**BC calculation step 1: Convert TfL benefits to York network** **Source**

| | | |
|---|---|---|
| York A59 AADT | 10751 | *From DfT 2015 count sites at either end and middle of scheme* |
| | 15336 | |
| | 18141 | |
| mean = | *14742.66667* | |
| London major road aadt urban (TRA0302) | *26100* | DfT. table TRA0302 |
| flow factor | 56.49% | (i.e. York traffic flow is 56% of London's) |

**Step 2: convert TfL savings to York ( Money)**

| | | | | |
|---|---|---|---|---|
| Cost savings per junction | £90,000 | VOT | 2009 | http://www.itsinternational.com/sections/cost-benefit-analysis/features/tfl-expands-scoot-adaptive-traffic-management |
| | £108,000 | VOT | 2016 | ONS inflation calculator |
| savings per York junct | £61,004 | | (56% of TfL) | |
| savings on scheme | £3,904,264.83 | | 64 junctions | |

**Step 3: profile of costs and benefits**

| | **2018** | **2019** | **2020** | **2021** | **2022** | **2023** | **2024** | **2025** | **2026** | **2027** | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| cost | £2,130,000 | £1,915,000 | £100,000 | £50,000 | £50,000 | £50,000 | £50,000 | £50,000 | £50,000 | £50,000 | 10% of costs for data |
| ben | £3,904,265 | £3,904,265 | £3,904,265 | £3,904,265 | £3,904,265 | £3,904,265 | £3,904,265 | £3,904,265 | £3,904,265 | £3,904,265 | assume no traffic growth |
| pv | £1,774,265 | £1,989,265 | £3,804,265 | £3,854,265 | £3,854,265 | £3,854,265 | £3,854,265 | £3,854,265 | £3,854,265 | £3,854,265 | |
| discount | | | | | | | | | | | |

| | | |
|---|---|---|
| NPV | £28,258,643 | Treasury Green book data sheet July 2016 - 3.5% discount |
| PVC | £4,211,587 | |
| PVB | £32,470,230 | |
| BCR | **7.7** | |

**Step 4: sanity check**

TfL has reported a 12:1 BCR but would have higher costs http://content.tfl.gov.uk/fpc-130718-part-1-item10-scoot.pdf

If costs are the same but flow double, an 6 :1 ratio is in the right order

**Step 5: Sensitivity**

If congestion period times are 50% higher in TfL than York, reduce benefits by 50% no evidence to suggest this available, just a test hypothesis

| | |
|---|---|
| PVB = | £16,235,114.82 |
| PVC | £4,211,587 |
| BCR | **3.9** |

if traffic growth means congestion savings increase by 25%,

| | |
|---|---|
| PVB | £40,587,787.06 |
| PVC | £4,211,587 |
| BCR | **9.6** |

**Step 6: Outputs**

**A lower bound BCR is 3.9:1 over ten years**
**A best estimate bound is 7.7:1 over ten years**
**An upper bound is 9.6:1 over ten years**
**TfL has shown 12:1 over ten years**