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# **Greater Bristol Bus Network**

## **Appendix 3C**

### **Bus Priority Scheme Value Management**



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## 3C.1. Introduction

### BACKGROUND

- 3C.1.1 Bath and North East Somerset, Bristol City Council, North Somerset and South Gloucestershire Council – the four Unitary Authorities of the Greater Bristol sub-region - submitted a Major Scheme Bid for the **Greater Bristol Bus Network (GBBN)** scheme to the Department for Transport (DfT) in July 2005.
- 3C.1.2 The GBBN will deliver very substantial improvements to the speed, quality, reliability and attractiveness of bus services in ten corridors across the Greater Bristol area in partnership with the major bus operator, First. In summary it comprises:
- ◆ the implementation of extensive bus priority measures in each corridor;
  - ◆ the provision of modern accessible low-floor vehicles;
  - ◆ improved service frequencies and new routes;
  - ◆ improved passenger facilities;
  - ◆ improved passenger information including the expansion of the current Real Time Passenger Information (RTPI) system; and
  - ◆ measures that will also provide benefits to other road users including pedestrians, cyclists and cars and goods vehicles.

### Progressing the Scheme to Implementation

- 3C.1.3 In July 2006 the Department confirmed that the scheme had been granted Programme Entry status under the terms of the Department's Major Scheme approval process. As already discussed and agreed with the Department the authorities are now seeking to achieve Full Approval and will be submitting a bid for Full Approval early in 2007.
- 3C.1.4 The July 2005 Programme Entry submission set out a strong business case backed up by evidence of the very substantial work that had been undertaken in the planning and design of the scheme. In line with the Department's guidance on Major Scheme Bids, the authorities have been refining and strengthening the delivery, financial and commercial elements of the bid.
- 3C.1.5 The authorities have discussed progress in developing the bid with the Department at a number of liaison meetings, as well as engaging directly with the Government Office for the South West (GOSW) through GOSW's representation on the GBBN Programme Board.

### *Comprehensive Review of Scheme Measures*

- 3C.1.6 The majority of major schemes submitted to the Department comprise single, usually large, infrastructure projects with costs very substantially higher than the £5 million

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threshold for LTP major scheme items. The GBBN is different in that it focuses on ten key high-volume movement corridors with infrastructure comprising a large number of relatively low risk minor works coupled with a few major works (which do though remain beneath the £5 million threshold) and network-wide measures such as RTPI.

- 3C.1.7 In progressing the case for Full Approval the authorities have undertaken a comprehensive review of the measures included in the GBBN scheme, as follows:
- ◆ A value management exercise that has scrutinised each of the scheme's infrastructure components to ensure that they add to the overall benefits of the scheme;
  - ◆ A detailed cost review of all scheme elements including not just the physical bus priority infrastructure but also bus stops, RTPI and marketing;
  - ◆ A further re-review in conjunction with First of all service and frequency enhancement assumptions;
  - ◆ An updated Quantified Risk Assessment (QRA) taking on board changes to scheme specification and risk; and
  - ◆ Overlaying the whole review process an ongoing risk identification and management process that ensured that where additional risks were identified actions were taken to refine elements such that design, cost and delivery risks have been mitigated.
- 3C.1.8 It is noted that this process has benefited from the ongoing experience of implementation of bus priority schemes around the UK and the current implementation of a second Showcase Route in Bristol.
- 3C.1.9 As will be presented in the Full Approval submission the scheme has been refined in a number of respects as a consequence of the review. All the major elements of bus priority measures in ten corridors supported by new vehicles, bus stop infrastructure and RTPI remain as in the Programme Entry bid and the scheme remains value for money. The outcome of the review and refinement has been to verify and optimise scheme designs, costs and deliverability and to minimise risks of not delivering the required outcomes.
- 3C.1.10 At the progress meeting with DfT on 11<sup>th</sup> December 2006 further information was requested on the Value Management Exercise. This report summarises the process and outcomes of the value management exercise.

## 3C.2. Components of Value Management and Cost Review

### THE VALUE MANAGEMENT REVIEW

- 3C.2.1 The Value Management process has assessed each of the proposed GBBN bus priority measures included in the Programme Entry bid in terms of the benefits and deliverability.
- 3C.2.2 The value management process followed the key stages set out in Table 3C.1.

**Table 3C.1 – Stages of Value Management Review**

Stage	Description
Stage 1	Initial assessment of all schemes
Stage 2	Workshop 1, to review the initial assessment process and identify a shortlist of measures that required further scrutiny to verify benefits and deliverability
Stage 3	Secondary assessment of the scheme elements identified in Workshop 1
Stage 4	Workshop 2, final recommendations on which measures were to be retained, those to be redesigned, or those to be discarded.
Stage 5	Report to Programme Board for final decision on scheme elements to be changed

### KEY INDICATORS

- 3C.2.3 Two key indicators have been used to provide a systematic basis for assessing the case for each of the priority measures included in the Programme Entry bid.

### First Year Rate of Return (FYRR)

- 3C.2.4 Bus priority and High Occupancy Vehicle (HOV) schemes have been assessed for their First Year Rate of Return (FYRR). This provides an estimate of journey time savings for buses (and High Occupancy Vehicles (HOVs) where relevant) in the 2011 'do something' case relative to the 2011 'do minimum' case.
- 3C.2.5 The FYRR is then converted to provide a Relative Performance (RP) score to enable priority measures to be benchmarked against one another and ranked.
- 3C.2.6 The FYRR has been calculated as follows:



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$$\begin{aligned}
 & \text{Average bus journey time saving} \\
 & \quad \times \\
 & \text{Number of buses during peak period} \\
 & \quad \times \\
 & \text{Value of time for average loaded bus on link} \\
 & \quad \times \\
 & \text{Number of working days in year} \\
 & \quad = \\
 & \text{PEAK PERIOD JOURNEY TIME BENEFITS PER ANNUM}
 \end{aligned}$$

### Calculation Variables

3C.2.7 The following variables have been sourced to complete the FYRR process. These are listed below:

- ◆ Journey Time (JT) Data. Average AM & PM peak JTs compared to free flow JTs;
- ◆ Bus frequency in the AM peak, this has been taken from the GBBN model or where data was not available current bus timetables;
- ◆ Bus Loadings and values of time (£/hr). The bus loadings have been sourced from the GBBN model, and patronage surveys. Values of time were obtained from Webtag and multiplied against the bus loadings. Bus patrons/ HOV users were set at £4.17/hr to represent commuting time;
- ◆ Working Days in a year has been set at 253 which is the mode average; and
- ◆ HOV lane occupancy has been obtained by surveys on existing HOV lanes in South Gloucestershire.

3C.2.8 The FYRR only covers peak period JT savings, so can ‘undersell’ bus priority schemes. Additional qualitative assessments are required for schemes that have peak periods outside the normal peak times. It has not been possible to source data for all schemes, and in this case the schemes have been graded by cost and a qualitative assessment has been undertaken through consultation with First Group the main bus operator.

### Deliverability Assessment

3C.2.9 The deliverability of each scheme has been assessed according to the following criteria:

- ◆ UAs confidence in the costs;
- ◆ Public support;
- ◆ Business Support;
- ◆ TRO implementation; and
- ◆ Land acquisition.

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## *UAs confidence in costs*

- 3C.2.10 Each UA was asked to clarify their confidence in the cost estimate submitted in the original bid at the GBBN workshop on 15 September 2006. Following further analysis and alterations each UA was asked whether they had a high; medium; or low confidence in the existing costs. This has been converted to green:amber:red for analysis.

## *Public support*

- 3C.2.11 It is essential to consider how public support may impact the implementation of certain schemes as negative representations are likely from motoring groups and local residents if for example on street parking or carriageway capacity is removed. However such schemes are likely to be popular with bus patrons, pedestrians and cyclists, who may not be as vocal in support of the scheme. Workshop attendees were therefore asked to categorise schemes according to expected levels of support/opposition.

## *Business support*

- 3C.2.12 As with public support there may be issues raised by local businesses, particularly relating to removal of parking spaces. Some schemes will be favoured by businesses especially at Cribbs Causeway and the new Broadmead centre, as access by bus will be made easier for shoppers. As with public consultations, local businesses will need to be consulted on all schemes that may impact their business. Workshop attendees were therefore asked to categorise schemes according to expected levels of support/opposition.

## *TRO implementation*

- 3C.2.13 The implementation of TROs is important to consider, as the statutory consultation required may delay the implementation of the scheme if the restriction imposed is likely to be contentious. This can add a delay to the implementation of the scheme. All schemes that require a TRO are included in the amber or red category, as statutory consultation is required.

## *Land acquisition*

- 3C.2.14 Several of the schemes require the purchase of land to implement the scheme. This process may delay the implementation, particularly if there has been limited dialogue between the UA and the existing land owner. The possibility of completing a Compulsory Purchase Order (CPO) on the land may delay the process if agreement cannot be reached between the relevant parties within the required timeframes.

## *Green, Amber, Red analysis*

- 3C.2.15 For ease of analysis each of the five criteria have been broken down into green, amber and red in terms of their potential to cause a barrier to delivery. Criteria

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highlighted green are not anticipated to pose any threat to the implementation of the scheme, or the criterion is not applicable to the scheme. Criteria highlighted as amber have the potential to cause problems in the implementation or the impact is not known at the present time. Finally criteria highlighted as red are anticipated to have an impact on the deliverability of the scheme.

## Wider Review of Costs

- 3C.2.16 The Value Management exercise was complemented by a parallel review of costs of all elements of the scheme. This included unit costs for the implementation of priority measures including reconciliation of costing approaches and assumptions across the four authorities. In addition, for the section of the scheme on the M32 – for which the Highways Agency (HA) is the highway authority – and independent cost review was undertaken by the HA's own design consultants.
- 3C.2.17 Additionally a detailed review of the costs for bus stops, Real Time Passenger Information (RTPI) and Consultation and Marketing was undertaken in conjunction with the refinement of procurement strategy and continuing risk management processes.

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## 3C.3. Outcomes

### SUMMARY OF FINDINGS

- 3C.3.1 It is emphasised that the value management process used quantitative and qualitative assessments alongside the informed views of transport engineers and planners from each of the local authorities with detailed knowledge of the road network and bus services. The workshop sessions enable the findings to be discussed and designs to be challenged and optimised to ensure that maximum benefit is secured for all road users. This has led to alterations in design that are minimal in terms of the overall package but will have significant benefits in terms of the impact on buses and general traffic.
- 3C.3.2 Table 3C.2 shows the rankings of the scheme elements. Those that remain within GBBN are shown in green and shown in red it identifies those which were considered for removal by the Programme Board. The rankings are a combination of the First Year Rate of Return and deliverability assessment and were agreed through the workshops with the GBBN Partners. In total 10 scheme elements were recommend for removal and one scheme element for significant reduction in budget.
- 3C.3.3 Schemes without a First Year Rate of Return have been assessed qualitatively to decide whether they are essential to the performance of the GBBN scheme.

**Table 3C.2 – Final outcomes of bus priority scheme value management**

Task Order Ref.	Scheme	Rank	Capital Cost <sup>1</sup>	Benefit
1010	A367 Midford Rd to Red Lion	1	£35,231	
2013	A4018 Westbury Road	2	£118,125	
4014	New Road Bus Link	3	£132,772	
1012	A367 Bear Flat	4	£78,798	
1011	A367 Wellsway Lower	5	£134,746	
4022	A4174 Coldharbour Lane to M32	6	£3,704,220	
2014	A4018 Whiteladies Road	7	£918,750	
3008	St George's Hill / Portbury High St HOV	8	£481,700	
2017	A4 Totterdown Bridge to Three Lamps	10	£343,375	
3005	A370 Congresbury Bus Lane	11	£100,589	
1008	A37 Staunton Lane Signals	12	£37,145	
4015	Great Stoke Way	13	£1,581,843	
4010	Route 73 Signal Priority Coniston Road		£18,390	
1005	A4 Twerton Fork		£45,165	

<sup>1</sup> Scheme costs current at time of value management assessment on 8<sup>th</sup> January 2007



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4020	A4174 Westbound to B4058 Frenchay		£47,231	
2024	A370 Plimsoll Bridge		£67,250	
2023	A37 Haverstock Road to Three Lamps		£74,875	
2020	A432 Muller Rd Junction	14	£711,250	
2018	Filton Avenue / Lockleaze Rd Signals	15	£112,125	
4016	Filton Avenue Northbound Bus Lane	16	£498,390	
7001	M32 J2 - Houlton Street Bus Lane	18	£2,492,379	
1009	A367 Odd Down	20	£1,510,694	
2016	A4 Callington Rd to Stockwood Rd	21	£938,625	
3004	M5 J21 Westbound approach	22	£73,867	
1006	A4 Newbridge Road	23	£156,530	
4011	Aztec West Roundabout	24	£1,236,118	
4024	Coldharbour Lane Bus Lanes	25	£1,554,340	
2019	A432 Staple Hill to Lodge Causeway	26	£1,143,750	
2021	A432 Coombe Road to Robertson Rd	27	£333,750	
4026	Abbey Wood Eastbound Bus Gate		£101,475	
3010	A369 Bridge Road Bus Lane	28	£138,680	
4008	A4018 / Lysander Rd Roundabout		£165,497	
3009	A369 Beggar Bush Lane HOV Lane	30	£502,499	
4025	Abbey Wood Roundabout Signalisation	31	£598,170	
1007	A4 Upper Bristol Road	32	£136,067	
1004	A4 Hicks Gate	33	£776,392	
2015	A4018 Park Street & The Triangle		£208,750	
4021	A4174 / M32 J1 Roundabout Works		£282,900	
4009	Route 73 Pegasus Road		£499,244	
4006	Lysander Rd (Pegasus Rd to Retail Pk)		£972,361	
4007	Lysander Rd (Retail Park to Merlin Rd)		£1,779,356	
<b>£24,70,7347</b>				
<b>Schemes short listed for removal</b>				
3007	Portbury Hundred HOV Lane	9	£194,048	
4012	Orpheus Avenue	17	£254,050	
2022	A37 New Fosseyway Rd to Airport Rd	19	£378,750	
3003	B3340 Locking Rd / New Bristol Rd	29	£48,000	
7002	A4174/M32 J1 Sliproad Works	34	£230,179	
4018	A432 Downend Bus Lane	35	£193,602	
4023	Coldharbour La Westbound Approach	36	£371,306	
3006	A370 Main Road, Cleeve		£23,915	
4019	A4174 Signal Priority (two sites)		£36,780	



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4013	Parkway Bus Link		£105,235	
4017	A432 Signal Priority (three sites)		£183,900	
			<b>£2,155,832</b>	

## SCHEME ELEMENTS REMOVED FROM GBBN

### Portbury Hundred HOV Lane

3C.3.4 Further detailed assessment has highlighted the limited public transport benefits that the scheme will deliver relative to its costs. The frequency of bus services is low on this section and First have confirmed that they do not consider the scheme as significant in terms of benefits to their operations.

### Orpheus Avenue

3C.3.5 This scheme is for a short length of bus lane but the cost is high because of widening requirements to accommodate the bus lane. On site surveys have observed marginal journey time and reliability benefits. On closer inspection this scheme is not considered to have significant operational benefits for First.

### A37 New Fosseway Rd to Airport Rd

3C.3.6 Detailed analysis has identified limited impacts in terms of predicted journey time savings and reliability impacts. With relatively few bus services using this section First have confirmed that the scheme is marginal in terms of anticipated benefits for their operations.

### B3340 Locking Rd / New Bristol Rd

3C.3.7 Detailed analysis of this scheme identified that the proposed bus lane would deliver few benefits and that the inclusion of SVD unit at the traffic signals would be the most cost effective form of priority at the traffic signals. The proposed changes to the scheme reduce scheme costs by 20%.

### A4174/M32 J1 Sliproad Works

3C.3.8 There is already a bus lane on the approach to junction 1 slip road. This scheme is anticipated to provide limited additional benefits relative to the cost.

### A432 Downend Bus Lane

3C.3.9 Detailed site survey have identified that this schemes delivers very little in the way of journey time or reliability benefits. The scheme is also relatively high costs due to highway widening requirements.

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## **Coldharbour Lane Westbound Approach**

- 3C.3.10 This scheme was a short left hand turn into the proposed bus lanes on Coldharbour Lane. Detailed analysis of the journey time and reliability benefits conclude that this left hand turn is providing no significant additional benefits to the wider bus lane scheme on Coldharbour Lane.

## **A370 Main Road, Cleeve**

- 3C.3.11 Detailed reassessment of this scheme concludes that whilst the costs are modest the scheme is not providing any tangible benefits to bus operations.

## **A4174 Signal Priority (two sites)**

- 3C.3.12 Selective Vehicle Detection (SVD) is now to be provided via the Real Time Passenger Information system. SVD can be provided using 'virtual' loops and no roadside infrastructure is required.

## **Parkway Bus Link**

- 3C.3.13 This scheme was included in the 2005 Programme Entry MSBC in anticipation that First would seek to make use this bus only link as a means of servicing Little Stoke and Bradley Stoke. In developing this Full Approval MSBC it has been established with First that they have no medium term plans to use this link if provided. On that basis the scheme has been recommended for removal from the MSBC.

## **A432 Signal Priority (three sites)**

- 3C.3.14 Selective Vehicle Detection (SVD) is now to be provided via the Real Time Passenger Information system. SVD can be provided using 'virtual' loops and no roadside infrastructure is required.

## **DELIVERABILITY ASSESSMENT KEY OUTCOMES**

- 3C.3.15 A key outcome of the deliverability assessment was to undertake further design work and detailed pricing of a number of schemes to ensure the cost estimates within the July 2005 scheme remain robust. The focus of activity remained on schemes that have had the highest delivery risks identified.

## **M32 Corridor**

- 3C.3.16 The M32 corridor was considered to have the highest risks in terms of implementation as it would require approval by the Highway Agency. In the work programme developing the Full Approval MSBC preliminary designs, a Stage III safety audit and application for approval in principle for Departure from Standards have been completed.

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- 3C.3.17 Agreements have also been reached with the Highways Agency for them to deliver the M32 scheme through a Section 278 Agreement on behalf of Bristol City Council.
- 3C.3.18 The importance of involving the Highways Agency has continued to be recognised by the Programme Board and they are regularly invited to the Programme Board. The Highways Agency has also received a details briefing on all the elements of GBBN to ensure none of the proposals will conflict with existing or future plans of the Highways Agency.

## **A4018 Whiteladies Road and A432 Fishponds Road Corridors**

- 3C.3.19 The proposals for bus priority on the A4018 have the potential for objections from both traders and residents. This corridor is also the highest demand corridor in terms of bus patronage. Similarly the proposals on the A432 corridor in Bristol have the potential for objections from both traders and residents.
- 3C.3.20 Detailed corridor reviews have been undertaken to review the scheme elements proposed to ensure that there is robust justification for each element and the most effective form of bus priority is being proposed as part of the GBBN scheme.
- 3C.3.21 In undertaking this review Atkins have utilised expertise involved in the delivery of bus priority in London on behalf of TfL. This expertise has been used to review and challenge the proposals put forward by the joint Bristol City Council/Atkins design team.
- 3C.3.22 The outcome of these reviews has been, on the whole, to reaffirm the appropriateness of the measures contained within the Programme Entry MSBC. There have been a number of relatively minor modifications to the 2005 proposals and a small number of additional measures included. The additional measures are primarily focussed on getting bottlenecks and junctions to operate to maximum efficiency.
- 3C.3.23 These corridor reviews give GBBN Programme Board partners confidence that the schemes can be taken forwards and delivered as part of the GBBN scheme.

## **COST REVIEW OUTCOMES**

- 3C.3.24 The cost review of non-bus priority elements has resulted in considerable cost savings.

## **Bus Stops**

- 3C.3.25 In the Programme Entry bid costs were included for improvements at all bus stops identified. This included the costs for raised kerbs and new shelters. In order to ensure only necessary expenditure is included in the Full Approval Major Scheme Business Case detailed bus stop audits were undertaken.

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- 3C.3.26 The results of these audits have been to reduce the cost requirements where stops already have raised kerbs and/or where shelters are relatively new and meet the shelter specification defined for GBBN.
- 3C.3.27 The audit has been complemented by the development of joint procurement for bus stop infrastructure to secure prices for infrastructure that reflect the scale of investment associated with GBBN.

## RTPI

- 3C.3.28 Detailed negotiations have been undertaken with the preferred supplier, ACIS. The Councils believe that they have secured the best offer from ACIS and that it delivers Value for Money. The procurement approach has been signed off by legal services of the four Councils as offering value for money under the negotiated procedures.

## Consultation and Marketing

- 3C.3.29 The deliverability assessment and ongoing risk analysis has highlighted the important of consultation and communication in ensuring delivery of the GBBN scheme. The proposed budgets for consultation and marketing have been increased to ensure that there is sufficient funding.

## SUMMARY

- 3C.3.30 The value management exercise has challenged the scheme proposals included within the Programme Entry Major Scheme Business Case.
- 3C.3.31 It is emphasised that as a result the scheme has been refined rather than changed. All the major elements of bus priority measures in ten corridors supported by new vehicles, bus stop infrastructure and RTPI remain the same. The outcome of the review and refinement has been to verify scheme designs, costs and deliverability.