

Weston Package Phase 1
Major Scheme Business Case

DfT F-forms Low Cost Option



West of England Partnership

Bath & North East
Somerset Council



North
Somerset
Council

South Gloucestershire
Council



Table 3.18 / F1 - Appraisal Summary Table (Low Cost Option)

| Low Cost Option | | Weston Package Phase 1 | To enable the sustainable development of Weston | Present Value of Costs to Public Accounts £m |
|-------------------------|---|---|---|--|
| OBJECTIVE | SUB-OBJECTIVE | QUALITATIVE IMPACTS | QUANTITATIVE ASSESSMENT | ASSESSMENT |
| ENVIRONMENT | Noise | The decrease in the number of people annoyed is mostly due to a redistribution of traffic over the network. An estimated 78 properties would be exposed to a level above 68 dBL _{Aeq} . Night-time noise levels likely to remain unchanged | No. of people annoyed: Without scheme: 4,730 With scheme: 4,678 | Net change in population annoyed with project: -52 NPV £855,591 |
| | Local Air Quality | No designated AQMA in area. There will be an overall decrease in PM ₁₀ and NO ₂ concentrations at properties in the area. Concentrations remain below the objective with or without the Scheme. The improvement is due to reductions in congestion. | Air quality improves at 2943 properties for PM ₁₀ and 2946 for NO ₂ , and worsens at 4069 properties for PM ₁₀ and 5346 for NO ₂ . There is no change at 1479 properties for PM ₁₀ and at 199 properties for NO ₂ . | A overall improvement in air quality PM ₁₀ =-85 /NO ₂ =-111 Beneficial |
| | Regional Air Quality | There will be in overall improvement in regional air quality. | 19.7 tonne reduction in NO _x emissions and 0.4 tonne reduction in PM ₁₀ emissions compared with do-minimum in the opening year | 2.5 % reduction in NO _x emissions and 2.1 % reduction in PM ₁₀ emissions in opening year Beneficial |
| | Greenhouse Gases | Reduction in carbon emissions with the scheme due to reduction in delays and congestion. | Reduction in tonnes carbon over 60yr appraisal period = 73 Reduction in tonnes carbon in opening yr = 2 | £2309 Beneficial |
| | Landscape | Scope to bring benefits to townscape through appropriate design and adequate mitigation. Some additional visual intrusion where close to properties. | n/a | Slight adverse |
| | Townscape | Same as Landscape | n/a | Same as Landscape |
| | Heritage of Historic Resources | No known archaeological or built heritage sites, either designated or non-designated, would be directly or indirectly affected by the proposed schemes for this option. There are a number of sites where there is a potential for buried archaeology and/or palaeoenvironmental remains, most notably at Worle Station. Archaeological investigation may well be required in order to determine the presence, extent and significance of such buried remains. | n/a | Neutral |
| | Biodiversity | Potential dust and pollution impacts to 3 Regional Wildlife Sites, neutralised through construction best practice. Neutral impacts are predicted on internationally and nationally designated sites. Habitat re-creation will be undertaken although there will be a minor net loss of habitats that is generally restricted to improved or amenity grassland, but includes some areas of rough grassland. Wildlife underpasses and fencing to improve safety for protected species, but minor impacts through net loss of habitat. | n/a | Slight adverse |
| | Water Environment | Principal impacts will include an increase in highway runoff and associated contaminants which could increase flood risk and water quality deterioration in receiving surface and ground water. As such routine runoff should be attenuated and appropriate methods of treatment provided prior to discharge. Construction of the highway within the floodplain will also act as a physical barrier, impeding flood flows and occupying floodplain storage potentially increasing flood risk to the scheme and others. It is assumed that as part of the costed scheme flood risk will be mitigated by providing compensatory floodplain measures and flood relief structures. However the scheme will result in a permanent alteration in the hydrological regime of the local rhine and floodplain system and associated ecology. | n/a | Slight adverse |
| Physical Fitness | It is assumed that no travel is over 30 minutes at each of the proposals. Existing pedestrian access is relatively good and would be maintained or improved through the provision of signalised pedestrian crossings. The existing cycling provision is limited in places and would be improved through the provision of cycle lanes and cycle advance areas. Improved facilities would be used by children travelling to school and for commuting. | n/a | Slight beneficial | |

| Low Cost Option | | Weston Package Phase 1 | To enable the sustainable development of Weston | Present Value of Costs to Public Accounts £m |
|------------------------|---|--|---|--|
| OBJECTIVE | SUB-OBJECTIVE | QUALITATIVE IMPACTS | QUANTITATIVE ASSESSMENT | ASSESSMENT |
| ENVIRONMENT (Cont.) | Journey Ambience | Most of the schemes are based on a similar alignment to that which currently exists. Junction improvements, signal improvements and directional signage would improve traffic flow and reduce frustration. Fear of potential accidents would be reduced through improved junctions and sightlines and provision of cycle lanes would reduce vehicle/cyclist interaction and reduce risk of associated accidents. | n/a | Moderate beneficial |
| | SAFETY | Accidents | There is a reduction in accidents, primarily at the M5 Junction 21 with the Low Cost Option | PVB £3.88m |
| | Security | Additional CCTV and passenger waiting facilities at Worle station to reduce the fear of crime, safer crossing facilities at multiple locations, more direct bus services to Worle station to save walking trips from existing terminus, and improved bus termini. | n/a | Slight Beneficial |
| ECONOMY | Public Accounts | Based on TUBA assessment, with the cost price base and discount for the economic appraisal to the year 2002, and an appraisal period of 60 years. | Central Govt PVC £10.199m, Local Govt PVC £4.172m | PVC £14.371m |
| | Transport Economic Efficiency: Business Users & Transport Providers | Based on TUBA assessment, with the benefit price base and discount for the economic appraisal to the year 2002, and an appraisal period of 60 years. | Users PVB £23.188m, Transport Providers PVB -£3.050m, Other PVB -£1.371m | PVB £18.767m |
| | Transport Economic Efficiency: Consumers | Based on TUBA assessment, with the benefit price base and discount for the economic appraisal to the year 2002, and an appraisal period of 60 years. | Users PVB £16.211m | PVB £16.211m |
| | Reliability | More reliable journey times from the M5 junction 21 to Weston. Bus journey time will also be more slightly more reliable due to the bus priority measures at Elmham Way and Queen's Way | n/a | Slight Beneficial |
| | Wider Economic Impacts | The scheme does not affect a Regeneration Area, but the WP1 is designed to enable the sustainable development of Weston, and the importance of transport improvements to the regeneration of Weston has been identified in the Vision for Weston and subsequent Weston ADF. In particular, the Package will reduce the actual and perceived constraint on existing and potential businesses in the town by improving Junction 21, and by improving the Gateway. It will also improve access through the improvements at Worle Station and the enhanced interchange with bus services. | n/a | Neutral |
| ACCESSIBILITY | Option values | Bus priority, Worle station interchange and improved foot/cycleways would improve transport options | n/a | Slight Beneficial |
| | Severance | New pedestrian/cycle crossings would slightly reduce severance | n/a | Slight Beneficial |
| | Access to the Transport System | Bus priority measures and interchange at Worle station would improve access to public transport | n/a | Slight Beneficial |
| INTEGRATION | Transport Interchange | Provision of a bus interchange and improvements to Worle station will enhance the passenger waiting environment and improve connectivity between transport modes. | n/a | Moderate Beneficial |
| | Land-Use Policy | Integration with land use policies is mainly beneficial with a slight adverse impact on environment policies relating to landscape and ecology | n/a | Beneficial |
| | Other Government Policies | Integration with other government policies is mainly beneficial with a slight adverse impact on environmental policies relating to landscape and ecology | n/a | Beneficial |

Analysis of Monetised Costs and Benefits - Low Cost Option

| | | |
|---|--|--------------------|
| Noise | | |
| Local Air Quality | | |
| Greenhouse Gases | | |
| Journey Ambience | | |
| Accidents | | 3,880 |
| Consumer Users | | 16,211 |
| Business Users and Providers | | 18,767 |
| Reliability | | |
| Option Values | | |
| Present Value of Benefits (see notes) (PVB) | | 38,858 |
| Public Accounts | | |
| Present Value of Costs (see notes) (PVC) | | 14,371 |
| OVERALL IMPACTS | | |
| Net Present Value (NPV) | | 24,487 |
| Benefit to Cost Ratio (BCR) | | 2.70 |
| | | <i>NPV=PVB-PVC</i> |
| | | <i>BCR=PVB/PVC</i> |

Notes : All values in £,000's in 2002 prices and values

This table includes costs and benefits which are regularly or occasionally presented in monetised form in transport appraisals, together with some where monetisation is in prospect. There may also be other significant costs and benefits, some of which cannot be presented in monetised form. Where this is the case, the analysis presented above does NOT provide a good measure of value for money and should not be used as the sole basis for decisions.

Value of greenhouse gases is -476 which is not included above as this spreadsheet does not permit negative numbers

Economic Efficiency of the Transport System (TEE) - Low Cost Option

| Consumers | ALL MODES | ROAD | BUS & COACH | RAIL | OTHER | |
|---|-------------------------------------|-----------------------|---------------------------------|-------------------|----------------|-------------------|
| <i>User benefits</i> | TOTAL | Private Cars and LGVs | Passengers | Passengers | | |
| Travel time | 22,079 | 19,062 | 3,028 | -11 | | |
| Vehicle operating costs | -5,884 | -5,884 | | | | |
| User charges | 16 | 0 | 0 | 16 | | |
| During Construction & Maintenance | 0 | 0 | 0 | 0 | | |
| NET CONSUMER BENEFITS | 16,211 (1) | 13,178 | 3,028 | 5 | 0 | |
| Business | | | | | | |
| <i>User benefits</i> | | Goods Vehicles | Business Cars & LGVs | Passengers | Freight | Passengers |
| Travel time | 23,465 | 11,565 | 11,634 | 424 | | -158 |
| Vehicle operating costs | -281 | -15 | -266 | | | |
| User charges | 3 | 0 | 0 | 0 | 0 | 3 |
| During Construction & Maintenance | 0 | 0 | 0 | 0 | 0 | 0 |
| Subtotal | 23,187 (2) | 11,550 | 11,368 | 424 | 0 | -155 |
| <i>Private sector provider impacts</i> | | | | | | |
| Revenue | 905 | | | 1,737 | -832 | |
| Operating costs | -3,955 | | | -3,955 | | |
| Investment costs | 0 | | | | | |
| Grant/subsidy | 0 | | | | | |
| Subtotal | -3,050 (3) | | | -2,218 | -832 | 0 |
| <i>Other business impacts</i> | | | | | | |
| Developer contributions | -1,371 | (4) | -1,371 | | | |
| NET BUSINESS IMPACT | 18,766 (5) = (2) + (3) + (4) | | | | | |
| TOTAL | | | | | | |
| Present Value of Transport Economic Efficiency Benefits | 34,977 (6) = (1) + (5) | | | | | |

Notes: Benefits appear as positive numbers, while costs appear as negative numbers.

All values in £,000's in 2002 prices and values

Public Accounts - Low Cost Option

| | ALL MODES | ROAD | BUS & COACH | RAIL | OTHER |
|---|------------------------|-----------------------|-------------|------|-------|
| Local Government Funding | TOTAL | INFRASTRUCTURE | | | |
| Revenue | 0 | 0 | | | |
| Operating Costs | 2,432 | 2,432 | | | |
| Investment Costs | 3,112 | 3,112 | | | |
| Developer and Other Contributions | -1,371 | -1,371 | 0 | 0 | |
| Grant/Subsidy Payments | 0 | 0 | 0 | 0 | |
| NET IMPACT | 4,173 (7) | 4,173 | 0 | 0 | 0 |
| Central Government Funding | | | | | |
| Revenue | 0 | 0 | | | |
| Operating Costs | 0 | 0 | | | |
| Investment Costs | 13,218 | 13,218 | | | |
| Developer and Other Contributions | 0 | 0 | 0 | 0 | |
| Grant/Subsidy Payments | 0 | 0 | 0 | 0 | |
| Indirect Tax Revenues | -3,020 | -3,131 | 251 | -140 | |
| NET IMPACT | 10,198 (8) | 10,087 | 251 | -140 | 0 |
| TOTAL Present Value of Costs (PVC) | 14,371 (9) = (7) + (8) | | | | |

Notes: Costs appear as positive numbers, while revenues and 'Developer and Other Contributions' appear as negative numbers.
All values in £,000's in 2002 prices and values

Appraisal Cost Proforma Summary Sheet - Low Cost Option

Assumptions:

| | |
|--------------------------------------|------|
| Price Year Base (Earliest - 1998) | 2008 |
|--------------------------------------|------|

Note: Promoters are requested to enter the price year base they are using into the above

| | |
|-----------------------------------|----|
| Investment cost optimism bias (%) | 44 |
| Operating cost optimism bias (%) | 0 |

| | |
|---|--------|
| QRA P(80) (total) | 1,710 |
| QRA P(50) (total) | 1,117 |
| Design Year Operating Cost (usually 15 years from opening year) | 303 |
| Operating Cost (all years total) | 20,939 |

COST BREAKDOWN:

All values in £,000's (thousands)

| Financial Year | Investment Cost (in price year base in cell C3, excluding risk) | Cost including real cost inflation (Base Cost) | Risk adjusted cost using QRA P (mean) | Risk adjusted cost including Optimism Bias | Risk adjusted cost including OB deflated and discounted to 2002 Market Prices |
|----------------|---|--|---------------------------------------|--|---|
| 2009/10 | 447 | 461 | 461 | 664 | 512 |
| 2010/11 | 671 | 712 | 712 | 1,025 | 764 |
| 2011/12 | 2,927 | 3,080 | 3,149 | 4,535 | 3,264 |
| 2012/13 | 4,008 | 5,060 | 5,720 | 8,236 | 5,728 |
| 2013/14 | 2,239 | 2,997 | 3,411 | 4,912 | 3,300 |
| 2014/15 | 1,564 | 2,218 | 2,539 | 3,656 | 2,373 |
| | | | | | |
| | | | | | |
| | | | | | |
| | | | | | |

Totals for remaining appraisal years:

| | | | | | |
|--|--|--|--|--|--|
| | | | | | |
|--|--|--|--|--|--|

| | | | | | |
|----------------|--------|--------|--------|--------|--------|
| Totals: | 11,856 | 14,528 | 15,992 | 23,028 | 15,941 |
|----------------|--------|--------|--------|--------|--------|

Low Cost Option

BEFORE and AFTER IMPLEMENTATION COMPARISONS

This should be populated with estimates from the local transport model for the approval stage being bid for and any earlier approval stages.

| | Before Implementation | | | Post - Implementation |
|--|-----------------------|----------------------|---------------|-----------------------|
| | Programme Entry | Conditional Approval | Full Approval | |
| Capital Cost (£000) | 16,331 | | | |
| Annual Operating Cost (£000) | 4,695 | | | |
| Annual Maintenance Cost (£000) | 1,546 | | | |
| Annual Revenue (£000) | 905 | | | |
| Annual Passenger Trips (Bus) (m) -2016 | 5.46 | | | |
| Annual Passenger Trips (Bus) (m) -2031 | 6.13 | | | |
| Annual Passenger Km (Bus) (m) - 2016 | 59.51 | | | |
| Annual Passenger Km (Bus) (m) - 2031 | 68.05 | | | |
| Congestion Benefits (£000) | 42,261 | | | |
| Mode Shift (%) -2016 | 1% | | | |
| Mode Shift (%) -2031 | 0% | | | |