

Technical note to support value for money assessment

The Value-for-money assessments (VfM) which have been carried out to assess the schemes have been done in good faith with the information reasonably available within the timescales allowed to prepare the bid.

A range of sources have been used for before and after data used in the HEAT analysis. Whilst a collaborative process, uplifts and assumptions in HEAT were made by our independent consultants ATKINS with the benefit of advice from Dr Adrian Davis who has been involved with developing and refining the tool, as well as authoring DfT documents on the subject of assessing walking and cycling schemes.

Before data has been taken from the following sources in the following hierarchy:

1. Automatic Cycle Counters where they exist on routes to be improved
2. Manual Cycle Counts where they exist on routes to be improved
3. Automatic / Manual counts on parallel routes
4. Automatic / Manual counts on similar routes nearby (i.e. similar quality, use etc)

After data has generally been based upon uplift seen on Cycling City routes, LSTF routes and CAF routes. Generally we have seen an uplift of between 200 and 400% on new good quality routes when compared to the previous levels of on-road cycling levels.

Attribute rates are made on a case for case basis. In some cases, such as the family cycling centre, we can confidently say that 100% of the activity can be attributed to the measure, as no activity would take place without it, and we have only used the direct activity generated by the centre in the HEAT analysis therefore under reporting the overall activity by ignoring the knock on effect to higher levels of utility cycling. For others, for example the Southmead Quietway, the attributable rate is much lower, at 30%. This is because most of the growth is expected to move from a parallel busy road to the new route.

Duration is based upon the average existing trip length in Bristol, 5.77km, which is based upon the 2011 census travel to work trip length. An average cycling speed of 14kph is used and is based upon the Sustrans 'rule of thumb'. This results in a duration of 49mins.

Conformity to WebTAG

With regards to WebTAG and section A5.1 we believe that we have carried out the VfM assessment 'in line' with WebTAG.

- For forecasting the increase in ped/cycle numbers we've used Approach 1: Comparative Study as set out in section 2.2
- As set out in the DfT CCAG guidelines we have not completed a full Cost-Benefit Appraisal but have assessed physical activity benefits using HEAT (which generally account for 1/3 of cycle scheme benefits)
- Whilst the speed stated in the case study WebTAG A5.1 is 20kph (from DMRB 11.3.8) we feel that for off-road, shared use and given our areas' topology 14kph is more appropriate.

% of new users that would have driven otherwise

In the Bristol urban area including north fringe (Bristol) 44% of journeys are under 5km in length and 66% of these are made by car. Bristol has seen a doubling of the number cyclists, numerically at least, from 5% of TTW journeys in 2001 to nearly 8% in 2011. Our aim is to double this again. The average trip length by bike in Bristol is 5.77km so those journeys are exactly those which we are targeting.

Many of the schemes also target busy routes such as the ring road which experiences congestion at peak times. A parallel cycle routes advertises cycling as the quicker and more convenient alternative. Looking at census data we believe we are justified in estimating the rate at 40% of new trips by bike would have previously been done by car. A Sustrans figure sets this at 35% for users of the national cycle network, but given impressive local growth we felt that 40% is more realistic for a dense urban area with growing numbers of cyclists.

Approach to HEAT Assessment and Pro forma assumptions

Cycle duration is calculated on two way journeys for the average cycle to work distance (for each local authority area) to represent the daily distance cycle on return trips and an average cycle speed of 14kph.

- An average cycle to work distance in Bristol of 5.77 km represents a duration of 49 minutes.
- In S Glos an average cycle to work distance of 8.67km represents a duration of 73 minutes.
- In BANES, 7.24km average cycle to work distance represents a duration of 62 minutes.

Individual HEAT and pro forma assessment assumptions

- S1 – Filwood – Existing users taken from 3 nearby count sites. Uplift based on similar schemes constructed nearby during cycling city.
- S2 – Malago – Existing users taken from ACC. Uplift based upon less wiggly route, new crossing points and removal of anti-moped barriers
- S3 – Family Cycling Centre. Measured only on the direct physical activity delivered by the intervention. 4 sessions p/day for 4 days p/wk for 50 wks a year. 10 recipients per session. Total of 4140 adults engage DIRECT activity. 100% attribution rate applied as only calculating DIRECT activity of sessions is used, and not even accounting for extra activity expected for other journeys as result of training.
- N1 – Southmead – before data based on nearby MCCs. Uplift based on previous similar measures. Only a 50% attribution given due to nearby Cranbrook levels,
- N3 - Safer Street Spaces
2011 Census cycle to work data used for population, with 10% uplift after scheme intervention.
- C1 - East-West City Centre Quietway
Very low 10% attribution rate from nearby road routes plus 25% uplift for new facilities based on similar schemes (inc Baldwin St)
- C2 - North-South City Centre Quietway
Low 25% attribution rate, given parallel on-road routes with 33% uplift due to segregation.

- C3 - Cattle Market Road- Low 25% attributable from parallel road routes and 100% uplift due to providing new link into LEZ and wider Quietway network links (likely to be MUCH higher as TQEZ and Arena are built),
- T1 - Bromley Heath Bridge - Based on proportion of nearby ATC data and post-scheme uplift for removal of pinchpoint and new links to wider network.
- T2 - Church Road -Nearest ATC data with 30% uplift estimated due to new path improvements, cycle lane and link via new subway.
- T3 - Bristol-Bath Cycle Path lighting - ATC counts from April used for assessment of impact of new lighting on winter cycling levels. 29% uplift used as recorded on similar scheme nearby.
- T4 - Filton Rd lighting - April AWT automatic counter data taken for nearest estimate of winter month commuters for impact of lighting.
- T5 - Hayes Way- Estimated 50% uplift for new shared use path on key route.
- B1 - Locksbrook Bridge - 20% attribution from nearby routes and 30% uplift due to improvements.
- B2 - Halfpenny Bridge - ACC uplift for bridge crossing facilities, wider connections and access to rail station.
- B3 - Kennet and Avon Towpath - Upgraded towpath - uplift for improved access to wider areas of the city.
- D1/T6/B4 – Cycle parking – 23,562 cyclists to work, an increase of 66% over 10 years. Cycle parking has roughly increased by the same rate from 8,000 to 16,000 spaces (mainly in the Bristol Urban area). As there are 1.4 cyclists to each space, a rate of 0.25 rate is assumed given that many of these spaces will be at major attractors such as rail stations, and employment sites. This increases the number of cyclists by 1029.
- D2 - Signage – current non cycling levels around in Bristol based on 2011 census. Assumed 0.01% of these trips transfer to cycling trips based on ‘Worst Case’ scenario of Impacts of a travel awareness campaign in DfT 2004 “Smarter Choice Changing the Way We Travel”.
- D3 – pinchpoints – no HEAT assessment. As a mix of the above schemes, assumed as an average of them based on Cost:Benefit.

Summary of the HEAT benefits

Ref	Route	Current value of the total benefits accumulated over 30 years (discounted by 3.5% per year) (£thousand)	Total Scheme Costs (£thousand)	Health only Benefit Cost Ratio (BCR)
South				
S1	Filwood Quietway	14,494	2,300	6.30
S2	Malago Quietway	8,897	600	14.83
S3	Family Cycle Centre	7,129	550	12.96
North				
N1	Southmead Quietway	1,888	100	18.88
N2	Frome Quietway	3,931	800	4.91
N3	Safer Streets Spaces	1,386	200	6.93
Centre				
C1	E-W City Centre Quietway	4,169	1,000	4.17
C2	N-S City Centre Quietway	10,637	2,200	4.84
C3	Cattle Market Road	7,221	1,250	5.78
Door-to-Door Journeys				
D1, T6, B4	Door-to-door journeys	13,307	588	22.63
D2	Legible Network	1,689	200	8.45
D3	Pinchpoints**	5,647	366	15.43
North Fringe Trunk Route				
T1	Bromley Heath Bridge	11,174	4,910	2.28
T2	Church Road	2,225	140	15.89
T3	Bristol to Bath Cycle Path lighting	4,238	70	60.54
T4	Filton Road lighting	5,795	70	82.79
T5	Hayes Way	2,836	330	8.59
Bath Riverside				
B1	Locksbrook Bridge	6,034	1,300	4.64
B2	Half Penny Bridge	6,676	1,820	3.67
B3	K&A Towpath	2,906	675	4.31
TOTAL		122,279	19,469	6.28

**Calculated from an average BCR of all other routes

Health improvements will save an estimated 6 deaths per year.

Extra benefits based upon WebTAG data book.

The reduction in car traffic is estimated to save 2,927 tonnes of CO₂ per annumⁱ. Applying the WebTAG values for Marginal External Benefits and discounting at 3.5% per annum for 30 years results in the following impacts as a result of reductions in car traffic alone.

Total benefits and dis-benefits including health benefits and marginal external benefits.

Impact	Benefit (£thousand)
Health	122,279
Decongestion	30,521
Infrastructure	265
Accident (decongestion only)	4,246
Local Air Quality	265
Noise	265
Greenhouse Gases	2,389
Indirect Taxation	-13,536
TOTAL	146,696

Adding Marginal Extra benefits would increase the overall BCR of the schemes to 7.53.

ⁱ Based on average car emissions of 206.9 CO₂ per km (Source: DEFRA (2010) Guidelines to Defra / DECC's GHG Conversion Factors for Company Reporting)