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Flint network improvements – Economic Impact Study

The following document provides an assessment of the economic benefits of improving the

1 Executive Summary

1.1 Key outputs from the economic appraisal

The economic benefits of the Flint Network Improvements have been appraised based on expected annual cyclist and pedestrian usage across the proposed improved routes after construction is completed. The economic benefits of this annual usage have been appraised as if observed for the next 20 years (i.e. a 20-year appraisal period has been used).

The following figures are key outputs related to the estimated current and future usage on the route, and the associated economic benefits from the economic appraisal. For a full description of these outputs, including the methodology used to arrive at these values, please see the main body of the report.

This analysis estimates a baseline level of annual cycling and walking usage by local users before estimating usage on the constructed route based on uplift seen in previous infrastructure projects. The post-construction usage estimates are derived from the Infrastructure Impact Tool (IIT). The post-construction usage scenarios include an estimated annual number of trips and are presented as low, middle and high scenarios.

Current annual usage estimate

Current usage on the route is estimated using data from a Route User Intercept Survey (RUIS) conducted on site. The estimated Annual Usage Estimates (AUEs) are:

22,630 cycling AUE

56,950 walking AUE

Forecasted/future annual usage estimate (cyclists)

These estimated values are based on scenarios that have been developed around the cyclist Infrastructure Impact Tool (IIT) output.

Table 1: Cyclist usage scenarios (Executive Summary)

Baseline AUE

The following illustrates the estimated economic benefits (including those as a result of health benefits) of the middle usage scenario in greater detail. A full breakdown of the estimated benefits for all scenarios is provided in section 4 of the report.

Under the middle scenario, where the shared use route sees a 72% increase in cycling and 26% increase in walking trips above baseline:

16,205 additional cycling trips and 14,807 additional walking trips per year[1]

Total economic benefits of £1,577,844

Health benefits of £581,588

Recreational expenditure of £613,487

Given the estimated costs of construction and maintenance of the route, this level of usage results in a Benefit-Cost ratio of 0.42:1.

2 Background

The economic benefits of this route have been evaluated from usage estimates from local manual count data and a Route User Intercept Survey (RUIS) from a proxy location

4.1 Annual Usage Estimate

An Annual Usage Estimate (AUE)[4] is required to calculate the expected economic benefits from a proposed route development.

4.1.1 Cycling

For each of the CPs the AADF for every year between 2000 and 2016 is available, however the amount of time that has elapsed since a manual count was last taken varies across the CPs, with one of the points not having had a manual count taken between 2000 and 2016.

Table 4 shows the 2016 pedal cycle AADF values and estimation method for the CPs shown in Figure 2.

Table 4: 2016 pedal cycle AADF, AUE and estimation method for CPs

Count Point	Pedal cycle AADF	Pedal cycle AUE	Estimation method
605	6	2190	Estimated using previous year's AADF on this link (last manual count conducted in 2012)
78441	12	4380	Estimated using previous year's AADF on this link (last manual count conducted in 2010)
78442	54	19710	Estimated using previous year's AADF on this link (last manual count conducted in 2011)
78443	7	2555	Estimated from nearby links (There hasn't been a manual count between 2000 and 2012)

Given that the AADF at CP 78443 is not based on a manual count taken at that location and, as a result, is likely to be less reliable that the other Count Point AADF values, it will not be used in the calculation of the baseline AUE for the scheme.

Mapping the r

The improvements within Flint, provide a benefit for cyclists rather than pedestrians, and so changes in pedestrian usage levels are not considered for these parts of the scheme improvements. For the improvements between Flint and Connah's Quay, the proposed new route will be attractive to both pedestrians and cyclists as it is more scenic than the current option and away from the busy A-road.

Applying the three pedestrians for every cyclist ratio to the cyclist AUE between Flint and Connah's Quay (18,980) generates a pedestrian AUE of 56,950.

4.1.3 Summary

The baseline pedestrian and cyclist AUEs for the Flint network improvements are shown in Table 5. The AUE has been split into two sections as to allow for different degrees of change in usage across the scheme elements.

Table 5: Summary of Baseline AUEs

Scheme section	Cycling AUE	Walking AUE
Improvements within Flint	3,650	Not calculated*
Flint to Connah's Quay	18,980	56,950
Overall	22,630	56,950

*Not considered to be impacted by scheme improvements

The baseline is an estimation of 'current usage' relevant to the proposed route i.e. usage that exists but is not currently facilitated due to route not existing. Therefore it is an estimation of the current number of journeys which may be occurring in the local area that could be using the proposed route.

4.2 AUE increase scenarios

To forecast the expected economic benefits of the route, a range of post-intervention scenarios where usage has increased above the baseline are set.

These scenarios are based on outputs from the Infrastructure Investment Tools (IIT) for cyclists and pedestrians which provides an estimate of the expected cycling and pedestrian usage increases based on a database of past schemes where infrastructure of a similar type has been delivered. The IIT models were run using the baseline AUE and the infrastructure intervention category 'Cycle and pedestrian track' with the urban rural classification of 'Urban town and city'.

The IIT provides an indication of usage increase that is likely to be expected from construction of the route. This is the estimate of annual usage once the scheme has been constructed, accounting for mode shift and growth in cycling usage that is encouraged through the route development. To account for potential uncertainty and the possibility that usage change may be higher or lower than what was observed in the past, a range of three post-usage scenarios are used.

The three scenarios for cycling uplift are shown in Table 6 Post-scenario cycling AUE scenarios. The three scenarios are as follows. The upper scenario is set above the IIT percentage increase and the lower scenario is set below the IIT percentage increase scenario. The IIT scenario is represented in green.

4.4 Health-related economic benefits

The health-related economic benefits of the Flint network improvements have been estimated using the World Health Organisation's (WHO's) Health Economic Appraisal Tool (HEAT)[5]. All health-related economic benefits are calculated over a 20 year appraisal period.

The BCR tool includes health-related economic benefits that have been generated using HEAT. The HEAT outputs that have been calculated are outlined in Table 8.

Table 8: HEAT outputs

	Post-scenario cycling AUE	Post-scenario pedestrian AUE	HEAT output (cyclists)	HEAT output (pedestrians)	HEAT output (combined)
Post-scenario 1	34,398	60,367	£305,422	£2,722	£308,144
Post-scenario 2	38,835	71,757	£489,266	£92,323	£581,588

Post

t network improvements are presented. These three scenarios will be input
The three scenarios are outlined in Table 10 below.

able 10: WebTAG and HEAT z AUEs and economic benefits

Cycling AUE increase	Pedestrian AUE increase	Post-scenario AUE (cycling)	Post-scenario AUE (pedestrian)	Economic benefits
52%	6%	34,398	60,367	£1,181,450
72%	26%	38,835	71,757	£1,577,844
92%	46%	43,450	83,147	£2,143,764

ratios

: of the proposed Usk to Pontypool route is estimated at £2,500,000.
ce costs for the route length of 3.5 miles are estimated to be £7,010 per
raisal time period, the total scheme costs (construction and maintenance)
)3 for the middle usage scenario.

estimated economic impact, including health benefits from HEAT, for each
enarios over a 20 year appraisal period. The benefit to cost ratio for each
the -BCR0 column.

Table 11 Estimated economic benefits

Cycling	Walking	Total Benefits	Cost (incl. maintenance over 20 years)[6]	BCR

Scheme costs were not available, and so it wasn't possible to calculate a benefit-cost ratio.

A Route User Intercept Survey (RUIS) from a site in Conwy was used as a proxy due to having similarities with the Flint improvements scheme, including also being a scheme on the Wales Rural Development Programme. They are both coastal, have similar tourist attractions (both have castle sites), and are both smaller urban areas.

The data from the Route User Intercept Survey (RUIS) in Conwy contained only six cyclist