



MontytraX Phase 2 Feasibility Study

Business Case Assessment

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Table of contents

MontytraX - Business Case	1
1 Executive Summary	1
1.1 Economic benefits of the MontytraX Initiative	1
1.2 Llanfyllin Branch Line Shared Use path	1
1.3 MontytraX Circular Cycle Route.....	2
2 Background	1
3 Literature Review	3
3.1 Tourism.....	3
3.2 Economic benefits of cycling	3
3.3 Economic benefits of walking	4
3.4 Benefits to communities	4
4 Economic Appraisal Tools.....	5
4.1 Infrastructure Investment Tool (IIT).....	5
4.2 WebTAG Appraisal Tool.....	5
4.3 Health Economic Assessment Tool (HEAT).....	6
4.4 Recreational Expenditure Model (REM) Tool.....	6
5 Considerations.....	7
6 Assessment of Economic Benefits.....	9
6.1 Annual Usage Estimate - Llanfyllin Branch Line Shared Use path	10
6.2 Annual Usage Estimate - MontytraX Circular Cycle Route.....	10
6.3 AUE increase scenarios - Llanfyllin Branch Line Shared Use path.....	11
6.4 AUE increase scenarios - MontytraX Circular Cycle Route	12
6.5 WebTAG and monetised economic benefits.....	13
6.6 Health-related economic benefits - Llanfyllin Branch Line Shared Use path.....	13
6.7 Health-related economic benefits - MontytraX Circular Cycle Route	14
6.8 Overall economic benefits - Llanfyllin Branch Line Shared Use path	14
6.9 Overall economic benefits - MontytraX Circular Cycle Route.....	15
6.10 Combined economic benefits of the MontytraX initiative	15
6.11 Tourism impact of the MontytraX initiative	16
7 Comparable site data.....	18
Appendix A: Map of Route Overview	19
Appendix B: Case Study - Blandford (Connect 2).....	20

MontytraX – Business Case

The following document provides an assessment of the economic benefits of developing walking and cycling infrastructure through the MontytraX initiative in Montgomeryshire, North Powys in Wales.

There are three proposed infrastructure developments in the initial MontytraX initiative:

1. Llanfyllin Branch Line Shared Use path
2. MontytraX Circular Cycle Route
3. Community Walks (in five communities spread over several settlements)

This document will inform the business case contribution to a wider feasibility study of the proposed developments that is being undertaken by Sustrans Cymru.

1 Executive Summary

1.1 Economic benefits of the MontytraX Initiative

The economic benefits of the MontytraX initiative outlined in this document have been appraised on the basis of expected annual cyclist and pedestrian usage on the MontytraX Circular Cycle Route and Llanfyllin Branch Line Shared Use path after the entirety of both routes have been constructed. The economic benefits (as per WebTAG) of this annual usage have been appraised as if observed for the next 30 years (i.e. a 30-year appraisal period has been used). The recreational expenditure benefits are calculated as an estimate of annual expenditure.

All estimates of cyclist and pedestrian usage are provided as an annual number of trips observed on either the MontytraX Circular Route or the Llanfyllin Branch Line Shared Use path. These Annual Usage Estimates (AUEs) have been drawn from comparable data at baseline, selected according to geographic characteristics and infrastructure type. The post-construction usage estimates have been developed using evidence from the Infrastructure Impact Tool (IIT) on the basis of an annual number of trips.

When appraising a post-construction scenario where the MontytraX Circular Cycle Route sees a 19% increase in cyclist trips and the Llanfyllin Branch Line Shared Use path sees a 173% increase in cycling and 58% increase in walking trips above baseline:

- The combined economic benefits of both route developments over a 30 year period are **£2,574,803**, inclusive of **£702,000** health-related economic benefits.
- The estimated tourism-related economic benefits of developing both routes is **£200,051** per year with **2.9 FTE** jobs supported. This includes **£120,117** of annual expenditure by recreational cyclists. These tourism-related benefits are additional to the combined economic benefits.

1.2 Llanfyllin Branch Line Shared Use path

- It is estimated that every year **8,797** cycling trips and **18,177** pedestrian trips could be occurring on the route, given an estimate of usage relevant to the path using three comparable railway path sites.
- The Infrastructure Investment Tool (IIT) suggests that cycling usage on the route will increase by **173%** to **24,022 cycling trips per year** if the complete route is constructed. A case study suggests that pedestrian usage will increase by **58%** to **28,720 pedestrian trips per year**.
- For the scenario where cycle usage increases by 173% and pedestrian usage increases by 58%, the health-related economic benefits are estimated to be **£662,000¹** over a 30-year appraisal period.
- In the 173% cyclist increase and 58% pedestrian increase scenario, the economic benefits of this walking and cycling usage are estimated as **£2,026,301²** over a 30-year appraisal period.

¹ See **Table 8** for a full outline of the health-related economic benefits of the Llanfyllin Branch Line Shared Use path.

² See

Table 10 for a full outline of the expected economic benefits of the Llanfyllin Branch Line Shared Use path.

1.3 MontytraX Circular Cycle Route

- An estimate of baseline usage that is relevant to the MontytraX Circular Cycle Route has been developed from five comparable cycle path data sites. This estimate of current usage is **16,648** cycling trips per year. The pedestrian usage of this route is expected to be negligible.
- The IIT suggests that cycling usage on the route will increase by **19% above the estimated baseline** to **19,811** trips per year once the route has been developed, from pre to post intervention.
- For the scenario where cycling usage increases by 19%, the estimated health-related economic benefits are **£40,000**³.
- For a 19% increase in cycling trips above baseline levels, the estimated economic benefits of the MontytraX Circular Cycle Route are **£548,502**⁴.

³ See **Table 9** for a full breakdown of the expected health-related economic benefits of the MontytraX Circular Cycle Route.

⁴ See **Table 12** for a full outline of all expected economic benefits of the MontytraX Circular Cycle Route.

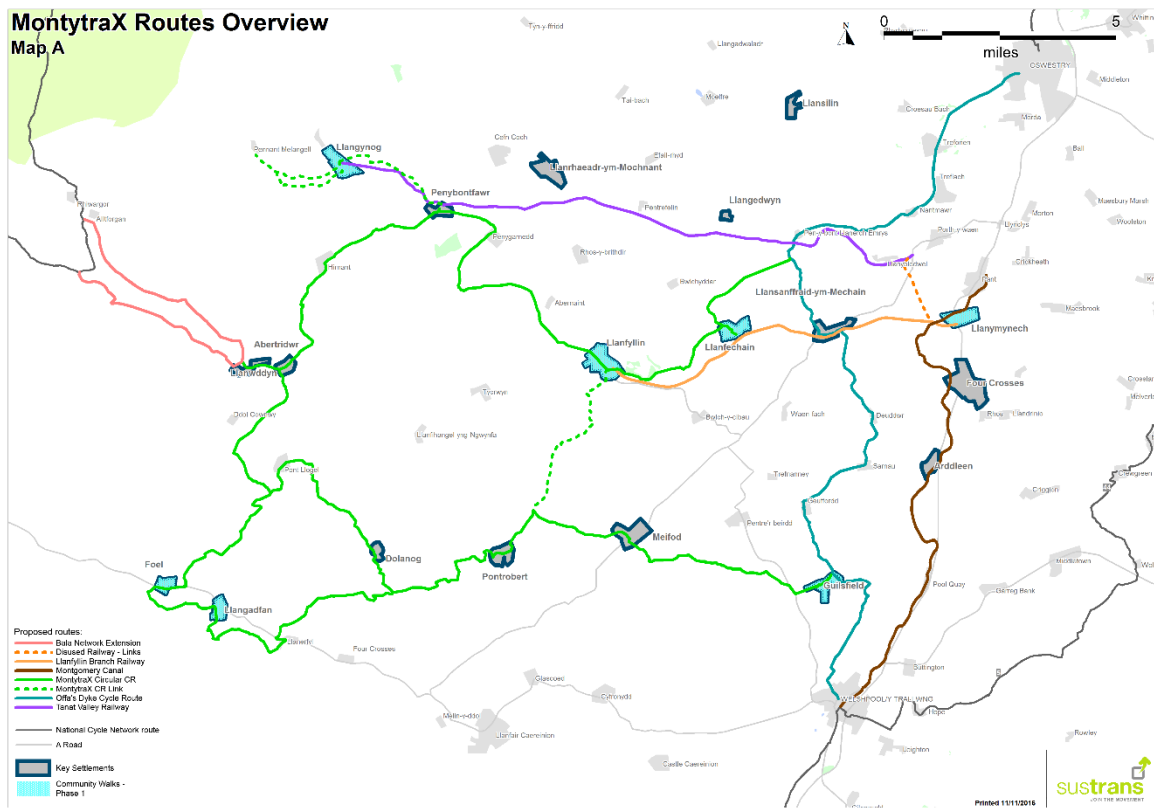
2 Background

The MontytraX initiative is a community supported project seeking to develop active travel and leisure walking and cycling in North Montgomeryshire.

The MontytraX development is located in north Powys, known as Montgomeryshire. The area is predominantly rural with a number of small settlements.

This document outlines the economic benefits of three proposed developments under the MontytraX initiative.

Figure 1: Map overview of proposed routes



2.1 Llanfyllin Branch Line Shared Use path

This potential path is a former disused railway route that seeks to connect settlements currently experiencing severance issues. The length of the path will be approximately 8 miles. The proposed development is intended for mixed use (pedestrians and cyclists) and be off-road with full disabled access.

The route is located near to the border of Snowdonia National Park, in an area that is popular with mountain biking and leisure cycling (Lake Vyrnwy) and there is a downhill bike park located in the vicinity at Llangynog. The additional recreational leisure usage that this development would unlock is likely to be significant.

The economic benefits of the **Llanfyllin Branch Line Shared Use path** have been evaluated using data from comparable railway path sites and have been appraised using the Infrastructure Investment Tool (IIT), the WebTAG tool and the Recreational Expenditure Model (REM). The tools

that have been used in this economic appraisal are described further in **Section 4: Economic Appraisal Tools**. Estimated post-scheme usage for pedestrians has been drawn from a case study of a similar development. The economic benefits of this development have been estimated for both cyclist and pedestrian usage.

2.2 MontytraX Circular Cycle Route

The circular cycle route will be developed to connect several settlements in the local area. The total length of the route is approximately 55 miles and will be on-road.

The area is popular with road cyclists and there is potential to link the development into existing National Cycle Network routes (NCR 81 and NCR 8). Leisure usage is relevant to the expected economic benefits of this route, but benefits from pedestrian usage are unlikely due to the on-road nature of the development.

The economic benefits of the **MontytraX Circular Cycle Route** have been evaluated using data from comparable cycling infrastructure schemes. The economic benefits have been estimated using the Infrastructure Investment Tool (IIT), the WebTAG Tool and the Recreational Expenditure Model (REM). The economic benefits have been calculated for cycling usage only, as pedestrian usage is not believed to be relevant to this route due to no specific provision for pedestrians planned in the infrastructure development.

2.3 Community Walks (in five communities spread over several settlements)

There are a number of local walking routes in the area that vary in length and difficulty. There are a number of Community Walk areas that have been identified for potential development. Initial communities that have been identified for the development of walking routes through the production of maps and leaflets, highlighting places of interest and key destinations, are:

- Banwy (Llangadfan & Foel)
- Guilsfield
- Llanfyllin and Llanfechain
- Llanmynech
- Llangynog

As these proposed walking developments involve small scale physical infrastructure developments, such as the introduction of signage, new gates and surface upgrades, an appraisal of the expected benefits has not been carried out as this would not be appropriate. To provide evidence on potential economic benefits of developing walking networks in this area, evidence from past Sustrans schemes and secondary sources has been provided.

3 Literature Review

The following evidence has been gathered through desk-based research and a review of Sustrans resources and secondary sources of information. The information below supports the notion that the proposed developments at MontytraX have the potential to yield substantial economic benefits, particularly through active tourism. Evidence of the economic benefits of a network of walking routes will be presented in place of a specific economic appraisal of the Community Walks proposed in this initiative.

3.1 Tourism

Tourism is the UK's fifth largest industry⁵ and is worth up to £115 billion a year⁶. In Wales, 4.9% of the nation's economic output can be attributed to tourism expenditure⁷ and cycling tourism is an area of growing popularity.

In particular, there are substantial economic benefits to be gained from investment in active travel infrastructure for tourism purposes. The number of active holidays in Wales is over 1.2 million trips per annum, made by UK residents for the specific purpose of activity holidays or holidays including activities (such as walking and cycling)⁸. The overall visitor spend for all of these activity-based holidays is approximately £180 million⁹.

3.2 Economic benefits of cycling

The UK is experiencing ever-greater involvement in cycling with the influence of the sport growing each year. In August 2016, British Cycling's membership surpassed 125,000 for the first time in the organisation's history, with an additional 75,000 members adding their support for the sport since London 2012¹⁰.

Leisure cycling represents a large and growing portion of all cycling trips across the UK. In 2014, 184 million cycle trips on the National Cycle Network (NCN) in Wales (53% of the total) were for either leisure purposes or from a holiday base¹¹. Based on these figures it is estimated that leisure and tourist cycling on the NCN contributes £652 million to the economy each year, directly and indirectly supporting 15,000 FTE jobs¹².

Cycling is the main purpose for 75,000 visits to Wales from other parts of the UK. In addition, over 640,000 trips to Wales also include cycling as part of the holiday stay¹³. In total, these are estimated to generate spending which amounts to £102 million per annum¹⁴. This provides evidence that

⁵ Visit Britain (2013) *How tourism supports the British economy*

⁶ Same as 1

⁷ Office for National Statistics (ONS) (2013) *The regional value of tourism in the UK: 2013*. [Online] Available from: <https://www.ons.gov.uk/peoplepopulationandcommunity/leisureandtourism/articles/theregionalvalueoftourismintheuk/2013>

⁸ Wales Tourist Board (2004) within the Institute of Transport and Tourism (2008)

⁹ Institute of Transport and Tourism (2008) *The Economic Impact Of Cycling And Walking On The Celtic And Taff Trails (Commissioned by Sustrans)*. University of Central Lanarkshire.

¹⁰ British Cycling. (2016). *British Cycling reaches 125,000 members milestone*

Available: <https://www.britishcycling.org.uk/about/article/20160815-about-bc-news-British-Cycling-reaches-125-000-members-milestone-0>

¹¹ Sustrans (2016) *Tourism report: Scottish Research Programme* (internal document)

¹² Visit Wales (2016) *Cycle Wales: Toolkit* (SE Wales). [Online]

¹³ The Institute of Transport & Tourism (2008) *The Economic Impact Of Cycling And Walking On The Celtic And Taff Trails (Commissioned by Sustrans)*. University of Central Lanarkshire.

¹⁴ Same as 8

although the MontytraX route developments are located in a rural area, there is a high likelihood that the investment in cycling infrastructure could potentially attract leisure visitors from across the UK.

Economic benefits of walking

In 2009, it was estimated that there were 28 million walking related trips to the Welsh countryside and coast. Direct expenditure associated with these walking and hill walking trips was approximately £632 million¹⁵. The same study of walking tourism in Wales using 2009 data estimated that the overall expenditure impacts of walking activities¹⁶ were £562 million of additional demand in the Welsh economy, £275 million of gross value added (16% of the total tourism GVA in Wales) and 11,980 person-years of employment¹⁷.

The Ramblers Association estimates that walking tourism in rural and coastal Wales contributes over £550million to the economy¹⁸. The Wales Coast path was estimated to be worth £32 million to the Welsh economy in its first 12 months¹⁹.

In England, walkers alone spend over £6 billion a year, supporting up to 245,000 full time jobs and helping small businesses to grow and diversify²⁰. The South West Coast Path is worth £436 million a year to the regional economy, supporting 9,771 jobs²¹.

This evidence highlights that there are substantial economic benefits to be unlocked through the development of Community Walks as part of the proposed developments in the MontytraX initiative, alongside the development of cycling infrastructure.

3.3 Benefits to communities

The benefits to communities of developing walking and cycling includes physical health (including wellbeing), access to jobs and services and job creation.

In 2013 it was estimated that the National Cycle Network generated £803 million in health benefits – this was out of £1 billion in overall benefits, and was the highest value single benefit type²². People who cycle regularly in mid-adulthood typically enjoy a level of fitness equivalent to someone who is 10 years younger, with a life expectancy that is two years above average²³. In addition to the physical health benefits of active travel, research by health economists has found significant associations between overall psychological wellbeing and active travel when compared to car travel²⁴.

The cycling industry employs an estimated 23,415 people in the UK, paying approximately £514m to its employees and £106m in tax and N.I contributions. Improved cycling and walking infrastructure can also provide a better means of linking communities to jobs and workplaces, with

¹⁵ Bryan, J., Jones, C. Munday, M. and Roche, N. (2011) *The Economic Impact of Walking and Hill Walking in Wales*. Cardiff: Cardiff University

¹⁶ After leakages from this direct spending were removed, and the indirect impacts calculated through Input Output modelling

¹⁷ Same as 10

¹⁸ Ramblers (2016) *Economic benefits* [Online]

¹⁹ Ramblers Scotland (2016) *The contribution of the West Highland way to the economy in Scotland: Parliamentary Briefing*. [Online] Available at: www.ramblers.org.uk/.../Scotland%20microsite/.../Parliamentary%20Briefing%20for... Rural Development Sub-committee (2008) *Poverty and Deprivation in Rural Wales*. [Online]

²⁰ Same as 13

²¹ Same as 13

²² Sustrans (2016) *Greenways: Evidence and case studies that illustrate their impact*. (Internal Document)

²³ Cycling UK (2016) *Cycling and Health*. [Online] Available from: http://www.cyclinguk.org/sites/default/files/file_public/health1crvbrf.pdf

²⁴ Same as 22

transport costs cited as a barrier by jobseekers²⁵ and is linked with post-16 education dropout rates²⁶.

On average, 12.7 jobs are supported or sustained for every £1 million of investment in sustainable transport infrastructure. This includes 1.6 jobs (direct, indirect and induced) for every km of route constructed²⁷.

4 Economic Appraisal Tools

4.1 Infrastructure Investment Tool (IIT)

The Infrastructure Investment Tool (IIT) uses data from a range of previous interventions to develop a category model for different types of infrastructure, calculating the typical impact of those interventions. This tool does not attempt to provide a definitive measure of the impact of an intervention. It should be used as part of a range of sources for forecasting the impact of a proposed intervention and should have appropriate sensitivity testing applied to the outputs.

The IIT is based on a database of past infrastructure scheme interventions. 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 Appraisal²⁸. 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 here. 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 is used to estimate a potential increase in usage from usage that is currently observed (i.e. a baseline estimate) to any usage change that results after a scheme has been constructed. This post-construction estimate is based on evidence that has been collected on observed cyclist usage pre- and post- infrastructure delivery in the past. This is not in reference to a specific time period over which this usage change is observed or occurs. All outputs from the IIT are in the form of an annual number of cyclist trips.

4.2 WebTAG Appraisal Tool

Sustrans RMU have developed an economic appraisal tool that is compliant with the Department for Transport (DfT)'s guidance, WebTAG. It should be noted that in Wales, the WelTAG rather than WebTAG tool is typically used in the appraisal of transport initiatives. WelTAG is adapted to Welsh-specific objectives and the outcomes and strategic priorities of the Wales Transport Strategy. The methodology is closely similar to WebTAG, and therefore the appraisals presented in this report are considered to be relevant to the Welsh context. The Sustrans RMU WebTAG tool is used to appraisal

²⁵ Social Exclusion Unit (2003) *Making the Connections*. [Online] Available at:

http://www.ilo.org/wcmsp5/groups/public/@ed_emp/@emp_policy/@invest/documents/publication/wcms_asist_8210.pdf

²⁶ Sustrans Cymru (2012) Integrated public transport: Sustrans Cymru submission to Enterprise and Business Committee inquiry.

[Online] Available at:

<http://www.senedd.assembly.wales/documents/s11396/Consultation%20Response%20IPT23.%20Sustrans%20Cymru.html?CT=2>

²⁷ Sustrans (2013) Jobs Study (internal document)

²⁸ 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

capital investments in walking and cycling based on information provided about the location and usage of the investment. WelTAG is currently being re-developed so future appraisals may well be conducted differently based on the result of the Welsh government's WelTAG consultation and subsequent update to the guidance.

The WebTAG tool requires the following inputs:

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

- Health (using WHO HEAT)
- 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 WebTAG are based on a 30 year appraisal time period. This provides an estimate of the economic benefits of a specific level of scheme usage being observed over the next 30 years. All benefits are discounted over the 30-year time period to provide a present-day value of these estimates.

4.3 Health Economic Assessment Tool (HEAT)

The World Health Organisation (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 30 year appraisal time period, to maintain compatibility with the WebTAG-generated economic outputs.

Further information on the HEAT tool can be found on the [HEAT website](http://www.heatwalkingcycling.org)²⁹.

²⁹ The WHO HEAT tool and associated guidance are available at: <http://www.heatwalkingcycling.org>

4.4 Recreational Expenditure Model (REM) Tool

Sustrans RMU has developed the Recreational Expenditure Model (REM) tool to estimate the impact of cycle tourism in association with the University of Central Lancashire (UCLAN) in 2007. The model has been iteratively updated, most recently in October 2016.

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 Sustrans Recreational Expenditure Model (REM) 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 REM is typically used in areas with high levels of recreational or tourist cycling, and as such is not necessarily appropriate for all route appraisals. It is anticipated that high levels of recreational and tourist cycling would be observed in the current proposed sites making the REM tool appropriate to use in the current scenario.

The Recreational Expenditure Model is based on data that has been collected for leisure cyclists only. As such, the model is not currently applicable to pedestrians.

Outputs from the Recreational Expenditure Model are not typically included in conventional cycling infrastructure appraisals. The outputs are indicative, rather than precise, estimates of the potential direct economic impact of investing in recreational cycling.

All REM outputs 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.

5 Considerations

There are a number of considerations relevant to the assessment of economic benefits that has been carried out for the **Llanfyllin Branch Line Shared Use path** and **MontytraX Circular Cycle Route**. These considerations relate to the baseline AUE calculation, case study selection, analysis and use of the tools outlined in Section 4.

Baseline AUE Data Selection

- The lack of data available in the local area of the MontytraX initiative has meant that the AUEs for both routes have been formulated using RUIS data available from comparable sites. As such, these baseline AUEs (and resulting post-scenario AUEs) are not precise estimates of usage for these routes. Efforts have been made to select the most comparable data sources, drawing on local knowledge and RMU's extensive databases of past schemes.
- Baseline AUE for Llanfyllin is an estimated indication of what current usage may exist in the local area that is relevant to the proposed development i.e. usage that would be occurring on the shared use path if it was in existence. This has been taken from proxy sites of a similar nature i.e. located in Wales, rural and with low population density.

- The area where the two proposed route developments are located is highly rural. The identification of cycling and pedestrian usage data in areas of a similar rural nature faces challenges due to low levels of usage data collection in such locations across the UK.
- Automatic Cycle Counter (ACC) data from a nearby site on the Montgomery Canal has not been available to integrate within this project.
- The close proximity of the two routes has limited the ability to select comparable sites based on geographic characteristics (i.e. population, geographic categorisation) and develop AUEs specific to each route. The type of infrastructure to be developed (i.e. shared use railway path and on-road cycle track) has thus played a prominent role in comparable site selection.
- Baseline AUEs have not been adjusted for population density. The schemes involve a strong leisure/visitor usage component and to adjust for the population density would disproportionately weight the AUEs towards representing local usage only.
- Due to data limitations, RUIS from as early as 2011 have been included. It is not possible to say whether or how usage may have changed since that time.

MontytraX Circular Cycle Route Baseline AUE Site Selection

- Route User Intercept Surveys (RUIS) are very rarely conducted at on-road locations for safety reasons. Therefore, comparable sites have been selected from NCN routes and canal towpaths.
- It has been assumed that pedestrian usage is not relevant to this development due to the nature of the route: on-road cycle lane development with no pedestrian provision.
- A comparable site for baseline AUE data was identified at Brynich Loch, in proximity to the Taff Trail, with very high cycling usage per annum. To balance against the high popularity of the Taff Trail, a number of other RUIS sites were included in the baseline AUE calculation for this route. As a result, the usage levels in the pool of comparable sites used is varied.
- A comparable site in Scotland, at Ganavan Sands on the NCN78, has been included in the analysis for this route. The site has high levels of comparability with the circular cycle route due to it being rural, on-road, high percentage of leisure users and with high levels of visitor usage. It is not possible to conclusively state whether usage in Scotland differs substantially from the Welsh context or not.

Post-scenario AUEs and analysis

- There have been no attempts to address the impact of the co-development of two routes on usage given their close proximity. The effect of this may be a co-benefit to both routes and a situation where substitution between the two occurs. Usage data for the two routes has been developed and analysed independently, but in reality, usage may not be mutually exclusive.
- The Infrastructure Investment Tool (IIT) is not applicable to pedestrian usage. To provide a reasonable estimate of post-scenario pedestrian usage on the Llanfyllin Branch Line Shared Use path, a case study of a scheme delivered in Blandford under Connect 2 was selected due to it sharing similar characteristics (i.e. rural, railway path). See Appendix B: Case Study – Blandford (Connect 2) for further information.

Leisure Usage

- The availability of data on schemes that have a strong recreational leisure usage component but low population density in the local area is limited. Through using combined data from

sites with both elements (high recreational usage, low population in local area) efforts have been made to represent the data in a way that is indicative of usage at MontytraX.

Analysis – WebTAG Tool

- The Pembrey RUIS site data was not appropriate as a data source for the WebTAG inputs for the Llanfyllin Branch Line Shared Use path due to the survey questions not being comparable. This was excluded from the WebTAG inputs but was used as part of the baseline AUE calculation for the shared use path.
- The Elan Valley RUIS site data was not used to calculate the WebTAG inputs for the MontytraX Circular Cycle Route due to the data being an aggregate of both pedestrian and cyclist usage. Pedestrian data was not considered relevant for this route. The manual count data for this site was still used to calculate the baseline AUE for this route.

Analysis – Recreational Expenditure Model

- The Recreational Expenditure Model (REM) tool requires inputs from specific recreational-related RUIS questions. Of all sites identified as comparable for this analysis, the Ganavan Sands site in Scotland was the only with the relevant data available. Therefore, the REM was run with inputs from this site alone.
- The recreational usage at Ganavan Sands was assumed to be representative of the recreational usage on both routes. A combined REM analysis was run for both routes, using usage data aggregated across the two developments.
- The REM outputs do not consider any economic multiplier effects on the local economy from employment supported through recreational cycling usage.

6 Assessment of Economic Benefits

This section outlines the economic benefits of the proposed **Llanfyllin Branch Line Shared Use path** and **MontytraX Circular Cycle Route**, including:

- Improved links between communities, bringing benefits to local amenities including tourism businesses, workplaces and services
- Direct and indirect job creation from infrastructure works and increased recreational walking and cycling usage on the routes
- Increased tourism-related cycling usage and associated spend in local businesses
- Health-related benefits of increased walking and cycling on the proposed routes
- Overall positive return on investment

6.1 Annual Usage Estimate - Llanfyllin Branch Line Shared Use path

An Annual Usage Estimate (AUE)³⁰ is required to calculate the expected economic benefits from a proposed route development. No usage data was available for the Llanfyllin Branch Line Shared Use path specifically.

To generate an AUE for the proposed route, data from comparable past railway path infrastructure schemes located in Wales were selected. Data from within Powys was unable to be obtained due to it not being available. The AUE was calculated from the most recent data available (no earlier than 2014) by taking an average of Route User Intercept Survey (RUIS) data across three selected railway sites. The comparable sites were also selected with a view to using data from a comparable geography i.e. rural. All three sites provide comparable walking and cycling usage data that can be used to formulate a baseline Annual Usage Estimate (AUE) for the Llanfyllin Branch Shared Use path.

Table 1: RUIS Annual Usage Estimate (AUE) data for Llanfyllin Branch Shared Use path

Site	Region	Year	Cycling AUE	Walking AUE
Amman Valley	Carmarthenshire	2014	7,524	25,682
Pontaman	Carmarthenshire	2014	17,351	28,191
Pembrey	Carmarthenshire	2015	1,517	657

Using the AUE data from the three RUIS listed above, the baseline AUE for Llanfyllin Branch Shared Use path was calculated by taking an average. The baseline pedestrian and cyclist AUEs for Llanfyllin are as follows:

Table 2: Baseline AUE for Llanfyllin Branch Shared Use path

Route Name	Baseline Cycling AUE	Baseline Pedestrian AUE
Llanfyllin Branch Shared Use path	8,797	18,177

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 MontytraX area that could be using the railway path.

6.2 Annual Usage Estimate - MontytraX Circular Cycle Route

There was no usage data available at the specific location of the MontytraX Circular Cycle Route in order to formulate a baseline AUE to use when conducting an economic appraisal.

To generate a baseline AUE, usage data from comparable infrastructure schemes across the UK was selected. Sites were recognised as comparable if they were not located on a disused railway line and were located in rural areas of Wales or Scotland where similar levels of cycling (including a leisure component) would be expected. Data was used from no earlier than 2011. For the purposes of the MontytraX Circular Cycle Route, a pedestrian AUE is not required. The Ganavan Sands was located on road with motor vehicle access. This is due to Route User Intercept Surveys generally not being allowed to take place on routes with motorised traffic.

The observed cycling AUEs across the five sites selected vary from 2,010 cycling trips per year to 33,095 cycling trips per year (the maximum observed in the sample). There are competing drivers of usage in the MontytraX context as it has both high recreational usage potential and is in an area of

³⁰ An Annual Usage Estimate (AUE) refers to the number of individual cycling trips made annually on a route

low population density. The sample of sites selected contain both sites in rural areas with low population (to account for this aspect of the route location) as well as sites with high recreational cycling usage, such as Brynich Lock and Ganavan Sands. The use of a larger number of sites to formulate the baseline AUE mitigates against the potential of any one site skewing the baseline estimate excessively.

RUIS data from the sites displayed in **Table 3** was used to formulate a baseline AUE for the on-road MontytraX Circular Cycle Route.

Table 3: RUIS Annual Usage Estimate (AUE) data for MontytraX Circular Cycle Route

Site	Region	Year	Cycling AUE
Ganavan Sands	Scotland	2014	8,729
Brynich Lock	Powys	2011	32,578
Llangollen	Denbighshire	2012	33,095
Elan Valley	Powys	2012	2,010
Goytre Wharf	Monmouthshire	2012	6,826

Data on cycling usage from five RUIS have been used to formulate a baseline cycling AUE for the MontytraX Circular Route. The baseline AUE, our estimate of current usage on the route (prior to any development taking place), for MontytraX Circular Cycle Route is as follows:

Table 4: Baseline AUE for MontytraX Circular Cycle Route

Route Name	Baseline Cycling AUE
MontytraX Circular Cycle Route	16,648

6.3 AUE increase scenarios - Llanfyllin Branch Line Shared Use path

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 Tool (IIT)** which provides an estimate of the expected cycling usage increase based on a database of past schemes where infrastructure of a similar type has been delivered. The IIT model was run using the baseline AUE for Llanfyllin Branch Line Shared Use path and the infrastructure category ‘Cycle and pedestrian track’.

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 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 5: Post-scenario cycling AUE scenarios: Llanfyllin Branch Line Shared Use path

Baseline AUE	Percentage increase in cyclist usage	Post-scenario AUE
8,797	153%	22,256
8,797	173%	24,022
8,797	193%	25,776

In order to formulate the post-usage scenarios for pedestrians, a case study of a similar infrastructure development was used. The IIT is not applicable to pedestrian usage.

The case study selected for the Llanfyllin Branch Line Shared Use path pedestrian usage was a scheme delivered in Blandford under the Connect 2 programme of work. This case study was selected to be included in this analysis based on having key features in common with the proposed Route from Llanfyllin to Llansanffraid:

- The provision of a traffic-free cycle route
- Having a similar route length
- Linking two distinct built up areas
- Being predominantly rural in nature

See Appendix B: Case Study – Blandford (Connect 2) of this report for further details.

Table 6: Post-scenario pedestrian AUEs: Llanfyllin Branch Line Shared Use path

Baseline AUE	Percentage increase in pedestrian usage	Post-scenario AUE
18,177	43%	25,993
18,177	58%	28,720
18,177	73%	31,446

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

6.4 AUE increase scenarios - MontytraX Circular Cycle Route

In order to calculate the post-usage scenarios to be appraised using WebTAG, the baseline AUE for the MontytraX Circular Cycle Route was input to the **Infrastructure Investment Tool (IIT)**. The setting in the tool was selected as ‘On-road cycle lane’. The IIT provides an estimate of the expected increase in cycling usage that might be observed from this route development, based on what has been observed for past schemes of a similar nature.

In addition to the IIT post-scheme usage scenario (displayed below in green), there are two additional usage scenarios that are developed as part of sensitivity testing. These scenarios are above and below the IIT scenario. All three scenarios are displayed below in **Table 7**. These scenarios represent the annual number of cycling trips that could be observed once the MontytraX Circular Cycle Route has been developed.

Table 7: Post-usage cycling AUE scenarios: MontytraX Circular Cycle Route

Baseline AUE	Percentage increase in cyclist usage	Post-scenario AUE
16,648	9%	18,146
16,648	19%	19,811
16,648	29%	21,457

6.5 WebTAG and monetised economic benefits

The WebTAG tool provides an appraisal of the economic benefits of an infrastructure development and requires specific inputs and provides a monetised value for the expected benefits under a number of impact areas.

In addition to the baseline and post-scenario AUEs, all necessary WebTAG inputs were taken from the same RUIS data sources that have been used to formulate the baseline AUEs for both the Llanfyllin Branch Line Shared Use path³¹ and the MontytraX Circular Cycle Route³². All data has been taken from the RUIS iterations occurring in the same year as that which was used to formulate the respective baseline AUEs.

No variation in these inputs has been made between the baseline and post-scenario cases as it is difficult to estimate what any change in these inputs would be in the local context without further data.

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

6.6 Health-related economic benefits - Llanfyllin Branch Line Shared Use path

The health-related economic benefits of the Llanfyllin Branch Line Shared Use path have been estimated using the World Health Organisation's (WHO's) Health Economic Appraisal Tool (HEAT)³³. All health-related economic benefits are calculated over a 30 year appraisal period.

The WebTAG tool permits inclusion of the 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 - Llanfyllin Branch Line Shared Use path

	Post-scenario cycling AUE	Post-scenario pedestrian AUE	HEAT output (cyclists)	HEAT output (pedestrians)	HEAT output (combined)
Post-scenario 1	22,256	25,993	£ 212,000	£ 323,300	£ 535,300
Post-scenario 2	24,022	28,720	£ 241, 000	£ 421,000	£ 662,000
Post-scenario 3	25,776	31,446	£ 269,000	£ 530,000	£ 799,000

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

³¹ RUIS data from the Amman Valley, Pontaman and Pembrey survey sites has been used to generate WebTAG inputs for the Llanfyllin Branch Line Shared Use path

³² RUIS data from the Ganavan Sands

³³ The WHO HEAT tool is available at: <http://www.heatwalkingcycling.org>

6.7 Health-related economic benefits - MontytraX Circular Cycle Route

The health-related economic benefits for the MontytraX Circular Cycle Route have been calculated using the WHO HEAT tool using the same approach as for the Llanfyllin Branch Line Shared Use Path. These benefits presented in **Table 9** have been calculated over a 30-year appraisal period.

In this case, only the health-related economic benefits of cycling usage have been calculated as a consideration of the economic benefits that arise from pedestrian usage has been excluded from the MontytraX Circular Cycle Route.

Table 9: HEAT outputs – MontytraX Circular Cycle Route

	Post-scenario cycling AUE	HEAT output
Post-scenario 1	18,146	£ 17,000
Post-scenario 2	19,811	£ 40,000
Post-scenario 3	21,457	£ 63,000

The HEAT outputs for the three post-scenarios is used in the WebTAG tool as a representation of the expected health-related economic benefits under each scenario. #

6.8 Overall economic benefits - Llanfyllin Branch Line Shared Use path

Using the WebTAG tool and HEAT inputs, the overall economic benefits of the proposed route development can be calculated. For this route, the WebTAG 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 WebTAG appraisal tool over a 30-year time period.

Table 10 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 10: WebTAG and HEAT – Economic benefits of the Llanfyllin Branch Line Shared Use path

		Walking AUE increase		
		43%	58%	73%
Cycling AUE increase	153%	£ 1,736,223	£ 1,866,475	£ 1,975,475
	173%	£ 1,896,059	£ 2,026,301	£ 2,135,301
	193%	£ 1,924,060	£ 2,054,302	£ 2,163,302

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 benefit outputs for the MontytraX Circular Cycle Route are presented.

These three scenarios will be combined with the low, middle and high usage change scenarios from the MontytraX Circular Cycle Route for input into the REM. The three scenarios are outlined in **Table 11** below.

Table 11: WebTAG and HEAT – Multi-scenario economic benefits of Llanfyllin Branch Line Shared Use path

	Cycling AUE increase	Pedestrian AUE increase	Post-scenario AUE (cycling)	Post-scenario AUE (pedestrian)	Economic benefits
1: Low usage change	153%	43%	22,256	25,993	£ 1,736,233
2: Medium usage change	173%	58%	24,022	28,720	£ 2,026,301
3: High usage change	193%	73%	25,776	31,446	£ 2,163,302

6.9 Overall economic benefits - MontytraX Circular Cycle Route

The overall economic benefits of the MontytraX Circular Cycle Route have been calculated using the Sustrans WebTAG tool. These benefits have been calculated for cycling usage only as pedestrian usage is not relevant to this development of on-road cycling lanes. The economic benefits presented in **Table 12** are based on an economic appraisal using the WebTAG appraisal tool over a 30-year time period.

Table 12 WebTAG and HEAT – Economic benefits of the MontytraX Circular Cycle Route

	Cycling AUE increase	Post-scenario AUE (cycling)	Economic benefits
1: Low usage change	9%	18,146	£ 496,703
2: Medium usage change	19%	19,811	£ 548,502
3: High usage change	29%	21,476	£ 606,295

6.10 Combined economic benefits of the MontytraX initiative

The economic benefits for the Llanfyllin Branch Line Shared Use path and MontytraX Circular Cycle Route have been estimated separately using WebTAG for each route. As above, these benefits are all representative of calculations over a 30-year appraisal time period.

The potential economic benefits (from an economic appraisal using Sustrans' RMU's WebTAG tool) under each of the three scenarios: low usage change, medium usage change and high usage change for both schemes can also be examined as an indication of the impact of delivering both route developments under the MontytraX initiative. These combined economic benefits are outlined as follows in **Table 13**.

Table 13: Combined economic benefits – MontytraX initiative

	Economic benefits (Llanfyllin)	Economic benefits (MontytraX Circular)	Combined economic benefits
1: Low usage change	£ 1,736,233	£ 496,703	£ 2,232,936
2: Medium usage change	£ 2,026,301	£ 548,502	£ 2,574,803
3: High usage change	£ 2,163,302	£ 606,295	£ 2,769,597

It is likely that the development of both proposed routes will yield higher usage, and therefore, economic benefits, than developing each proposed route singularly. The extent of the co-benefits between developing the two routes may not be accurately represented by the combined economic benefits displayed here. The combined economic benefits (across all WebTAG output areas) may be either higher or lower than what is displayed here.

6.11 Tourism impact of the MontytraX initiative

The Recreational Expenditure Model (REM) tool has been used to generate an estimate of the combined tourism-related economic benefits across the entire MontytraX initiative. This approach has used a combined recreational AUE from both the Llanfyllin Branch Line Shared Use path and MontytraX Circular Cycle Route to provide an overall estimate of the tourism-related economic benefits of the MontytraX initiative.

The REM tool has been run using the necessary recreational usage inputs from the Ganavan Sands RUIS (2014) in Scotland. This site and the data collected can be considered comparable to the profile of recreational usage that might be expected from the MontytraX initiative due to the infrastructure and usage observed being of a similar nature. RUIS inputs are required to operate the REM and as no data was collected from the site of the MontytraX initiative, RUIS data from a comparable site has had to be used.

The economic benefits captured by the REM tool are excluded from appraisals of cycling usage according to WebTAG and therefore, can be considered to be additional to those benefits outlined in **Table 13**. 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 REM tool provides 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 generated through the proposed route developments will make on the local economy on a yearly basis.

The REM tool also provides an estimate of the annual social value of recreational trips made by home-based or tourist leisure users on the Llanfyllin Branch Line Shared Use path and MontytraX Circular Cycle Route. 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 14: Combined Recreational Expenditure Model (REM) outputs – MontytraX Initiative

	Annual recreational spend	Annual social value of recreational trips	Overall tourism economic benefits
1: Low usage change	£ 111,469	£ 74,179	£ 185,648
2: Medium usage change	£ 120,117	£ 79,934	£ 200,051
3: High usage change	£ 129,511	£ 86,186	£ 215,697

The REM tool also provides 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 15**.

Table 15: Recreational cycling usage and employment support

	Direct employment (FTEs)	Indirect employment (FTEs)	Total employment (FTEs)
1: Low usage change	1.57	0.93	2.50
2: Medium usage change	1.69	1.00	2.69
3: High usage change	1.83	1.08	2.90

7 Comparable site data

The following tables provide a summary of all of the sites that were used to formulate the two baseline AUE and RUIS inputs for WebTAG.

Table 16 provides an overview of all of the RUIS sites that were used as a basis for calculating the Llanfyllin Branch Line Shared Use path baseline AUE and WebTAG inputs.

Table 16: RUIS sites used for railway AUE and WebTAG inputs

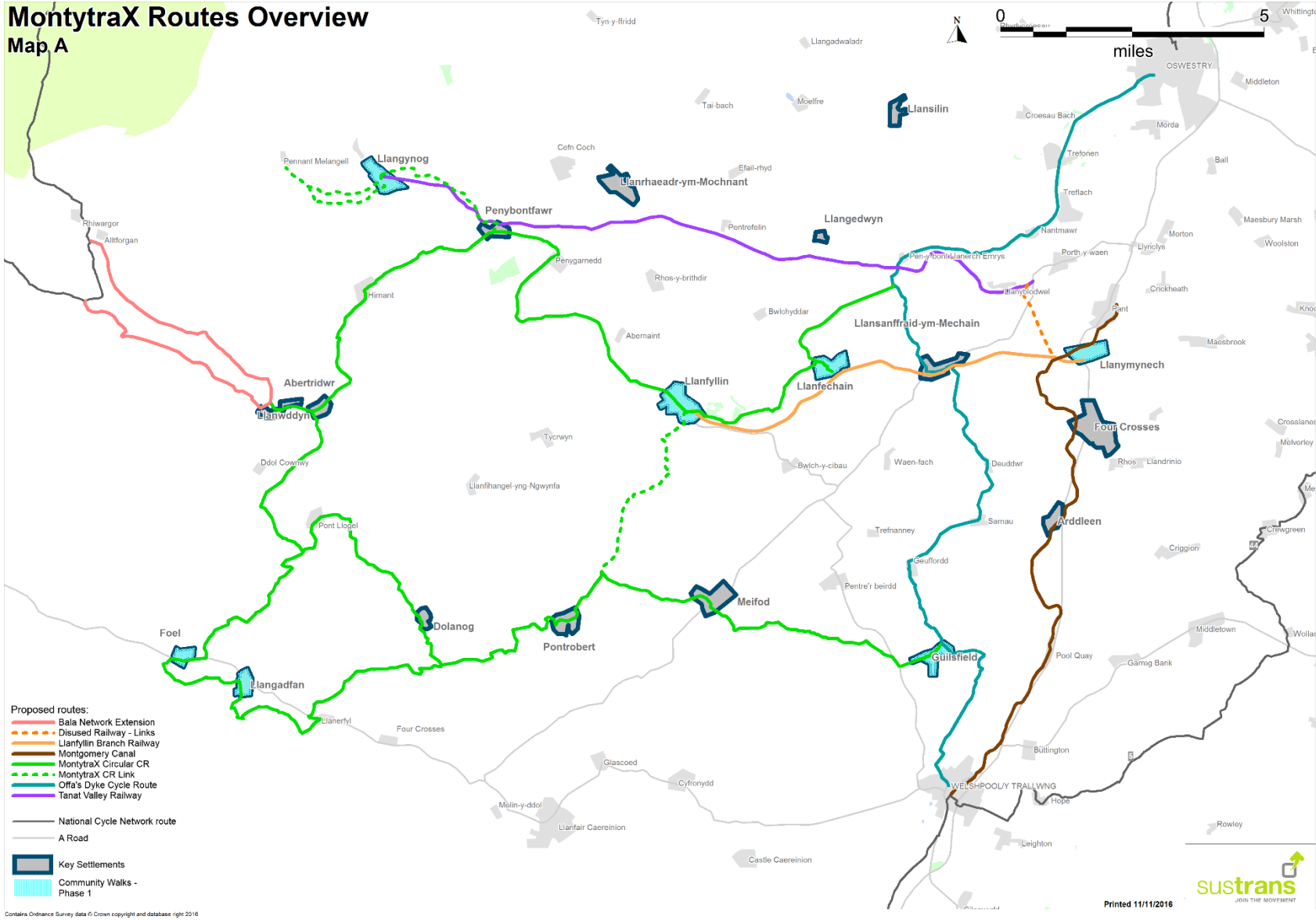
Site	Location	Year	Cyclist AUE	Pedestrian AUE	Percentage leisure usage (cyclists)	Percentage leisure usage (pedestrians)	Notes
Amman Valley	Carmarthenshire	2014	7,524	25,682	95.6	95.6	
Pembrey	Carmarthenshire	2015	1,517	657	78	78	Data not in a compatible format to be input into WebTAG
Pontaman	Carmarthenshire	2014	17,351	28,191	96.9	85.8	

Table 17 provides an overview of all the RUIS sites that were used as a basis for calculating the MontytraX Circular Cycle Route baseline AUE and WebTAG inputs.

Table 17: RUIS sites used for on-road cycling route (non-railway) AUE and WebTAG inputs

Site	Location	Year	Cyclist AUE	Pedestrian AUE	Percentage leisure usage (cyclists)	Percentage leisure usage (pedestrians)	Notes
Brynich Lock	Powys	2011	32,578	22,291	90.2	88.5	
Elan Valley	Powys	2012	2,010	5,672	76.5	76.5	Data only available as combined pedestrian and cyclist data; not suitable for inclusion in WebTAG
Ganavan	Scotland	2012	8,729	22,356	61.2	90.7	
Goytre Wharf	Monmouthshire	2012	6,826	29,009	96	95.9	
Llangollen	Dengbighshire	2012	33,095	79,809	96.6	100	

Appendix A: Map of Route Overview



Appendix B: Case Study – Blandford (Connect 2)

This section provides a case study that is similar to the work being undertaken at the Llanfyllin railway site. This case study was used to create the percentage increase in walking that was applied to the route between Llanfyllin and Llansanffraid.

This case study was selected based on having a few key features in common with the proposed Route from Llanfyllin to Llansanffraid:

- The provision of a traffic-free cycle route
- Having a similar route length
- Linking two distinct built up areas
- Being predominantly rural in nature

The case study selected was from **Blandford** and is a scheme that was delivered as part of the Connect 2 programme of infrastructure development.

As part of the Connect 2 scheme, a new multi-user path was created by Dorset County Council between Blandford and Stourpaine on the route of the railway line providing another section of the hugely popular North Dorset Trailway. The Trailway is ideal for pedestrians, cyclists, horse riders and is particularly useful for parents with push chairs and people with mobility vehicles who want to get out into the countryside.

Following the scheme's implementation, walking usage increased by **58%**, from 81,911 to 141,226 trips per year. A map of the scheme is shown below in **Figure 2**.

Figure 2: A map of route between Blandford and Stourpaine

