438.00	£ 43,708.00	
Series 1700: Structures	£ -	£ 1,900,000.00	£ 1,500,000.00	£ -	£ -	£ 54,000.00	
Series 2400: Brickwork, Blockwork and Stone Work	£ -	£ -	£ -	£ -	£ -	£ 24,550.00	
Series 3000: Landscaping and Ecology	£ 38,342.00	£ -	£ -	£ -	£ 253,168.00	£ 10,974.00	
Series: Rogues	£ -	£ -	£ -	£ 20,360.92	£ 3,000.00	£ 3,000.00	
Restricted Working				£ 10,000.00	£ 94,028.95	£ 52,055.56	
Utilities	£ 10,000.00	£ -	£ -	£ -	£ 440,679.22	£ -	
Estimating Tolerance (5%)	£ 277,079.86	£ 95,000.00	£ 75,000.00	£ 10,018.05	£ 37,611.58	£ 20,822.22	
ITS Costs (Signalised Junctions)	£ 123,291.18	£ -	£ -	£ -	£ 19,872.29	£ 21,469.25	
Preliminaries (15%)	£ 891,295.23	£ 299,250.00	£ 236,250.00	£ 31,556.84	£ 121,457.33	£ 68,810.39	
SUB-TOTAL ENGINEERING WORKS	£ 6,843,263.44	£ 2,294,250.00	£ 1,811,250.00	£ 251,935.80	£ 1,465,881.01	£ 579,601.86	
Environmental Mitigation	£ 432,000.00	£ -	£ -		£ 73,294.05	£ 28,980.09	
Ticket Machine	£ 20,000.00	£ -	£ -	£ 20,000.00	£ 20,000.00		
ADSL	£ 2,500.00	£ -	£ -	£ 2,500.00	£ 2,500.00		
TOTAL	£ 7,297,763.44	£ 2,294,250.00	£ 1,811,250.00	£ 274,435.80	£ 1,561,675.06	£ 608,581.96	
ROUTE TOTAL							£ 13,847,956.26

5.4 East Fringe

North Fringe to Hengrove Package Section 04: East Fringe BAFB Capital Cost Estimate

August 2011 Estimate

Works Cost					
Drawing Reference Numbers	CTR-AEA-04-301 to 304	CTR-AEA-04-305 to 310	CTR-AEA-04-311 Emerson's Green P&R	CTR-AEA-04-311 Emerson's Green District Centre	
Series 0100: Traffic Safety & Management	£ -	£ -	£ -	£ -	
Series 0200: Site Clearance	£ 27,810.00	£ 45,200.00	£ -	£ -	
Series 0300: Fencing & Steps	£ 2,500.00	£ 38,500.00	£ -	£ -	
Series 0400: Highway Restraint System			£ -	£ -	
Series 0500: Drainage	£ 172,500.00	£ 285,775.00	£ -	£ -	
Series 0600: Earthworks	£ 86,374.00	£ 169,818.00	£ -	£ -	
Series 0700: Pavements	£ 193,842.59	£ 414,116.64	£ -	£ -	
Series 1100: Kerbs, Footways and Paved Areas	£ 31,444.00	£ 91,138.00	£ -	£ -	
Series 1200: Traffic Signs and Road Markings	£ 157,892.29	£ 355,915.10	£ 180,000.00	£ 51,067.60	
Series 1300: Street Lighting and Electrical Works	£ 51,050.00	£ 122,500.00	£ -	£ -	
Series 1700: Structures	£ 100,000.00	£ 1,250,000.00	£ -	£ -	
Series 2400: Brickwork, Blockwork and Stone Work	£ 57,500.00	£ -	£ -	£ -	
Series 3000: Landscaping and Ecology	£ 2,698.00	£ -	£ -	£ -	
Series: Rogues	£ 30,427.65	£ 392,581.42	£ -	£ 13,829.22	
Restricted Working	£ 228,509.63	£ 791,386.04			
Utilities	£ 55,000.00	£ 63,000.00	£ 27,000.00		
Estimating Tolerance (5%)	£ 45,701.93	£ 158,277.21	£ 9,000.00	£ 3,244.84	
ITS Costs	£ 93,259.83	£ -	£ -	£ -	
Preliminaries (15%)	£ 157,950.04	£ 498,573.20	£ 28,350.00	£ 10,221.25	
SUB-TOTAL ENGINEERING WORKS	£ 1,535,459.95	£ 4,867,780.61	£ 244,350.00	£ 78,362.91	
Environmental Mitigation			£ 20,000.00		
Ticket Machine	£ 20,000.00	£ 60,000.00	£ 20,000.00	£ 20,000.00	
ADSL	£ 2,500.00	£ 7,500.00	£ 2,500.00	£ 2,500.00	
TOTAL	£ 1,557,959.95	£ 4,935,280.61	£ 286,850.00	£ 100,862.91	
ROUTE TOTAL					£ 6,880,953.47

5.5 M32 Bus Lane Extension, M32 Bus Only Link and Stoke Lane

North Fringe to Hengrove Package Section 05: M32 Bus Lane Extension and Rapid Transit Junction
BAFB Capital Cost Estimate

August 2011 Estimate

Works Cost				
EOI Drawing Reference Numbers	CTR-AEA-03- 313	CTR-AEA-05-301 to 304	CTR-AEA-05-305 to 310	
Series 0100: Traffic Safety & Management	£ -	£ -	£ -	
Series 0200: Site Clearance	£ 23,330.00	£ 101,560.00	£ 64,470.00	
Series 0300: Fencing & Steps	£ 1,200.00	£ 194,500.00	£ 81,300.00	
Series 0400: Highway Restraint System			£ 169,000.00	
Series 0500: Drainage	£ 36,960.00	£ 21,500.00	£ 756,000.00	
Series 0600: Earthworks	£ 9,068.63	£ 233,175.00	£ 960,280.00	
Series 0700: Pavements	£ 54,183.65	£ 374,550.00	£ 556,547.25	
Series 1100: Kerbs, Footways and Paved Areas	£ 17,606.40	£ 231,760.00	£ 43,040.00	
Series 1200: Traffic Signs and Road Markings	£ 20,398.42	£ 125,405.00	£ 83,590.00	
Series 1300: Street Lighting and Electrical Works	£ 39,180.00	£ 305,850.00	£ -	
Series 1700: Structures	£ -	£ -	£ 3,068,300.00	
Series 2400: Brickwork, Blockwork and Stone Work	£ 6,037.50	£ -	£ -	
Series 3000: Landscaping and Ecology	£ 648.00	£ -	£ -	
Series: Rogues	£ 100,000.00	£ 6,000.00		
Series: Accomodation Works			£ 224,500.00	
Series: Miscellaneous			£ 6,000.00	
Restricted Working	£ 77,153.15		£375,814.20	
Utilities	£ 46,291.89	£ 239,145.00	£300,651.36	
Estimating Tolerance	£ 15,430.63	£ 79,715.00	£300,651.36	
ITS Costs	£ 57,534.49	£ 600,000.00		
Preliminaries	£ 57,236.66	£ 341,102.25	£947,051.79	
SUB-TOTAL ENGINEERING WORKS	£ 562,259.41	£ 2,854,262.25	£7,937,195.97	
Environmental Mitigation	£ -	£ 28,542.62		
Ticket Machine	£ -			
ADSL	£ -			
TOTAL	£ 562,259.41	£ 2,882,804.87	£ 7,937,195.97	
ROUTE TOTAL				£ 11,382,260.25

5.6 City Centre

North Fringe to Hengrove Package Section 06: City Centre
BAFB Capital Cost Estimate

August 2011 Estimate

Works Cost				
EOI Drawings	Bond Street	Rupert Street / Lewins Mead	The Centre	
Series 0100: Traffic Safety & Management	£ 5,000.00	£ 5,000.00	£ 120,000.00	
Series 0200: Site Clearance	£ 11,400.00	£ 425.00	£ 426,640.00	
Series 0300: Fencing & Steps	£ 5,600.00	£ -	£ 12,000.00	
Series 0400: Highway Restraint System				
Series 0500: Drainage	£ 1,150.00	£ -	£ 77,000.00	
Series 0600: Earthworks	£ 2,800.00	£ -	£ 322,700.00	
Series 0700: Pavements	£ -	£ -	£ 277,349.40	
Series 1100: Kerbs, Footways and Paved Areas	£ 2,530.00	£ -	£ 1,051,650.00	
Series 1200: Traffic Signs and Road Markings	£ 243,058.00	£ 191,560.00	£ 809,147.50	
Series 1300: Street Lighting and Electrical Works	£ -	£ -	£ 58,800.00	
Series 1700: Structures	£ 12,500.00	£ -	£ -	
Series 2400: Brickwork, Blockwork and Stone Work	£ 11,500.00	£ -	£ 43,000.00	
Series 3000: Landscaping and Ecology	£ 21,000.00	£ -	£ 305,520.00	
Series: Rogues	£ -	£ -	£ -	
Restricted Working	£ 31,853.80	£ 19,898.50	£ 350,880.69	
Utilities	£ 7,000.00	£ 7,000.00	£ 255,000.00	
Estimating Tolerance (5%)	£ 15,926.90	£ 9,949.25	£ 175,440.35	
ITS Costs	£ -	£ 20,000.00	£ 250,000.00	
Preliminaries (15%)	£ 50,169.74	£ 34,340.14	£ 590,137.09	
SUB-TOTAL ENGINEERING WORKS	£ 421,488.44	£ 288,172.89	£ 5,125,265.02	
Environmental Mitigation				
Ticket Machine				
ADSL				
TOTAL	£ 421,488.44	£ 288,172.89	£ 5,125,265.02	
ROUTE TOTAL				£ 5,834,926.34

5.7 South Bristol

North Fringe to Hengrove Package Section 07: South Bristol 1 of 2
BAFB Capital Cost Estimate: Central Case

August 2011 Estimate

Works Cost									
EOI Drawing Reference Numbers	Hengrove Park	Bamfield / Whitchurch Lane junction including Traffic Calming	Bamfield	Creswicke Road	Novers Lane / Inns Court	Hartcliffe Way / Novers Lane Junction	West Street Rapid Transit Stops	Sheene Road / West Street	
Series 0100: Traffic Safety & Management	£ -	£ -	£ -	£ -	£ -	£ -	£ -	£ -	£ -
Series 0200: Site Clearance	£ 7,230.00	£ 13,435.00	£ 9,510.00	£ 21,655.00	£ 5,910.00	£ 32,310.00	£ -	£ 9,325.00	
Series 0300: Fencing & Steps	£ -	£ -	£ -	£ -	£ -	£ 60,000.00	£ -	£ -	
Series 0400: Highway Restraint System									
Series 0500: Drainage	£ 3,000.00	£ 9,000.00	£ -	£ 11,250.00	£ 17,400.00	£ 283,250.00	£ 13,310.00	£ 2,250.00	
Series 0600: Earthworks	£ 7,880.00	£ 36,834.00	£ 7,996.00	£ 5,460.00	£ 2,968.00	£ 473,986.00	£ -	£ 7,460.00	
Series 0700: Pavements	£ 9,555.60	£ 111,675.25	£ -	£ 257,962.44	£ 2,947.00	£ 729,615.44	£ -	£ 44,452.65	
Series 1100: Kerbs, Footways and Paved Areas	£ 8,645.00	£ 24,898.00	£ 8,454.00	£ 14,600.00	£ 7,627.00	£ 154,813.00	£ -	£ 15,425.00	
Series 1200: Traffic Signs and Road Markings	£ 11,791.50	£ 112,495.20	£ 106,440.20	£ 219,470.40	£ 105,295.20	£ 346,088.77	£ 132,135.20	£ 22,327.50	
Series 1300: Street Lighting and Electrical Works	£ -	£ 7,350.00	£ -	£ -	£ -	£ 216,243.00	£ -	£ 2,233.00	
Series 1700: Structures	£ -	£ -	£ -	£ -	£ -	£ 194,000.00	£ -	£ -	
Series 2400: Brickwork, Blockwork and Stone Work	£ -	£ 16,850.00	£ -	£ -	£ -	£ -	£ -	£ -	
Series 2700: Stautory Undertakers	£ 2,000.00	£ 3,000.00	£ 1,000.00	£ 2,000.00	£ -	£ 50,000.00	£ 2,000.00	£ 2,000.00	
Series 3000: Landscaping and Ecology	£ -	£ 24,000.00	£ 180.00	£ -	£ -	£ 92,708.80	£ -	£ -	
Series: Rogues	£ -	£ -	£ -	£ -	£ -	£ -	£ -	£ -	
Restricted Working	£ -	£ 35,953.75	£ 13,358.02	£ 53,239.78	£ 14,214.72	£ 131,650.75	£ 14,744.52	£ 15,820.97	
Utilities	£ 5,000.00	£ 64,556.00	£ 2,000.00	£ 102,539.00	£ -	£ 150,000.00	£ 5,000.00	£ 5,000.00	
Estimating Tolerance (5%)	£ 2,505.11	£ 17,976.87	£ 6,679.01	£ 26,619.89	£ 7,107.36	£ 131,650.75	£ 7,372.26	£ 5,273.66	
ITS Costs	£ -	£ -	£ -	£ -	£ -	£ 45,000.00	£ -	£ 30,000.00	
Preliminaries (15%)	£ 7,891.08	£ 56,627.15	£ 21,038.88	£ 83,852.66	£ 22,388.18	£ 421,449.86	£ 23,222.62	£ 21,112.02	
SUB-TOTAL ENGINEERING WORKS	£ 65,498.29	£ 534,651.22	£ 176,656.11	£ 798,649.18	£ 185,857.46	£ 3,512,766.37	£ 197,784.60	£ 182,679.80	
Environmental Mitigation	£ 654.98	£ 5,346.51	£ 1,766.56	£ 7,986.49	£ 1,858.57	£ 35,127.66	£ 1,977.85	£ 1,826.80	
Ticket Machine	£ -	£ 20,000.00	£ 20,000.00	£ 40,000.00	£ 20,000.00	£ 40,000.00	£ 20,000.00	£ -	
ADSL	£ -	£ 2,500.00	£ 2,500.00	£ 5,000.00	£ 2,500.00	£ 5,000.00	£ 2,500.00	£ -	
TOTAL	£ 66,153.27	£ 562,497.73	£ 200,922.67	£ 851,635.67	£ 210,216.04	£ 3,592,894.03	£ 222,262.44	£ 184,506.60	
ROUTE TOTAL									

North Fringe to Hengrove Package Section 07: South Bristol 2 of 2
BAFB Capital Cost Estimate: Central Case

August 2011 Estimate

Malago Road / Sheene Road	Dalby Avenue Rapid Transit Stops	Lombard Street	St Johns Road / Coronation Road	Commercial Road / Wapping Road	New Cut Bridge	
£ -	£ -	£ -	£ -	£ -	£ -	
£ 1,000.00	£ 13,985.00	£ 53,640.00	£ 5,220.00	£ 11,230.00	£ -	
£ -	£ 800.00	£ -	£ -	£ 9,160.00	£ -	
£ -	£ 1,080.00	£ 3,240.00	£ 1,500.00	£ 6,750.00	£ -	
£ -	£ 5,053.00	£ 30,205.00	£ 2,148.00	£ 10,518.00	£ -	
£ -	£ -	£ 33,444.60	£ 1,656.48	£ 22,453.76	£ -	
£ -	£ 9,152.00	£ 58,475.00	£ 2,429.00	£ 7,408.00	£ -	
£ 11,190.00	£ 59,142.60	£ 114,273.20	£ 12,722.50	£ 5,575.50	£ -	
£ -	£ 4,466.00	£ 13,064.00	£ 2,233.00	£ -	£ -	
£ -	£ -	£ -	£ -	£ -	£ 2,514,000.00	
£ -	£ -	£ -	£ -	£ 17,600.00	£ -	
£ -	£ 1,000.00	£ 5,000.00	£ 5,000.00	£ 1,000.00	£ -	
£ -	£ 17,555.00	£ 24,150.00	£ -	£ 17,500.00	£ -	
£ -	£ -	£ -	£ -	£ -	£ -	
£ 1,219.00	£ 11,223.36	£ 16,774.59	£ 2,000.00	£ 10,919.53	£ -	
£ -	£ 33,989.00	£ 40,835.00	£ 13,000.00	£ 3,000.00	£ -	
£ 609.50	£ 5,611.68	£ 16,774.59	£ 1,645.45	£ 5,459.76	£ 125,700.00	
£ 70,000.00	£ 20,000.00	£ 20,000.00	£ 60,000.00	£ -	£ -	
£ 12,419.93	£ 20,676.79	£ 55,839.96	£ 14,183.16	£ 17,198.25	£ 395,955.00	
£ 96,438.43	£ 203,734.43	£ 485,715.94	£ 123,737.59	£ 145,772.80	£ 3,035,655.00	
£ 964.38	£ 2,037.34	£ 4,857.16	£ 1,237.38	£ 1,457.73	£ 30,356.55	
£ -	£ 10,000.00	£ 20,000.00	£ -	£ -	£ -	
£ -	£ 1,250.00	£ 2,500.00	£ -	£ -	£ -	
£ 97,402.81	£ 217,021.78	£ 513,073.10	£ 124,974.97	£ 147,230.53	£ 3,066,011.55	
						£ 10,056,803.19

5.8 Costing Summary

North Fringe to Hengrove Package Cost Summary

	Base Prices 000's	Outturn Prices 000's
Engineering Works	£ 50.909	
Land Costs	£ 11.637	
Site Supervision Costs	£ 2.000	
Preliminaries	£ 5.109	
Part 1 Claims	£ 3.766	
Works Sub-total	£ 73.421	
Preparatory Costs	£ 5.110	
Project Management	£ 0.910	
Outturn Risk Budget		£ 11.163
Inflation		£ 10.852
Scheme Evaluation	£ 0.150	
Sub-total	£ 6.170	£ 22.015
Total	£ 79.591	£ 101.606



Appendix A1

Cyril Sweett Cost Verification Report Addendum from
MSBC to EOI – December 2010

Addendum

Further to our Independent Cost Review Report for North Fringe to Hengrove Package dated 26th March 2010 Cyril Sweett has undertaken a cost assessment of a revised reduced scheme.

Due to the timeframe provided to undertake a revised reduced scope a different process has been utilised to produce the estimate.

Designs have been undertaken by Halcrow, Bristol City Council and South Gloucestershire Council. The engineering teams have quantified the revised designs using the Standard Method of Measurement for Highways Works. These quantities have not been validated by Cyril Sweett and it is recommended that further to continuation of the project following approval, a validation exercise is undertaken.

Cyril Sweett have provided and/or verified the rates to be applied to all quantities to produce a construction cost for the project. These rates are based on previous schemes provided by Halcrow, Bristol City and South Gloucestershire Councils or from Cyril Sweett's database of benchmarked cost items. The level of pricing reflects the reduce scope of works and is based on 4th Qtr 2010 pricing levels. The pricing levels take into consideration for a proportion of the works being delivered by framework term contractors, this limits higher mobilisation and add-on costs.

Through negotiation with all parties, add-on costs have been applied to the construction costs. These add-ons have been reviewed section by section with the format standardised throughout the scheme to maintain a common understanding throughout the three different design inputs.

The add-ons are :

- Restricted Working – in certain sections of the route out of hours working or works by hand, or construct using inefficient working conditions will be required. On a section by section basis, with a desktop study approach this has been assessed and a suitable allowance made.
- Utilities – where applicable on a section to section basis an allowance has been added to the construction cost to undertake all works in connection with diverting, renewing, connecting to, or removing existing utility provision.
- Estimating tolerance. Due to the time of production of revised scheme and quantifying the route, minor discrepancies to quantum may be incurred. As Cyril Sweett has not validated the quantities, nor assessed specific task rate, to task location a 5% tolerance add-on has been applied.
- ITS Costs – these have been provided by Halcrow utilising the latest design and cost information available to them. These have not be validated by Cyril Sweett
- Preliminaries – the work packages will now be of a lower value than previously envisaged and traffic management requirements have been significantly reduced. Therefore it has been agreed to apply a 15% addition to costs for contractors preliminary items which are to include traffic management unless mentioned separately (ie on the M32)

- Environmental Mitigation – a number of sites will require mitigation measures to reduce or remove the risk of the project being held up or amended due to environmental discoveries. Each site has been reviewed and an appropriate allowance has been made on a desk top study basis.
- Contingency – the design is based on an 'order of magnitude' level without detailed topographical nor utilities study. Therefore a level of 15% has been added to the total cost for any variation to design caused by furthering the survey knowledge. This sum is not for scope development (any scope increase would have to go through standard change control processes) but for design development (adapting the design to suit survey information).

Further to the use of revised reduced engineering design and quantification from Halcrow, Bristol City Council and South Gloucestershire Council and utilising standardised rates and add-ons to all elements a total revised cost of **£61,816,000** based on 4th Qtr 2010 for construction works is provided for business case purposes.

Further allowances must be made for preparatory works, site supervision, land, capital renewal, quantified risk assessment or inflation beyond base year (4Q10) costs.

15 December 2010



Appendix A2

Cyril Sweett Cost Verification Report EOI to BAFB –
September 2011



Bristol City Council & South Gloucestershire Council

transport (roads)



North Fringe to Hengrove Package

Independent Cost Review

05 September 2011

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1.0 Introduction

In November 2010 Cyril Sweett issued an addendum to the first Cost Review of North Fringe to Hengrove to consider a de-scoped scheme in order to satisfy a reduced funding capability.

Due to the design development undertaken since our last review, Cyril Sweett has been commissioned to produce a further assessment of the estimate by providing an independent cost verification with report of North Fringe to Hengrove rapid transit system. Our scope is to review any variance between the base construction estimate issued in November 2010 totalling £61,816,000 and the current estimate. Cyril Sweett have had access to the drawings but other than the central Bristol section have not undertaken any measurements as their have been few changes to the proposed works. The Central Bristol section has been assessed due to the inference with adjoining projects and changes made accordingly.

Section 2 – Verification Report: highlights the differences between the cost base from the estimate issued in November 2010 and the latest estimate issued August 2011.

Section 3 – Review by exception

Section 4 – Procurement

Section 5 – Conclusions: provides a considered opinion of the estimate level for this size and type of scheme based on the information provided.

2.0 Verification Report

To undertake this verification report Cyril Sweett have been issued with the following documents:

- Halcrow Group scheme drawings as identified in Appendix A
- Bristol Engineering Consultancy scheme drawings as identified in Appendix A
- Estimate spreadsheets as identified in Appendix B
- Summary sheet as identified in Appendix B

The revised drawings produced for the scheme can be found in BAFB submission as Appendix A.

2.1 The scheme has been divided into various sections following Halcrow, South Gloucestershire and Bristol City Councils project structure, these are as follows:

- 2.1.1 Cribbs Extension
- 2.1.2 Bradley Stoke Way
- 2.1.3 Stoke Gifford Link
- 2.1.4 M32 Park and Ride proposals
- 2.1.5 East Fringe
- 2.1.6 City Centre – issued by Bristol City Council
- 2.1.7 South Bristol

The list of drawings utilised for this review is included within Appendix A

2.2 The scheme includes works to Bristol City Centre; these Works have been designed, measured and priced by Bristol City Council.

2.3 Halcrow produced quantities from their drawings; these have been priced to provide a total cost for the Works. A list of these documents is included in Appendix 2.

2.4 All costs are 1st quarter 2010; no allowance for future inflation has been included as this is dealt with by the Appraisal process undertaken by others.

2.5 Our review has taken into account the central city section; the drawings assessed are named in appendix A. This section has been reviewed as a separate process due to the design, costs and format being provided by Bristol City Council as opposed to South Gloucestershire and Halcrow, therefore assumptions have slightly differed due to the nature of the works.

3.0 Review by Exception

Our review highlighted the following differences:

3.1 Cribbs Extension

Current Price	Price Nov 2010	Comments
£553,000	£465,000	1. Introduction of platform civils

The above incurred an extra over cost of £88,000

3.2 Bradley Stoke Way

Current Price	Price Nov 2010	Comments
£8,617,000	£6,382,000	<ol style="list-style-type: none"> 1. Quantum amended throughout estimate not effecting cost base 2. Lighting changed from new to re-use and adapt existing 3. Retaining walls removed 4. Utilities costs increased significantly due to provision of estimates 5. Restricted working added increasing price significantly 6. The above increases the contingency amount

The above incurred an extra cost the base construction total of £2,235,000

3.3 Stoke Gifford Link

Current Price	Price Nov 2010	Comments
£13,046,000	£12,695,000	<ol style="list-style-type: none"> 1. Quantum for excavation, pavements & kerbing have increased the cost significantly 2. Retaining walls removed 3. Utilities costs reduced significantly due to provision of estimates 4. The above increases the contingency amount

The above incurred an extra cost the base construction total of £351,000

3.4 North Fringe RT to M32 Park & Ride

Current Price	Price Nov 2010	Comments
£3,076,000	£3,181,000	1. Pavements & excavation works removed form bus turnaround

The above incurred a saving to the cost the base construction total of £105,000

3.5 M32 Park and Ride proposals

Current Price	Price Nov 2010	Comments
£13,085,000	£13,140,000	1. Bridge of M32 costs decreased 2. ITS reduced significantly

The above incurred a saving to the cost the base construction total of £55,000

3.6 East Fringe

Current Price	Price Nov 2010	Comments
£7,890,000	£6,936,000	1. Significant increase to price of footbridge 2. Additional cost for civils for platforms 3. Utilities reduced significantly 4. Increase in environmental works

The above incurred an extra cost the base construction total of £954,000

3.7 City Centre – issued by Bristol City Council

Current Price	Price Nov 2010	Comments
£6,710,000	£7,111,000	1. Significant reduction in ITS 2. Significant increase in paving 3. Adjustment quantum in earthworks and pavement 4. Restricted working increase

The above incurred a saving to the cost the base construction total of £401,000

3.8 South Bristol

Current Price	Price Nov 2010	Comments
£11,519,000	£11,906,000	<ol style="list-style-type: none">1. Site clearance reduced2. Fencing increased3. Earthworks increased4. Streelighting increased5. Retaining walls reduced6. Landscaping increased7. Utilities costs significantly reduced8. Introduced Restricted working significantly increasing the base cost9. ITS significantly reduced

The above incurred a saving to the cost the base construction total of £387,000



4.0 Procurement

A draft report titled Joint Procurement Strategy has been produced by WSP for the West of England Partnership issued to the team on the 31 August 2011. Due to the late availability of this report we are unable comment. Therefore for clarity, all rates and additions are based on the scheme being let as suitably sized and scoped sections of work developed as standard design and build contracts.

Over the following two weeks the WSP report will be reviewed and commentary added through an addendum.

PACKAGE ELEMENTS:	North Fringe RT - Cribbs Causeway to Winterbourne Way					Stoke Gifford Transport Link			North Fringe RT - STGL to M32 Park & Ride					M32 Park & Ride			East Fringe RT				City Centre	South Bristol RT			ROUTE					
	Cribbs Causeway Extension	Aztec West Business Park	Aztec West Roundabout	Bradley Stoke Way	Winterbourne Road crossing	Stoke Gifford Transport Link (Great Stoke to A4174), excluding rail bridge	Stoke Gifford Transport Link - rail bridge only	Stoke Gifford Stream Crossing	Bristol Parkway Turnaround	Bristol Parkway North P&R	RT route through Harry Stoke	A4174 crossing / junction	Coldharbour Lane to UWE	South of UWE to M32 P&R	Option 1 M32 P&R & M32 approaches	Option 2 M32 Park and Ride Approaches	Stoke Lane/B4058 Junction	M32 - P&R to Cabot Circus (Extension of existing GBBN Bus Lane to Viaduct)	A4174 - M32 J1 to Bromley Heath Rbt (inclusive)	Bromley Heath Rbt to SPark	RT route through Emerson's Green East	Emerson's Green P&R	A4174 crossing / junction @ Emerson's Green	Emerson's Green District Centre terminus	City Centre	Bridge across New Cut	Coronation Rd - East Street (incl. East St streetscape)	Hartcliffe Way	Creswick Road and Filwood Link including A4174 Hengrove Way crossing	TOTAL in £'000s
Construction																														
Main works (incl. prelims, structures, earthworks, drainage, carriageway, signs, walking & cycling links)	431,797			5,679,092		6,833,263	2,294,250	1,811,250	96,642	636,738			251,936	1,025,202		7,636,545	515,968	2,615,117	1,480,460	4,804,781		217,350		78,363	5,565,926	3,035,655			6,285,023	51,295
Statutory Undertakers	0			1,581,730		10,000			12,005	70,318				440,679		300,651	46,292	239,145	55,000	63,000		27,000		0	269,000	0			424,919	3,540
Environmental mitigation	0			98,000		432,000			0	10,000				73,294		0	0	28,543	0	0		20,000			0	30,357			67,099	759
Additional contingency	64,770			1,089,123		1,026,490	344,138	271,688	16,297	106,058			37,790	219,882		1,190,579	84,339	428,139	230,319	730,167		36,653		11,754	875,239	455,348			1,006,491	8,225
RT stop infrastructure									0	0				0		0	0	0	0	0		0		0	0	0			0	0
Ticketing infrastructure	50,000			150,000		20,000			10,000	20,000			20,000	20,000		0	0	0	20,000	60,000		20,000		20,000	0	0			190,000	600
Other ITS Systems inc signals	6,250			18,750		2,500			1,250	2,500			2,500	2,500		0	0	0	2,500	7,500		2,500		2,500	0	0			23,750	75
Real-Time information									0	0				0		0	0	0	0	0		0		0	0	0			0	0
Construction Total	552,817			8,616,695		8,324,253	2,638,388	2,082,938	136,194	845,615			312,226	1,781,557		9,127,775	646,598	3,310,944	1,788,279	5,665,448		323,503		112,617	6,710,165	3,521,360	0	0	7,997,283	64,495

5.0 Conclusions

Verification Summary

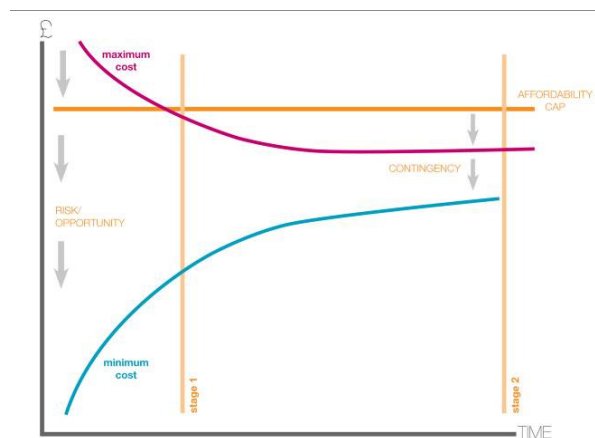
Our summary of the cost following verification is:

Verification	Works cost November 2010 (£k)	Works cost August 2011 (£k)
Section produced by Halcrow	54,705,000	57,785,000
Section produced by Bristol city centre	7,111,000	6,710,000
Total	61,816,000	64,495,000

Affordability

The cost provided by Halcrow, South Gloucestershire and Bristol City Council for the design development of the route has resulted in an increase to the base cost of £2.680m. A significant portion of the additional cost is attributable to quantum in excavation & pavement due to better design information and utilities costs, however there is a significant reduction in ITS systems.

It must be understood that through a cost control process as depicted in the graph below, as design develops and the quantities and items firm up the cost will fluctuate. Rather than showing an increase and decrease each time it is best practice to utilise the risk provision to offset any variances to the base cost and keep it within an affordability cap.



If scope change is introduced then this should follow a change control process to amend the baseline cost. Currently no change control is required and in our opinion, at this time the change to the base works costs will require an equal opposite movement in the risk provision. We currently do not have access to make amendments to the risk figure (however figures supplied from the latest QRA carried out by others support a reduction of this allowance and



therefore for the purposes of the business case we are confident that the figures being used are in line with our expectations of a project of this size and type.

Cyril Sweett conclude that the base cost representing the current scheme falls in the range of **£61,812,000 to £64,495,000**, a variance of 4.3%



Appendix A

Drawing register



Drawing Register -

CTR – AEA-01-300 to 310
CTR – AEA-02-300 to 313
CTR – AEA-03-300 to 311
CTR – AEA-04-300 to 311
CTR – AEA-05-300 to 313
CTR – AEA-06-001 to 005
CTR – AEA-07-301 to 329



Appendix B

Document register



The estimates have now been compiled into a single costing spreadsheet received and ref "NFH DfT BAFO costs 2010Q4 rates", utilised for this assessment in comparison to the previous scheme costing provided in spreadsheet "NFH DfT EOI costs 2010Q4 rates".

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