Flint Network Improvements Economic Impact Study

Wales Rural Development Programme

February 2019

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Table of contents

Flint network improvements – Economic Impact Study

The following document provides an assessment of the economic benefits of improving the cycling and walking links in and around Flint.

The cycle network between Flint and Connah's Quay runs along a main A-road, with a high concentration of traffic (including heavy good vehicles). As such, it is currently a dangerous route for cyclists. This scheme will provide an alternative route away from the road for a large part of the distance between Flint and Connah's Quay, and will complement improvements that are currently being made on parts of the existing route.

Within Flint, this scheme will look to improve the link between the centre and residential area of the town and the foreshore and the improved network between Flint and Connah's Quay. These improvements include new shared use paths.

This document provides economic evidence to accompany wider feasibility study of the proposed developments that is being undertaken by Sustrans Cymru as part of the Wales Rural Development Programme.

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	Percentage increase in pedestrian usage	Post-scenario AUE
22,630	52%	34,398
	72%	38,835
	92%	43,450

Forecasted/future annual usage estimate (pedestrians)

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

Table 2: Pedestrian usage scenarios (Executive Summary)

Baseline AUE	Percentage increase in pedestrian usage	Post-scenario AUE
56,950	6%	60,367
	26%	71,757
	46%	83,147

Estimated economic benefits (including health)

The following economic benefits have been estimated using the Benefit-Cost Ratio tool, and using the usage information in the previous tables as inputs.

Table 3: Estimated economic benefits (Executive Summary)

	Post-scenario AUE (cycling)	Post-scenario AUE (pedestrian)	Economic benefits	Benefit-cost ratio
Low usage change	34,398	60,367	£1,181,450	0.32:1
Medium usage change	38,835	71,757	£1,577,844	0.42:1
High usage change	43,450	83,147	£2,143,764	0.57:1

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.

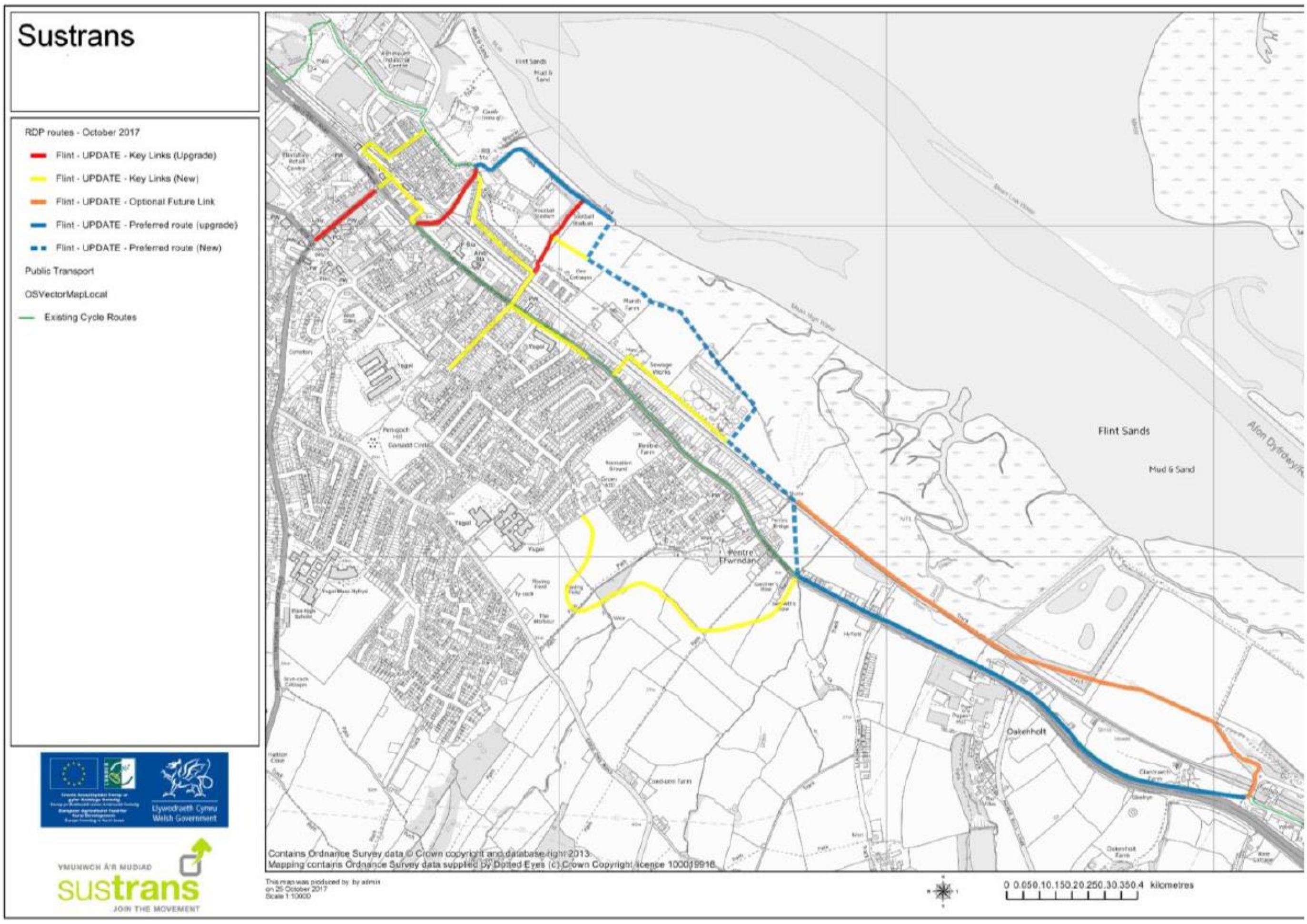
2 Background

Sustrans' Research and Monitoring Unit (RMU) have undertaken economic analysis for three scenarios for the proposed development of a new route between Flint and Connah's Quay, and network improvements within Flint.

This document outlines the economic benefits of the proposed improvements for the three usage scenarios.

2.1 Study area

***Figure 1**: Map overview of proposed improvements*



The cycle network between Flint and Connah's Quay runs along a main A-road, with a high concentration of traffic (including heavy good vehicles). As such, it is currently a dangerous route for cyclists. This scheme will provide an alternative route away from the road for a large part of the distance between Flint and Connah's Quay (blue dotted line), and will complement improvements that are currently being made on parts of the existing route (blue bold line).

Within Flint, this scheme will look to improve the link between the centre and residential area of the town and the foreshore, and the improved network between Flint and Connah's Quay. These improvements include upgrades to existing cycling provisions (red lines) and new shared use paths (yellow lines).

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. This was then appraised using the Infrastructure Investment Tool (IIT) for cyclists and pedestrians, the WebTAG based Benefit Cost Ratio (BCR) tool and the Leisure Cycling and Leisure Walking Expenditure Models (LCEM and LWEM) to determine the economic benefits for both cyclist and pedestrians.

3 Methodology

3.1 Economic Appraisal Tools

Infrastructure Investment Tools (IIT)

The cycling IIT (CIIT) and the pedestrian IIT (PIIT) are based on a database of past infrastructure scheme interventions delivered across the UK. This approach adopts a forecasting approach based on comparable schemes, as recommended by the Department for Transport (DfT) in their WebTAG Unit A5.1 for Active Mode Appraisal[1]. This approach is also consistent with the Welsh government Transport Appraisal Guidance (WelTAG). In adopting a case study approach, assumptions have been made that infrastructure developments are likely to perform similar to what was observed in the past. This approach is not specific to the local context evaluated here and may not fully integrate all of the unique aspects of the proposed development. It is a generalised approach based on evidence from past schemes and as such should not be considered a definitive calculation of the expected outcomes of a scheme.

The IIT's are used to estimate a potential increase in usage from any currently observed usage (i.e. a baseline estimate) to any change that results after a scheme has been constructed. This post-construction estimate is based on evidence of observed cyclist and pedestrian usage pre- and post-infrastructure delivery in the past. The PIIT is a new tool, which was created based on the CIIT model. The data that the PIIT draws on for reference is not as extensive as the number of schemes which feed into the CIIT. The tools do not give estimates in reference to a specific time period over which this usage change is observed or occurs. All outputs from the IIT's are in the form of an annual number of cyclist or walking trips.

Benefit-cost ratio (BCR) Tool

Sustrans RMU have developed an economic appraisal tool which is used to estimate the economic benefits of capital investments in walking and cycling based on information provided about the location and usage of the investment .The tool was initially developed to comply with the Department for Transport (DfT)'s guidance, WebTAG (Web-based Transport Appraisal Guidance). In Wales, the Welsh government's Transport Appraisal Guidance (WelTAG) is used, as this is adapted to Welsh-specific objectives and the outcomes and strategic priorities of the Wales Transport Strategy. There are no specific adaptations to the Sustrans RMU BCR tool mandated in the latest version of WelTAG, therefore the BCR tool developed in accordance with WebTAG is compatible for the Welsh context.

The BCR tool requires the following inputs:

[1] WebTAG Unit A5.1 for Active Mode Appraisal. Available at: https://www.gov.uk/government/uploads/system/uploads/attachment_data/file/427098/webtag-tag-unit-a5-1-active-mode-appraisal.pdf

- Trip frequency
- Journey purpose
- Trip distance
- Proportion not using a car for any part of their journey
- Proportion who could have used a car for their journey but have chosen not to

The BCR tool provides an estimate of the monetised economic benefits for the following impact areas related to cycling and walking:

- Health (using the WHO HEAT tool)
- Absenteeism
- Amenity
- Greenhouse Gas Emissions Reduction
- Accidents Savings
- Decongestion
- Air Quality Improvement
- Noise Pollution Reduction
- Infrastructure Development
- Indirect Taxation (disbenefit)

All economic benefits appraised through the BCR tool are based on a 20 year appraisal time period. This provides an estimate of the economic benefits of a specific level of scheme usage being observed over the next 20 years. All benefits are discounted over the 20-year time period to provide a present-day value.

Health Economic Assessment Tool (HEAT)

The (WHO) Health Economic Assessment Tool (HEAT) is used to evaluate the health-related economic benefits of walking and cycling. The benefits calculated through HEAT relate to the reduced mortality generated through a specific number of walking and cycling trips. All health-related economic benefits are calculated over a 20 year appraisal time period, to maintain compatibility with the WebTAG-generated economic outputs.

The version used in this appraisal is not the most current as the BCR tool currently still uses the previous version of the tool. The further information on the HEAT tool used can be found on the HEAT website[2].

[2] The WHO HEAT tool and associated guidance are available at: http://www.heatwalkingcycling.org

Leisure Expenditure Model Tools: Cycling and Walking

Sustrans RMU has developed two models which calculate the economic benefit to an area from recreational cycling and walking in terms of 'spend per head' and the job roles these activities create.

The **Leisure Cycling Expenditure Model**[3] was originally developed in 2007 in association with the University of Central Lancashire (UCLAN) to estimate the impact of cycle tourism. It has been iteratively updated, most recently in 2017.

The model was developed based on an extensive data collection exercise undertaken between 2001 and 2006 on long-distance routes in the North of England, using user surveys, automatic counter data and travel diaries. The model can be used to estimate the economic impact of cycle tourism based on an estimate of annual 'spend per head' for all recreational cyclist users on the route. This estimate of cycle tourism-related expenditure is differentiated according to home-based and recreational tourist users. The outputs are indicative, rather than precise, estimates of the potential direct economic impact of investing in recreational cycling and give an estimate of the annual tourism-related economic benefits of recreational cycling usage on a proposed route. This is in terms of tourism expenditure and the social value of tourism per year.

The **Leisure Walking Expenditure Model** (LWEM) is a tool for estimating the economic benefit of leisure walking in terms of the expenditure it contributes to the local economy. This model originated from the Recreation Expenditure Model (now the LCEM) and builds on expenditure data collected from route users over a number of years.

It is based on data collected from Route User Intercept Surveys (RUIS) across the UK (though mainly in Wales and Scotland). The model estimates the total annual spend for all home- and holiday-based based leisure walkers. It also calculates the number of full time equivalent (FTE) roles this spend would support. In order to further understand the effect of the expenditure, spend and FTE roles are split by sector.

4 Assessment of Economic Benefits

This section outlines the economic benefits of the proposed network improvements in and around Flint**,** including:

- The economic value of congestion, greenhouse gas (GHG) emissions, noise pollution and amenity benefits accrued through mode shift encouraged by the route
- Health-related benefits of increased walking and cycling on the proposed routes
- Direct and indirect job creation from infrastructure works and increased recreational walking on the routes
- Overall positive return on investment

[3] Previously titled the Recreational Expenditure Model (REM)

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

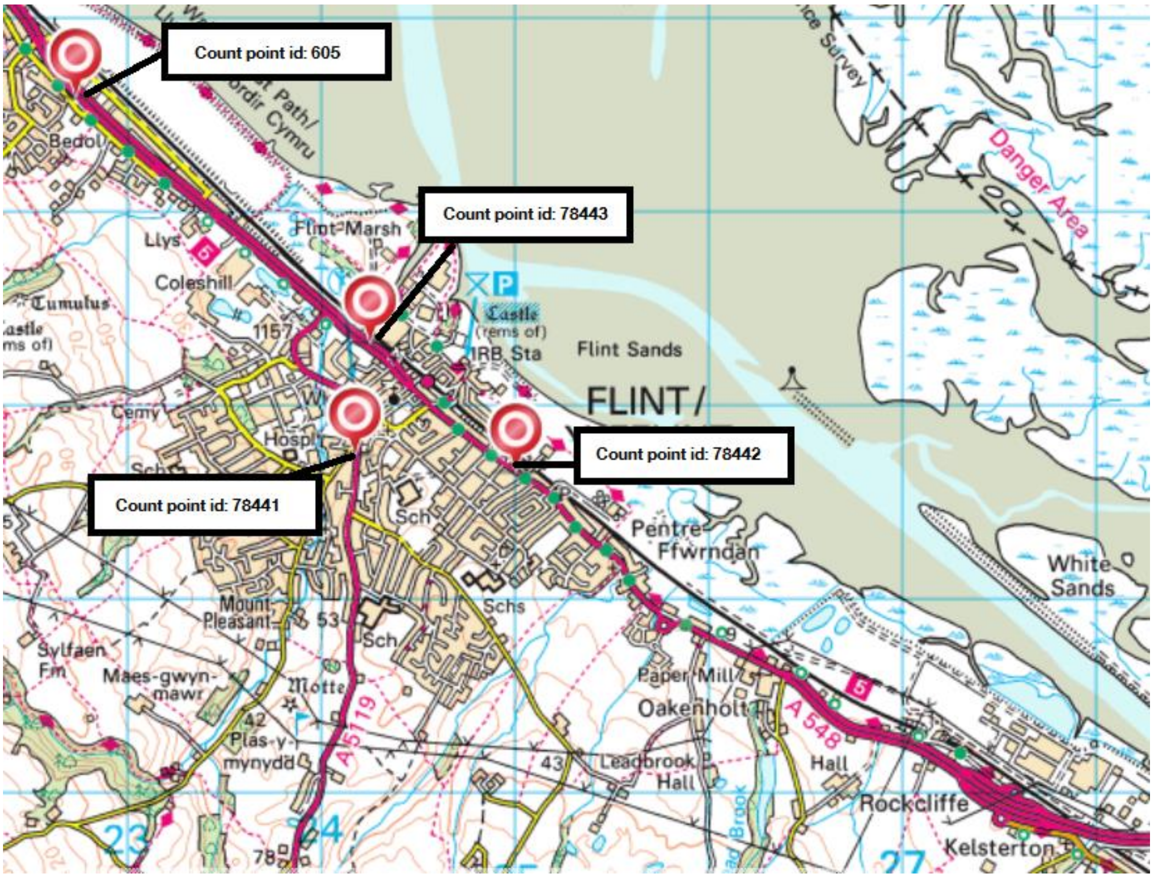
Sustrans' does not hold any usage data for routes that are relevant to the scheme.

The Department for Transport (DfT) conducts manual counts of traffic on a sample of roads across the UK. There are approximately 8000 of these manual counts conducted per year, and the duration of a count is 12 hours over a single day. The locations at which these take place are referred to as Count Points (CPs). The DfT generate an Average Annual Daily Flow (AADF), which is multiplied by 365 to obtain an AUE, for each count point. The AADF is calculated using data from a series of Automatic Cycle Counters (ACC), which collect a full year of data (24 hours a day 365 days a year), to expand the 12 hour counts to 24 hours and account for variability in usage across the year (seasonality).

A manual count is not conducted at every CP every year. In cases where a manual count has not been conducted at a CP, the change in AADF between years is estimated based on changes in usage from the ACCs.

There are a few CPs that are relevant to Flint. These are shown in Figure 2.

Figure 2: *Map of relevant DfT CPs*



4 An Annual Usage Estimate (AUE) refers to the number of individual cycling trips made annually on a route

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.

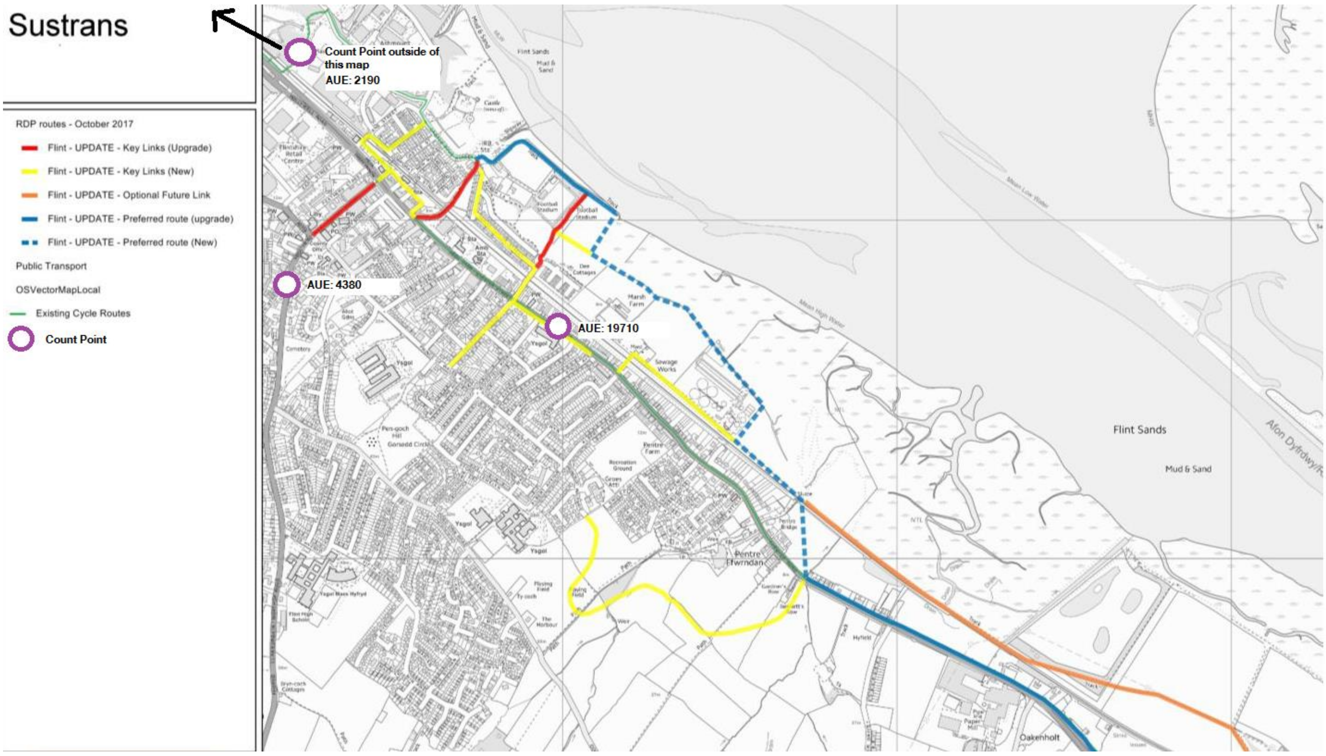
***Table 4**: 2016 pedal cycle AADF, AUE and estimation method for CPs*

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 remaining CPs onto the map of the proposed scheme improvements (Figure 3) we can see that although the CPs don't account for all of the scheme improvement routes we are able to obtain general levels of usage on key roads in and around Flint from these count points.

***Figure 3**: Map of proposed route improvements with CPs' AUE values*



CP 78441 is on Northop road/A5119, which joins up with Chester Street/A548, the main road out of Flint towards Connah's Quay and Chester. CP 78442 is on the A548, south east of Flint towards Connah's Quay, and CP 605 is on the A548 north west of Flint.

Considering the proximity of the CPs to one another and the fact that they are all on key roads, there is likely to be some double counting of the usage (i.e. a single trip being counted at multiple CPs), and so summing the usage across the relevant CPs would lead to an overestimate of the number of trips being made.

To account for this we can consider the possible destination (/origin, when referring to return trips) of the trips at CP 78441. The clearest destinations for those passing this CP are as follows:

- The train station, castle or football stadium, which does not entail passing either of the other two CPs.
- South east towards Connah's Quay passing CP 78442
- North west towards Bedol passing CP 605

If we make the assumption that the 4,380 cycle trips per year are split equally across these options, this would mean that 1,460 trips are counted at both CP 78441 and CP 78442.

To provide some adjustment for double counting we can take the 1,460 double counted trips, divide it by two (the total number of CPs over which double counting is occurring), and remove the resulting number of trips (730) from the AUE of each of the two CPs. After adjusting for double counting the AUEs at CP 78441 and CP 78442 are **3,650** and **18,980**, respectively.

As the scheme improvements are not directly relevant to the route between Flint and Bedol, the usage at CP 605 is not considered to be part of the baseline AUE for the scheme improvements.

Summing the adjusted AUEs for CPs 78441 and 78442 provides a total pedal cycle baseline AUE of **22,630**.

4.1.2 Walking

The DfT do not conduct counts of pedestrians in their manual counts, so the process used for the calculation of cyclist AUEs is not applicable for pedestrians.

Observing the ratio of cyclist to pedestrian usage on the Conwy Bridge, a relatively similar site at which baseline data has been collected as part of the Wales Rural Development Programme, we can see that pedestrian usage is almost 8 times that of cyclist usage. The distance between the communities either side of the Conwy Bridge is relatively short (approximately 2km between the centre of Conwy and the centre of Llandudno Junction) compared to the distance between Flint and Connah's Quay (approximately 6km between the centres). The larger distance between Flint and Connah's Quay is likely to lead to less pedestrian usage compared to Conwy Bridge, and so a ratio of eight pedestrian trips for every cyclist trip is likely to be an overestimate.

A previous Sustrans study identified a ratio of three walking trips to every one cyclist trip, based on data collected from NCN RUIS, Connect 2 programme RUIS and automatic counters. This ratio is likely to be a conservative estimate of the number of trips made, which is preferred to an over estimation.

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.

Table 6 Post-scenario cycling AUE scenarios

Baseline AUE	Percentage increase in cyclist usage	Post-scenario AUE
22,630	52%	34,398
22,630	72%	38,835
22,630	92%	43,450

In order to formulate the post-usage scenarios for pedestrians, the pedestrian Infrastructure Impact Tool (IIT) has been used. The scenarios for pedestrian usage are shown in **Table 7**.

Table 7 Post-scenario pedestrian AUEs

Baseline AUE	Percentage increase in pedestrian usage	Post-scenario AUE
56,950	6%	60,367
56,950	26%	71,757
56,950	46%	83,147

Together, the post-scenario cycling and pedestrian usage calculations represent the three scenarios that are appraised.

4.3 WelTAG and monetised economic benefits

The BCR tool provides an appraisal of the economic benefits of an infrastructure development and requires specific inputs in order to provide a monetised value for the expected benefits under the three post-construction usage scenarios.

For this route, the BCR appraisal tool has been used to calculate the expected economic benefits based on the post-scenarios for both pedestrians and cyclists. All economic benefits presented have been calculated using the WelTAG appraisal tool over a 20-year time period.

In addition to the baseline and post-scenario AUEs, all necessary BCR tool inputs were taken from a proxy RUIS carried out on Conwy bridge in August/September 2017. This proxy site was used as no recent RUIS have been carried out in or near Flint.

No variation in these additional inputs has been made between the baseline and post-scenario cases as it is not possible to predict how these might change as a result of the development.

Depending on what occurs in practice and how these variables change in reality, the valuations obtained through WelTAG using these fixed inputs may reflect an economic value that is either higher or lower than the reality.

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-scenario 3	43,450	83,147	£680,291	£312,144	£992,434

The combined HEAT output for both pedestrian and cyclist usage is used as the health economic benefit input in the WelTAG tool.

4.5 Overall economic benefits

The overall economic benefits of the proposed route include both the BCR tool and HEAT outputs.

Table 9 displays the range of economic benefits that could be expected under all possible combinations of the three cycling and pedestrian usage scenarios that have been examined. All of these economic benefits include the HEAT outputs displayed in Table 8.

***Table 9** WebTAG and HEAT – Economic benefit*

		Walking AUE increase		
		6%	26%	46%
Cycling AUE increase	52%	£1,181,450	£1,293,396	£1,563,921
	72%	£1,465,897	£1,577,844	£1,848,368
	92%	£1,761,294	£1,873,240	£2,143,764

As well as viewing the estimated economic benefits as an array of possible scenarios, these economic benefits can be displayed as three scenarios: a low usage change scenario, a middle usage change scenario and a high usage change scenario. This corresponds with how the economic

[5] The WHO HEAT tool is available at: http://old.heatwalkingcycling.org/

benefit outputs for the Flint network improvements are presented. These three scenarios will be input into the LCEM and LWEM. The three scenarios are outlined in Table 10 below.

Table 10: *WebTAG and HEAT – AUEs and economic benefits*

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

4.6 Benefit-cost ratios

The total construction cost of the proposed Usk to Pontypool route is estimated at £2,500,000. Annual (routine) maintenance costs for the route length of 3.5 miles are estimated to be £7,010 per year. Over the 20 year appraisal time period, the total scheme costs (construction and maintenance) are estimated at £3,749,503 for the middle usage scenario.

Table 11 below shows the estimated economic impact, including health benefits from HEAT, for each of the different increase scenarios over a 20 year appraisal period. The benefit to cost ratio for each scenario is included under the 'BCR' column.

Table 11 *Estimated economic benefits*

	Cycling	**Walking**	**Total Benefits**	**Cost (incl. maintenance over 20 years)**[6]	**BCR**
1: Low (52% cycling, 6% walking)	£1,177,663	£3,787	£1,181,450	£3,749,682	0.32:1
2: Middle (72% cycling, 26% walking)	£1,462,111	£115,733	£1,577,844	£3,749,503	0.42:1
3: High (92% cycling, 46% walking)	£1,757,507	£386,258	£2,143,764	£3,749,256	0.57:1

Any BCR above 1 signifies that the economic benefits of constructing the route are equal or greater than the provided cost. All scenarios have positive BCRs, signifying strongly that the economic benefits of this route are such that they outweigh the costs. The range of scenarios is intended to provide an indication of potential outcomes, which in this instance all have strongly positive outcomes.

[6] The present-value cost varies across scenarios because of the infrastructure benefit variation across scenarios. The infrastructure benefit is deducted from costs to the government (as this is government spending that is directly saved as a result of the scheme).

4.7 Tourism-related economic benefits

The Leisure Cycling Expenditure Model (LCEM) and Leisure Walking Expenditure Model (LWEM) tools have been used to generate an estimate of the combined tourism-related economic benefits of the proposed Flint network improvements.

The LCEM and LWEM tools have been run using the recreational usage inputs from the Conwy RUIS conducted in August/September 2017. The economic benefits captured are excluded from appraisals of cycling and walking usage according to WebTAG and therefore, can be considered to be additional to those benefits outlined in Table 10. These tourism-related economic benefits are derived from a different approach to the economic benefits generated through the RMU WebTAG tool and therefore, should not be combined.

The LCEM and LWEM tools provide an estimate of the annual recreational spend by both home-based and tourist leisure cyclists on accommodation, food and drink, retail, car costs, cycle costs and public transport. This provides an estimate of the direct contribution that leisure cycling and walking generated through the proposed route developments will make on the local economy on a yearly basis.

The tools also provide an estimate of the annual social value of recreational trips made by home-based or tourist leisure users on the Flint network improvements. This is a measure of the 'public good' or value placed on the route by leisure users that is not captured in their expenditure.

***Table 12**: Combined Leisure Cycling Expenditure Model (LCEM) outputs*

	Annual recreational spend - HOME	Annual recreational spend - HOLIDAY	Overall tourism economic benefits
Based on existing route usage levels	£ 29,602	N/A	£ 29,602
Low usage change	£ 44,995	N/A	£ 44,995
Medium usage change	£ 50,799	N/A	£ 50,799
High usage change	£ 56,835	N/A	£ 56,835

***Table 13**: Combined Leisure Walking Expenditure Model (LWEM) outputs*

	Annual recreational spend - HOME	Annual recreational spend - HOLIDAY	Overall tourism economic benefits
Based on existing route usage levels	£ 141,349	£ 305,229	£ 446,578
Low usage change	£ 149,830	£ 323,543	£ 473,373
Medium usage change	£ 178,099	£ 384,589	£ 562,688
High usage change	£ 206,369	£ 445,635	£ 652,004

The LCEM and LWEM tools also provide an estimate of the direct and indirect full-time equivalent (FTE) jobs supported in the local economy through recreational cycling. Details of this are provided in **Table 14** and **Table 15.**

Table 14: Leisure cycling usage and employment support

	Direct employment (FTEs)	Indirect employment (FTEs)	Total employment (FTEs)
Based on existing route usage levels	0.4	0.2	0.7
Low usage change	0.6	0.4	1.0
Medium usage change	0.7	0.4	1.1
High usage change	0.8	0.5	1.3

Table 15*: Leisure walking usage and employment support*

	Direct employment (FTEs)	Indirect employment (FTEs)	Total employment (FTEs)
Based on existing route usage levels	6.3	3.8	10.1
Low usage change	6.7	4.0	10.7
Medium usage change	7.9	4.8	12.7
High usage change	9.2	5.5	14.7

Considerations

There are a number of considerations relevant to the assessment of economic benefits that has been carried out for Flint network improvements**.**

Baseline AUE Data Selection

- The DfT Manual counts have a very limited data collection period of 12 hours over one day, and in years where a manual count doesn't take place the change in usage is based on the change in usage from counters in a similar type of location. The most recent estimate has been used in this case, but the last manual counts at these locations were taken 6-8 years ago.
- This total baseline AUE doesn't quite capture the baseline usage for all of the aspects of the scheme, most notably the proposed off-road path from the end of Prince of Wales Avenue to Chester road (see the yellow route in), but does cover the majority of the scheme relevant baseline usage.

__Figure 4__: Prince of Wales Avenue to Chester road

- The 3:1 ratio of pedestrians to cyclists used for the estimation of the number of pedestrians using the route is based on usage data collected from a wide range of contexts (a variety of infrastructure types and urban/rural classifications). As so there is likely to be a reasonable margin for error around this ratio.

Post-scenario AUEs

- The urban rural classification of the area in which the scheme is being implemented impacts on the forecasted change in usage as a result of the scheme. The Flint improvements have been classified as being in an urban environment. Both Flint and Connah's Quay are urban areas, but the route in-between them isn't particularly urban, but has been classed as such due to the relatively close proximity between the settlements.
- In forecasting the usage post-intervention, the intervention has been classified as 'Cycle and pedestrian track'. The forecast % change in usage is dependent on the classification of the intervention. For the red lines on the map of proposed improvements it isn't clear whether a segregated cycle and pedestrian track will be implemented. If they will instead by on road cycle lanes, then there is a separate, lower, % change in usage value.
- The nature of the improvements relating to the bold blue line section on the route between Flint and Connah's Quay on the proposed scheme map, is unclear, and so the 'Cycle and pedestrian track' classification may not be applicable to all of the route.
- The high and low usage scenarios were calculated as +/- 20% of the mid usage scenario, determined by the IIT output for both modes. 20% was used as there is no other evidence to suggest you should vary substantially from the IIT output but there is a need to illustrate that a range of scenarios is possible.

Analysis – BCR Tool

- 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 survey responses so for the BCR tool cyclist values, the responses from all survey respondents were used, therefore these inputs are largely based around data from pedestrians.

Analysis – Leisure Expenditure Model Tools

- All of the surveyed recreational cyclists (sample of four) started their trip from a home base and not a holiday base therefore the overall tourism economic benefits outlined in Table 12 are based only on home-based expenditure. It is unlikely that there are no holiday based recreational cyclists in reality, and their absence is likely to be due to the small sample size. The Leisure Cycling Expenditure Model assigns a greater recreational spend per head to holiday-based trips than to home-based trips, therefore the economic benefits of the route may have been underestimated.