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Valleys Rail Strengthening Final Evaluation: Final Report

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Views expressed in this report are those of the researcher and not necessarily those of the Welsh Government

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Glossary

Acronym/Key word	Definition
BRES	Business Register & Employment Survey
CAPI	Computer Aided Personal Interviewing
CCT	Cross Cutting Themes
DDA	Disability Discrimination Act
DfT	UK Department for Transport
ERDF	European Regional Development Fund
Headway	Frequency / time between train services
Impact	The indirect impacts of an intervention on the wider economy potentially in the longer term
Inbound	Rail services between Ebbw Vale Town / Ebbw Vale Parkway and Cardiff Central
LDP	Local Development Plan
LENNON	Latest Earnings Networked Nationally Overnight
LSOA	Lower Layer Super Output Area
NRPS	National Rail Passenger Survey
ORR	Office of Road and Rail
Outbound	Rail services between Cardiff Central and Ebbw Vale Parkway / Ebbw Vale Town
Outcome	The direct impacts of an intervention in terms of demand in the short and medium term
Output	The outputs or supply side changes are the physical achievements brought about by a project
Passenger kilometre	Unit of measure representing the transport of one rail passenger by rail over a distance of one kilometre.
RTP	Regional Transport Plan
SEWTA	South East Wales Transport Alliance
Train kilometre	Unit of measure representing the movement of a train over one kilometre.
VRS	Valleys Rail Strengthening
WAG	Welsh Assembly Government

Acronym/Key word	Definition
WAVE	Wales: A Vibrant Economy - The Welsh's Assembly Government's Strategic Framework for Economic Development
WEFO	Welsh European Funding Office
WG	Welsh Government
WIMD	Welsh Index of Multiple Deprivation

Executive Summary

1. Peter Brett Associates, in partnership with Beaufort Research and Loxley Consultancy, were appointed in August 2015 to undertake a final evaluation of the ERDF funded Valleys Rail Strengthening Project. The evaluation was undertaken in two parts:
 - i. An evaluation of the reopening of the Ebbw Vale line based upon on-train surveys of rail users, stakeholder consultation and desk-based analysis.
 - ii. A desk-based evaluation of the wider Valleys Rail Strengthening programme, much of which pre-dates the ERDF intervention.
2. The research was undertaken in 2015, four and a half years after the completion of the project.

The Valleys Rail Strengthening (VRS) Project

3. The Valleys rail network is a grouping of busy suburban lines linking Cardiff City Centre with communities in the Valleys and South Glamorgan / Vale of Glamorgan through a network of 81 stations. The Valleys rail network has benefitted from significant investment in the last 10-15 years and has witnessed a strong growth in passenger numbers. Ongoing capacity and frequency expansion has been required to accommodate this growth, a key element of which is the Valleys Rail Strengthening (VRS) Project.
4. The VRS was principally a Welsh Government initiative intended to support enhanced services on key rail corridors (most notably Ebbw Vale) linking the Valleys with Cardiff. The VRS commenced in January 2005 with the formation of the first 'strengthened' services, with funding to maintain service levels pledged through to 2018.
5. The VRS consisted of two distinct strands:
 - The reopening of the Ebbw Vale Line in February 2008 between Ebbw Vale Parkway and Cardiff Central (at the time the VRS was introduced, Ebbw Vale Town and Pye Corner stations had not yet been opened); and
 - Commencing in January 2005, the provision of additional rolling stock to provide higher capacity trains and support longer train formations (i.e. strengthened services) on peak services on the following Valleys lines.
 - Merthyr Tydfil / Aberdare – Bridgend / Barry Island;
 - Treherbert – Cardiff Central; and
 - Rhymney – Cardiff Central.

6. The Valleys Rail Strengthening Business Plan established three objectives for the project:
 - **Objective 1:** Encouraging a modal shift by reducing the level of car usage, particularly single occupancy commuting.
 - **Objective 2:** Enhancing sustainable accessibility to employment opportunities, key services and enabling local people to access education and training opportunities and the major employment locations within Wales.
 - **Objective 3:** Reducing congestion and harmful greenhouse gas emission levels through enhanced rail services during peak hour travel (Welsh Government, 2007).
7. Funding was provided through the ERDF Convergence (West Wales and the Valleys) Programme under Priority 3, Developing a Strategic Infrastructure for a Modern Economy, Theme 1, Sustainable Transport. The total project cost was £22,674,978, including £8,478,945 ERDF grant. The project ran from 1st April 2008 to 30th April 2011.
8. Output targets set out in the Business Plan are as follows:
 - Public transport services created or improved (i.e. annual train carriage kilometres) = **1,662,954** per annum
 - Strengthening: 442,316 (or 221,158 train km)
 - Ebbw Vale: 1,220,638 (or 527,974 train km)
 - Annual Gross passenger kilometre opportunities on public transport = **147,092,130** (i.e. annual seated and standing kilometres).
 - Strengthening: 33,389,738 (24,733,139 seated)
 - Ebbw Vale: 113,702,392 (84,223,994 seated)

Findings and Conclusions

9. Overall, the project has been highly successful, delivering the following against the objectives of the Business Plan.

Objective 1: Encouraging a modal shift by reducing the level of car usage, particularly single occupancy commuting.

- The reopening of the Ebbw Vale Line has generated around 530,000 additional train kilometres per annum and 77.5 million additional 'seat' kilometres per annum, significantly increasing rail supply. The strengthening provided a 19% uplift in non-Ebbw Vale Valleys rail capacity.

- The reopening of the Ebbw Vale line removed around 14 million road kilometres annually, generating around £1 million of gross economic benefits per annum.
- Travel-to-work by rail grew by 300% in the Ebbw Vale – Rogerstone corridor between the 2001 and 2011 Census periods. The equivalent figure for the strengthened lines is 88% growth, 18% higher than in the non-strengthened areas used as a control group.

Objective 2: Enhancing sustainable accessibility to employment opportunities, key services and enabling local people to access education and training opportunities and the major employment locations within Wales.

- The user survey and consultations suggest that the reopening of the Ebbw Vale line has had a transformative effect in terms of access to the jobs market, particularly in Cardiff. A number of consultees highlighted the project as a best practice example of where targeted government investment in infrastructure can support wider economic development and regeneration.
- There has been strong peak rail passenger growth across South-East Wales which would have been unlikely to have occurred without the introduction of the strengthened services.

Objective 3: Reducing congestion and harmful greenhouse gas emission levels through enhanced rail service during peak hour travel.

- As noted, the reopening of the Ebbw Vale line removed around 14 million road kilometres annually. Of the £1 million of gross economic benefits generated annually, around £130,000 of these benefits relate to reduced GHGs, improved local air quality and a reduction in noise.

10. Perhaps more importantly, the VRS contributed both to a wide range of Welsh Government policies and the critical ERDF Cross Cutting Themes of Equal Opportunities and Environmental Sustainability. Indeed:

- In terms of environmental sustainability, the VRS has, as noted above generated around £130,000 per annum of environmental benefits.
- Equal opportunities have also been a key success of the VRS. The VRS has significantly enhanced access to the Cardiff jobs and leisure market and the newly built stations, whilst the VRS has also supported equal opportunities through providing better disabled access facilities than are available at certain other Valleys stations or indeed on the bus.

Reopening of the Ebbw Vale Line

11. The reopening of the Ebbw Vale line was also highly successful in terms of the outcomes which the project generated. There has been significant growth in patronage on the Ebbw Vale line since it was reopened in 2008. The Blaenau Gwent station of Llanhilleth witnessed the largest growth over the period, which suggests that the new line has released an element of latent demand. Growth has also been strong at Crosskeys and Rogerstone.
12. Ultimately, however, no transport project is undertaken for its own sake – it is always a means to enabling and facilitating a wider package of policy initiatives through improving access to markets and services. It is these impacts on which the success of the reopening of the Ebbw Vale line and the strengthening project more widely can be measured. The impacts associated with the reopening of the line to passenger traffic are significant and include:
 - The reopening of the Ebbw Vale line has significantly enhanced access to the Cardiff jobs and leisure market. This has provided new employment and leisure opportunities for residents of the Ebbw Valley whilst, at the same time, expanding the pool of resources / customers available to the Cardiff employment and retail / leisure markets.
 - The scheme, in tandem with a range of other policy measures, has also facilitated economic development and regeneration within the Ebbw Valley. Of foremost significance has been the role of the line as an enabler for development on the site of the former Ebbw Vale steelworks. Other impacts include facilitating new land-use (particularly housing) development in areas like Ebbw Vale and Rogerstone. The re-establishment of the line has also coincided with a range of town centre regeneration projects.
 - The newly built stations have also supported equal opportunities through providing better disabled access facilities than are available at certain other Valleys stations or indeed on the bus.
 - It was also noted that the reopening of the Ebbw Vale line has helped promote economic agglomeration within the Cardiff Capital Region. The project itself was highlighted by a number of stakeholders as exactly the type of project which should be developed under the Metro concept.
13. Overall, the reopening of the Ebbw Vale line can be considered highly successful, delivering the pre-scheme objectives and facilitating a wider range of desirable societal impacts.

Strengthened Services

- The initial 2005 wave of strengthening provided a substantial 19% increase in capacity on the Valleys rail network, a critical intervention at a point when capacity constraints were potentially choking off growth.
- Travel-to-work by rail on the strengthened lines grew by 88% between the 2001 and 2011 Census periods, 18% higher than in the non-strengthened areas used as a control group.
- Despite this growth, and a 45% growth in rail travel in Wales as a whole between 2004-05 and 2013-14, there are very few instances of the 'Passengers in Excess of Capacity' (PiXC) measure being exceeded on the Valleys lines, suggesting the additional capacity has facilitated this growth in rail travel.

1. Introduction

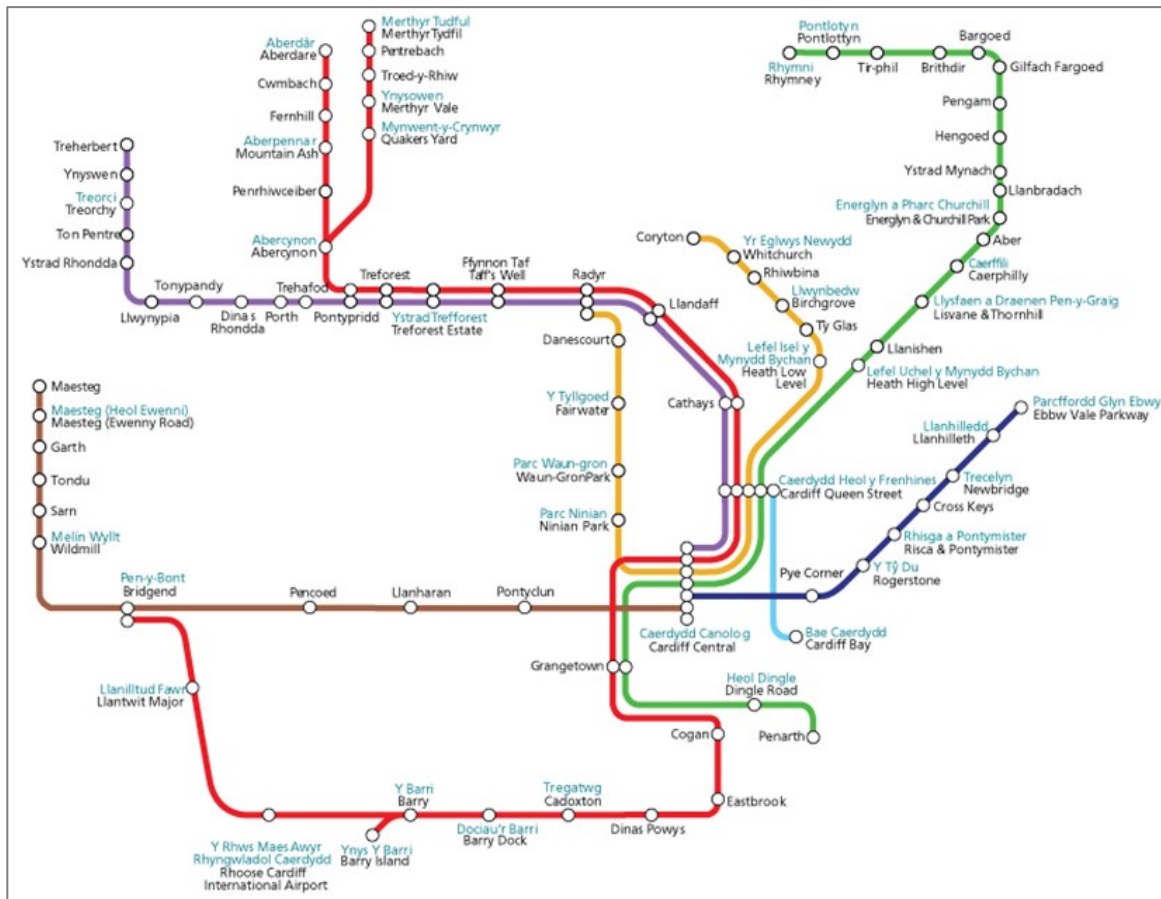
- 1.1 Peter Brett Associates, in partnership with Beaufort Research and Loxley Consultancy, were appointed in August 2015 to undertake a final evaluation of the ERDF funded Valleys Rail Strengthening Project.
- i. An evaluation of the reopening of the Ebbw Vale line based upon on-train surveys of rail users, stakeholder consultation and desk-based analysis.
 - ii. A desk-based evaluation of the wider Valleys Rail Strengthening programme, much of which pre-dates the ERDF intervention.
- 1.2 The evaluation was undertaken in two parts: The research was undertaken in 2015, four and a half years after the completion of the project.

Background

The Valleys Rail Network

- 1.3 The Valleys rail network is a grouping of busy suburban lines linking Cardiff City Centre with communities in the Valleys and South Glamorgan and the Vale of Glamorgan. The Valleys rail services operate across a number of unitary authorities, linking some 81 stations in total (Cardiff Central and, to a lesser degree, Cardiff Queen Street, being the main hubs). The network consists of five lines as follows (the Maesteg – Cheltenham Spa, Marches and Cardiff Bay lines are not considered here):
- Merthyr Tydfil / Aberdare – Bridgend / Barry Island
 - Treherbert – Cardiff Central
 - Coryton – Radyr
 - Rhymney – Penarth
 - Ebbw Vale Town – Cardiff Central.
- 1.4 The route network is illustrated in Figure 1.1.

Figure 1.1: The Valleys Rail Network



Source: Arriva Trains Wales

- 1.5 The Valleys rail network has benefitted from significant investment in the last 10-15 years and has witnessed a strong growth in passenger numbers. Ongoing capacity and frequency expansion and integrated timetabling has been required to accommodate this growth, a key element of which is the Valleys Rail Strengthening (VRS) Project.

Valleys Rail Strengthening Project

- 1.6 The VRS was principally a Welsh Government initiative intended to support enhanced services on key rail corridors (most notably Ebbw Vale) linking the Valleys with Cardiff. The objectives of the VRS were set out in the business plan and are as follows:

- **Objective 1:** Encouraging modal shift by reducing the level of car usage, particularly single occupancy commuting.
- **Objective 2:** Enhancing sustainable accessibility to employment opportunities, key services and enabling local people to access education and training opportunities and the major employment locations within Wales.

- **Objective 3:** Reducing congestion and harmful greenhouse gas emission levels through enhanced rail services during peak hour travel (Welsh Government, 2007)

1.7 The VRS project itself consisted of two distinct strands:

- the provision of additional services on the Ebbw Vale Line between Ebbw Vale Parkway and Cardiff Central (at the time the VRS was introduced, Ebbw Vale Town and Pye Corner stations had not yet been opened); and
- additional rolling stock to support longer train formations (i.e. strengthened services) on peak services on other Valleys lines.

1.8 Funding was provided through the ERDF Convergence (West Wales and the Valleys) Programme under *Priority 3, Developing a Strategic Infrastructure for a Modern Economy, Theme 1, Sustainable Transport*. The total project cost was £22,674,978, the ERDF grant being £8,478,945 of that sum. The ERDF funding was provided between 1st April 2008 and 30th April 2011.

1.9 The following section provides a brief overview of the specifics of each element of the VRS.

Ebbw Vale Line

1.10 Passenger services were restored to the Ebbw Vale line in February 2008, after a gap of 46 years. The service initially operated between Ebbw Vale Parkway and Cardiff Central with stops at Llanhilleth, Newbridge, Crosskeys, Risca & Pontymister and Rogerstone. New stations were added to the line over time, Pye Corner in December 2014 and Ebbw Vale Town in May 2015.

1.11 The VRS provided initial funding for the operation of the following services:

- hourly services in both directions between Cardiff Central and Ebbw Vale Parkway, 17 trains per day Monday to Saturday
- two-hourly trains between Cardiff Central and Ebbw Vale Parkway in both directions, seven trains per day each Sunday.

Other Valleys Lines

1.12 The strengthening of the other Valleys lines consisted of additional funding to support longer train formations on specific services. The funding provided for a maximum of 12 strengthened services in the AM peak¹ and 11 in the PM peak² (the

¹ Departures from Rhymney, Treherbert, Bargoed, Merthyr Tydfil, Aberdare, Barry and Bridgend to Cardiff Central or beyond between 0700 and 0845.

Arriva Trains Wales franchise agreement set a requirement of a minimum number of strengthened services per day).

Evaluating the VRS

1.13 The initial brief set the following objectives for the VRS evaluation:

- To conduct a comprehensive assessment of project outcomes against the aims and objectives set out in the business plan.
- To assess the effectiveness and efficiency of project delivery and to assess value for money (this is known as a 'Process Evaluation').
- To assess how well the ERDF programme's Cross Cutting Themes have been integrated across the project and to assess the effect of the project on e.g. social exclusion, modal shift and access for disabled people.
- To understand the added value provided as a consequence of ERDF funding.
- To consider whether there have been any unintended consequences arising from the project and whether these have had a positive or negative impact on outcomes.
- To assess user and community satisfaction with the project outcomes.
- To assess how the project has contributed towards the Wales Transport Strategy and other WG strategic objectives.

1.14 Following commissioning, a detailed Scoping Report was prepared setting out how the consultant team would deliver the study. However, it became clear during this scoping stage that the 'strengthening' identified in the Brief was part of a much wider programme of improvements than ERDF funding alone had supported. The ERDF project was predominantly a switch in budget line, with no noticeable 'on-the-ground' impacts for the public.

1.15 As a consequence of this complexity, the evaluation has focussed on the area where data are available and on the outcomes that are reasonably attributable to the ERDF funding and can be supported by primary evidence. The scope includes:

- An evaluation of the reopening of the Ebbw Vale line based upon on-train surveys of rail users, stakeholder consultation and desk-based analysis.
- A desk-based evaluation of the wider Valleys Rail Strengthening programme, much of which pre-dates the ERDF intervention.

² Departures from Cardiff Central to Rhymney, Bargoed, Treherbert, Aberdare and Bridgend between 1600 and 1745.

- 1.16 Given the elapsed time since these projects were implemented, a process evaluation was no longer considered to be appropriate. As a process evaluation was not carried out, it was not possible to gather views on the success of the planning, design and implementation of the project.
- 1.17 Finally, it should be noted that, as the evaluation has been conducted post the reopening of Ebbw Vale Town and Pye Corner, the research findings reflect the situation at the time the research was conducted (December 2015).

2. Policy Review

- 2.1 In advance of setting out the key findings from the evaluation, it is important to set out the policy context against which the VRS funded, both in terms of the contribution to Welsh Government policy and the ERDF Cross Cutting Themes.

Context

- 2.2 At the time when the VRS was being developed (2007/8), the Valleys communities of South East Wales were facing a variety of socio-economic problems and historically high levels of economic inactivity and multiple deprivation.
- 2.3 The regeneration of areas of high unemployment was a priority and the reduction of barriers to travel was seen as one solution. Many households did not have access to a car and train services to the large employment centres on the coast experienced overcrowding during peak periods, which was perceived to be suppressing rail usage.
- 2.4 Enhancing services and transport infrastructure in the area was, therefore, identified as one way to improve access to jobs (including better paid jobs), education and training opportunities, and generally contribute towards a more sustainable transport system. WG acknowledged these economic pressures and utilised EU funding mechanisms such as the 2007-13 ERDF Convergence Programme to help tackle the issues.

ERDF Convergence Programme

- 2.5 The 2007-13 West Wales and the Valleys Convergence Operational Programme is closely aligned with EU and National policies for jobs and growth. It is rooted in the Lisbon and Gothenburg reform agendas that were set to improve economic opportunities.
- 2.6 The programme vision was to make:
- West Wales and the Valleys a vibrant, entrepreneurial region at the cutting edge of sustainable economic development, with its people living in prosperous, strong, healthy, safe, and where relevant, bilingual communities within an ever improving natural environment.*
- 2.7 To achieve this vision and to maximise the impact from the Structural Funds, the Convergence programme was aligned with relevant (then) Welsh Assembly Government (WAG) policies for delivering sustainable economic growth and employment. In the context of this project evaluation, attention is focussed on those

elements of the ERDF programme concerned with transport policy and regeneration. In particular, ERDF Priority 3 that had the objective to:

Equip the region with the physical infrastructure necessary for the development of a modern competitive economy, and to promote agglomeration effects and sustainable integrated urban regeneration.

- 2.8 The Operational Programme noted that use of the rail network was less than half the British average, and that the Valleys lines network provides access to jobs located in the prosperous coastal strip, including Cardiff and Newport.

Relevance to Wales Transport Strategy, WG Policies and National Strategies

- 2.9 We have examined the relevant national policies and strategies³ and consider the rationale for the Valleys Rail Strengthening Project was firmly based on then WAG policies that aimed to encourage modal shift through the provision of enhanced and additional train services across the Welsh rail network, in particular during peak hours.
- 2.10 The enhancement of rail services encourages modal shift and improves accessibility by supporting delivery of better quality services to travellers on the Valleys rail corridors. The project was well designed to fit with the ERDF Convergence Programme aims. A more detailed policy review is contained in Annex A.

ERDF Cross Cutting Themes

- 2.11 All ERDF projects are required to integrate the Cross Cutting Themes (CCT) of **Equal Opportunities** and **Environmental Sustainability** into implementation plans.
- 2.12 Within the relevant priorities and themes (P3:T1) of the 2007-13 Convergence Programme, actions such as the Valleys Rail Strengthening Project are expected to contribute towards Environmental Sustainability through:
- Developing sustainable urban transport, particularly rail and bus services, to encourage modal shift

³ These include Wales: A Vibrant Economy (WAVE); The Wales Spatial Plan (2004); Wales: A Better Country (2003); One Wales: Connecting the Nation; the Wales Transport Strategy (2008); One Wales; One Planet (2009); National Transport Plan (2010); and SEWTA Regional Transport Plan (RTP).

- Innovative schemes that will serve as exemplars or models of best practice in sustainable transport solutions including projects that break down attitudinal barriers, which prevent people using modes other than the private car.

- 2.13 The project clearly addresses these aims by delivering improvements to the rail transport infrastructure that encourages a shift away from car travel, particularly for commuter journeys, supporting environmental sustainability objectives. The improved services, combined with linked park and ride facilities, have the potential to reduce congestion on main commuter routes leading to a reduction in vehicle carbon emissions and an improvement in air quality. The extent of modal shift is evaluated through the survey programme.
- 2.14 In respect of Equal Opportunity objectives, there is an expectation that transport projects will improve social inclusion by increasing economic activity (e.g. making jobs or training opportunities more accessible) and enabling people to access key services. The project contributes towards these goals by enhancing the availability and capacity of train services from Valleys communities to coastal employment and training centres. It also improves Arriva Trains Wales compliance with Disability Discrimination Act (DDA) legislation by doubling the disabled-accessibility of each train. All trains are also equipped with on-train CCTV facilities linked to the British Transport Police, which contributes towards the ERDF programme's personal safety goal of providing an environment perceived as non-threatening.
- 2.15 In Wales, the commitment to integrate the Equal Opportunities CCT also includes provision to support the Welsh Language in addition to making information available in accessible formats (e.g. Braille, audio, large print). The project has acknowledged this need in its implementation.

Key Point: The VRS supported the critical ERDF Cross Cutting Themes of Equal Opportunities and Environmental Sustainability. In addition, by significantly enhancing access to the Cardiff jobs and leisure market and the newly built stations, the VRS has also supported equal opportunities through providing better disabled access facilities than are available at certain other Valleys stations or indeed on the bus.

Continued Relevance

- 2.16 Initiatives such as the Valleys Rail Strengthening Project remain relevant in terms of transport policies. The project continues to support the main objectives of WG. Consultations on the National Transport Plan 2015 that closed in March 2015 observed that rail usage had increased, funded through WG (Transport and Regeneration), ERDF, Network Rail and Arriva Trains Wales. It also notes a continuing need to focus on improving connectivity and accessibility between communities and key employment centres, particularly for areas (like the Welsh Valleys) where accessibility is generally poor and where car ownership is low.
- 2.17 In addition, the project is in keeping with emerging plans for the Cardiff Capital Region, where the concept of a public transport metro system is of central importance (and indeed features heavily in the proposed Cardiff City Deal).
- 2.18 In the context of the Ebbw Vale line, the overall contribution to modal shift was significant (see Chapter 5). However, opportunities to use the line for commuting are constrained to some extent by the hourly headway. It is likely that an increase in the service frequency to half hourly (an ambition of WG) would significantly increase modal shift amongst commuters.

Key Point: The Valleys Rail Strengthening Project has been implemented in a manner that has remained consistent with the objectives of national, regional and local policies. This type of investment is also consistent with that envisaged as part of the Cardiff Capital Region and forthcoming City Deal.

3. Methodology

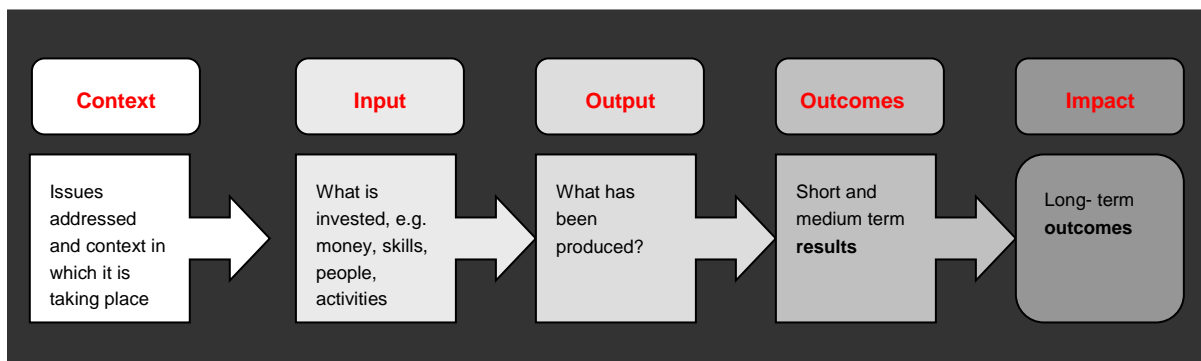
Overview

- 3.1 This chapter provides a detailed discussion of the methodological approach adopted for the research.

Overall Approach

- 3.2 In order to ensure the evaluation captures the full extent of the Valleys Rail Strengthening project, a logic model approach was developed as the basis of the research. The Tavistock Institute (2010) produced a guide to Logic Mapping in the context of transport evaluations on behalf of the UK Department for Transport. It suggests that the main components of an 'intervention logic map' are as follows:

Figure 3.1: Logic Modelling Approach



Source: Tavistock Institute (2010)

- 3.3 In the context of this evaluation, this can be seen as:
- **Context** – as set out in the Business Plan and the wider ERDF and WG policy documents.
 - **Input** – e.g. funding, resources (rolling stock) etc.
- 3.4 The context and inputs in relation to the VRS are set out in the two previous chapters. The evaluation will focus on the **outputs, outcomes** and **impacts** as detailed below:
- **Output** - has the project **physically achieved** what it set out to do – i.e. this is essentially a measure of the supply-side in terms of train and seat kilometres.
 - **Outcomes** - What have the **direct impacts** been in the short and medium term – i.e. how many additional passengers have been attracted onto the rail network (the demand-side)?

- **Impacts** - What have the **indirect impacts** been on the wider economy potentially in the longer term – i.e. how has the project affected e.g. accessibility, economic activity, health, social exclusion etc?

3.5 To summarise, the following analysis is reported in terms of outputs, outcomes and impacts:

Outputs

- Annual train kilometres, which are compared to the Business Plan.
- Annual seat kilometres which are compared to the Business Plan.

Outcomes

- Trend in passenger numbers on the Ebbw Vale line, strengthened lines and control group lines.
- Ticket kilometres on the Ebbw Vale line (10/01/15 – 09/01/16).

Impacts

- Passenger survey results on the Ebbw Vale line.
- The findings of the stakeholder consultation with the public sector, businesses and other organisations in relation to the impact of the reopening of the Ebbw Vale line.
- Changes in travel-to-work patterns between the 2001 and 2011 Censuses for all lines.
- Assessment of the gross and net economic impact of the reduction in car kilometres as a result of the reopening of the Ebbw Vale Line through a combination of the user survey results, LENNON data and WebTAG parameters.
- Identification of changes in multiple deprivation between the 2005 and 2014 Welsh Index of Multiple Deprivation.

3.6 A wider analysis of views on of the Valleys Rail service, drawn from an Omnibus survey, is also set out towards the end of this document.

3.7 A detailed method statement for each area of the research can be found in Annex B.

4. Evaluation of the Reopening of the Ebbw Vale Line – Outputs

Overview

- 4.1 The revised Business plan ‘outputs’ or supply-side changes brought about by the Ebbw Vale reopening were as follows:
- 4.2 Output targets set out in the Business Plan are as follows:
- Public transport services created or improved (i.e. annual train carriage kilometres) = 1,662,954 per annum
 - Strengthening: 442,316 (or 221,158 train km)
 - Ebbw Vale: 1,220,638 (or 527,974 train km)
 - Annual Gross passenger kilometre opportunities on public transport = 147,092,130 (i.e. annual seated and standing kilometres).
 - Strengthening: 33,389,738 (24,733,139 seated)
 - Ebbw Vale: 113,702,392 (84,223,994 seated)
- 4.3 Our method for measuring the outputs entailed:
- estimating total additional train kilometres from 1st April 2008 to 31st March 2013 (the period initially envisaged for the ERDF related strengthening) using data provided by Arriva Trains Wales⁴; and
 - combining the above data with rolling stock types to establish total additional seat kilometres.
- 4.4 The following section considers the extent to which each of these ‘outputs’ have been delivered.

Data Assumptions

- 4.5 To cover the evaluation period, Arriva Train Wales provided a typical Weekday, Saturday and Sunday timetable for the Ebbw Vale line for the months of December in 2008 and the month of May in 2009 - 2013.
- 4.6 The timetables included information on the number of train kilometres travelled per weekday, Saturday and Sunday and the typical train class used for each scheduled service.
- 4.7 In order to estimate the total number of train kilometres and passenger seat kilometre opportunities it was assumed that the timetables for December and May were broadly representative of the timetables for all other months in each year. To

⁴ Note that this timescale predates the opening of both Pye Corner and Ebbw Vale Town stations.

calculate the total passenger seat kilometre opportunities, the rolling stock capacities in Table 4.1 were utilised. Note that standing capacity was not considered in the calculation.

Table 4.1: Rolling Stock Capacities

Train Class	Seat Capacity
150	138
153	75
158	142
143	106

Train and Passenger Kilometre Opportunities

- 4.8 Tables 4.2 and 4.3 below show the estimated train and passenger kilometres covered over the period of operation (6th February 2008 - 31st March 2013). It is noted that these train and passenger seat kilometres opportunities are based on timetabled rather than outturn (i.e. accounting for cancellations and short-forming) services.

Table 4.2: Train Kilometres

Year	WD	Sat	Sun	Total
2008	374,230	74,529	30,688	479,447
2009	413,873	82,457	33,953	530,283
2010	413,873	82,457	33,953	530,283
2011	412,287	84,043	33,953	530,283
2012	413,873	82,457	34,606	530,936
2013	101,486	20,614	8,488	130,589
Total	2,129,620	426,558	175,642	2,731,820

Table 4.3: Passenger Seat Kilometre Opportunities

Year	WD	Sat	Sun	Total
2008	51,643,691	10,284,972	4,234,989	66,163,652
2009	57,114,421	11,379,118	4,685,519	73,179,058
2010	57,114,421	11,379,118	4,685,519	73,179,058
2011	56,895,592	22,202,209	4,685,519	83,783,320
2012	59,232,475	15,856,069	4,775,625	79,864,169
2013	15,443,782	3,137,018	1,171,380	19,752,180
Total	297,444,381	74,238,505	24,238,552	395,921,438

- 4.9 The re-opening of the Ebbw Vale line has clearly resulted in an increase in train and passenger seat kilometre opportunities. Over the six year period, the number of

train kilometres travelled per day remained consistent, with annual figures slightly higher in 2012 as a result of it being a leap year.

- 4.10 The number of passenger kilometres is far more variable as a result of the changes made to the rolling stock configurations. As shown in Table 4.3, total passenger seat kilometre opportunities peaked in 2011 at 83,783,320. This is primarily the result of the rolling stock being increased from one Class 150 to two Class 150s on some Saturday services resulting in an overall increase in seat kilometres operated.
- 4.11 Based on the above figures and taking only the four full years of operation (2009-2012) into account, the estimated average annual train and passenger seat kilometre opportunities equate to:
- Train kilometres: 530,446 per annum
 - Passenger seat kilometre opportunities: 77,501,401 per annum
- 4.12 This train kilometre estimate of 530,446 per annum compares well with the Business Plan figure of 527,974 per annum.
- 4.13 While the annual gross passenger kilometre opportunities figure is below that of the revised objective, when standing capacity is excluded, the figures are broadly comparable (revised Business Plan annual passenger seat kilometre opportunities of 84,223,994 compared to an outturn figure of 77,501,401).
- 4.14 It is important to emphasise that the above figures are an estimate only being based upon an extrapolation of a typical monthly timetable and are for the Ebbw Vale line only. In addition, the data reflects timetabled rather than actual train and seat kilometres, with no account taken of cancellations or short-forming.

Key Point: The re-opening of the Ebbw Vale line has resulted in an increase in train and passenger kilometres on the Valleys rail network.

5. Evaluation of the Reopening of the Ebbw Vale Line – Outcomes

Overview

- 5.1 The following sections consider the ‘outcomes’ or the demand-side impacts of the service improvements.

Current Travel Volumes

- 5.2 To provide an overview of recent patronage on the Ebbw Vale line, LENNON data were obtained from Arriva Trains Wales for the year up to 9 January 2016. This therefore covers the first eight months of Ebbw Vale Town and a full year of Pye Corner. To keep the dataset manageable only journeys completed on the new line are included here.

Table 5.1: Ebbw Vale Line Station Journeys

Ebbw Vale Line Station Journeys 10/01/15 to 09/01/16	Cardiff	Others	Total
Pye Corner ⁵	44,958	4,097	49,055
Rogerstone ⁶	62,109	4,198	66,308
Risca & Pontymister	70,441	9,349	79,789
Crosskeys	67,749	6,921	74,670
Newbridge	79,728	11,877	91,605
Llanhilleth	46,374	15,176	61,550
Ebbw Vale Parkway	100,726	9,410	110,137
Ebbw Vale Town	88,196	10,805	99,001
Total	560,280	71,833	632,114

Source: Arriva Train Wales LENNON Data

- 5.3 The LENNON data therefore recorded around 630,000 journeys in the 12 months to 09/01/16. In this dataset around 90% of trips were to and from Cardiff Central. The table below provides the same information for ticket (passenger) kilometres.

⁵ Note – Pye Corner is not in the Convergence Area

⁶ Note – Rogerstone is not in the Convergence Area

Table 5.2: Ebbw Vale Line Station Ticket Kilometres

Ebbw Vale Line Station Ticket km 10/01/15 to 09/01/16	Cardiff	Others	Total
Pye Corner	897,707	89,438	987,146
Rogerstone	1,400,046	68,561	1,468,607
Risca & Pontymister	1,811,218	102,357	1,913,575
Crosskeys	1,960,277	68,013	2,028,291
Newbridge	2,699,801	110,074	2,809,874
Llanhilleth	1,792,254	143,236	1,935,490
Ebbw Vale Parkway	4,720,705	173,783	4,894,488
Ebbw Vale Town	4,290,781	222,096	4,512,877
Total	19,572,790	977,558	20,550,348

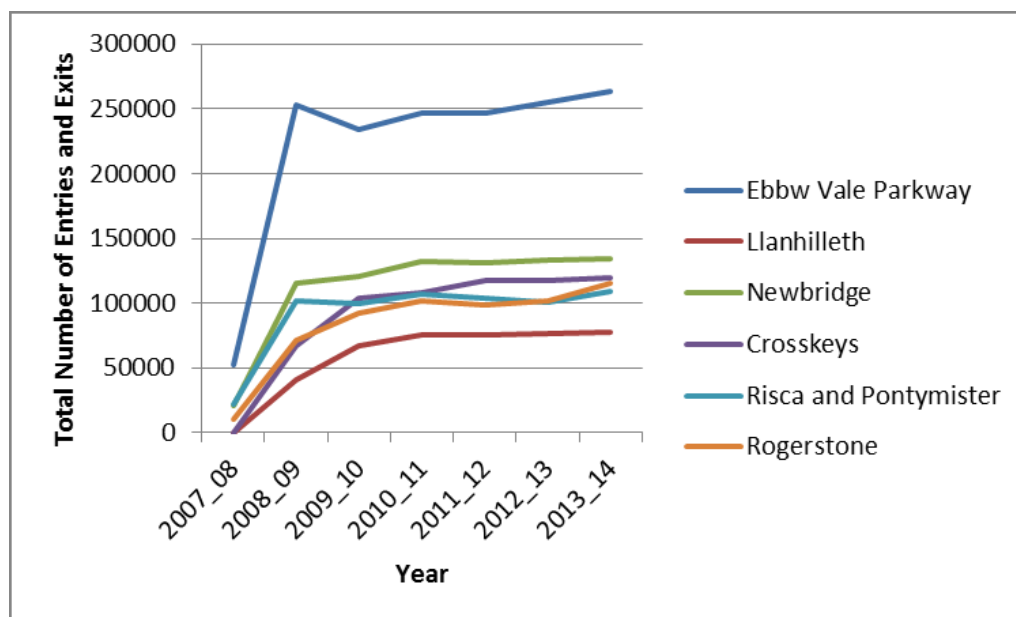
Source: Arriva Train Wales LENNON Data

- 5.4 It can therefore be seen here that the line has generated around 20 million kilometres of passenger travel when only journeys which were fully completed on the line are included.

Passenger Numbers

- 5.5 The ORR publishes annual estimates of the total number of people entering and exiting each rail station in Great Britain.
- 5.6 Figure 5.1 shows the total number of entries and exits by station on the Ebbw Vale line between 2007/08 and 2013/14. The line reopened in February 2008 and therefore the first full year of operation was 2008/9. Note that Pye Corner and Ebbw Vale Town Stations are not included in the ORR dataset as these stations did not open until 2014 and 2015 respectively.

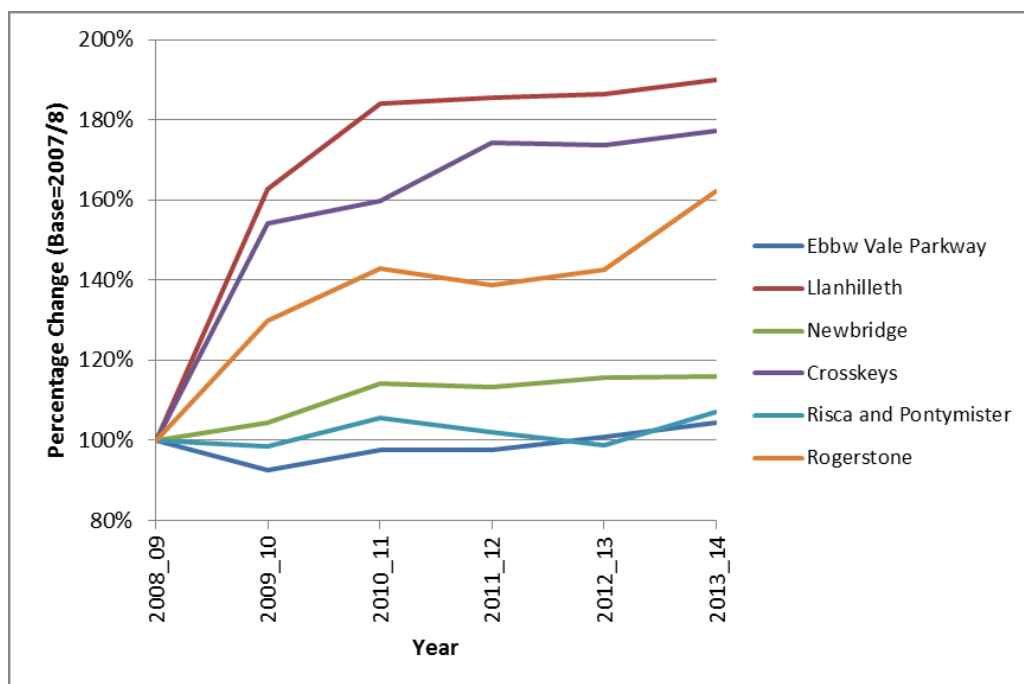
Figure 5.1: Total Number of Entries and Exits on Ebbw Vale Line 2008/09-2013/14



Source: ORR (2015a)

- 5.7 Overall, Ebbw Vale Parkway has the largest number of entries and exits, with approximately 264,000 in 2013-14. This is followed by Newbridge and Crosskeys, accounting for 134,000 and 120,000 entries and exits respectively.
- 5.8 Figure 5.2 shows the change in the total number of entries and exits by station on the Ebbw Vale line between 2008/09 (the first full year of operation) and 2013/14 (the last full year for which data is available).

**Figure 5.2: Change in Total Number of Entries and Exits on Ebbw Vale Section
2008/09-2013/14**



Source: ORR (2015a)

- 5.9 On the whole there was a significant uplift in carryings since 2008/9. This is particularly noticeable in Llanhilleth which experienced a growth of 63% between 2008-09 and 2009-10. The primary research and stakeholder consultation (see Chapter 6) suggests that the rail link created genuinely new opportunities to access employment and other services in Cardiff, supporting the wider economic development of Blaenau Gwent.
- 5.10 Crosskeys in Caerphilly and Rogerstone in Newport also experienced steady growth over the above period. The level of growth at the Caerphilly stations of Newbridge and Risca & Pontymister has been more modest but boardings at both stations have still increased overall over the period.
- 5.11 Overall, the total number of entries and exits across the seven stations on the line increased by 30% between 2007/8 and 2012/13. It is also interesting to note that research undertaken by the UK Department for Transport (DfT) found that patronage on the Ebbw Vale line exceeded forecasts by some 450% - forecast demand for 2008/09 was 45,000 passengers, with actual demand being 252,000 (DfT, 2010).⁷

⁷ The reasons cited for this by DfT were 1) the exclusion of rail demand arising from regeneration of the area and also the assumption that the Ebbw Vale steelworks would remain open and 2) the fact that the rail service operates to Cardiff rather than Newport (as assumed in the modelling).

Key Point: There has been significant growth in patronage on the Ebbw Vale line since it was reopened in 2008. The Blaenau Gwent station of Llanhilleth witnessed the largest growth over the period, which suggests that the new line has released an element of latent demand. Overall, patronage on the Ebbw Vale line exceeded forecasts by 450%. In absolute terms, Ebbw Vale Parkway has by far the largest number of users.

- 5.12 The Ebbw Vale line lies in close proximity to the Rhymney and Marches lines, although the topography of the Valleys does accentuate the distance. Nonetheless, it is possible that passengers who previously used these lines switched to the Ebbw Vale line following its opening.
- 5.13 In order to establish any displacement impact, entry and exit data for a subset of relevant stations on each line were compared. Overall, the data show that whilst there has been a clear growth in passenger numbers on the Ebbw Vale line, there has not been a corresponding fall in numbers on the other lines. This suggests that the number of people switching between stations was relatively small or that the additional capacity created as a result of switching was taken up by latent demand. This finding was confirmed by the primary research and stakeholder consultation.

Key Point: There is no evidence in this dataset of displacement of patronage from other Valleys lines.

6. Evaluation of the Reopening of the Ebbw Vale Line – Impacts

Overview

- 6.1 The previous two steps in the logic model (outputs and outcomes) set out the supply-side and direct demand-side impacts of providing additional services on the Ebbw Vale Line. The following section considers the impact of the project on the users of the additional services and the wider Valleys communities.

Ebbw Vale Line User Survey

- 6.2 In order to gather information on user behaviour and perceptions, an interviewer-administered self-completion survey was conducted with passengers travelling on the Ebbw Vale line. A copy of the survey is included in Annex C.

Response Rate

- 6.3 In total 747 completed responses were received. Of these, 346 were weekday responses and 401 were weekend responses.
- 6.4 In order to estimate the sample rate as a proportion of all users, LENNON ticket sales data was obtained for the equivalent days in 2014 (up to 14/12/14) as shown in Table 6.1. These data provide:
- Ticket sales (and resulting number of journeys) where Ebbw Vale Parkway, Llanhilleth, Newbridge, Crosskeys, Risca & Pontymister, Rogerstone are the origins; and
 - Ticket sales (and resulting number of journeys) where Ebbw Vale Parkway, Llanhilleth, Newbridge, Crosskeys, Risca & Pontymister, Rogerstone are the destinations.

Table 6.1: Equivalent LENNON Data Days

Day	Survey Date	Equivalent LENNON date (from data received)
Weekdays	Wednesday 02 December 2015	Wednesday 03 December 2014
	Thursday 03 December 2015	Thursday 04 December 2014
	Friday 04 December 2015	Friday 05 December 2014
	Monday 07 December 2015	Monday 08 December 2014
	Tuesday 08 December 2015	Tuesday 09 December 2014
	Thursday 10 December 2015	Thursday 11 December 2014
	Monday 14 December 2015	Monday 24 November 2014
	Tuesday 15 December 2015	Tuesday 25 November 2014
	Wednesday 16 December 2015	Wednesday 26 November 2014
	Friday 18 December 2015	Friday 28 November 2014
Weekends	Saturday 05 December 2015	Saturday 06 December 2014
	Sunday 06 December 2015	Sunday 07 December 2014
	Saturday 12 December 2015	Saturday 13 December 2014
	Sunday 13 December 2015	Sunday 14 December 2014

Table 6.2: Sample Size

	LENNON Journeys	Survey ⁸	Sample
Weekday	24,029	261	1.1%
Weekend	11,158	300	2.6%
Total	35,347	561	1.6%

6.5 As shown in Table 6.2, based on the LENNON data, a sample size of 1.6% was achieved. Note however that many survey respondents would have made multiple journeys within the 02/12/15 to 18/12/15 period, and this information has been obtained. The sample of journeys will therefore be larger than the 1.6% reported here. Even so, taking the 561 sample and the 35,347 population, this implies a confidence interval of plus or minus 4.1% which provides a good basis for the analysis. **It should also be noted that responses were not weighted by journey frequency.**

Origin and Destination Stations

6.6 Respondents to the survey were asked to specify the station at which they got on the train and the station they intended to get off at, as well as whether they were travelling one way or undertaking an outward or return leg.

6.7 The figures below show the most popular origin and destination stations.

⁸ Excluding survey responses from Ebbw Vale Town and Pye Corner.

6.8 Note – in all of the following figures where the responses do not add up to 100%, this is due to rounding unless the question was multiple response, in which case it is noted in the title.

Figure 6.1: Origin Station

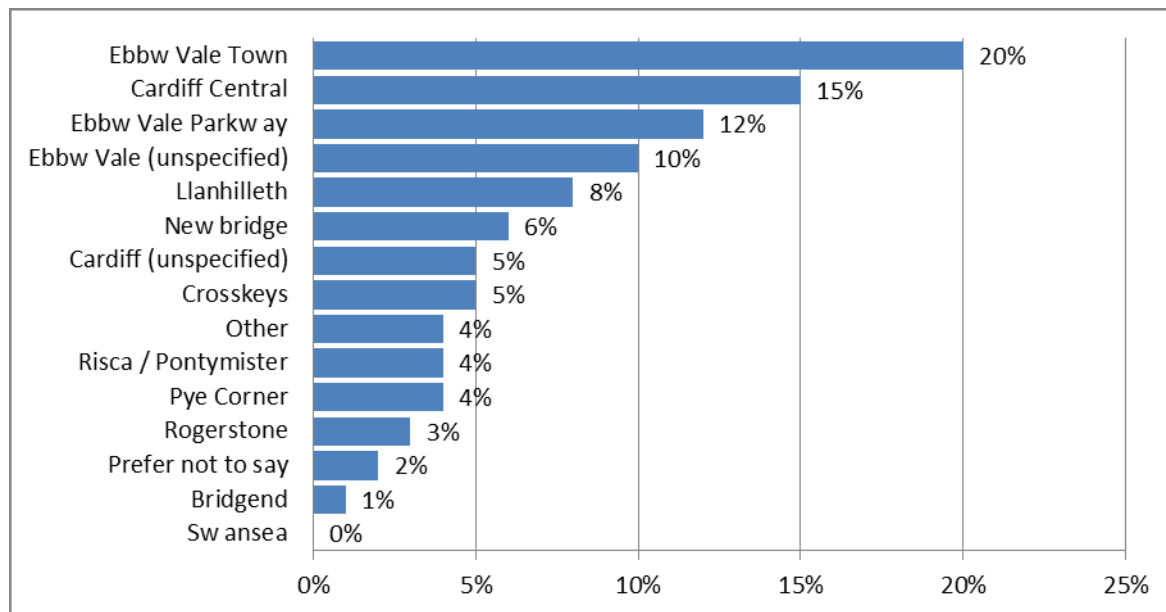
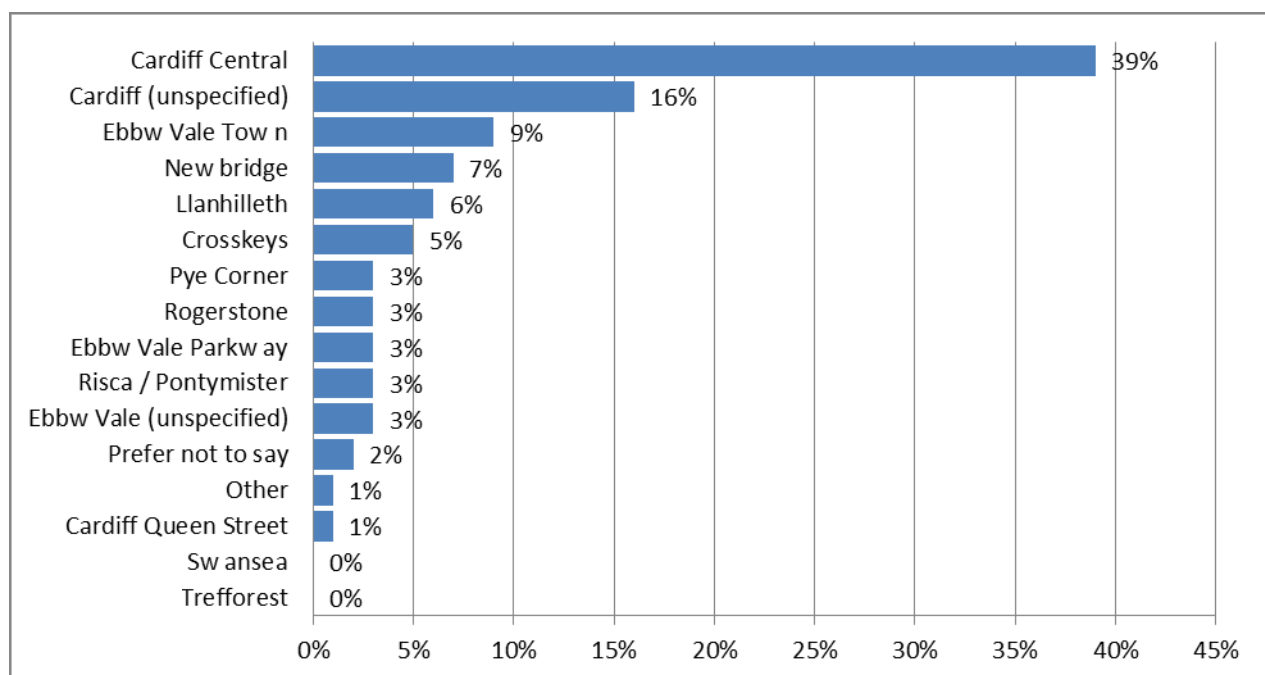


Figure 6.2: Destination Station



6.9 The most popular origin station was Ebbw Vale Town with 20% (n=152) of the journeys recorded originating at this station. Unsurprisingly Cardiff Central was the most popular destination station, with 39% (n=288) of journeys ending at Cardiff Central, a further 16% (n=116) ending at an unspecified Cardiff station and 1% (n=5) ending at Cardiff Queen Street.

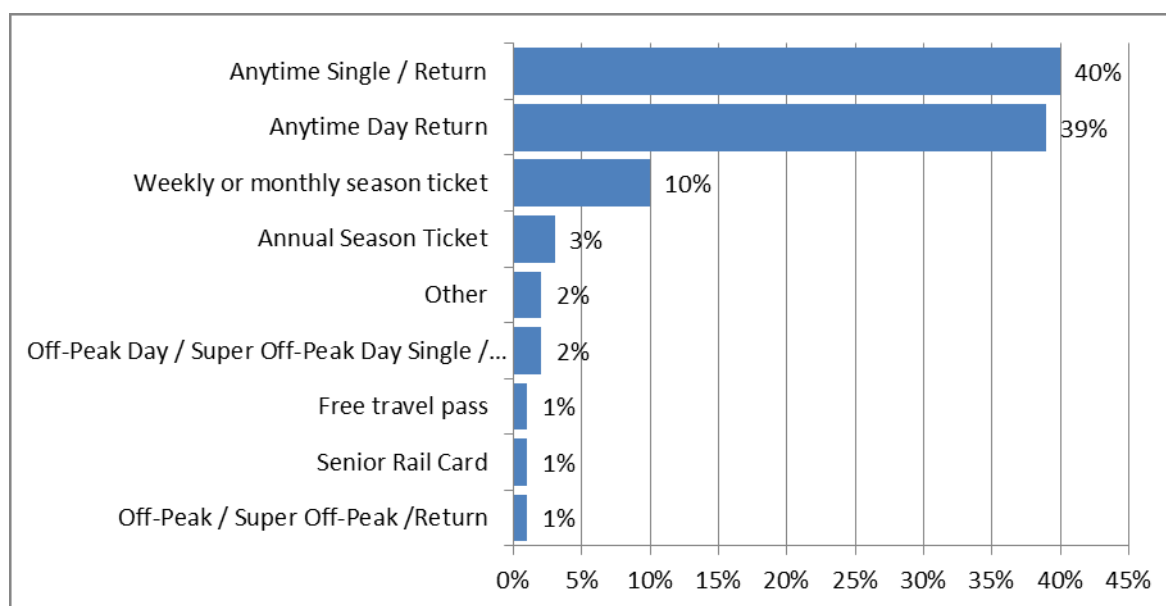
- 6.10 Overall the most popular journey amongst those surveyed was Ebbw Vale Town to Cardiff Central, with 13% (n=99) of those sampled making this trip.
- 6.11 Respondents were also asked which town they lived in. Of those who responded to this question, the majority (76%, n=435) indicated that they lived in towns and villages on or within the vicinity of the line (excluding Cardiff), with 24% (n=137) living in Cardiff or further afield (e.g. Barry, Bridgend, Porthcawl etc). This suggests that the majority of journeys recorded were outbound from the local authority areas of Newport, Caerphilly and Blaenau Gwent rather than inbound trips.

Key Point: The origin-destination data obtained from the survey clearly demonstrate the strong traffic flows between stations on the Ebbw Vale line (particularly Ebbw Vale Town) and Cardiff. Based on analysis of where respondents lived, the majority are within the vicinity of the line, suggesting that most journeys undertaken are outbound. This supports the findings of the consultation below, which highlighted the benefits for Ebbw Vale residents of being able to access Cardiff.

Ticket Type

- 6.12 The figure below shows the ticket type being used by survey respondents. The ticket type is a useful indicator of the different types of demand for the service (e.g. those using season tickets are likely to be commuters).

Figure 6.3: Ticket Type⁹



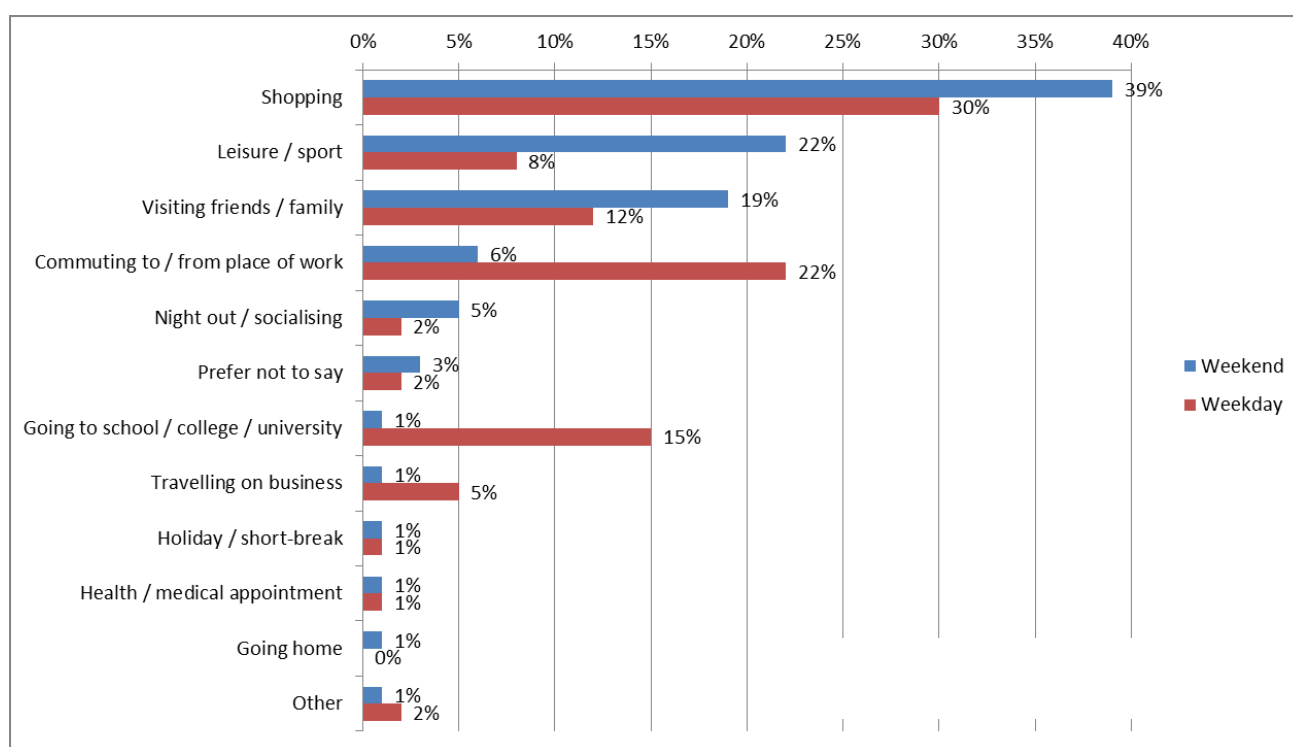
⁹ It is noted that off peak and super off peak tickets are not available on the Ebbw Vale line and therefore respondents selecting these options are likely to be using standard single or return tickets.

6.13 Overall, the majority of respondents were travelling using an Anytime Single/Return ticket (40%, n=299), with slightly lower proportions using the Anytime Day Return (39%, n=292) and 10% (n=71) using a monthly season ticket. As would be expected season ticket use was more common during the week and anytime tickets were more common at the weekend, although the split for anytime tickets is much more even for weekdays / weekends (72% vs. 85%) than the split for season tickets (18% vs 6%).

Journey Purpose

6.14 The figure below shows the journey purpose of those surveyed.

Figure 6.4: Journey Purpose



6.15 Overall, the most common journey purpose was shopping with 35% (n=259) of respondents selecting this purpose. This was followed by visiting family/friends (16%, n=117) and leisure/sports (15%, n=114), with commuting to/from work being only the fourth most popular journey purpose (14%, n=103). Overall, 71% (n=527) were leisure trips, 21% (n=159) were commuting to either work or education and 3% (n=20) were business trips.

6.16 In comparison, the proportions recorded in the most recent National Rail Passenger Survey (NRPS) for Arriva Trains Wales were 58% leisure, 32% commuting and 10% business (Transport Focus 2015). The proportion of leisure trips was therefore higher than that on the wider network, with commuting and business trips lower than

that recorded in the NRPS. This may change if WG's ambition of a half hourly frequency is realised in the future.

6.17 As may be expected shopping, visiting friends and family and leisure/sport was more common on the weekends while commuting rates were significantly higher during the week.

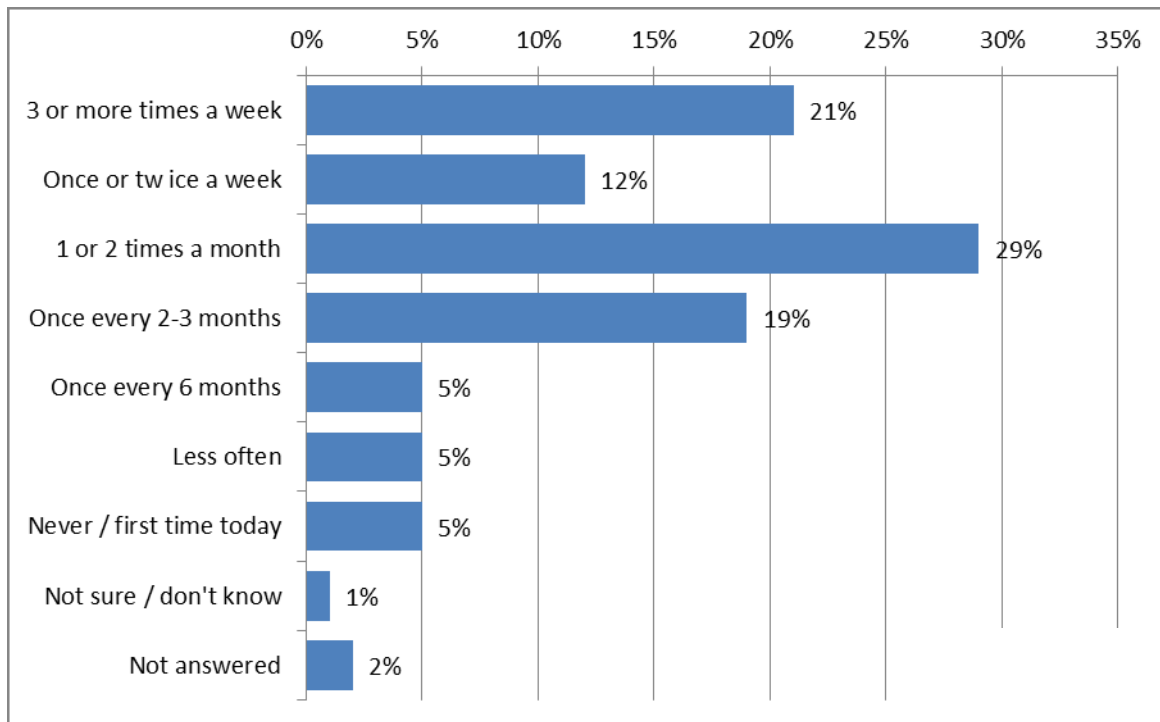
6.18 The results suggest that the line is well used in terms of leisure, with many people using the line on the weekend and evenings to access leisure opportunities further afield.

Key Point: The survey findings suggest that the Ebbw Vale line is well used for leisure and less so for commuting purposes. In particular, the enhanced rail accessibility to Cardiff appears to be stimulating leisure trips of various types to the capital.

Journey Frequency

6.19 Respondents were also asked to indicate the frequency at which they make their current journey.

Figure 6.5: Frequency of Travel



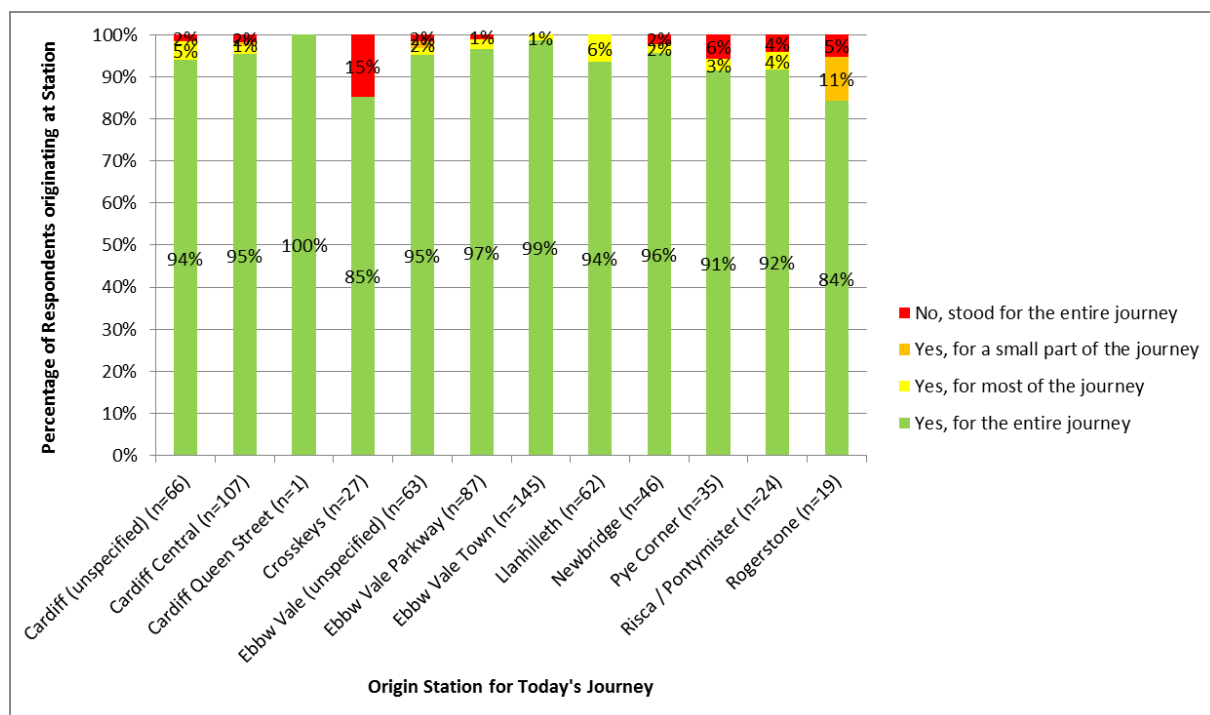
- 6.20 There was a fairly even split between those who travelled on at least a weekly basis (33%, n=248), a monthly basis (29%, n=214), and those travelling less often (29%, n=220) (see Figure 6.5). Around 21% (n=155) use the train three or more times a week, these passengers likely being commuters.

Key Point: Whilst there is a core commuting demand for the Ebbw Vale services, evidence shows that leisure trips (especially for shopping) form the core usage of the service for a significant proportion of passengers

Capacity

- 6.21 Across all journeys, 92% (n=690) indicated that they were able to get a seat for their entire trip with a further 3% (n=22) stating they were able to get a seat for the majority of their journey. Patterns were similar on weekdays and weekends. During weekdays, evenings appear to be the busiest time with slightly higher rates of standing at this time, although it is noted that absolute numbers are small.
- 6.22 Figure 6.6 below shows the ability to get a seat by origin station.

Figure 6.6: Having a Seat for Today's Journey by Origin Station



- 6.23 It was relatively easy to get a seat when starting your journey at any of the origin stations. Overall, getting a seat was most difficult for those starting their journey at Crosskeys with 15% (n=4) of those who started their journey here stating that they were unable to get a seat for their entire journey.

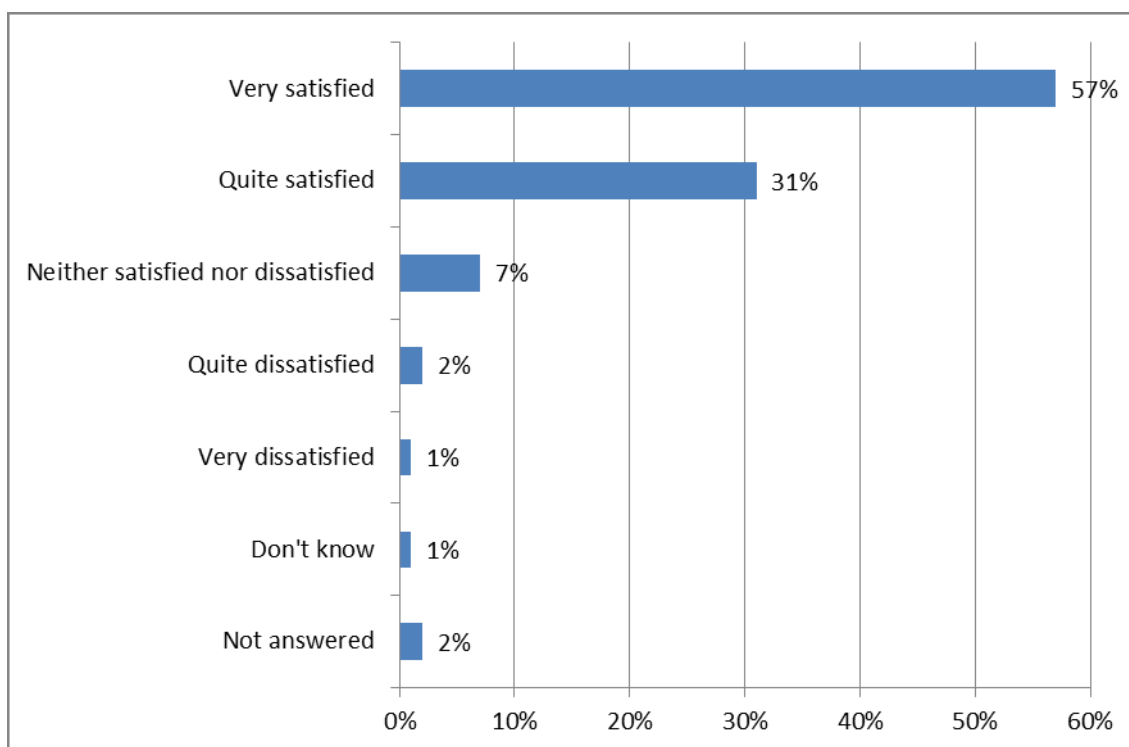
6.24 It is worth noting that capacity is likely to be sufficient because peak commuting trains have been strengthened to four cars.

Key Point: The user survey suggests that capacity issues are not significant overall on the Ebbw Vale line. This conflicts to some extent with the perceptions of capacity expressed through the stakeholder consultation as detailed below.

User Satisfaction

6.25 The figure below shows overall levels of satisfaction with the Ebbw Vale line services.

Figure 6.7: Satisfaction with Service



6.26 Overall, 87% (n=653) of respondents indicated that they were satisfied with their train journey compared to 3% (n=24) who were dissatisfied. Satisfaction rates were similar at the weekend, with 88% of respondents saying they were either very or fairly satisfied.

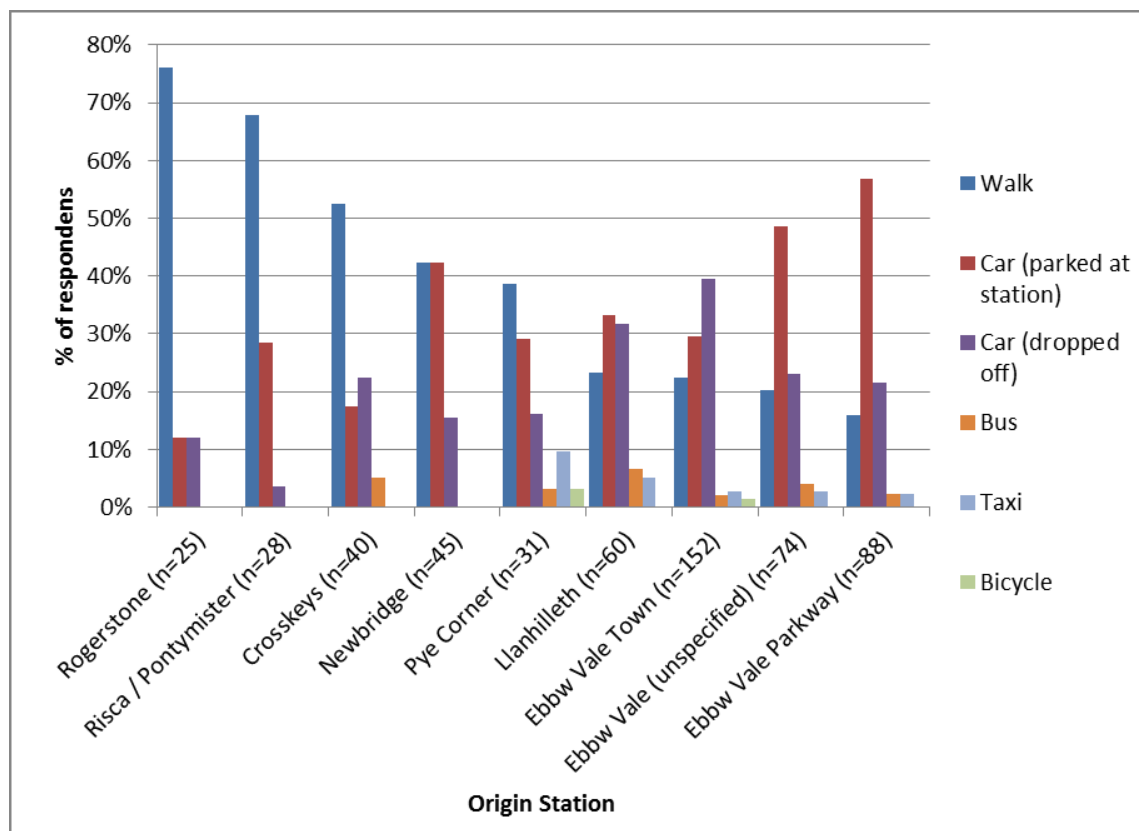
6.27 Of the respondents travelling during the week, satisfaction levels were highest in the morning, with 91% (n=136) of those travelling in the morning satisfied compared to 88% (n=130) of afternoon travellers and just 68% (n=34) of those travelling in the evening. The lower levels of satisfaction in the evening may partly be a result of the capacity issues as discussed above.

Key Point: The Ebbw Vale line is clearly well regarded by users, with 87% of users expressing satisfaction with the service.

Mode Used to Access Rail Station

6.28 The figure below shows the main mode of transport for travel to the station of boarding.

Figure 6.8: What was the main mode of transport that you used for your journey to the train station today?



6.29 Across the sample as a whole, walking was the most common mode of travel to the station with 36% (n=272) of respondents choosing this option. This was closely followed by driving to / parking at the station (31%, n=230) and being dropped off (23%, n=173).

6.30 As may be expected patterns differed across the study area. At Ebbw Vale Parkway and Llanhilleth, driving and parking at the station was the most common option with 57% (n=50) and 33% (n=20) respectively of those starting their journey at these stations choosing this option. At Ebbw Vale Town being dropped off at the station was most common (39%, n=60) while walking to the station was the primary choice at all other stations (which are largely town centre stations).

Key Point: Walking is the most popular mode of travel to the majority of the stations on the Ebbw Vale line, particularly in relation to the town centre stations. As would be expected given its designation, Ebbw Vale Parkway has a higher proportion of users who drive to and park at the station.

Change in Home Location

- 6.31 Overall, 23% of respondents indicated that they moved to their current address following the re-opening of the passenger rail line in February 2008. Whilst the majority (61%, n=106) said the line was not a factor in their decision to move, a number (26%, n=46) stated that it was a factor in their decision process. Of these most were based in Ebbw Vale (17%, n=8) or Cardiff (17%, n=8) with smaller numbers in Risca (9%, n=4) and Newbridge (7%, n=3).

Key Point: It is highly significant that a quarter of survey respondents who had moved to their current address since the line re-opened indicated that the reopening of the Ebbw Vale line was a factor in their decision to move to their current address. This is an excellent example of how a transport investment can support the regeneration and development of an area by attracting people to move there.

Car Ownership

- 6.32 Across the sample as a whole, car ownership was relatively high with just 14% (n=108) of respondents living in households without access to a car. As may be expected car ownership levels were lowest amongst passengers living in Cardiff, with 58% (n=22) of Cardiff residents living in households without access to a car. The next lowest level was Ebbw Vale where 11% (n=15) lived in households without car access.
- 6.33 Respondents who currently had access to a car were also asked whether their household would require additional cars if the restored passenger rail service was not operating between Ebbw Vale and Cardiff. Overall 76% (n=465) said they would not require any additional vehicles, with 18% (n=109) stating that they would need one additional car (and a further 3% saying they would need more than one additional car). Patterns differed across the study area. Those living in Ebbw Vale were most likely to require additional vehicles with 16% (n=19) stating that one

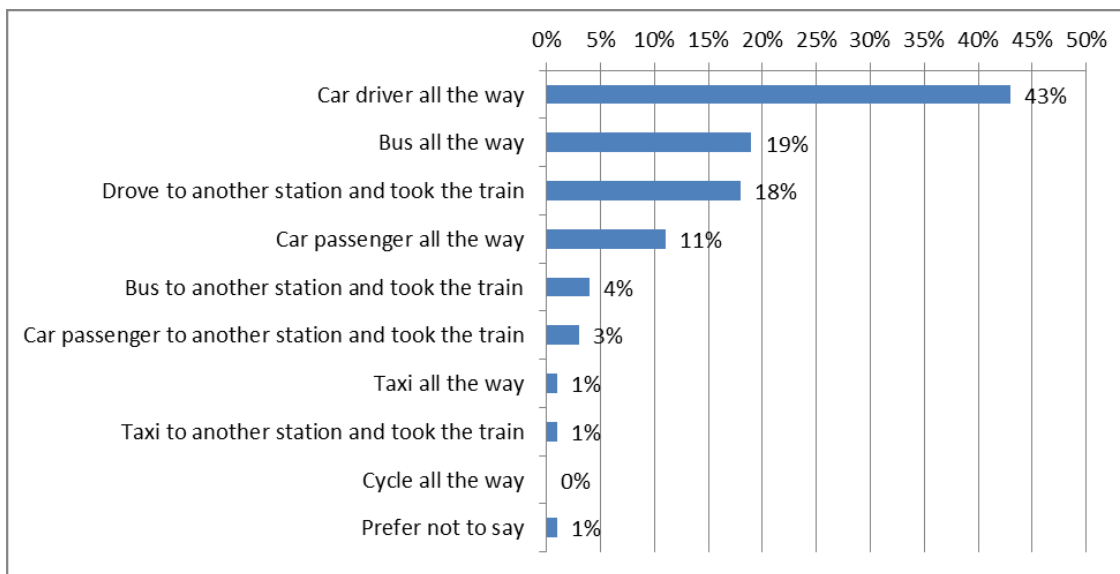
additional vehicle would be needed and a further 4% (n=5) needing an additional two vehicles.

Key Point: Almost one fifth of the sample indicated that they would need at least one additional vehicle if the Ebbw Vale line was not in operation.

Mode Switch

- 6.34 The figure below shows how those using the Ebbw Vale line previously made the same journey prior to the new service being introduced.

Figure 6.9: How did you make this journey prior to passenger rail services being reintroduced on the Ebbw Vale to Cardiff line?

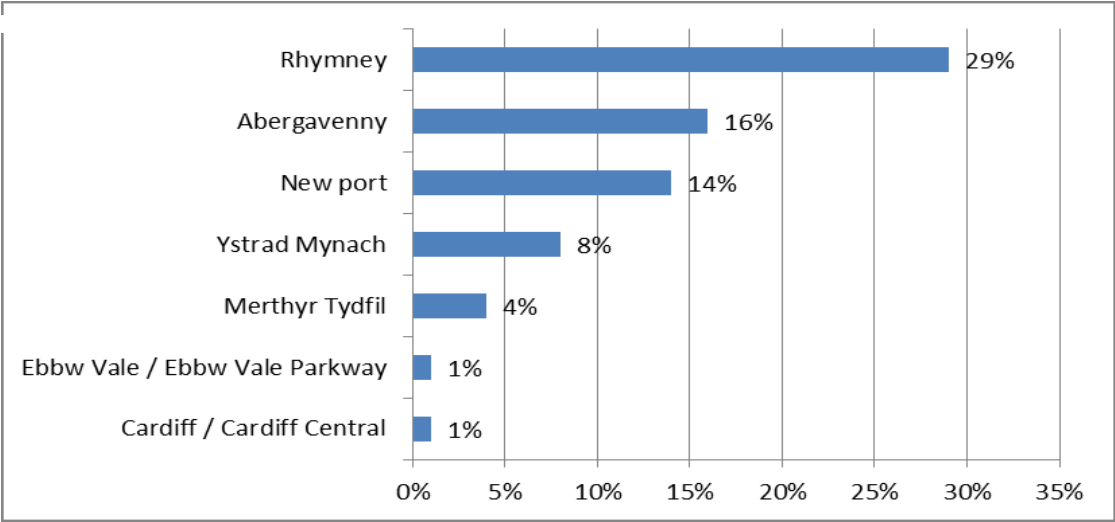


- 6.35 Across the sample as a whole 48% (n=358) stated that prior to the re-opening of the line they regularly made their journey by an alternative mode. Of these, the highest proportion (43%, n=154) drove all the way to their destination with a further 11% (n=40) travelling as car passengers.
- 6.36 A fairly high proportion of respondents who had previously made the journey indicated that they used to take the bus all the way to their destination (19%, n=68) with a further 4% (n=13) travelling by bus to another station and taking the train. The results of the survey therefore suggest that patronage on some bus routes will have declined as a consequence of the line re-opening (this is consistent with the points identified in the stakeholder consultation).

Key Point: The reopening of the Ebbw Vale has led to a significant mode switch from the private car and, to a lesser extent, the bus to the train.

6.37 As noted above, a number of survey respondents (n=90) indicated that they had previously used another station prior to the reopening of the Ebbw Vale line. The figure below shows the station which was previously used.

Figure 6.10: Which station did you previously take the train from?

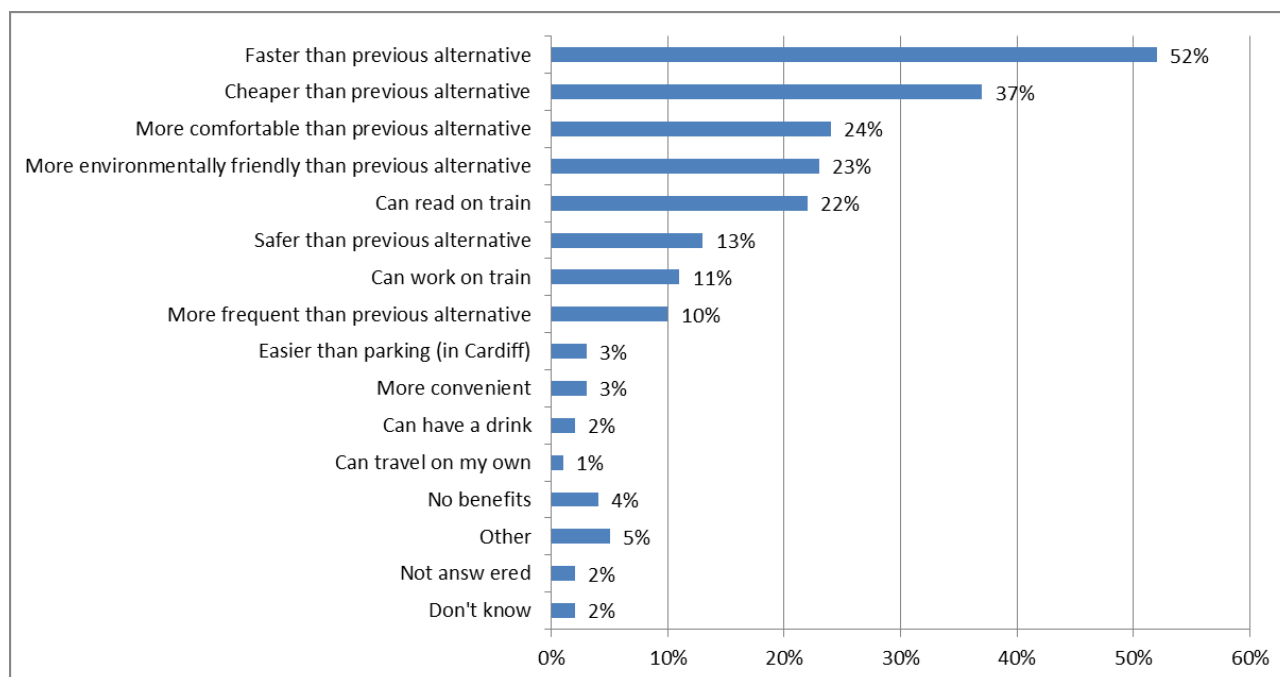


6.38 The majority of ‘station switchers’ came from other stations near the heads of the respective Valleys, most notably Rhymney (29%, n=26) and Abergavenny (16%, n=14). There was also a significant switch from Newport (14%, n=13), likely from residents of Rogerstone and Risca & Pontymister.

Key Point: The reopening of the Ebbw Vale line displaced a small proportion of rail passengers from the Rhymney and Marches lines, as well as from Newport station.

6.39 Respondents were also asked to indicate the ways they had benefitted from switching from their previous mode of transport to the train.

Figure 6.11: In what ways, if any, have you benefitted from switching from your previous mode of transport to the train? *Multiple response question*



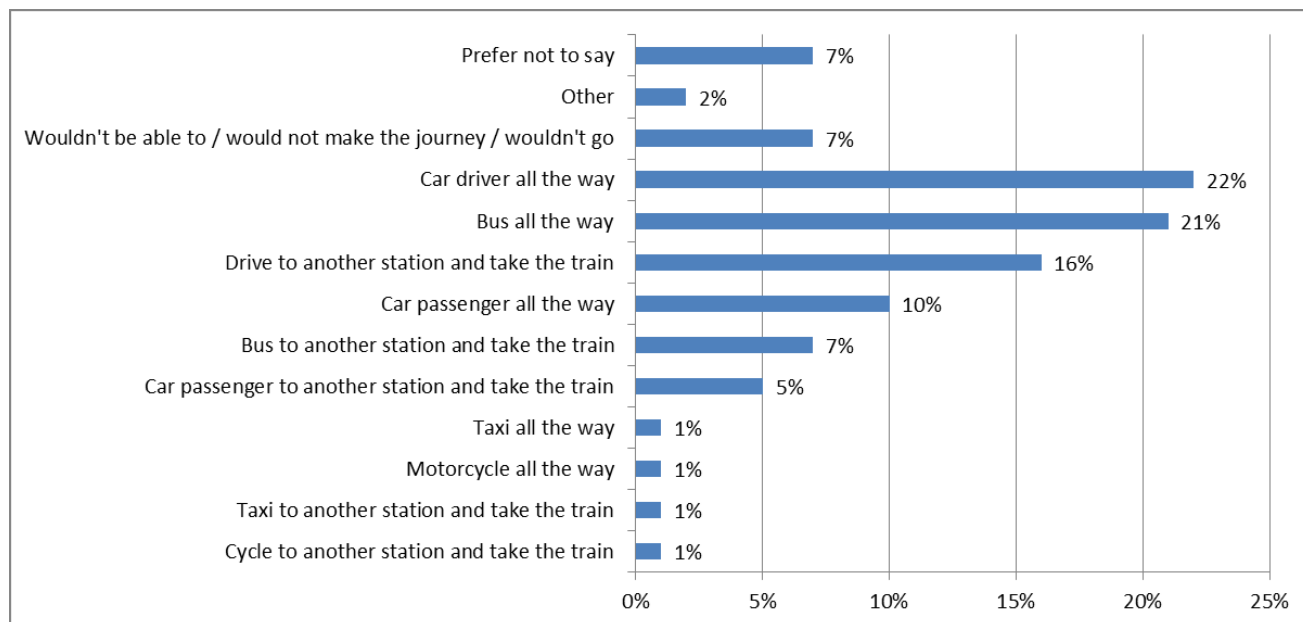
6.40 As shown in Figure 6.11, the most commonly cited benefit was that the train was faster than the previous alternative (52%, n=186). This was followed by the lower cost (37%, n=134) and greater comfort offered by rail (24%, n=86).

Key Point: The reopening of the Ebbw Vale line offered users a faster, cheaper and more comfortable alternative to the mode of travel used pre-opening. There were therefore both financial and social welfare benefits attributable to the reopening of the line.

Mode Used if Rail Services had not been Re-introduced

6.41 Respondents who did not previously make the journey before the reopening of the line were also asked how they would be making their journey today if the rail services had not been re-introduced (see Figure 6.12 below).

Figure 6.12: If passenger rail services had not been reintroduced on the Ebbw Vale to Cardiff line, how would you be making this journey today?



6.42 The highest proportion of respondents (22%, n=85) stated that they would have driven all the way to their destination, with a further 10% (n=38) travelling as car passengers all the way to the destination.

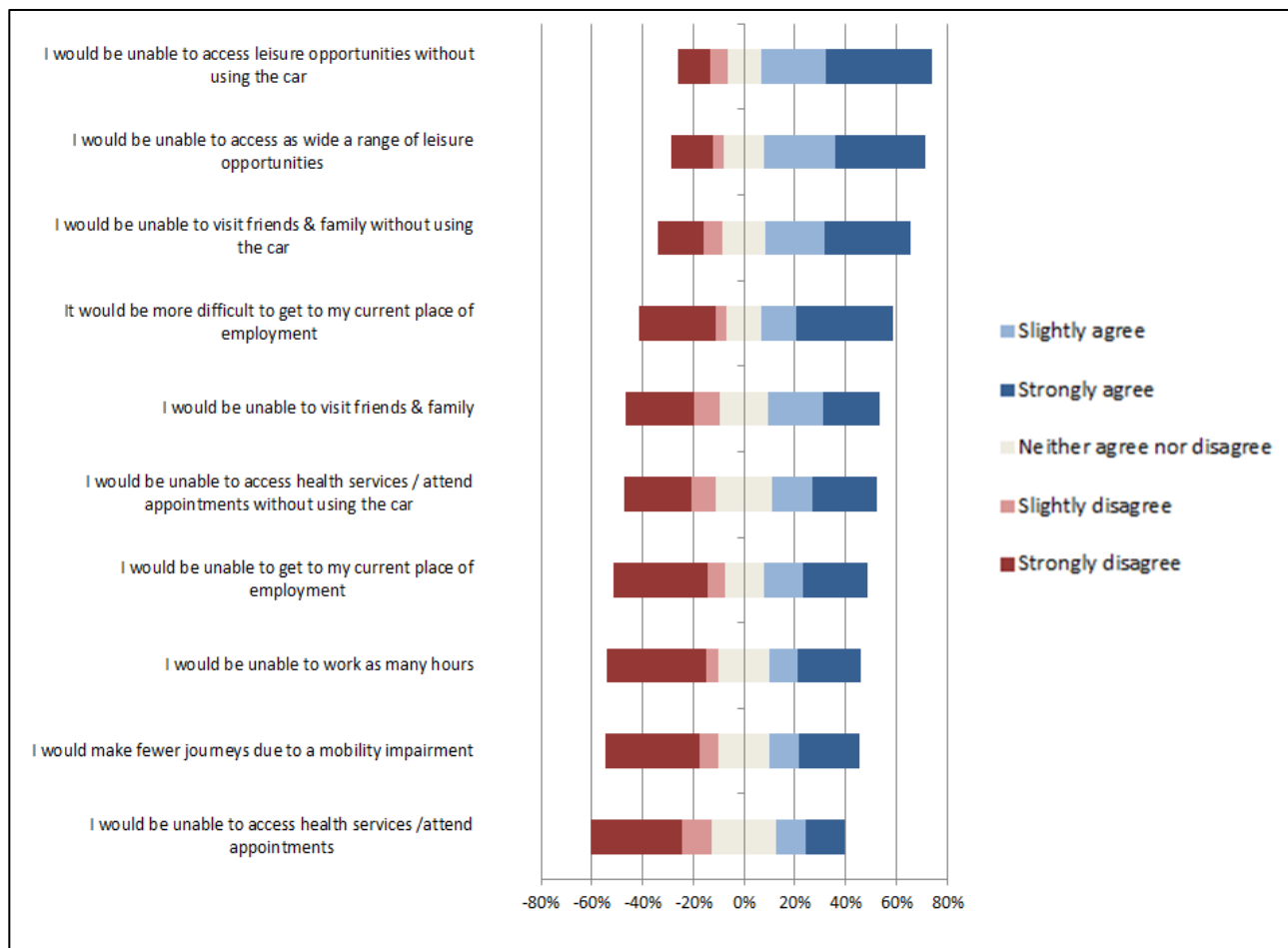
6.43 A high proportion (21%, n=80) also said they would use the bus all the way to their destination, suggesting that the rail line has resulted in some modal shift from the bus to rail.

Key Point: The reopening of the Ebbw Vale line removed a significant number of potential car kilometres from the road network, generating environmental decongestion and safety benefits.

Impact of the Passenger Line Re-opening

6.44 Respondents were also asked about the impact of the line re-opening. Figure 6.13 shows the extent to which respondents agreed or disagreed with a number of statements regarding the benefits of switching to rail.

Figure 6.13: Please tell us how much you agree or disagree with each of these statements



- 6.45 Overall, respondents agreed most strongly with the statements regarding leisure opportunities with 67% (n=365) agreeing that they would be unable to access leisure opportunities without using the car and 64% (n=344) agreeing that they would not be able to access as wide a range of leisure opportunities.
- 6.46 The reopening of the Ebbw Vale line was also seen as important in supporting employment through allowing people to access their place of work more easily and supporting longer working hours.
- 6.47 As may be expected agreement rates were slightly higher amongst those whose originating station was in Ebbw Vale than those who originated at other stations further south.

Key Point: There was broad agreement amongst those surveyed that the reopening of the Ebbw Vale line has significantly enhanced access by public transport to leisure and employment opportunities.

Estimated Annual Trips

- 6.48 It is possible to estimate the annual number of journeys associated with the survey responses. In order to do this a number of assumptions were made with regard to the number of journeys undertaken. As noted above, each survey respondent was asked how often they make the journey they were making when surveyed. Each survey response can then be annualised using the following assumptions.

Table 6.3: Assumptions regarding Annual Journeys

Journey Frequency (survey response)	Assumed journeys per month	per annum
3 or more times a week	20	235
Once or twice a week	7	78
1 or 2 times a month	2	18
Once every 2-3 months	1	6
Once every 6 months	0.2	2
Less often	0.1	1
Never / first time today	0.1	1

- 6.49 As discussed above the ORR produces annual statistics for station entries and exits (i.e. total single trips through the station –e.g. a return trip from Crosskeys to Cardiff would count as one station entry at Crosskeys (outward trip) and one station exit at Crosskeys (return trip)). The latest ORR data (2014-15) is detailed in Table 6.4. It is noted that this pre-dates the opening of Ebbw Vale Town and Pye Corner.

Table 6.4: ORR Total Entries & exits 2014/15

Station	ORR Total Entries & exits 2014/15
Ebbw Vale Town	NA
Ebbw Vale Parkway	253,904
Llanhilleth	77,912
Newbridge	132,440
Crosskeys	113,926
Risca / Pontymister	107,786
Rogerstone	105,938
Pye Corner	NA
Total	791,906

Source: ORR (2015a)

- 6.50 The above assumptions regarding trip frequency were used to create an estimate of the annual entries and exits at each station associated with the one-way journeys comprising the survey sample (see Table 6.5). The intra Ebbw Vale line figures are

subtracted to avoid double counting of these trips (i.e. they are an entry and an exit within the Ebbw Vale line).

Table 6.5: Estimated Annual Trips associated with the Survey Sample

	Station Entries	Station Exits	Intra Ebbw Vale line	Total Entries & exits
Ebbw Vale Town	10,697	9,449	3,718	16,428
Ebbw Vale Parkway	2,684	1,575	682	3,578
Llanhilleth	3,861	4,075	1,663	6,273
Newbridge	3,014	3,795	978	5,831
Crosskeys	4,357	6,188	2,646	7,899
Risca / Pontymister	1,790	1,980	427	3,343
Rogerstone	2,475	1,354	1,578	2,251
Pye Corner	2,508	733	1,622	1,619
Total	31,386	29,149	13,313	47,222

Annualisation Factors

- 6.51 The ORR figures and the estimated annual trips associated with the survey sample as outlined in Table 6.5 were used to generate an 'annualisation factor' for each station where both sets of data are available (see Table 6.6).
- 6.52 Based on the assumption that the trips which have been surveyed at each station (and the impacts of these trips) are typical of all trips made through these stations, any quantified impact of travel through any of these stations can be annualised using the figures outlined below. For Ebbw Vale Town and Pye Corner (where ORR data are not available) the figures for the nearest station have been used.

Table 6.6: Station Annualisation Factors

	Total Entries & exits 2014/15	Total Entries & exits	Annualisation Factor
Ebbw Vale Town	NA	16,428	71.0
Ebbw Vale Parkway	253,904	3,578	71.0
Llanhilleth	77,912	6,273	12.4
Newbridge	132,440	5,831	22.7
Crosskeys	113,926	7,899	14.4
Risca / Pontymister	107,786	3,343	32.2
Rogerstone	105,938	2,251	47.1
Pye Corner	NA	1,619	47.1
Total	791,906	29,175¹⁰	

- 6.53 Overall this suggests that for the stations where we have ORR data, the survey has accounted for 3.7% of annual trips. This figure would double if all surveyed trips were assumed to be return trips.

¹⁰ Excluding Ebbw Vale Town and Pye Corner

Reduction in Potential Car Kilometres

- 6.54 Respondents to the survey were also asked how they would have made their journey if passenger rail services had not been reintroduced on the Ebbw Vale line. A number of respondents to this question indicated that they would have driven or travelled as a car passenger either all the way to their destination or to the nearest alternative rail station and then taken the train to their destination. As such the introduction of passenger rail services on the line has resulted in a reduction in the number of car kilometres travelled.
- 6.55 Using the data from the survey together with the above annualisation factors the total car kilometres saved was estimated. In order to do this a number of assumptions were made as follows:
- It was assumed that those who said they would drive to an alternative station would have driven 5 kms further if the Ebbw Vale line had not been opened to passenger traffic.
 - The distance saved for those who said they would drive or travel as a car passenger all the way to the destination was assumed to be the distance between their start station and end station * 1.1.
 - For those who would have travelled as a car passenger, it is assumed that 50% of these switchers result in the removal of a car journey – ie for the other 50% it is assumed that the person providing the lift continues to drive.
 - It was assumed that those who did not specify which Ebbw Vale station they used travelled to/from Ebbw Vale Town Station
 - It was assumed that those who did not specify which Cardiff station they used travelled to/from Cardiff Central.
- 6.56 Table 6.6 shows the estimated reduction in potential car kilometres associated with the survey sample and the total annual reduction.

Table 6.6: Estimated Reduction in Car Kilometres (2015)

	Estimated Reduction in Potential Car Km (Sample)	Annualisation Factor	Total Annual Reduction in Potential Car Km
Ebbw Vale Town	142,395	71.0	10,110,019
Ebbw Vale Parkway	32,727	71.0	2,323,646
Llanhilleth	6,760	12.4	83,828
Newbridge	19,499	22.7	442,622
Crosskeys	20,169	14.4	290,431
Risca / Pontymister	6,306	32.2	203,062
Rogerstone	3,685	47.1	173,564
Pye Corner	3,266	47.1	153,826
TOTAL	234,807		13,780,998

6.57 The figure of 13.8 million car kilometres can be used in conjunction with WebTAG databook information¹¹ to estimate the impacts of this reduction in car kilometres on:

- congestion levels;
- infrastructure – reduced maintenance due to lower traffic levels;
- accident rates and severity;
- local air quality;
- traffic noise;
- greenhouse gases emissions; and
- indirect taxation (through reduced fuel sales).

6.58 In the absence of more detailed information, the 14m car kilometre figure has been distributed to different road types based on WebTAG parameters for Wales at the national level. Table 6.7 provides an estimate of these impacts for 2015 (2010 prices, undiscounted).

¹¹ <https://www.gov.uk/government/publications/webtag-tag-data-book-december-2015>

Table 6.7: Marginal External Impacts of Reductions in Car KM (2015)

Marginal External Impact	Estimate of Impact
Congestion	£632,479
Infrastructure	£12,058
Accident	£180,876
Local air quality	£3,859
Noise	£10,956
Greenhouse gases	£113,693
Total Benefits	£953,921
Indirect taxation	-£661,736
Net Total Impact	£292,185

- 6.59 Note that the loss in indirect taxation would be offset to some extent by additional rail revenue and hence reduced subsidy.
- 6.60 It can therefore be estimated that the reintroduction of Ebbw Vale services has led to reduced road traffic levels which has then generated around £1m per annum in gross economic benefits.
- 6.61 A full record of assumptions is provided in Annex D.

Key Point: Overall, the reopening of the Ebbw Vale line has removed approximately 14 million potential car kilometres per annum from the road network which has then generated around £1m per annum in gross economic benefits.

Ebbw Vale Stakeholder Consultation

- 6.62 In addition to conducting research with the general public, telephone consultations were held with a range of consultees who have a potentially wider or indirect interest in the Ebbw Vale line. A list of the organisations contacted as part of the research is provided in Annex E.
- 6.63 The following sections thematically summarise the key points from these consultations. It is important to bear in mind that what is reported here are views as presented by the consultees. Where possible, points are evidenced using available secondary data but, as is always the case with such consultation, there is an element of anecdote and opinion in the following sections.

Access to the Jobs Market and the Implications of Improved Connectivity

- 6.64 There was widespread agreement that the line has improved access to employment markets, particularly the Cardiff jobs market. This was deemed to be a key success

of the project and a clear example of where positive government intervention can support economic development and regeneration. As discussed above, overall, patronage on the Ebbw Vale line significantly exceeded forecasts (the line going to Cardiff being cited as a key reason for this), whilst there has also been a marked shift in rail-based travel-to-work (see below).

- 6.65 Consultees across the piece explained that the busiest services are AM peak southbound and PM peak northbound, suggesting a significant commuting flow to and from Cardiff. When the line was built it was premised on an hourly two car service but with patronage levels well in excess of forecast, some of the commuter services have been strengthened to accommodate demand.
- 6.66 Whilst the line has substantially improved access to the Cardiff jobs market, the lack of a direct rail connection to Newport, the traditional centre for the Ebbw Valley, was highlighted as a key issue (although it was widely acknowledged that Cardiff Central is the “right” terminus for the line). At present, the line has the effect of taking people out of Newport (from Rogerstone and Pye Corner) to Cardiff. With Newport being a key employment centre for the Ebbw Valley, the lack of a direct connection to the city means that there is believed to be significant latent demand for travel which is not currently being captured by the route.
- 6.67 Whilst the dominant flow is undoubtedly towards the capital, the consultations suggested that the re-opening of the line has also encouraged an albeit much lesser commuter flow into the Ebbw Valley. Whilst outside of the scope of the initial investment, this reverse flow is likely to have increased as a result of the extension of the line to Ebbw Vale Town in May 2015 and the associated redevelopment of the town and the former steel works site. As part of the latter a number of new trip attractors have been built including Coleg Gwent, Ebbw Fawr Learning Centre and Ysbyty Aneurin Bevan Hospital and the new rail line is central to the access strategy for the area, with the station located at the heart of the site.

Key Point: The consultations suggest that the reopening of the Ebbw Vale line has had a transformative effect in terms of access to the jobs market, particularly in Cardiff. A number of consultees highlighted the project as a best practice example of where targeted government investment in infrastructure can support wider economic development and regeneration.

Non-Work Travel

- 6.68 As well as employment opportunities, the re-opening of the line has also improved access to the Cardiff leisure and retail market. The consultation suggested that the services are well used at the weekend in particular, with high numbers using the service on Saturday mornings. A number of Saturday trains have also been strengthened to accommodate demand. It was also suggested that the service is well used during school holidays and key sporting (particularly rugby) and cultural events within the capital. The assertion that the service is well used on the weekend is supported by the on-board survey results with the majority of respondents to the survey being weekend users and shopping and other leisure uses being more common journey purposes than travel to work. It was suggested by a number of consultees, most notably the local authorities that rail service is allowing people to make trips they otherwise would not have made or which they would have made by another mode.
- 6.69 As with employment, there is a suspicion that the opening of the line may have had some negative consequences for Newport as a leisure/shopping destination as a result of improving transport connections to/from Cardiff relative to the city. There are however no data available which evidence this point, and it is likely extremely difficult to isolate the impact of the rail reopening from, for example, the opening of St David's Shopping Centre in Cardiff in conjunction with the repeated delay in the redevelopment of Newport City Centre.

Key Point: The consultations suggested that the reopening of the Ebbw Vale line has prompted significant use of the train for leisure purposes, with peak leisure use coinciding with the weekends, the festive season and major sporting and cultural events. It was suggested that the reopening of the Ebbw Vale line is allowing people to make trips they would not have made previously or would have made by another mode (likely by private car).

- 6.70 Transport investment is often key to unlocking regeneration and land-use development opportunities. By facilitating improved access both to sites and from sites to major employment / leisure centres, enhanced transport connectivity can act as a significant enabler of economic development. In order to collect views on this issue, we consulted with Planning Officers at each of three local authorities through which the line runs. Housing completions data were also sought with a view to quantifying this impact, although only Blaenau Gwent Council provided these data.
- 6.71 Blaenau Gwent CBC described how the improved connectivity provided by the rail line combined with the benefits offered by the presence of an Enterprise Zone in Ebbw Vale has helped improve the attractiveness of the area to developers. Both factors have helped to stimulate development in and around the town. The table below shows housing completions in Blaenau Gwent since 2007:

Table 6.4: Blaenau Gwent CBC Housing Completions 2007-2015

	Number of Homes Completed On...		
Year	Large Sites	Small Sites	Total Completions
2007	32	41	73
2008	49	53	102
2009	97	53	150
2010	91	24	115
2011	64	8	72
2012	190	23	213
2013	59	23	82
2014	59	22	81
2015 (Part-Year)	27	22	49
TOTAL	641	247	937

Source: Blaenau Gwent CBC

- 6.72 It can be seen from the above table that large site completions were higher in each year post-line opening, despite the fact that that period immediately after the line opening coincided with the start of the economic downturn. The Council did explain the timing has been challenging given the coincidence with the economic downturn and public sector spending reductions, which has meant that much of the proposed housing land within the local development plan (LDP) has not been released and the viability of private sector development in the area has been curtailed somewhat in recent years.

- 6.73 Public sector funding was required to kick-start local development, with a number of strategic investment projects taken forward including the major regeneration project to develop the former steel works site and the latter extension of the rail line into Ebbw Vale itself.
- 6.74 However, while the development of the area has been slower than initially envisaged, it is anticipated that the development plans will gradually be realised in the coming years as the market recovers and the rail line, as part of the wider package of measures, is seen as an important enabler in this process.
- 6.75 Consultees from Caerphilly County Borough Council explained that the enhanced connectivity offered by the line had assisted in making the case (particularly in terms of European funding) for urban realm improvements in towns such as Newbridge and Risca which had in turn helped to improve the viability of the town centres. However, they noted that the scheme had not enabled any significant new land-use developments, principally because the stations are largely in town centres.
- 6.76 It was however explained that there are a number of proximate major developments (such as Oakdale). However, there are limited transport connections between the Ebbw Vale stations and these sites, which has meant that induced development has been limited.
- 6.77 In Newport, there have been a number of new residential developments within the vicinity of the both Rogerstone and Pye Corner Stations, with both areas increasing in popularity in terms of residential development. Rogerstone in particular has, in recent years, progressed from being a largely post-industrial village into a largely commuter settlement. The reopening of the Ebbw Vale line has significantly assisted in terms of enhancing accessibility, particularly to Cardiff.
- 6.78 There are also two large residential sites coming forward within Newport in close proximity to the line: the Jubilee Park development, located to the north of Pye Corner Station in close proximity to the station; and Tredegar Park located south of the M4 will accommodate 900 and 1,000 new homes respectively as well as a range of local services. Consultees explained that there had been greater developer interest in both sites as a result of the proximity of the rail line, which it is believed was an important factor in ensuring the viability of both sites.

Key Point: The reopening of the Ebbw Vale line to passenger traffic has played an important role in enabling / stimulating new housing development throughout the corridor. This is particularly the case at Pye Corner, Rogerstone and Ebbw Vale itself. Commercial development has been more limited, although this is unsurprising given the proximity of the corridor to Newport and Cardiff.

Impact on Ebbw Vale Businesses

- 6.79 A key issue with investing in any transport scheme is that there can be a ‘two-way street’ effect, whereby the benefits accruing to one area can be offset by disbenefits in another. This is often the case where a small and relatively self-contained area is connected to a larger area, which attracts e.g. the highest skilled employees to better paying jobs, retail spend etc.
- 6.80 However, the evidence collected through the consultation has suggested that this has not been the case in the context of the Ebbw Vale line. Whilst more Ebbw Valley residents now commute to the south coast, this is seen as beneficial in terms of bringing money back into the area and indeed encouraging in-migration. In addition, the reopening of the line has coincided with urban realm improvements in a number of settlements including Ebbw Vale, Newbridge and Risca.
- 6.81 In terms of town centre vitality, there was a view amongst business and economic development consultees that the line had actually supported Ebbw Valley towns and villages. It was felt that the types of retail activity in these towns & villages are sufficiently distinctive so as to avoid economic leakage to Cardiff and Newport. Indeed, data from Blaenau Gwent Council suggest that footfall in Ebbw Vale town centre increased because of the new Ebbw Vale Town station, the cableway and the new development in the surrounding area (34% increase in daily visitors to the town in the last year).

Key Point: Consultees did not identify any significant economic leakage as a result of the reopening of the Ebbw Vale line. Indeed, the line was seen as impacting positively on town centre footfall and urban regeneration.

Accessibility

6.82 The Ebbw Vale line was built to the equalities standards required by the Department for Transport Code of Practice for New Stations and therefore accessibility arrangements on the route are likely to be better relative to the other older lines within the Valleys network. However, during the consultation a number of remaining accessibility barriers specific to the Ebbw Vale line were identified as follows:

- Unmanned stations /self-service ticket machines – a number of the stations on the Ebbw Vale line are unmanned with self-service ticket machines only. Consultees noted that the height of these machines may prevent wheelchair users from purchasing tickets. The functionality of the ticket machines was also identified as an issue with disabled rail cards not recognised, thereby preventing the purchase of discounted tickets.
- Capacity issues – high passenger numbers on the line were identified as a key issue, particularly during peak times and on match days/special events. Where trains run at or near capacity, due to the sheer number of passengers, it can be difficult for disabled people to board even where assistance has been booked in advance.
- Llanhilleth Station car park - the car park at Llanhilleth Station is some distance from the station with negotiation of the road bridge required and this may create difficulties for some disabled passengers.
- Cost - the cost of train travel and the inability to use concessionary and disabled bus passes for rail travel was raised as an issue by some consultees, although the cost of using the Ebbw Vale line on a £/km basis is lower than other Valleys lines.

Key Point: Consultation feedback suggests that the Ebbw Vale line was built to a very high standard in terms of providing equal opportunities. However, a number of issues were highlighted which could be valuable in informing the design and development of future projects of this nature.

Transport Impacts

Mode Shift

6.83 Consultees noted that empirical evidence on whether the reopening of the Ebbw Vale line has predominantly generated new journeys or displaced journeys from other modes is limited. However, anecdotally, it was felt that there has been modal

shift from the car to rail (supported by the survey data), particularly for commuter traffic but also for leisure and other purposes. Evidence-based consideration of this issue has been provided in relation to the passenger surveys (see above) and mode of travel-to-work (see below).

Change of Origin Station

- 6.84 Switching between the routes to take advantage of the enhanced services on the Ebbw Vale line was not felt to be common. The topography of the Valleys means switching between the lines is generally impractical. In addition, for the majority of locations, switching lines would result in a significant disbenefit in terms of service frequency. For example, Cwmbran and, to a lesser extent Pontypool & New Inn, offer a level of connectivity at least equivalent to that offered on the Ebbw Vale line while in areas largely equidistant from the Ebbw Vale and Rhymney lines (e.g. Blackwood), the latter is generally preferred because of the fifteen minute (as opposed to one hour) headway. Whilst switching may have occurred in some locations (such as Blaenavon), the numbers doing so were felt to be small.

Parking Capacity

- 6.85 In general the car parks along the rail line are well used, particularly at peak commuting times. The primary exceptions to this are Ebbw Vale Parkway and Risca & Pontymister stations which are felt to be underutilised.
- 6.86 Since the opening of Ebbw Vale Town station in May 2015, the number of people parking at Ebbw Vale Parkway has declined, with many former users originating in the north of Blaenau Gwent opting to switch to the new town centre station as a result of the shorter drive time. However, with the significant development planned in the Heads of the Valleys in the near-term, the available capacity may be taken-up over time.
- 6.87 The park and ride at Risca & Pontymister is poorly utilised, with only approximately 20-25 of the 90 available spaces used on a daily basis. The low frequency of the service is felt to contribute to lower car park utilisation at the P&R site, a trend which is in contrast with that of P&R sites in the wider valleys network with, for example, the new park and ride at Pengam on the Rhymney line being very well utilised.
- 6.88 Llanhilleth and Newbridge Station car parks, the latter of which is shared between rail and town centre uses, are relatively well used, with plans for additional parking to be provided at each station.

- 6.89 Both Rogerstone and Pye Corner were said to be increasing in popularity as places to live, with both car parks relatively well used and the site at Pye Corner being approximately 75% full during the AM peak.

Impact on the Bus Network

- 6.90 As may be expected, the reopening of the Ebbw Vale line has resulted in a number of changes to the bus network in the vicinity of the route, with some bus services particularly those services providing connections to Cardiff seeing declining passenger figures. For example, in Blaenau Gwent, the bus service between Ebbw Vale and Cardiff reportedly lost between 30%-35% of its market share in the first twelve months post the line opening. Similarly, passenger numbers on route X16 connecting Risca to Cardiff declined, with repeated changes to the route resulting in connectivity issues between Risca and the employment areas around M4 junction 28 and St Mellons in Cardiff.
- 6.91 Providing bus connections from the rail line into Newport City has proved problematic. There were reportedly two attempts to provide a rail-bus link between Rogerstone and Newport City with the first going via the employment area around M4 junction 28 and, some years later, a direct service to Newport offered. However, neither route was commercially successful. In part this was because of the long journey times compared to the equivalent journey by bus alone, with, for example, it being faster to travel by bus to Newbridge rather than take the rail-bus link. In addition, Llanhilleth and Ebbw Vale Parkway do not have large walk in populations and few people were prepared to incur a double interchange penalty for trips to Newport.

Key Points: The location of the Ebbw Vale line in a topographically self-contained corridor has meant that there has been little displacement from other rail services (a point evidenced by the ORR data).

Parking capacity is seen to be sufficient although there is increasing pressure on capacity at Llanhilleth, Newbridge, Pye Corner and Rogerstone. Inter-urban bus services, particularly from the north of the Ebbw Valley to Cardiff, have become less viable since the rail line reopened.

Agglomeration (Cardiff Capital Region)

- 6.92 There was agreement that the opening of the Ebbw Vale line has led to improved connectivity to Cardiff, bringing the Ebbw Valley 'closer' to the capital. The scheme was seen by a number of consultees as promoting economic agglomeration within

the Capital Region and an excellent example of what the Metro scheme and wider Cardiff City Deal should be trying to achieve.

- 6.93 However, there were mixed feelings with regards to the extent to which this has contributed to the concentration of economic activities within the capital.

Key Point: Consultees have noted that the reopening of the Ebbw Vale line has helped promote economic agglomeration within the Cardiff Capital Region. The project itself was highlighted by a number of stakeholders as exactly the type of project which should be developed under the Metro concept and as part of the wider forthcoming City Deal.

Secondary Data Analysis – Ebbw Vale

Census Travel-to-Work Data

- 6.94 Travel-to-work data from the 2001 and 2011 Census at the LSOA level was analysed and compared in order to assess changes in the travel-to-work mode used within a catchment area around the Ebbw Vale line (as shown in Figure 6.14).
- 6.95 Table 6.5 shows the percentage change in the number of people travelling by different travel modes in each zone between 2001 and 2011.

Figure 6.14: Travel to Work Ebbw Vale Line Boundary

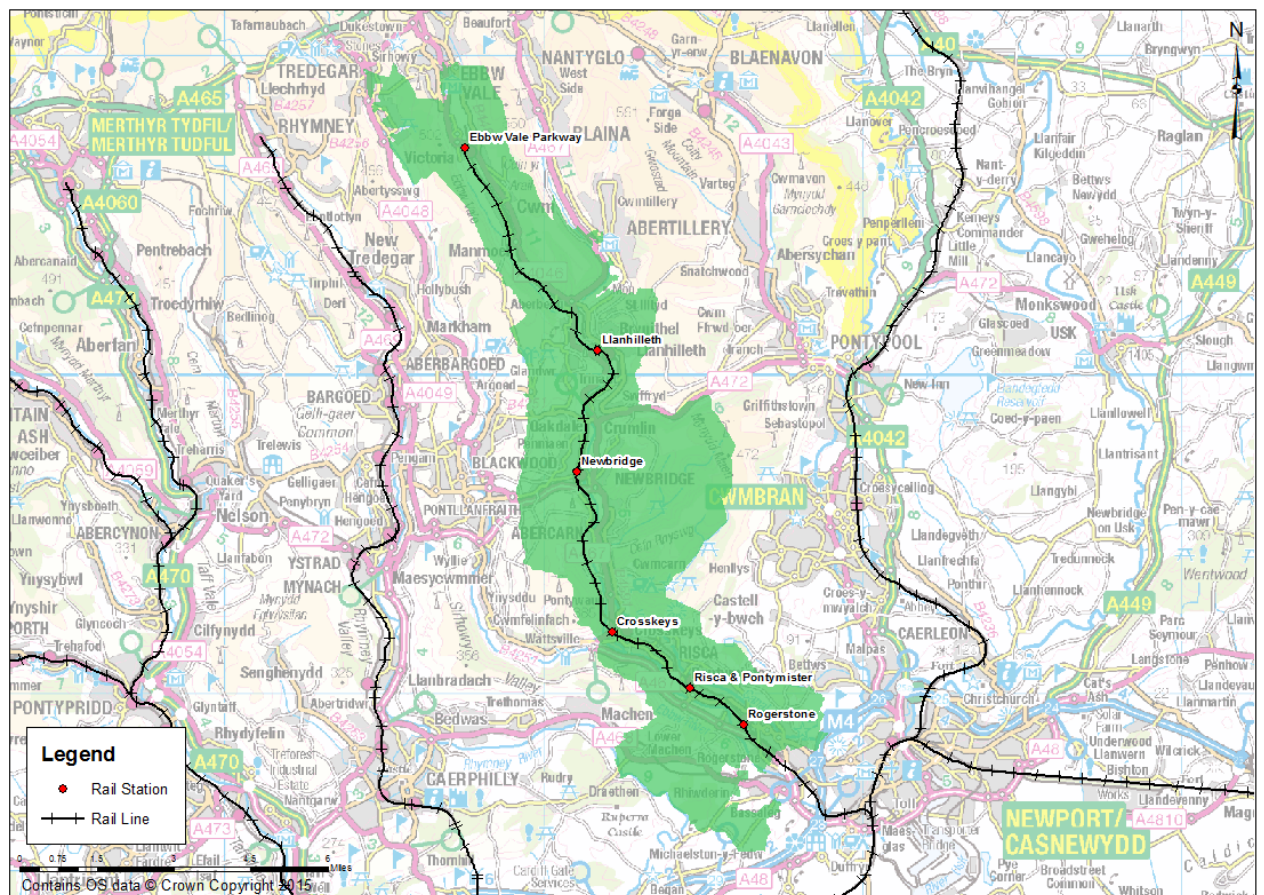


Table 6.5: Number of People Travelling to Work by Various Transport Modes 2001-2011 – Ebbw Vale Catchment

	All categories	Work mainly at or from home	Train	Bus, minibus or coach	Driving a car or van	Passenger in a car or van	Bicycle	On foot	Other method of travel to work	Not in employment
2001	37,583	1,356	109	1,237	14,083	2,546	148	1,770	325	16,009
2011	41,601	1,730	446	1,110	18,068	2,079	169	1,461	349	16,189
% Change	11%	28%	309%	-10%	28%	-18%	14%	-17%	7%	1%

Source: Nomis (2016)

- 6.96 As shown above, the absolute number of people travelling to work by train in the Ebbw Vale – Rogerstone catchment area has increased by 309% (n=337) between 2001 and 2011. This is the largest rate of increase in rail travel across all of the lines in the Valleys Rail network, including both the strengthened and non-strengthened services.
- 6.97 Over the same time period the total number of people in employment increased by 11% (n=4,018). There was a decline in the numbers choosing to walk to work (-17%, n=-309) which, when combined with the increase in rail travel, suggests that there may have been an element of switching from a local job to a commuting related job. Travel by bus declined (-10%, n=-127), likely as a result of people switching to rail (which in turn caused further diminution of inter-urban bus services between the Ebbw Valley and Cardiff). The number of people who drive to work has increased, although the extent of this growth may have been checked by the option of taking the train.
- 6.98 The results support those of the primary research which suggests that the rail link created new opportunities to access employment and other services in Newport and Cardiff. While, given the aggregate nature of the data, it is difficult to discern exact patterns, it is likely that the rail users are made up of both new users and those who have switched from alternative modes.

Key Point: There has been a significant increase in rail use in the Ebbw Vale – Rogerstone catchment over the Census period, with the number of people choosing to travel to work by rail increasing by over 300% over this period.

Deprivation

- 6.99 There has been a marginal reduction in relative levels of deprivation (as measured by the Welsh Index of Multiple Deprivation) in the Ebbw Vale corridor between the 2005 and 2014 WIMD datasets. Whilst it is not possible to prove causality between the reopening of the rail line and reduced relative deprivation, it is likely that the new infrastructure enabled new economic development and employment opportunities (which are evidenced by the consultation).
- 6.100 A detailed review of changes WIMD rankings is provided in Annex F.

7. Evaluation of Strengthened Services

Overview

- 7.1 This chapter sets out the available evidence on the outputs, outcomes and impacts of the strengthening programme on other Valleys lines.
- 7.2 It is important to note that the provision of additional rolling stock on services which were experiencing peak capacity problems was a key element of the strengthening programme. The investment in additional stock and train crew across the Valleys rail network was clearly smaller in nature than that on the Ebbw Vale line. However, it was nonetheless critical in unlocking constraints on the network which were preventing passenger growth.
- 7.3 Whilst a critical element of the VRS overall, the strengthening on the other Valleys lines commenced before the period which this evaluation covers. In addition, the strengthening took place alongside a programme of frequency enhancements on various lines. Given the elapsed time since the strengthened services were introduced, there are very little data available which can demonstrate attribution of benefits in the context of the ERDF funding. This chapter therefore considers the benefits of strengthening more generally, using available secondary data sources and the findings from consultation with the Welsh Government.

Context

- 7.4 In advance of discussing the impacts of strengthening, it is useful to set out the context in which the strengthening project was undertaken. In 2004, the Valleys rail lines were experiencing significant peak congestion, particularly in and around Cardiff. Indeed, on several sections of different lines, the number of passengers standing was greater than the rolling stock franchise capacity, whilst several other lines recorded standing passengers, albeit within the rolling stock franchise capacity.
- 7.5 In January 2005, a fleet of ex-ScotRail rolling stock was to be cascaded into the Wales & Borders franchise. In summary, this involved the cascade of 12 two-car Class 150s, which were intended to replace locomotive hauled stock on the Rhymney line and six two-car Class 158s, which were to go off-hire. Given the capacity constraints on the Valleys network, WG committed to invest around £3.6 million per annum through until 2018 (around £50 million in total) to retain the six Class 158s and to lease a further Class 150 and two one car Class 153s.

- 7.6 The increase in total rolling stock availability allowed for:
- Seven two-car Class 150s to replace seven two-car Class 14x Pacers, adding 34 seats per service.
 - The freed-up Pacer stock was then coupled to seven existing two-car Pacers, doubling their capacity (circa plus 102 seats each) (Welsh Government, 2005).

- 7.7 The outputs, outcomes and impacts of the increase in rolling stock are set out below.

Outputs

- 7.8 The Welsh Government provided details of the outputs of the strengthening programme (although it should be noted that these outputs are pre-ERDF funding).
- 7.9 Data from Welsh Government suggest that the initial wave of strengthening provided a substantial **19% increase in capacity on the Valleys rail network**, a critical intervention at a point when capacity constraints were potentially choking off growth.
- 7.10 Further strengthening took place over time, coupled with frequency enhancements.

Outcomes

Passenger Numbers

- 7.11 In an effort to determine the impact of the strengthening, the research included a review of ORR station usage on all strengthened lines between 2001/02 and 2013/14, comparing the trends with the Control Group where applicable.
- 7.12 As the various Valleys lines converge at different points on the network, it was necessary to divide the affected lines into a number of distinct segments
- 7.13 The analysis of each segments is included in Annex G. The main point to emerge from this analysis is that it is difficult to identify any discernible trend in station usage that can be attributed to the strengthened services. This is not to say that there was not an impact; the issue is isolating that impact without a precise chronology of strengthening and any primary data / evidence, particularly in the context of the following factors:
- the strengthened services represent only a small proportion of all Valleys services;
 - the impact of land-use development (housing and commercial) and wider macroeconomic trends on the demand for rail travel; and

- much of the benefit of the strengthening will likely have accrued to passengers who were previously standing but who are now able to get a seat. This impact will not be picked up in the ORR station usage data.

- 7.14 However, a review of capacity by WG / ATW in autumn 2014 does highlight the positive benefits of strengthening. As explained previously, a number of sections of different lines on the Valleys rail network were becoming capacity constrained in 2004, before the strengthening provided a capacity uplift of around 19%. Manual counts of passenger numbers on Valleys services in the AM and PM peak were undertaken between 1st September and 30th November 2014.
- 7.15 The counts established that on a typical weekday (measured by the weekday average), only a handful of passengers boarding the train at the stations nearest to Cardiff had to stand. There were only a very small number of instances where the number of passengers exceeded the industry standard 'Passengers In Excess of Capacity measure (PiXC)' measure¹² (Welsh Government, 2015). Given that capacity problems were being experienced in 2004 and that growth in passenger journeys in Wales has been 45% between 2004-05 and 2013-14 (ORR 2015), it can be argued that strengthening, combined with other rail improvements, has facilitated the significant growth on the Valleys rail network.

Impacts

Census Travel to Work

- 7.16 Travel-to-work data from the 2001 and 2011 Census at the LSOA level was analysed and compared in order to assess changes in the travel to work mode used over the period. In order to isolate the impacts on each line, catchment areas were defined around each route as follows:
- Aberdare - Penrhiwceiber
 - Barry Island - Grangetown
 - Bridgend - Pontyclun
 - Merthyr - Abercynon
 - Pontypridd - Cathays
 - Rhymney - Llanishen
 - Treherbert - Trehafod

¹² PiXC is used to identify the most severe instances of average overcrowding. Services can break PiXC down in two ways, either by the average load exceeding 135% of the booked seating capacity, or by virtue of passengers having to stand for more than 20 mins on average.

7.17 In addition, for comparison purposes, catchment areas were defined for those lines not subject to the Strengthening Project as follows:

- Abergavenny - Cwmbran
- Coryton - Ty Glas
- Danescourt - Ninian Park
- Maesteg - Wildmill
- Newport - Chepstow

7.18 The boundaries of the catchment areas are shown in Figure 7.1 while Tables 7.1 and 7.2 show the percentage change in the number of people travelling by different travel modes in each zone between 2001 and 2011.

Figure 7.1: Travel to Work Boundaries

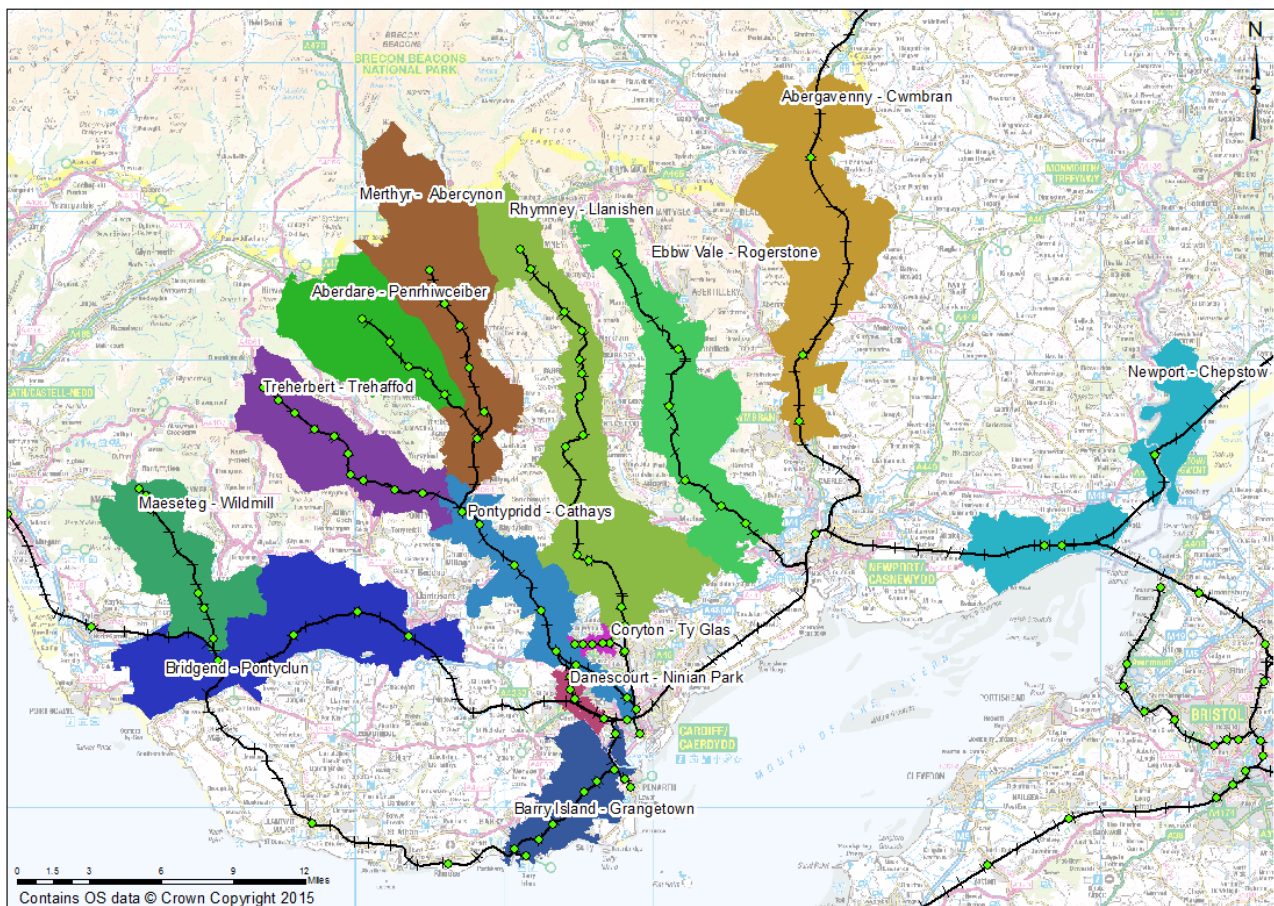


Table 7.1: Percentage Change in Number of People Travelling to Work by Various Transport Modes 2001-2011 – Strengthened Lines

	All categories	Work mainly at or from home	Train	Bus, minibus or coach	Driving a car or van	Passenger in a car or van	Bicycle	On foot	Other method of travel to work	Not in employment
Aberdare - Penrhiwceiber	3%	27%	106%	-28%	23%	-19%	-39%	-9%	-11%	-6%
Barry Island - Grangetown	15%	35%	50%	-4%	29%	-14%	51%	16%	-2%	4%
Bridgend - Pontyclun	21%	40%	208%	-17%	30%	-20%	7%	8%	3%	15%
Merthyr - Abercynon	7%	37%	73%	-1%	31%	-1%	-4%	7%	46%	-9%
Pontypridd - Cathays	14%	37%	69%	-8%	17%	-26%	59%	18%	1%	10%
Rhymney - Llanishen	5%	20%	47%	-19%	20%	-23%	22%	-7%	-10%	-3%
Treherbert - Trehafod	0%	5%	71%	-21%	22%	-25%	0%	-6%	-4%	-11%
Total	9%	29%	74%	-12%	25%	-18%	32%	3%	2%	0%

Source: Stats Wales (2016)

Table 7.2: Percentage Change in Number of People Travelling to Work by Various Transport Modes 2001-2011 – Non Strengthened Lines

	All categories	Work mainly at or from home	Train	Bus, minibus or coach	Driving a car or van	Passenger in a car or van	Bicycle	On foot	Other method of travel to work	Not in employment
Abergavenny – Cwmbran	3%	24%	77%	7%	14%	-17%	-2%	-5%	-14%	-6%
Coryton - Ty Glas	41%	67%	81%	37%	50%	-4%	95%	62%	20%	23%
Danescourt - Ninian Park	9%	38%	102%	0%	11%	-18%	63%	15%	1%	3%
Maeseteg - Wildmill	6%	27%	116%	-32%	19%	-27%	5%	-6%	-8%	2%
Newport - Chepstow	13%	33%	75%	-18%	10%	-12%	-14%	-6%	-12%	25%
Total	10%	32%	88%	-4%	16%	-18%	27%	2%	-8%	4%

Source: Stats Wales (2016)

- 7.19 As shown, the number of people travelling to work by train has increased across all of the catchment areas.
- 7.20 Of the strengthened lines, the Bridgend – Pontyclun catchment area has seen the largest rate of growth (208%, n=785) followed by Aberdare to Penrhiwceiber (106%, n=386).
- 7.21 However, while there has been a clear increase in the numbers travelling by train in the strengthened catchment areas (88%), there has also been an increase within the non-strengthened catchment areas (70%),
- 7.22 This suggests that the increase may be more due to macroeconomic factors (e.g. higher fuel prices) and local factors (e.g new housing, higher parking charges etc) than a direct result of the strengthened services. Nonetheless, the strengthening helped to ensure that there was sufficient capacity to accommodate this significant growth in rail patronage.

Key Point: There has been strong rail passenger growth across South-East Wales which would have been unlikely to have occurred without the introduction of the strengthened services.

8. Views on the Valleys Rail Network (Omnibus Survey)

8.1 An omnibus survey was carried out to evaluate levels of satisfaction with the Valleys Rail Strengthening Project amongst a wider, community audience, including non or infrequent rail users. The omnibus survey covered all Valleys lines, including Ebbw Vale.

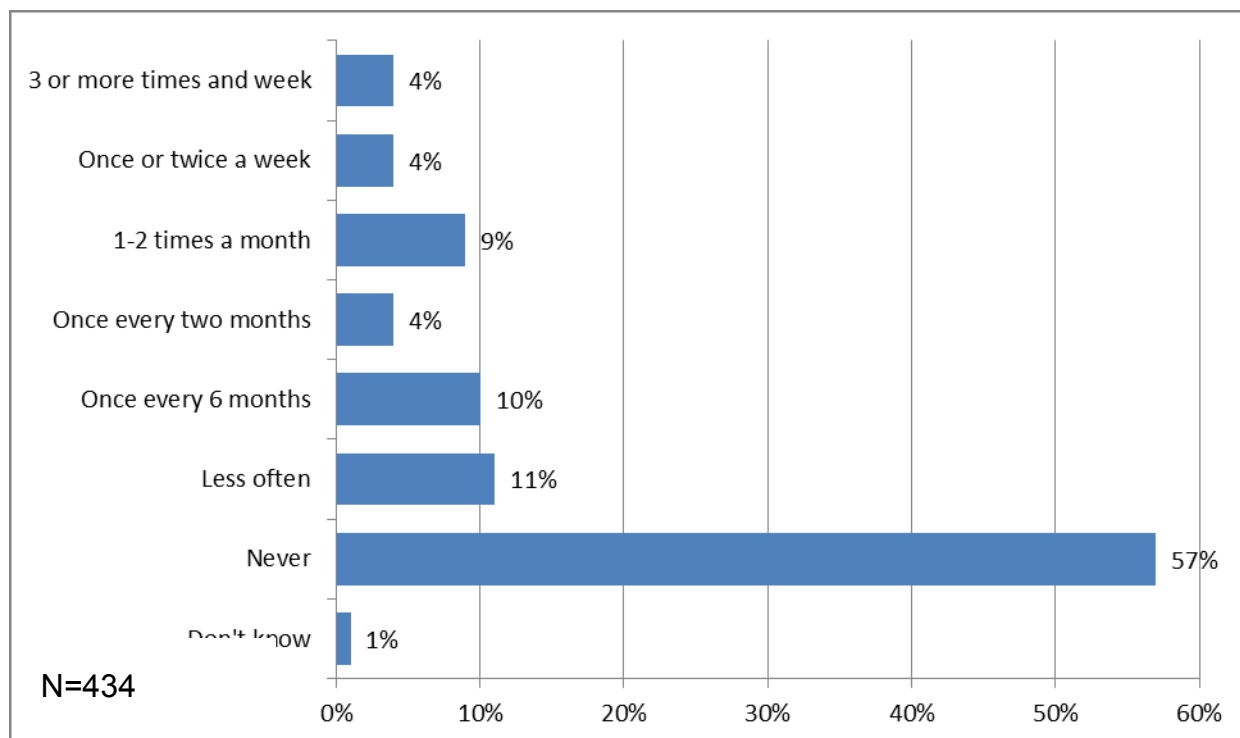
8.2 The following section provides a brief summary of the results of the survey. In total 440 interviews were conducted with residents of the local authority areas covered by the Valleys Lines. The results are reported for the Valleys as a whole and, where relevant, by region as follows:

- South West – Bridgend
- Valleys – Rhondda Cynon Taf, Merthyr Tydfil, Caerphilly, Blaenau Gwent
- South East - Cardiff, Newport, Vale of Glamorgan

Typical Use of Valleys Rail Lines

8.3 Figure 8.1 shows the typical use of the Valleys Rail Lines as reported by respondents to the survey. Overall, the majority of respondents to the survey (57%, n=248) indicated that they never use the Valleys rail lines, with just 8% (n=30) of respondents using the service on a weekly basis or more.

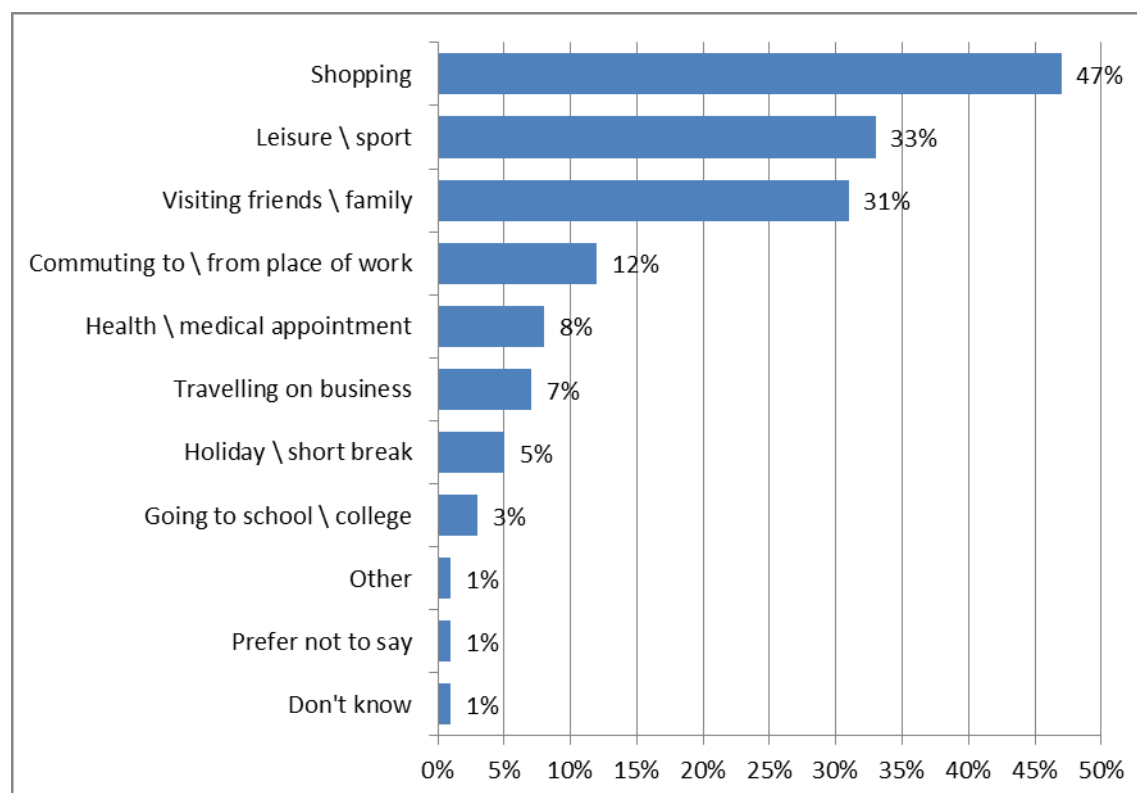
Figure 8.1: How often do you typically use Valleys Rail Line train services?



Journey Purpose

- 8.4 Those who indicated they used the Valley Lines train services were asked about the reason they use the train. Shopping was by far the most dominant reason for using the lines, with 47% (n=88) of respondents selecting this response (see Figure 8.2). This was followed by leisure / sport (33%, n=62) and visiting friends / family (31%, n=57). Results were similar across the three regions, with those in the Valleys and the West slightly more likely to use the service for shopping purposes, reflecting the propensity to travel into Cardiff by rail for shopping.

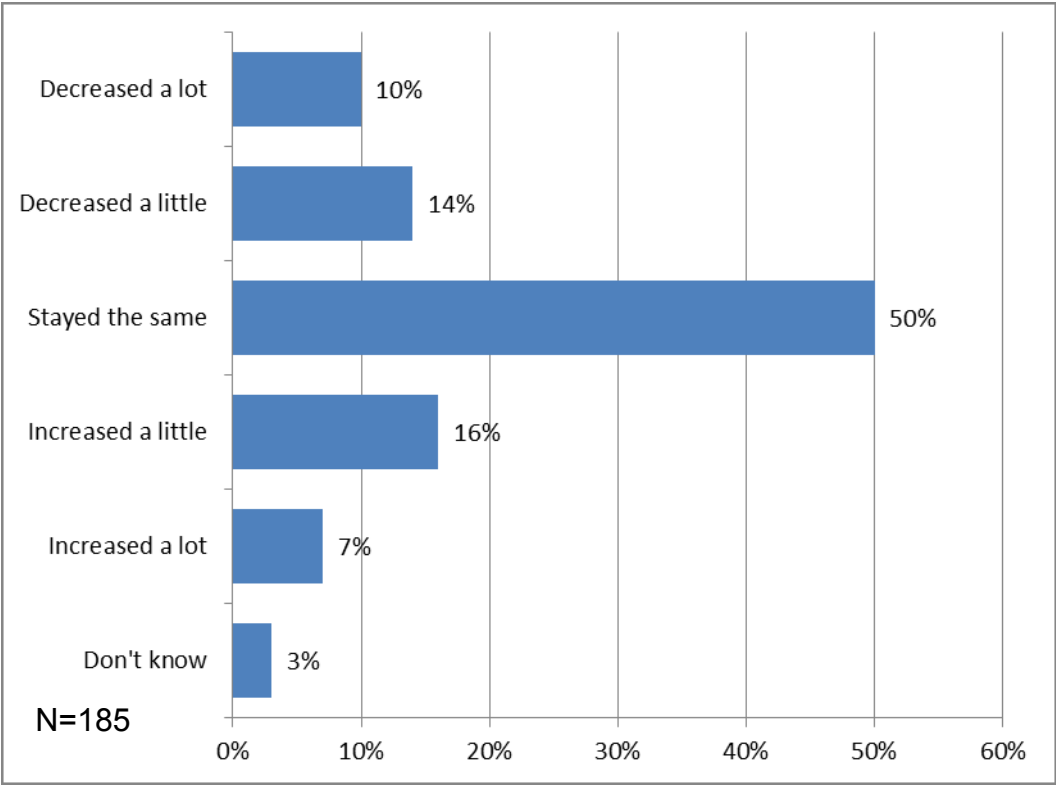
Figure 8.2: For what reasons do you mostly use the train? *Multiple response question*



Frequency of Use

- 8.5 Those who indicated they used the Valleys Lines train services were asked about their frequency of use. Figure 8.3 shows the extent to which passenger's use of the Valleys lines has increased or decreased in the last 3 years. Overall, the highest proportion stated that their use had remained the same over the period (50%, n=92), with a fairly even proportion stating that their use had increased (23%, n=43) as those who said it had decreased (24%, n=44).

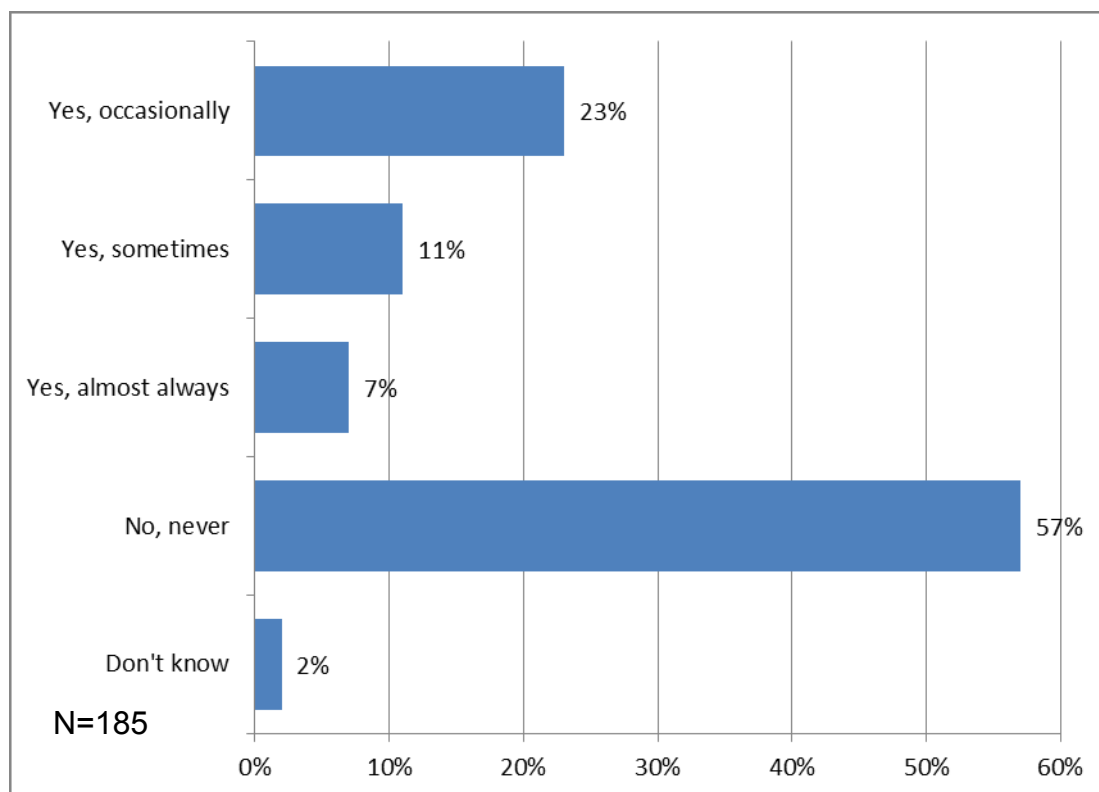
Figure 8.3: In the last 3 years, would you say that your use of Valleys Lines train services has increased, stayed the same or decreased?



Capacity

8.6 Passengers were also asked to indicate whether they had experienced any difficulties in finding a seat when using the service, the results of which are shown in in Figure 8.4.

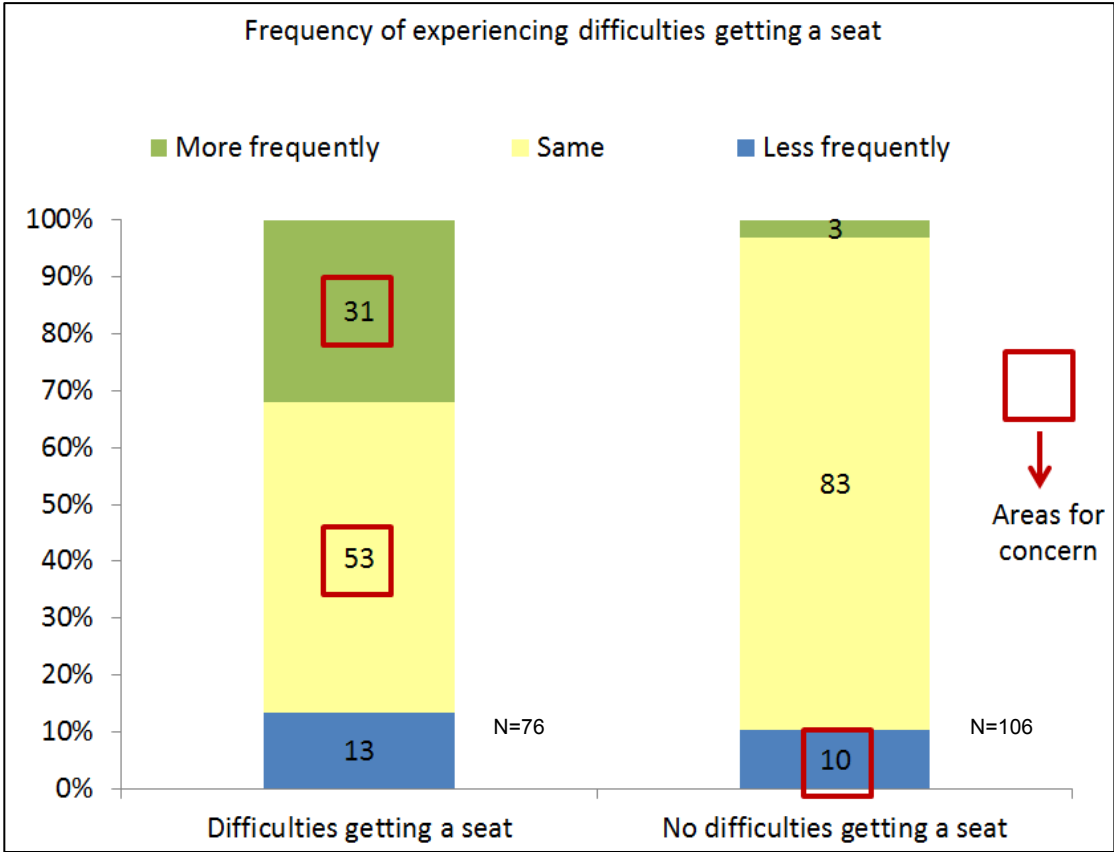
Figure 8.4: Do you ever experience any difficulties in finding a seat at the times you need to travel when using the Valleys Line train services?



8.7 The majority of passengers (57%, n=106) stated that they never experience difficulty finding a seat. 7% (n=13) of passengers responded that they almost always find it difficult to get a seat, whilst 11% (n=20) of users sometimes experience difficulty getting a seat.

8.8 Passengers were also asked whether the degree to which they experience difficulty finding a seat had increased or decreased over the last three years. As shown in Figure 8.5, of those who indicated they do experience difficulties getting a seat, 53% (n=40) said the frequency of this had not changed and 31% (n=24) said the frequency had increased over the last 3 years. In contrast, of those who said they did not experience difficulty finding a seat, 10% (n=11) said this had happened less frequently (i.e. their difficulty had increased over the period).

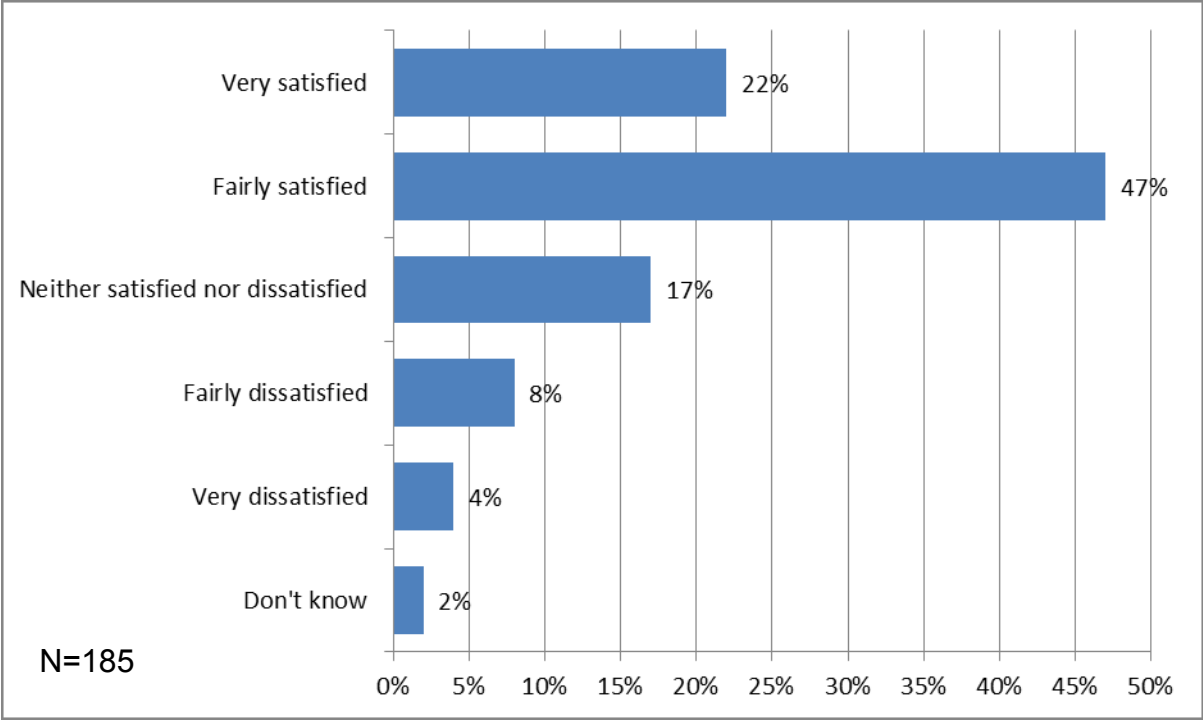
Figure 8.5: In the last 3 years have you experienced difficulty finding a seat...?



Satisfaction with Service

8.9 Satisfaction with the service was relatively high, with 47% (n=88) of passengers describing themselves as fairly satisfied and 22% (n=40) stating that they were very satisfied. In total, 69% (n=128) of passengers were satisfied overall and 12% (n=22) were dissatisfied, with the highest levels of satisfaction in the south-west (90%).

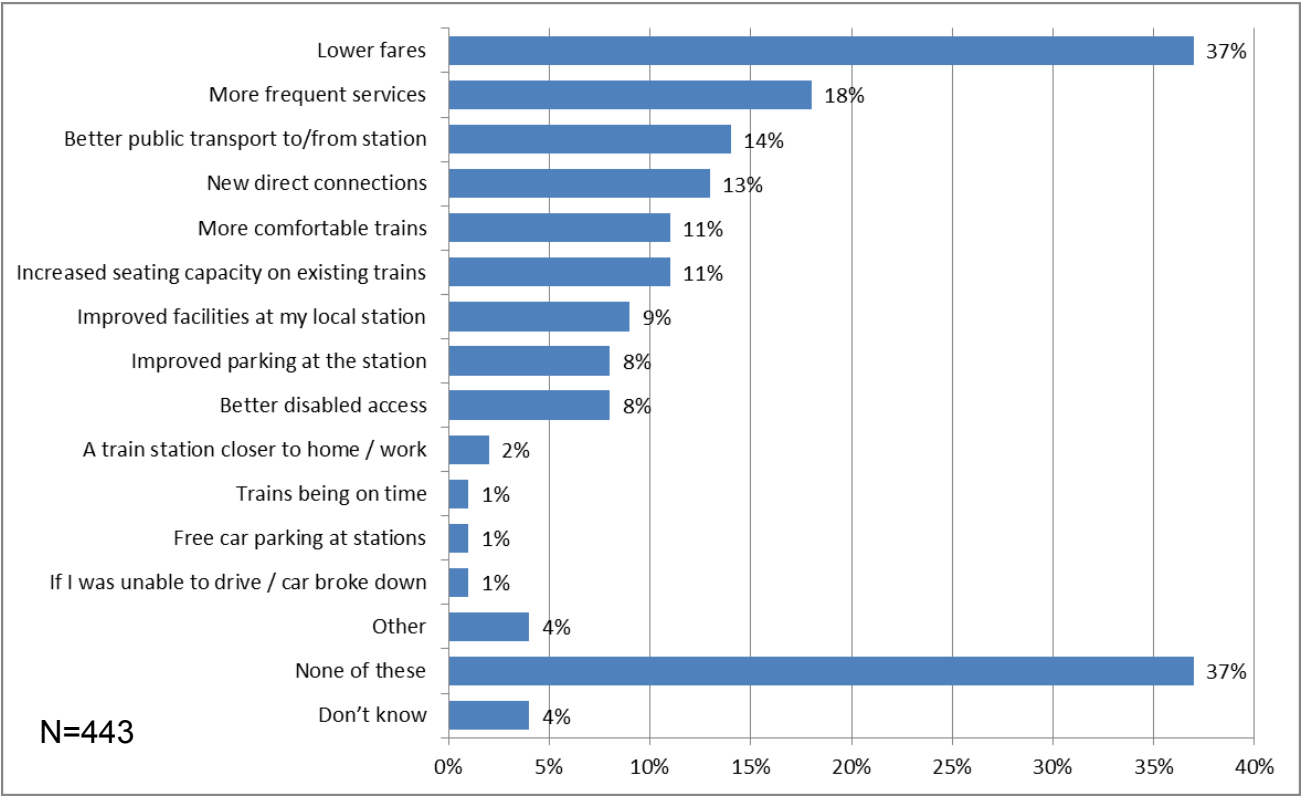
Figure 8.6: Overall how satisfied are you with the Valleys Line train services?



Service Improvements

8.10 All respondents interviewed (whether users of the Valley Line services or not) were asked about what would make them use local train services more often. The most popular improvement was unsurprisingly lower fares with 37% (n=161) of respondents selecting this option, followed by more frequent services (18%, n=77) and better public transport links to the station (14%, n=61). A relatively high proportion selected ‘none of these’, the majority of whom were non train users.

Figure 8.7: Which, if any, of these factors would encourage you to use your local train service more often? *Multiple response question*



9. Conclusions

- 9.1 This evaluation of the Valleys Rail Strengthening Project has set out in detail the outputs, outcomes and impacts of the combined ERDF and Welsh Government investment in the Valleys rail network, particularly in terms of the reopening of the Ebbw Vale line.

Contribution to Project Objectives

- 9.2 Overall, the project has been highly successful, delivering the following against the objectives of the Business Plan.

Objective 1: Encouraging a modal shift by reducing the level of car usage, particularly single occupancy commuting.

- The reopening of the Ebbw Vale Line has generated around 530,000 additional train kilometres per annum and 77.5 million additional 'seat' kilometres per annum, significantly increasing rail supply. The strengthening provided a 19% uplift in non-Ebbw Vale Valleys rail capacity.
- The reopening of the Ebbw Vale line removed around 14 million road kilometres annually, generating around £1 million of gross economic benefits per annum.
- Travel-to-work by rail grew by 300% in the Ebbw Vale – Rogerstone corridor between the 2001 and 2011 Census periods. The equivalent figure for the strengthened lines is 88% growth, 18% higher than in the non-strengthened areas used as a control group.

Objective 2: Enhancing sustainable accessibility to employment opportunities, key services and enabling local people to access education and training opportunities and the major employment locations within Wales.

- The user survey and consultations suggest that the reopening of the Ebbw Vale line has had a transformative effect in terms of access to the jobs market, particularly in Cardiff. A number of consultees highlighted the project as a best practice example of where targeted government investment in infrastructure can support wider economic development and regeneration.
- There has been strong peak rail passenger growth across South-East Wales which would have been unlikely to have occurred without the introduction of the strengthened services.

Objective 3: Reducing congestion and harmful greenhouse gas emission levels through enhanced rail service during peak hour travel.

- As noted, the reopening of the Ebbw Vale line removed around 14 million road kilometres annually. Of the £1 million of gross economic benefits generated annually, around £130,000 of these benefits relate to reduced GHGs, improved local air quality and a reduction in noise.

9.3 Perhaps more importantly, the VRS contributed both to a wide range of Welsh Government policies and the critical ERDF Cross Cutting Themes of Equal Opportunities and Environmental Sustainability. Indeed:

- In terms of environmental sustainability, the VRS has, as noted above generated around £130,000 per annum of environmental benefits.
- Equal opportunities have also been a key success of the VRS. The VRS has significantly enhanced access to the Cardiff jobs and leisure market and the newly built stations, whilst the VRS has also supported equal opportunities through providing better disabled access facilities than are available at certain other Valleys stations or indeed on the bus.

Reopening of the Ebbw Vale Line

9.4 The reopening of the Ebbw Vale line was also highly successful in terms of the outcomes which the project generated. There has been significant growth in patronage on the Ebbw Vale line since it was reopened in 2008. The Blaenau Gwent station of Llanhilleth witnessed the largest growth over the period, which suggests that the new line has released an element of latent demand. Growth has also been strong at Crosskeys and Rogerstone.

9.5 Ultimately, however, no transport project is undertaken for its own sake – it is always a means to enabling and facilitating a wider package of policy initiatives through improving access to markets and services. It is these impacts on which the success of the reopening of the Ebbw Vale line and the strengthening project more widely can be measured. The impacts associated with the reopening of the line to passenger traffic are significant and include:

- The reopening of the Ebbw Vale line has significantly enhanced access to the Cardiff jobs and leisure market. This has provided new employment and leisure opportunities for residents of the Ebbw Valley whilst, at the same time, expanding the pool of resources / customers available to the Cardiff employment and retail / leisure markets.

- The scheme, in tandem with a range of other policy measures, has also facilitated economic development and regeneration within the Ebbw Valley. Of foremost significance has been the role of the line as an enabler for development on the site of the former Ebbw Vale steelworks. Other impacts include facilitating new land-use (particularly housing) development in areas like Ebbw Vale and Rogerstone. The re-establishment of the line has also coincided with a range of town centre regeneration projects.
- The newly built stations have also supported equal opportunities through providing better disabled access facilities than are available at certain other Valleys stations or indeed on the bus.
- It was also noted that the reopening of the Ebbw Vale line has helped promote economic agglomeration within the Cardiff Capital Region. The project itself was highlighted by a number of stakeholders as exactly the type of project which should be developed under the Metro concept.

9.6 Overall, the reopening of the Ebbw Vale line can be considered highly successful, delivering the pre-scheme objectives and facilitating a wider range of desirable societal impacts.

Strengthened Services

- The initial 2005 wave of strengthening provided a substantial 19% increase in capacity on the Valleys rail network, a critical intervention at a point when capacity constraints were potentially choking off growth.
- Travel-to-work by rail on the strengthened lines grew by 88% between the 2001 and 2011 Census periods, 18% higher than in the non-strengthened areas used as a control group.
- Despite this growth, and a 45% growth in rail travel in Wales as a whole between 2004-05 and 2013-14, there are very few instances of the 'Passengers in Excess of Capacity' (PiXC) measure being exceeded on the Valleys lines, suggesting the additional capacity has facilitated this growth in rail travel.

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Annex A: Policy Review

This annex provides a summary of the contribution of the VRS to the Welsh Government policy of the period.

At the time when funding was awarded, the WG had published several economic development policy statements with which the Project could be aligned, including:

- **Wales: A Vibrant Economy (WAVE)**, The Welsh's Assembly Government's Strategic Framework for Economic Development, November 2005
- **The Wales Spatial Plan (2004)**, covering a 20-year period, provides a high-level strategic framework to guide future development and policy interventions. The 2008 update *People, Places, Futures* confirmed the concerns for sustainable accessibility and regeneration of Valleys communities
- **Wales: A Better Country (2003)** that focuses on the creation of more and better jobs.

The then WAG was also acquiring for the first time the powers to produce its own transport vision¹³:

- **One Wales: Connecting the Nation, the Wales Transport Strategy (2008)** set out plans to achieve social, economic and environmental outcomes that reflect a wide range of responses to earlier consultation. In particular, it set out the five key areas where substantial progress was needed. These were:
 - Reducing greenhouse gas emissions and other environmental impacts
 - Improving public transport and better integration between modes
 - Improving links and access between key settlements and sites across Wales and strategically important all-Wales links
 - Enhancing international connectivity
 - Increasing safety and security.

The One Wales: Connecting the Nation programme aimed to achieve a nation with access for all, where travelling between communities and accessing services, jobs and facilities was both easy and sustainable, and which would support economic growth.

As the Valleys Rail Strengthening project got underway, further policies and strategies emerged that built on earlier initiatives, including:

¹³ Government of Wales Act (2006).

- The **One Wales; One Planet (2009)**, scheme ensuring that sustainable development is the central organising principle of the WG and of the public sector.
- **National Transport Plan (2010)**, the Wales Transport Strategy established the framework for the creation of an integrated transport system to deliver One Wales. The National Transport Plan sits alongside the Regional Transport Plans in delivering the Wales Transport Strategy, ensuring consistency of service provision. The plan makes a commitment to sustainable development and a desire to get more out of the transport infrastructure. Improvements to sections of the road and railway network will be required to make this integrated system safer, more reliable and to reduce journey times.
- **Regional Transport Plan (RTP)** was submitted by South East Wales Transport Alliance (SEWTA) to the then WAG in December 2009 and was approved in 2010. The RTP set out an integrated and sustainable transport strategy for South East Wales that included: a strategic framework, setting out the issues, analysis, vision, aims, and policies; an implementation programme identifying actions, proposals and a five year programme; and a monitoring and review mechanism. The RTP vision was:

“A modern, accessible, integrated and sustainable transport system for South East Wales, which increases opportunity, promotes prosperity for all and protects the environment; where walking, cycling, public transport, and sustainable freight provide real travel alternatives.”

The Valleys Rail Strengthening project was aligned with the rail policies and actions set out in the RTP and the 8 priorities that guided SEWTA's 5-year activities and investment programme.

A key element in ERDF evaluations is consideration of the relevance of a Project and its relationship to policy initiatives. The ERDF Convergence Programme West Wales and the Valleys 2007-13 Operational Programme document links into the Welsh strategic policy initiatives around transport. It contains within Priority 3, Developing a Strategic Infrastructure for a Modern Economy, Theme 1, Sustainable Transport a direct link supporting WAG policy goals at that time.

Annex B: Research Methodology

This annex sets out the detailed research methodology for each element of the study

Establishing Outputs

The supply-side outputs of this project were defined in the Business Plan (Wales Rail Strengthening in Convergence Areas) case as:

- Public transport services created or improved (i.e. annual train kilometres) = 1,644,330 kilometres per annum.
- Annual gross passenger kilometres on public transport = 338,923,539 per annum (i.e. this can be thought of as annual seat kilometres).

However, an inconsistency was found in the data used to produce these estimates and revised estimates were produced as follows:

- Public transport services created or improved (i.e. annual train kilometres) = **1,662,954** per annum
- Annual Gross passenger kilometre opportunities on public transport = **147,092,130** (i.e. annual seat and standing kilometres).

Our method for measuring the *outputs* entailed:

- estimating total additional train kilometres from 1st April 2008 to 31st March 2013 (the period initially envisaged for the ERDF related strengthening) using data provided by Arriva Trains Wales¹⁴; and
- combining the above data with rolling stock types to establish total additional seat kilometres.

The key issue in relation to the above is that rail supply-side data were only available for the Ebbw Vale line and not the other strengthened services. There are a variety of reasons for this, including:

- The Welsh rail franchise only specifies the need for a minimum number of morning services (seven) to be strengthened on a daily basis (up to 12 services could be strengthened within the funding if the rolling stock is available). There was therefore not a consistent daily set of strengthened services over the evaluation period.

¹⁴ Note that this timescale predates the opening of both Pye Corner and Ebbw Vale Town stations.

- The age of the rolling stock - the majority of which dates from the mid-1980s - and tight timetable meant that once two units were coupled in the morning to provide a 'strengthened' service, they would remain coupled throughout the day.

The outturn train and seat kilometres reported in this evaluation therefore reflects the Ebbw Vale line only.

It is also important to note that the data provided by Arriva Trains Wales is in relation to typical train formations for each service on a weekday, Saturday and Sunday. No account is taken in the data of cancellations or short-forming. Therefore, the supply-side data which will be reported in this evaluation reflect timetabled rather than actual train and seat kilometres. In addition, the supply side data considers seat capacity only – no account is taken of the standing capacity provided.

Establishing Outcomes

The outcomes / direct impacts from the VRS are in terms of the change in train loadings.

The means by which this would ideally be determined would be through analysis of Latest Earnings Networked Nationally Overnight (LENNON) data. However, the LENNON data for both the Ebbw Vale and strengthened services were not available for the pre-intervention period. We therefore used the ORR annual estimates of the total number of people entering and exiting each rail station in Great Britain for which a longer time series was available. This allowed for a long-term trend to be established.

The main challenge in this task was that each Valleys line is not a distinct entity. A number of the lines converge, e.g. the Trehebert and Merthyr Tydfil / Aberdare lines all converge at Pontypridd. We therefore reported the trends by line section.

The other challenge is demonstrating causality between the rail improvements and changes in patronage. This is particularly the case for the period during which the strengthened services were introduced given the performance of the wider economy and the socio-economic changes which have occurred in the Valleys in recent years. The means by which this was controlled for was through comparing the Valleys lines sections with other sections of other south-east Wales lines which had not been strengthened (Coryton – Radyr, Maesteg – Chepstow and Abergavenny – Bridgend). This issue was also picked up through the primary research and stakeholder consultation.

Establishing Impacts

The focus was largely on establishing the impacts of the reopening of the Ebbw Vale line to passenger traffic. Given that this represented a more recent and substantial change (i.e. from having no rail service to having a service), the impacts were likely to be larger and more visible. In contrast, the strengthened services, whilst offering needed additional capacity, represented a smaller change in overall service provision, were phased in over a longer period and all services do not necessarily run each day.

There were five distinct elements to this research, as follows:

- passenger surveys on the Ebbw Vale line;
- stakeholder consultation with the public sector, business and other organisations in relation to the impact of the reopening of the Ebbw Vale line;
- identifying changes in travel-to-work patterns between the 2001 and 2011 Censuses for all lines;
- Assessing the gross and net economic impact of the reduction in car kilometres as a result of the reopening of the Ebbw Vale Line through a combination of the user survey results, LENNON data and WebTAG parameters
- identifying changes in multiple deprivation between the 2005 and 2014 Welsh Index of Multiple Deprivation.

A summary of the research approach in relation to each of the above five bullets is provided below.

Ebbw Vale Line Passenger Survey

All questionnaires were completed by passengers travelling on the Ebbw Vale Town to Cardiff Central Reintroduced Passenger Rail Service.

The questionnaire was presented as a self-completion document – this was administered by fieldworkers, who explained the aims of the project and were on hand to assist with any queries on how to complete the questions.

Interviews were conducted with a cross-section of passengers, and no quotas were imposed on the sample in terms of demographics (e.g. age and gender), allowing the profile of passengers to fall out naturally. However, Beaufort fieldworkers ensured that a good spread of passengers was approached in terms of age and gender, to gain the views from a range of people with varying characteristics. This was achieved by interviews being conducted across a range of times of day / days of the week.

Interviews were conducted on all days of the week (weekdays and weekends), across a variety of scheduled times (designed around train timetables and the duration of return journeys). All fieldwork shifts began and ended at Cardiff Central Station.

WEEKDAYS:

Peak morning to early afternoon:	7.15am – 12.40pm
Early afternoon to early evening:	12.20pm – 5.40pm
Early evening to late evening:	5.20pm – 10.40pm

WEEKENDS:

Daytime:	9.05am – 3.45pm
Evening	3.30pm – 10.40pm

Passengers were encouraged to complete the questionnaire during their journey and return this to the fieldworker onboard. However, where this was not possible, passengers were provided with a postage paid return envelope, to post the completed questionnaire back to Beaufort Research in their own time. A total of 747 completed questionnaires were obtained: 728 were collected on-train, and a further 19 were returned via Royal Mail. This was against a target of 500. The questionnaire was offered bilingually, and passengers could complete the questionnaire in the language of their choice (English / Welsh). A total of 2 Welsh questionnaires were completed.

All passengers taking part in the survey were included within a prize draw (if desired), consisting of three prizes of £25 in high street gift vouchers.

Fieldwork took place Wednesday 2nd to Friday 18th December 2015.

Stakeholder Consultation

In addition to conducting research with the direct beneficiaries (in the form of the travelling public), telephone consultations were also held with other parties who have a potentially wider, or indirect interest in the project. These consultations included key public sector bodies, business organisations and other relevant stakeholders such as Sustrans. We secured 19 consultations in total.

The telephone consultations were structured around a pre-prepared topic guide, although meetings were allowed to take their own course and often reflected the specific remit of a given consultee. In all cases, brief notes from each meeting were taken and provided to the consultee for amendment and approval.

Travel-to-Work Patterns

In order to assess the impact of both the Ebbw Vale line reopening and the strengthened services, we have analysed relative changes in the mode of travel-to-work between the 2001 and 2011 Censuses. The changes in the travel-to-work patterns in the intervention group were then compared against the control group. It should be borne in mind that the 2011 Census pre-dated the opening of both Pye Corner and Ebbw Vale Town Stations, and thus any further changes in travel-to-work patterns brought about by these two new stations will not be captured in this analysis.

Reduction in Vehicle (Car) Kilometres

The reopening of the Ebbw Vale Line led to a significant reduction in car kilometres. A detailed description of the methodology used to calculate the economic impact of this is included in Annex D. To summarise, there were two steps to this process.

- Step 1: Estimate the number of car kilometres which are not present on the road network as a consequence of the Ebbw Vale line re-opening
- Step 2: Use WebTAG parameters to estimate the monetised benefits of the removal of these car kilometres.

Changes in Relative Deprivation

The Welsh Index of Multiple Deprivation (WIMD) is the official measure of relative deprivation for small areas in Wales. It is designed to identify those small areas where there are the highest concentrations of several different types of deprivation.

Given the magnitude of the Ebbw Vale scheme and its impact in terms of land-use development and regeneration, we reviewed changes in relative deprivation as recorded in WIMD, with a view to developing anecdotal evidence on the impact of the reopening of the rail line. It should be noted that the WIMD only shows relative deprivation and thus an improvement in an area's ranking does not necessarily reflect an absolute improvement.

Views on the Valleys Rail Network - Omnibus Survey

A further element of the research was aimed at gauging wider opinions on the Valleys rail network amongst local communities. This was done through the use of the Beaufort Wales Omnibus Survey.

The Beaufort Wales Omnibus Survey is the only Wales-focussed syndicated survey of its kind: it is run four times a year, and interviews a representative sample of 1,000 Welsh consumers, in-home, across the whole of Wales. The unitary authorities around the

strengthened Valleys rail services where we would focus this research included: Blaenau Gwent, Bridgend, Caerphilly, Cardiff, Merthyr Tydfil, Newport, Rhondda Cynon Taff, and Vale of Glamorgan.

The Omnibus sample is designed to be representative of the adult population resident in Wales aged 16 and over. The unit of sampling is Lower Layer Super Output Area (LSOA) and 69 interviewing points throughout the Wales are selected with probability proportional to resident population, after stratification by Local Authority and Social Grade. A fresh sample of interviewing locations is selected each wave.

Within each sampling point, interlocking demographic quota controls of age and social class within sex are employed for the selection of respondents. Quotas are set to reflect the individual demographic profile of each selected point.

A fresh sample of interviewing locations and individuals are selected for each survey and no more than one person per household is interviewed.

Interviews are conducted face to face in the homes of respondents utilising CAPI (Computer Aided Personal Interviewing) technology. Beaufort's experienced fieldworkers are used with postal and telephone back-checking in accordance with ISO 20252.

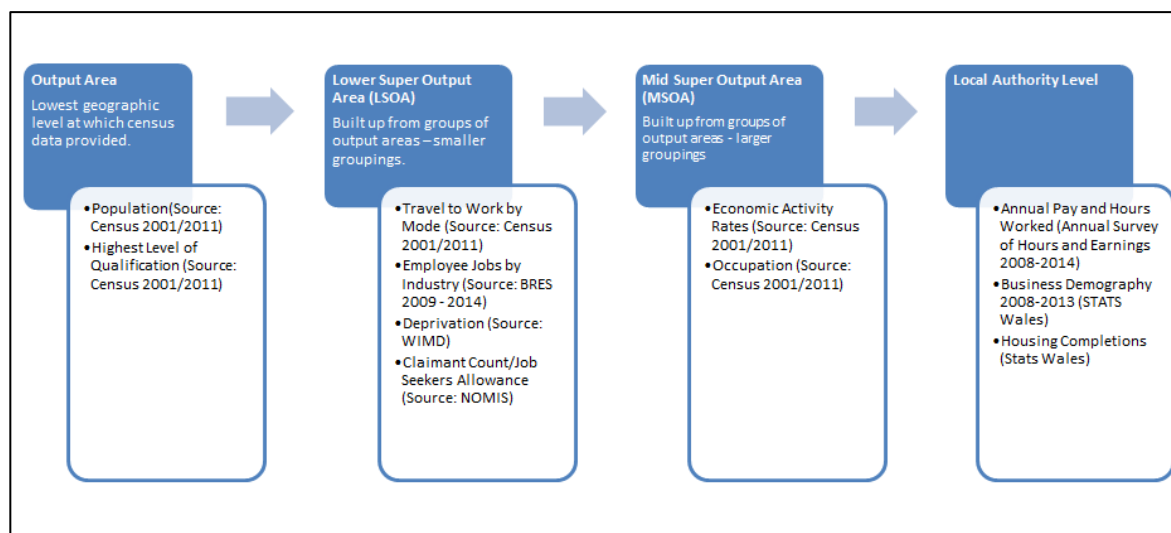
The majority of fieldwork for the November 2015 survey took place between 16th and 29th November 2015, with the remainder conducted in early December. A total of 1,000 interviews were completed and analysed - this report focusses on the 440 interviews conducted in the selected areas covered by the Valleys Lines train services.

A note on Data Geography

It is important to note that the available socio-economic data to inform the evaluation were limited. This is a result of a combination of the date and geographic level at which data are available.

The figure below shows the socio-economic data typically used in analysis of this nature as well as the date and lowest geographic level at which it is available.

Figure B1: Typical Data used for Analysis by Different Geographic Levels



Ideally, any analysis to inform this evaluation would be built up by combining relevant Output Areas. However, much of the data available at this level is sourced from the Census which is of limited value as a result of the low reporting frequency and associated difficulties in establishing causality. The only exception to this is the Census Travel-to-Work data which explicitly examines travel patterns which will have been impacted by the reopening of the Ebbw Vale line in particular.

The Business Register & Employment Survey (BRES) data are reported more frequently. However, BRES data are not available pre-2009 and therefore it is not possible to make comparisons between the pre and post intervention situations.

As such, the discussion in the report focuses only on an analysis of the travel-to-work data and the changes in small area relative deprivation as expressed by the Welsh Index of Multiple Deprivation.

Annex C: Ebbw Vale Line User Survey

Evaluation of the Impact of the Reopening of the Ebbw Vale to Cardiff Passenger Rail Line Passenger Survey

Case No. (1-3)	Shift No (4-5)



beaufortresearch

Welsh Government has commissioned independent research amongst train passengers using the Arriva Trains Wales service between Ebbw Vale and Cardiff, and would like to know your opinions and attitudes towards the service since its reintroduction in February 2008. This offered:

- Hourly trains between Cardiff Central and Ebbw Vale Parkway in both directions, 17 trains per day, Mondays to Saturdays, calling at Rogerstone, Risca & Pontymister, Crosskeys, Newbridge, Llanhilleth and Ebbw Vale Parkway.
- Two-hourly trains between Cardiff Central and Ebbw Vale Parkway in both directions, 7 trains per day each Sunday, calling at Rogerstone, Risca & Pontymister, Crosskeys, Newbridge, Llanhilleth and Ebbw Vale Parkway.

Subsequent stations have been opened at Pye Corner and Ebbw Vale Town.

The survey is being carried out by Peter Brett Associates and Beaufort Research, which operate in line with the Market Research Society's Code of Conduct on confidentiality and ethics. The information gathered from this survey will be handled with the strictest confidence and only be used by the Welsh Government and their contractors for the purposes of this research – it will not be shared with any third parties.

Every passenger who completes and returns a questionnaire by Wednesday 18th November 2015 will be entered into a prize draw, where three lucky winners will receive £25 of gift vouchers, redeemable at over 20,000 high street stores including Argos, Boots, Debenhams, Toys 'R' Us, House of Fraser, River Island, New Look and Waterstones, plus restaurants and attractions.

HOW TO COMPLETE THE QUESTIONNAIRE

- This questionnaire should only be completed by passengers who are aged 16 years and over.
- It should only take you around 10 minutes to complete the questionnaire.
- Please read the instructions for each question carefully – in most cases you will only have to mark one box for each question, although in some cases you can tick more than one box if applicable.
- When you have completed the questionnaire, please seal it in the envelope provided and pass it back to the Beaufort Research Interviewer who asked you to take part in the research.
- Alternatively, if you prefer to complete the questionnaire later, please post it to Beaufort Research in the freepost envelope provided, by Wednesday 18th November.
- Should you have any queries, please contact the Passenger Survey Helpline on 029 2037 6742.

Please use a black or blue pen.

Clearly mark the appropriate box with an ☐ rather than a ☒

If you make a mistake, shade in the box ☐ and then insert a cross in the correct box

Thank you for your time and co-operation.

ABOUT YOUR JOURNEY

Q1 Are you....?

Please cross one box only

(10)

Travelling alone	<input type="checkbox"/> 1	Travelling with children aged 11-15	<input type="checkbox"/> 4
Travelling with children aged 0-4	<input type="checkbox"/> 2	Travelling with other adults aged 16+	<input type="checkbox"/> 5
Travelling with children aged 5-10	<input type="checkbox"/> 3	Prefer not to say	<input type="checkbox"/> 6

Q2 What type of ticket are you using?

Please cross one box only

(11)

Anytime Single / Return	<input type="checkbox"/> 1	Annual Season Ticket	<input type="checkbox"/> 7
Anytime Day Return	<input type="checkbox"/> 2	Rail staff pass / privilege ticket / Police concession	<input type="checkbox"/> 8
Off-Peak / Super Off-Peak / Return	<input type="checkbox"/> 3	Special promotion ticket	<input type="checkbox"/> 9
Off-Peak Day / Super Off-Peak Day Single / Return	<input type="checkbox"/> 4	Free travel pass	<input type="checkbox"/> A
Advance	<input type="checkbox"/> 5	Other (please write in below)	
Weekly or monthly season ticket	<input type="checkbox"/> 6	_____	

Q3 At which station did you get on the train today?

Please write in below

(12)

Prefer not to say ☐ N

Q4 And at which station will you get off the train today?

Please write in below

(13)

Prefer not to say ☐ N

Q5 Is this the outward or return leg of your journey?

Please cross one box only

(14)

Outward	<input type="checkbox"/>	1
Return	<input type="checkbox"/>	2
Not applicable – only going one way	<input type="checkbox"/>	3

Q6 In which village, town or city did you start your journey today (i.e. where you left the house, left work etc.)?

Please write in a town or a postcode below

Town: (15-17)

Postcode ____ _

(18)(19)(20)(21) (22)(23)(24)

Q7 And in which village, town or city will you finish your journey today (i.e. where you live, work etc.)?

Please write in a town or a postcode below

Town: (30-32)

Postcode ____ _

(33)(34)(35)(36) (37)(38)(39)

Q8 What is the main reason for your trip today?

Please tick one box only

(40-41)

Commuting to / from place of work	<input type="checkbox"/>	1	Holiday / short-break	<input type="checkbox"/>	6
Travelling on business	<input type="checkbox"/>	2	Shopping	<input type="checkbox"/>	7
Going to school / college	<input type="checkbox"/>	3	Health / medical appointment	<input type="checkbox"/>	8
Visiting friends / family	<input type="checkbox"/>	4	Other (please write in below)		
Leisure / sport	<input type="checkbox"/>	5			
Prefer not to say				<input type="checkbox"/>	N

Q9 Is this the main reason why you usually use this train?

Please cross one box only

(42)

Yes	<input type="checkbox"/>	1
No	<input type="checkbox"/>	2
Prefer not to say	<input type="checkbox"/>	3

Q10 How often do you make the train journey you are on now?

Please cross one box only

(43)

3 or more times a week	<input type="checkbox"/>	1	Once every 6 months	<input type="checkbox"/>	5
Once or twice a week	<input type="checkbox"/>	2	Less often	<input type="checkbox"/>	6
1 or 2 times a month	<input type="checkbox"/>	3	Never / first time today	<input type="checkbox"/>	7
Once every 2-3 months	<input type="checkbox"/>	4	Not sure	<input type="checkbox"/>	8

Q11 Were you able to get a seat today?

Please cross one box only

(44)

Yes, for the entire journey	<input type="checkbox"/>	1	Yes, for a small part of the journey	<input type="checkbox"/>	3
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Yes, for most of the journey

☐ 2

No, stood for the entire journey

☐ 4

Q12

Overall, how satisfied were you with the service provided on your train journey today, taking into account the station you boarded at and the train environment?

Please cross one box only

(45)

Very satisfied	<input type="checkbox"/> 1	Quite dissatisfied	<input type="checkbox"/> 4
Quite satisfied	<input type="checkbox"/> 2	Very dissatisfied	<input type="checkbox"/> 5
Neither satisfied nor dissatisfied	<input type="checkbox"/> 3	Don't know	<input type="checkbox"/> 6

ABOUT WHERE YOU LIVE

- Q13** Please can you tell us where you live?
Please write in a town or a postcode below

Town: _____ (50-52)
Postcode ____ _ (53)(54)(55)(56) (57)(58)(59)

- Q14** What was the main mode of transport that you used for your journey to the train station today?
Please cross one box only (60)

Walk	<input type="checkbox"/> 1	Van	<input type="checkbox"/> 6
Car (parked at station)	<input type="checkbox"/> 2	Taxi	<input type="checkbox"/> 7
Car (dropped off)	<input type="checkbox"/> 3	Bicycle	<input type="checkbox"/> 8
Motorbike	<input type="checkbox"/> 4	Other (please write in below)	
Bus	<input type="checkbox"/> 5	_____	
Prefer not to say			<input type="checkbox"/> N

- Q15** Does your household have access to a car?
Please cross one box only (61)

Yes – 1 car → GO TO Q16	<input type="checkbox"/> 1	No → SKIP TO Q17	<input type="checkbox"/> 5
Yes – 2 cars → GO TO Q16	<input type="checkbox"/> 2	Prefer not to say → SKIP TO Q17	<input type="checkbox"/> 6
Yes – 3 or more cars → GO TO Q16	<input type="checkbox"/> 3		

- Q16** If this restored passenger rail service was not operating between Ebbw Vale and Cardiff, would your household require additional cars?
Please cross one box only (62)

Yes – 1 additional car	<input type="checkbox"/> 1	No – none	<input type="checkbox"/> 4
Yes – 2 additional cars	<input type="checkbox"/> 2	Prefer not to say	<input type="checkbox"/> 5
Yes – 3 or more additional cars	<input type="checkbox"/> 3		

- Q17** Did you live at your current address before the Ebbw Vale to Cardiff passenger rail line was reopened in February 2008?
Please cross one box only (63)

Yes → SKIP TO Q19	<input type="checkbox"/> 1
No → GO TO Q18	<input type="checkbox"/> 2
Prefer not to say → SKIP TO Q19	<input type="checkbox"/> 3

Q18 To what extent did the reopening of the Ebbw Vale to Cardiff passenger rail line influence your decision to move to your current address?

Please cross one box only

(65)

It was the main factor	<input type="checkbox"/> 1	It was not a factor	<input type="checkbox"/> 4
It was one of a number of important factors	<input type="checkbox"/> 2	Don't know	<input type="checkbox"/> 5
It was a fairly minor factor	<input type="checkbox"/> 3		

Q19 Before the reopening of the Ebbw Vale to Cardiff rail line, did you regularly make this journey using another mode of transport?

Please cross one box only

(66)

Yes → GO TO Q20	<input type="checkbox"/> 1
No → SKIP TO Q23	<input type="checkbox"/> 2
Prefer not to say → SKIP TO Q23	<input type="checkbox"/> 3

Q20 How did you make this journey prior to passenger rail services being reintroduced on the Ebbw Vale to Cardiff line?

Please cross one box only

(67)

Drove to another station and took the train	<input type="checkbox"/> 1	Car driver all the way	<input type="checkbox"/> 7
Car passenger to another station and took the train	<input type="checkbox"/> 2	Car passenger all the way	<input type="checkbox"/> 8
Bus to another station and took the train	<input type="checkbox"/> 3	Bus all the way	<input type="checkbox"/> 9
Cycle to another station and took the train	<input type="checkbox"/> 4	Cycle all the way	<input type="checkbox"/> A
Motorcycle to another station and took the train	<input type="checkbox"/> 5	Motorcycle all the way	<input type="checkbox"/> B
Taxi to another station and took the train	<input type="checkbox"/> 6	Taxi all the way	<input type="checkbox"/> C
		Other (please write in) _____	
		Prefer not to say	<input type="checkbox"/> N
IF YOU HAVE CROSSED ANY OF THE ABOVE BOXES, PLEASE GO TO Q21		IF YOU HAVE CROSSED ANY OF THE ABOVE BOXES, PLEASE GO TO Q22	

Q21 Which station did you previously take the train from?

Please write in below

(68-69)

Don't know	<input type="checkbox"/> N	NOW GO TO Q22
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Q22 In what ways, if any, have you benefitted from switching from your previous mode of transport to the train? (75-78m)
Please cross as many boxes as apply

Faster than previous alternative	<input type="checkbox"/> 1	Can work on train	<input type="checkbox"/> 8
More frequent than previous alternative	<input type="checkbox"/> 2	Other (please write in below)	
More comfortable than previous alternative	<input type="checkbox"/> 3		
Safer than previous alternative	<input type="checkbox"/> 4	No benefits	<input type="checkbox"/> M
Cheaper than previous alternative	<input type="checkbox"/> 5	Don't know	<input type="checkbox"/> N
More environmentally friendly than previous alternative	<input type="checkbox"/> 6	NOW SKIP TO Q24	
Can read on train	<input type="checkbox"/> 7		

Q23 If passenger rail services had not been reintroduced on the Ebbw Vale to Cardiff line, how would you be making this journey today? (79)
Please cross one box only

Drive to another station and take the train	<input type="checkbox"/> 1	Car driver all the way	<input type="checkbox"/> 7
Car passenger to another station and take the train	<input type="checkbox"/> 2	Car passenger all the way	<input type="checkbox"/> 8
Bus to another station and take the train	<input type="checkbox"/> 3	Bus all the way	<input type="checkbox"/> 9
Cycle to another station and take the train	<input type="checkbox"/> 4	Cycle all the way	<input type="checkbox"/> A
Motorcycle to another station and take the train	<input type="checkbox"/> 5	Motorcycle all the way	<input type="checkbox"/> B
Taxi to another station and take the train	<input type="checkbox"/> 6	Taxi all the way	<input type="checkbox"/> C
		Other (please write in) _____	
		Prefer not to say	<input type="checkbox"/> N
IF YOU HAVE CROSSED ANY OF THE ABOVE BOXES, PLEASE GO TO Q24		IF YOU HAVE CROSSED ANY OF THE ABOVE BOXES, PLEASE GO TO Q25	

Q24 Which station would you use for this journey if the Ebbw Vale to Cardiff passenger rail line had not been reopened? (80-81)
Please write in below

Don't know	<input type="checkbox"/> N	NOW GO TO Q25
------------	----------------------------	----------------------

HOW THE REOPENING OF THE RAIL LINE HAS AFFECTED YOU

Q25 Below are a number of statements that other people have made about the reopening of the passenger rail line between Ebbw Vale and Cardiff. Please tell us how much you agree or disagree with each of these statements. There are no right or wrong answers – it is your personal opinion that counts

Please cross one box only in each row

Without the Ebbw Vale to Cardiff passenger rail service.....	Strongly agree	Slightly agree	Neither agree nor disagree	Slightly disagree	Strongly disagree	Don't know / not applicable
I would not be able to get to my current place of employment	<input type="checkbox"/> 1	<input type="checkbox"/> 2	<input type="checkbox"/> 3	<input type="checkbox"/> 4	<input type="checkbox"/> 5	<input type="checkbox"/> 6 (85)
It would be more difficult to get to my current place of employment	<input type="checkbox"/> 1	<input type="checkbox"/> 2	<input type="checkbox"/> 3	<input type="checkbox"/> 4	<input type="checkbox"/> 5	<input type="checkbox"/> 6 (86)
I would not be able to work as many hours	<input type="checkbox"/> 1	<input type="checkbox"/> 2	<input type="checkbox"/> 3	<input type="checkbox"/> 4	<input type="checkbox"/> 5	<input type="checkbox"/> 6 (87)
I would not be able to be able to access as wide a range of leisure opportunities	<input type="checkbox"/> 1	<input type="checkbox"/> 2	<input type="checkbox"/> 3	<input type="checkbox"/> 4	<input type="checkbox"/> 5	<input type="checkbox"/> 6 (88)
I would not be able to access leisure opportunities without using the car	<input type="checkbox"/> 1	<input type="checkbox"/> 2	<input type="checkbox"/> 3	<input type="checkbox"/> 4	<input type="checkbox"/> 5	<input type="checkbox"/> 6 (89)
I would not be able to be able to visit friends and family	<input type="checkbox"/> 1	<input type="checkbox"/> 2	<input type="checkbox"/> 3	<input type="checkbox"/> 4	<input type="checkbox"/> 5	<input type="checkbox"/> 6 (90)
I would not be able to visit friends and family without using the car	<input type="checkbox"/> 1	<input type="checkbox"/> 2	<input type="checkbox"/> 3	<input type="checkbox"/> 4	<input type="checkbox"/> 5	<input type="checkbox"/> 6 (91)
I would not be able to access health services and attend appointments	<input type="checkbox"/> 1	<input type="checkbox"/> 2	<input type="checkbox"/> 3	<input type="checkbox"/> 4	<input type="checkbox"/> 5	<input type="checkbox"/> 6 (92)
I would not be able to access health services and attend appointments without using the car	<input type="checkbox"/> 1	<input type="checkbox"/> 2	<input type="checkbox"/> 3	<input type="checkbox"/> 4	<input type="checkbox"/> 5	<input type="checkbox"/> 6 (93)
I would make fewer journeys due to a mobility impairment	<input type="checkbox"/> 1	<input type="checkbox"/> 2	<input type="checkbox"/> 3	<input type="checkbox"/> 4	<input type="checkbox"/> 5	<input type="checkbox"/> 6 (94)

ABOUT YOU

Finally, this section is so that we can put your answers into context. This information is requested so that Welsh Government can identify the opinions and specific needs / requirements of various groups amongst rail passengers. Please be assured that the information you provide will be kept confidential, and your answers will not be linked to individually identify yourself. All questions have a 'Prefer not to say' option.

Q26 Are you...?

Please cross one box only

(100)

Male	<input type="checkbox"/>	1
Female	<input type="checkbox"/>	2
Prefer not to say	<input type="checkbox"/>	3

Q27 What is your age?

Please cross one box only

(101)

16-24	<input type="checkbox"/>	1	55-64	<input type="checkbox"/>	5
25-34	<input type="checkbox"/>	2	65-74	<input type="checkbox"/>	6
35-44	<input type="checkbox"/>	3	75+	<input type="checkbox"/>	7
45-54	<input type="checkbox"/>	4	Prefer not to say	<input type="checkbox"/>	8

Q28 What is your employment status?

Please cross one box only

(102)

Employed full time (35+ hours per week)	<input type="checkbox"/>	1	Retired	<input type="checkbox"/>	6
Employed part time (less than 35 hours per week)	<input type="checkbox"/>	2	Other (please write in below)		
Self-employed	<input type="checkbox"/>	3			
Full-time student	<input type="checkbox"/>	4	Prefer not to say	<input type="checkbox"/>	N
Unemployed	<input type="checkbox"/>	5			

Q29 What is your average household income, including all wages and benefits?

Please cross one box only

(103)

Less than £10,000	<input type="checkbox"/>	1	£40,001 - £50,000	<input type="checkbox"/>	5
£10,001 - £20,000	<input type="checkbox"/>	2	£50,001 - £60,000	<input type="checkbox"/>	6
£20,001 - £30,000	<input type="checkbox"/>	3	£60,001 or more	<input type="checkbox"/>	7
£30,001 - £40,000	<input type="checkbox"/>	4	Prefer not to say	<input type="checkbox"/>	8

Q30 Do you consider yourself to have a physical or mental health condition or illnesses lasting or expected to last 12 months or more?

Please cross as many boxes as apply

(104-107m)

Yes - vision	<input type="checkbox"/>	1	Yes – mental health, social or behavioural	<input type="checkbox"/>	5
Yes - hearing	<input type="checkbox"/>	2	Yes – learning or concentrating or memory	<input type="checkbox"/>	6
Yes – mobility / dexterity	<input type="checkbox"/>	3	Other (please write in)		
Yes – stamina or breathing fatigue	<input type="checkbox"/>	4	No – none	<input type="checkbox"/>	M
			Prefer not to say	<input type="checkbox"/>	N

Q31

IF YOU HAVE ANSWERED YES TO Q30...

Does your condition or illness make it difficult for you to make journeys by train?

Please cross one box only

(110)

Yes – very difficult	<input type="checkbox"/>	1
Yes – fairly difficult	<input type="checkbox"/>	2
No	<input type="checkbox"/>	3
Prefer not to say	<input type="checkbox"/>	4

Thank you for taking the time to complete this questionnaire. Please pass your questionnaire back to the Beaufort Research Interviewer who asked you to take part in the survey.

Alternatively, you can return the questionnaire by post using the freepost envelope provided.

Completed questionnaires must be returned by 18th November

If you would like to be entered into the prize draw, please provide us with your contact details below.

Full Name: (Miss/Mrs/Mr/Dr)	Address:												
	Postcode:				<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>	
<div>(111) (112) (113) (114) (115) (116) (117)</div>													
Tel. No:	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>
Mobile:	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>

Please be assured that the information you provide will be kept confidential and you will not be individually linked to your survey responses. This information will be used solely for the purposes of selecting prize drawer winners, and will be handled in accordance with the Market Research Society’s Code of Conduct on confidentiality and ethics, and the Data Protection Act 1998.

FUTURE RESEARCH

If you are interested in taking part in any follow-on research from this study, please tick the box below. By ticking this box you are indicating that you are happy for the Welsh Government to be provided with your contact details and they may contact you in the future regarding other research related to this study. Please be assured that this will in no way affect the outcome of the prize draw. By saying yes now, you are not committing yourself to taking part in any future research.

Yes – I am happy to be contacted again	<input type="checkbox"/>	(118)
Yes – I am happy to take part in future research	<input type="checkbox"/>	(119)

Annex D: External Marginal Impacts – Estimation

This process was undertaken in two stages:

- Step 1: Estimate the number of car kilometres which are not present on the road network as a consequence of the Ebbw Vale line re-opening
- Step 2: Use WebTAG parameters to estimate the monetised benefits of the removal of these car kilometres.

Step 1 – Estimate of Car Kilometres Not Present on Network

The survey responses can be used to estimate (i) the number of trips per annum associated with our sample, and (ii) the quantum of car kilometres not present on the road network as a result of the re-opening of the line from the sample.

The number of trips by station can be cross-referenced with ORR station entry and exit data at each station to create an expansion / annualisation factor which can be used to annualise any outcome from the survey. This assumes that our surveyed journeys are a representative sample of overall travel on the line, and there is no reason to suggest that this is not the case. The reduction in car kilometres by station has been annualised on this basis.

The result of these calculations is the following estimate of reductions in car kilometres (documented in the main text).

Table D.1: Annual Reduction in Car KMs

Travel through:	Total Annual Reduction in Potential Car Km
Ebbw Vale Town	10,110,019
Ebbw Vale Parkway	2,323,646
Llanhilleth	83,828
Newbridge	442,622
Crosskeys	290,431
Risca / Pontymister	203,062
Rogerstone	173,564
Pye Corner	153,826
TOTAL	13,780,998

Step 2: Quantification of Marginal Impacts

WebTAG TAG Unit A5-4¹⁵ documents a process whereby any change in road traffic levels can be monetised in terms of:

- Congestion
- Infrastructure
- Accidents
- Local Air Quality
- Noise
- Greenhouse Gases
- Indirect Taxation

TAG Unit A5.4.1 provides an estimate of the proportion of road traffic (car kilometres) by different road types (motorways, A-roads, urban), different area types (Inner and Outer Conurbations, Other Urban and Rural) and different congestion 'bands' for different regions of England and also Wales and Scotland. The figures for Wales have been used in this analysis, and the 13.8m car kilometres determined above has been distributed amongst these areas on the basis of the figures contained in the table below. This shows the assumed proportion of all Wales traffic by these road types.

Table D.2: Congestion Bandings

	Other Urban		Rural		
	A Roads	Other Roads	Motorways	A Roads	Other Roads
Congestion Band 1	2.9%	9.4%	2.5%	22.2%	19.6%
Congestion Band 2	5.0%	2.8%	5.9%	11.3%	3.0%
Congestion Band 3	3.9%	0.6%	3.5%	1.9%	0.7%
Congestion Band 4	1.8%	0.3%	0.5%	0.6%	0.2%
Congestion Band 5	1.0%	0.3%	0.0%	0.0%	0.0%

TAG Unit A5.4.2 provides a pence per kilometre valuation of congestion by these road types and these values have been applied to produce a monetised estimate of the decongestion benefits associated with these reductions in traffic levels. It also provides equivalent figures for the other marginal external impacts noted above.

The resulting benefits from these calculations are shown in the table below. The monetary values are in 2010 prices as used in WebTAG.

¹⁵ <https://www.gov.uk/government/publications/webtag-tag-unit-a5-4-marginal-external-costs-december-2015>
& <https://www.gov.uk/government/publications/webtag-tag-data-book-december-2015>

Table D.3: Benefit Calculations

	Other Urban		Rural			
Marginal Impact Type	A Roads	Other Roads	Motorways	A Roads	Other Roads	Total
Congestion Band 1	£2,398	£31,090	£0	£12,238	£5,402	£51,128
Congestion Band 2	£13,092	£34,342	£0	£18,687	£5,788	£71,909
Congestion Band 3	£58,583	£15,793	£3,376	£9,164	£6,946	£93,862
Congestion Band 4	£105,425	£53,456	£12,058	£39,524	£9,013	£219,476
Congestion Band 5	£101,842	£94,262	£0	£0	£0	£196,104
Infrastructure	£2,012	£1,847	£0	£4,961	£3,239	£12,058
Accident	£64,385	£59,093	£0	£34,728	£22,670	£180,876
Local Air Quality	£2,012	£1,847	£0	£0	£0	£3,859
Noise	£4,024	£3,693	£0	£0	£3,239	£10,956
Greenhouse Gases	£16,096	£16,620	£15,380	£39,689	£25,908	£113,693
Indirect Taxation	-£94,565	-£97,873	-£87,151	-£233,174	-£148,973	-£661,736

Annex E: Stakeholder Consultations

Table E1: Organisations Consulted

Organisation	Department	Date
Blaenau Gwent County Borough Council	Engineering Services & Transportation Strategy Manager	16/11/2015
Blaenau Gwent County Borough Council	Regeneration/Economic Development	16/11/2015
Blaneau Gwent County Borough Council	Planning Officer	20/11/2015
Caerphilly County Borough Council	Integrated Transport Team	09/11/2015
Caerphilly County Borough Council	Regeneration/Economic Development	12/11/2015
Disability Wales	Access and Transport Policy Officer	17/11/2015
Federation of Small Businesses	Chairman, South East Wales Branch	30/11/2015
Federation of Small Businesses	Wales Policy Manager	18/11/2015
Monmouthshire County Borough Council	Transport Planning & Policy Officer	20/11/2015
Newport City Council	Planning Policy Manager	17/11/2015
Newport City Council	Economic Development Manager	19/11/2015
Sustrans	Sustrans Officer	13/11/2015
Torfaen County Borough Council	Group Leader, Economy, Enterprise & Tourism	12/11/2015
WG / WEFO	EU Rail Programme Manager	16/11/2015
WG / WEFO	Rail Franchise Manager	20/11/2015
WG / WEFO	Rail Development Manager	13/11/2015
WG / WEFO	Head of Equality	13/11/2015
WG / WEFO	Economist, Rail Planning	18/11/2015
WG / WEFO	Rail Capital Programme Director	18/11/2015

Annex F: Welsh Index of Multiple Deprivation Analysis

The WG produces the WIMD which is the official measure of small area deprivation in Wales. The WIMD measures deprivation at LSOA level and is made up of eight separate domains (or types) of deprivation namely: income; employment; health; education; access to services; community safety; physical environment and housing.

Based on these domains each LSOA in Wales is ranked from 1 (most deprived) to 1,909 (least deprived), with areas generally classified as deprived when they fall within the 20% most deprived LSOAs.

Tables G1 – G3 summarise the distribution of LSOAs in various categories of deprivation in 2005 and 2014 for Newport, Caerphilly and Blaenau Gwent.

Table F1: Proportion of Blaenau Gwent's LSOAs in different Categories of Deprivation

	2005	2014
0 - 20% (most deprived)	47%	47%
20 - 40%	38%	30%
40 -60%	15%	21%
60 - 80%	0%	2%
80 - 100% (Least deprived)	0%	0%

Table F2: Proportion of Newport's LSOAs in different Categories of Deprivation

	2005	2014
0 - 20% (most deprived)	28%	29%
20 - 40%	14%	20%
40 -60%	13%	14%
60 - 80%	16%	11%
80 - 100% (Least deprived)	30%	26%

Table F3: Proportion of Caerphilly's LSOAs in different Categories of Deprivation

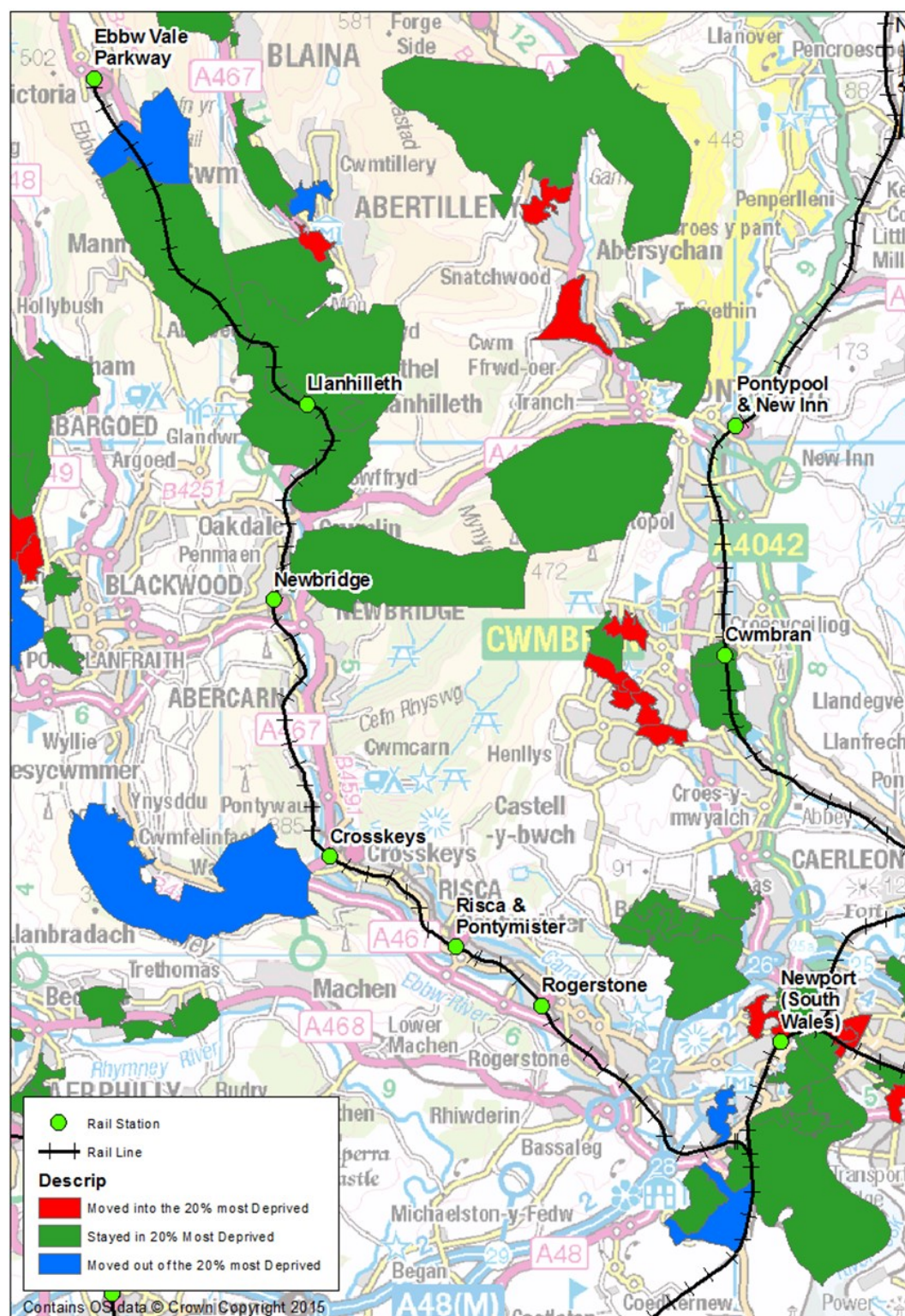
	2005	2014
0 - 20% (most deprived)	29%	28%
20 - 40%	29%	25%
40 -60%	24%	22%
60 - 80%	11%	13%
80 - 100% (Least deprived)	7%	12%

Source: Stats Wales

As shown in the tables above, at the local authority level, the proportion of LSOAs in the '20% most deprived' category has remained relatively consistent over the period. However, for both Caerphilly and Blaenau Gwent there has been a general move towards the least deprived categories.

Figure G1 shows the LSOA zones within the vicinity of the Ebbw Vale line which have moved into, stayed in or moved out of the 20% most deprived LSOAs in Wales between WIMD 2005 and WIMD 2014.

Figure F1: Change in WIMD 2005-2014



As shown, a number of zones (Ebbw Vale Parkway and Crosskeys) have moved out of the 20% most deprived while others have shown no change and just one (near Abertillery) has moved into the 20% most deprived category. It is not possible to demonstrate causality between the rail line opening and changes in relative deprivation. Nonetheless, it is notable that the areas to the south of Ebbw Vale and the west of Crosskeys have moved out of the 20% most deprived. These stations demonstrated passenger growth and it is possible that

the reopening of the rail line contributed alongside a number of other measures in enabling new economic development in the area and employment opportunities for its residents.

Annex G: Review of ORR station usage for Strengthen Services

As discussed above, the VRS consisted of the strengthening of services on a number of the Valleys lines. In order to assess whether the number of entries and exits has changed as a result of these improvements, the affected lines were divided into a number of distinct segments as follows:

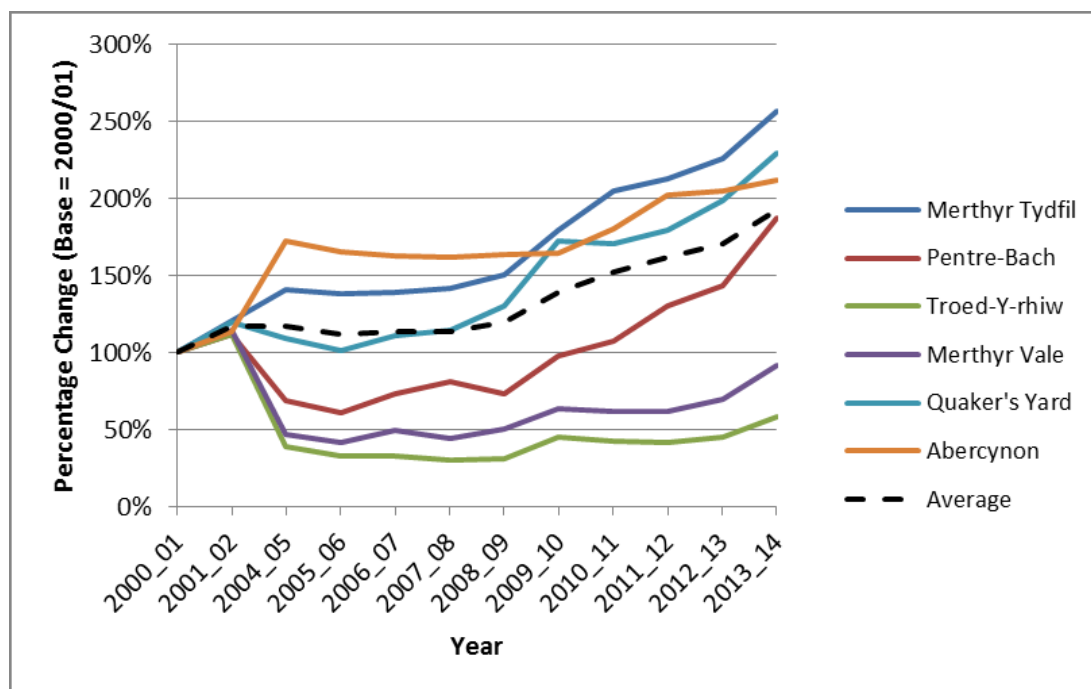
- Merthyr Tydfill – Abercynon
- Aberdare – Penrhiwceiber
- Pontypridd – Cathays
- Grangetown – Barry Island
- Treherbert – Trehafod
- Rhymney – Heath High Level

The trends on each of the affected segments are discussed below. Where appropriate comparisons are also made to that of the control lines.

Merthyr Tydfill – Abercynon

Figure H.1 below shows the change in the total number of entries and exits at the stations on the Merthyr Tydfill to Abercynon section.

Figure G.1: Change in the Number of Entries and Exits at Stations on the Merthyr Tydfil – Abercynon Section

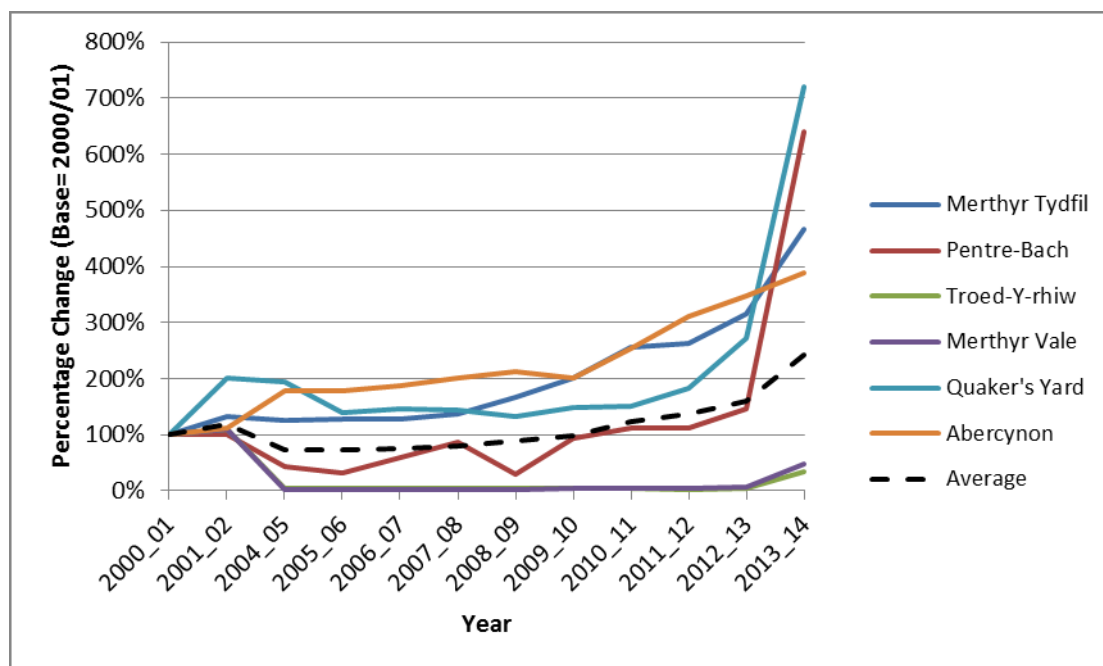


Source: ORR (2015)

Overall, the total number of entries and exits on the line remained fairly stable between 2004 and 2006. However, the pattern varied by station, with Troed-Y-Rhiw, Abercynon and Merthyr Tydfil seeing a decline and Pentre-Bach, Merthyr Vale and Quakers Yard an overall growth in numbers over this period.

In terms of ticket sales, the number of season ticket entries/exits on the line have grown continuously since 2004/5, which suggests an increased number of commuters boarding services on the line. However, while increasing overall, the results vary by station, as shown in Figure H.2.

Figure G.2: Change in the Number of Season Ticket Entries at Stations on the Merthyr Tydfil – Abercynon Section



Source: ORR (2015)

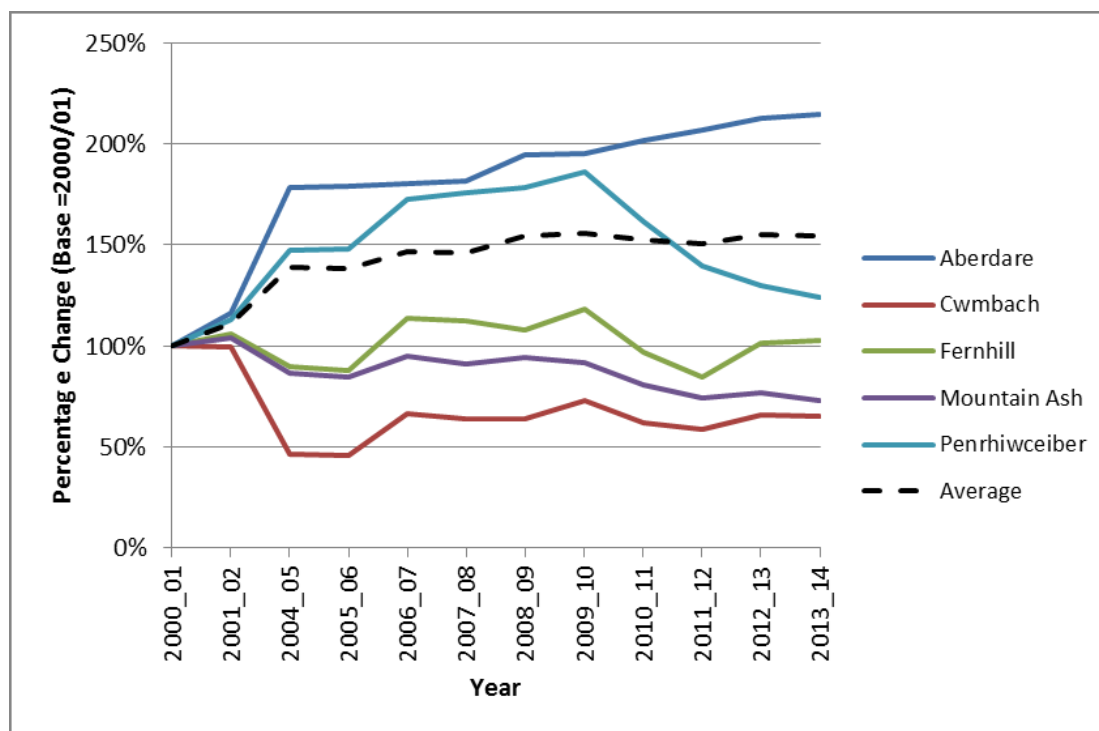
At Merthyr Vale and Troed-Y-Rhiw the number of season tickets remained relatively constant over the period while Merthyr Tydfil, Pentre-Bach, and Abercynon witnessed a growth in numbers.

Overall, strengthening would be expected to have less of an impact on rail use in this section because the train starts from Merthyr Tydfil and is likely to have available seating.

Aberdare – Penrhiwceiber

The total number of entries and exits on the Aberdare - Penrhiwceiber section increased between 2004/5 and 2006/7, with all of the stations seeing a growth in numbers over this period. As shown in Figure H3, with the exception of Aberdare there was a step change in passenger numbers across all the stations from 2005/06 to 2006/07 which could have coincided with the strengthening of services. While the impact is less marked at Aberdare, this may be expected given that the route starts at this station and therefore there is likely to be available seating.

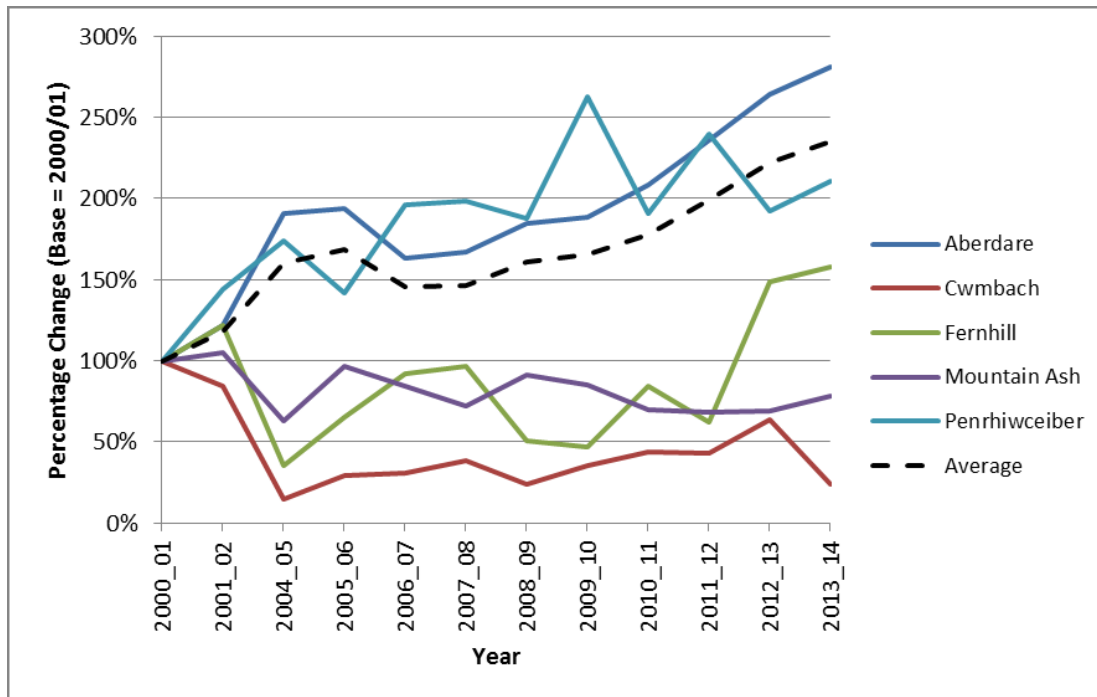
Figure G.3: Change in the Number of Entries and Exits at Stations on the Aberdare – Penrhiwceiber Section



Source: ORR (2015)

In terms of ticket type, the majority of the stations saw an increase in the number of seasonal entries and exits between 2004/5 and 2006/7, as shown in Figure H.4. However, the trends are mixed, with Mountain Ash and Aberdare experiencing a decline between 2005/06 and 2006/07 and others seeing a continuous growth in numbers.

Figure G.4: Change in the Number of Season Ticket Entries and Exits at Stations on the Aberdare – Penrhiwceiber Section

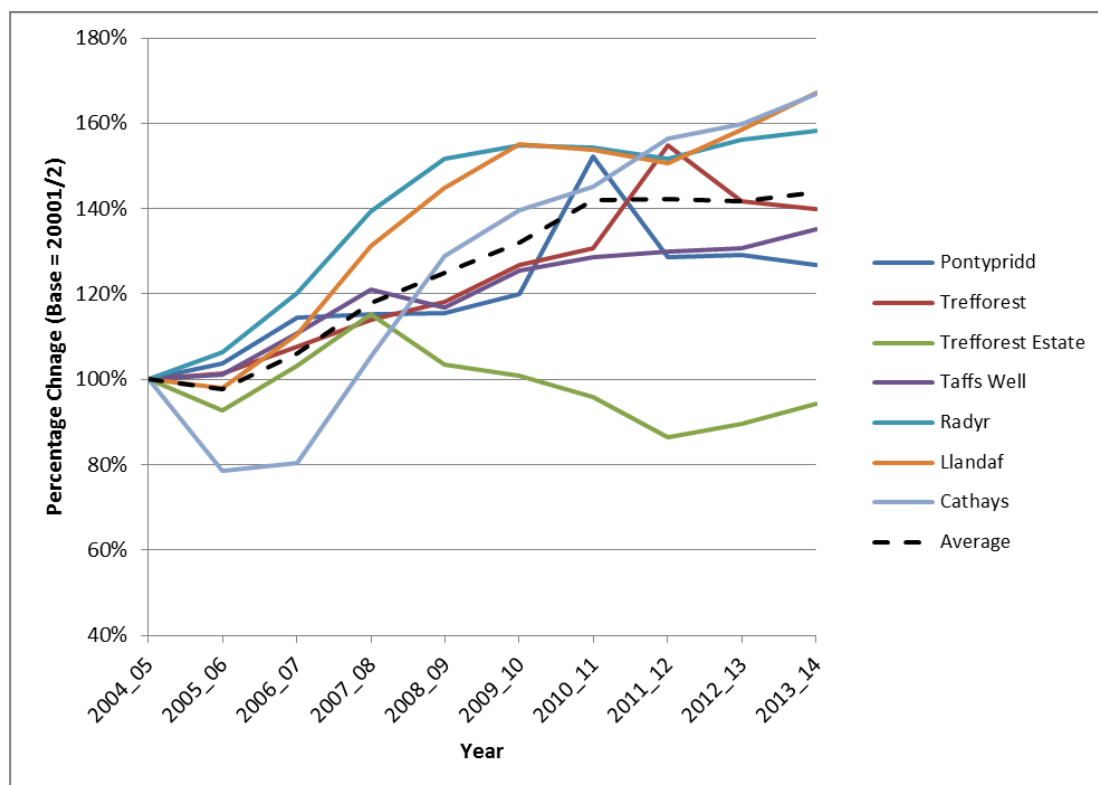


Source: ORR (2015)

Pontypridd – Cathays

Overall, there has been a continuous increase in the number of entries and exists on this line since 2005/6. As shown in the figure below all stations on the lines experienced a growth in passenger numbers between 2005/6 and 2006/7 which may have corresponded with the introduction of the strengthened services (see Figure H.5).

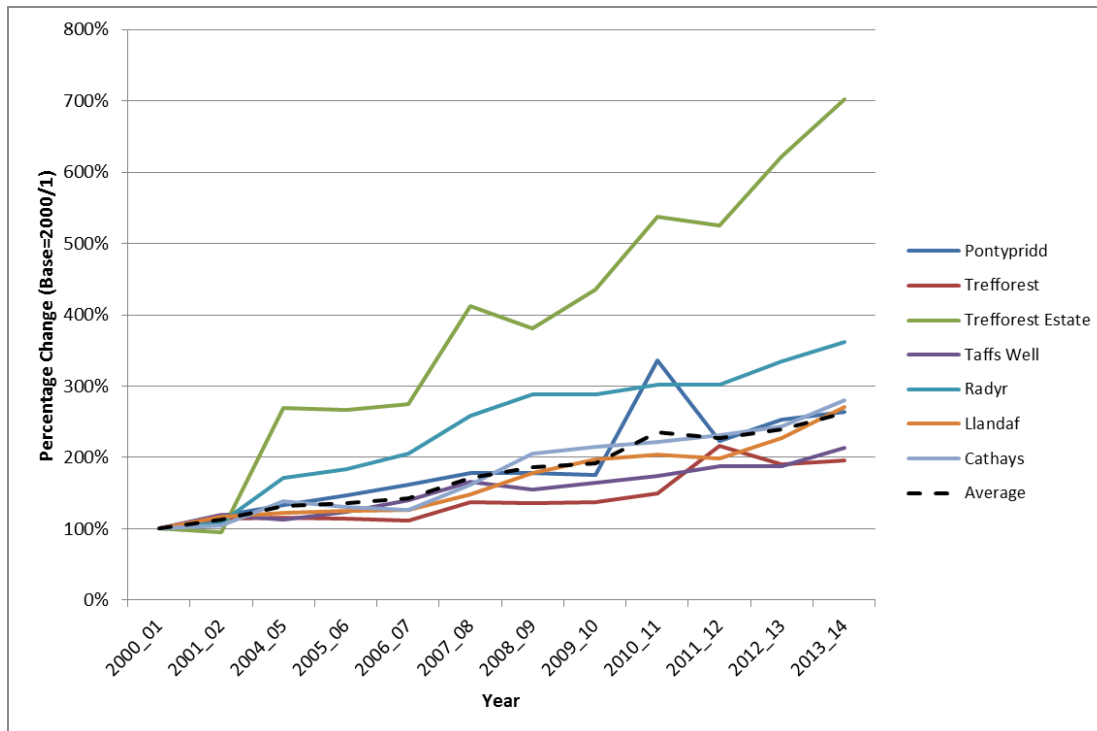
Figure G.5: Change in the Number of Entries and Exits at Stations on the Pontypridd - Cathays Section



Source: ORR (2015)

As shown Figure H.6, there has been a long-term upward trend in the total number of season ticket entries/exits on this section. With the exception of Trefforest and Cathays, all of the stations saw an increase in season entries between 2004/05 and 2006/07 (see Figure H.6).

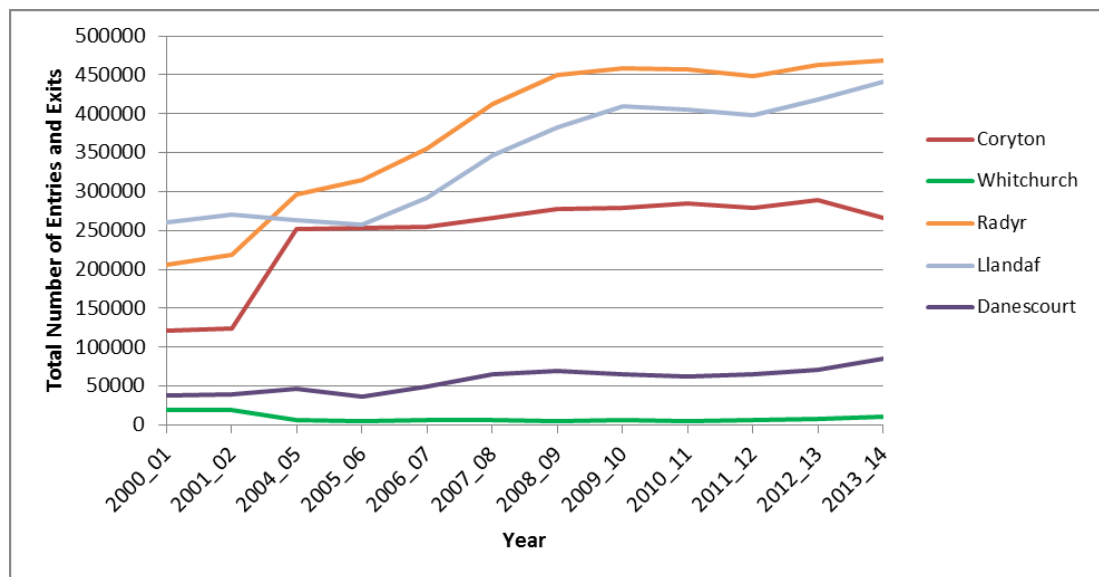
Figure G.6: Change in the Number of Season Ticket Entries and Exits at Stations on the Pontypridd - Cathays Section



Source: ORR (2015)

Given that Radyr and Llandaff are located in close proximity to Coryton, Whitchurch and Danescourt stations, it is possible that people have switched their origin station from the latter to the former to take advantage of the strengthened services. Figure H.7 shows the total number of entries and exits at each station over the 200/01- 2013/14. As shown, numbers at Radyr station increased from 2004/5 onwards while those at Danescourt and Whitchurch fell. As such, it is possible that some of the growth at Radyr is partly a result of people switching from the other stations. However, given the aggregate nature of the data it is difficult to draw firm conclusions.

Figure G.7: Total Number of Entries and Exits at Radyr, Llandaff, Coryton and Whitchurch Stations 2000/01 -2013/14

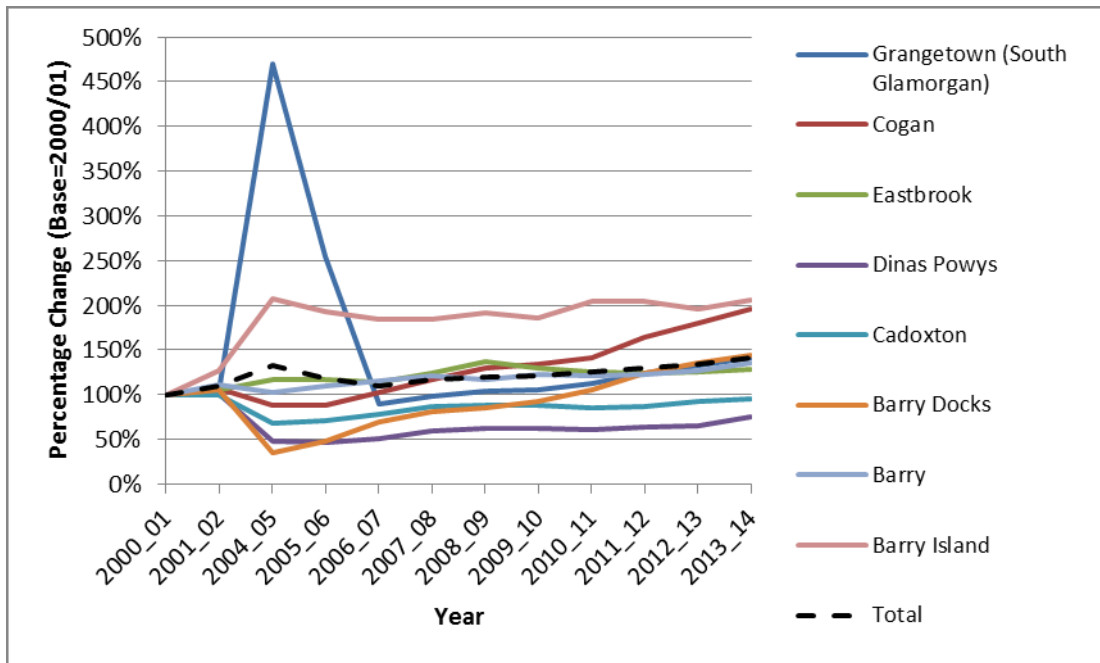


Source: ORR (2015)

Grangetown – Barry Island

Overall, the number of entries / exits on the Barry Island to Grangetown section declined between 2004/05 and 2006/07 before increasing thereafter (see Figure H.8). Numbers differed by station with for example Barry Docks experiencing an increase and Barry Island declining over the period.

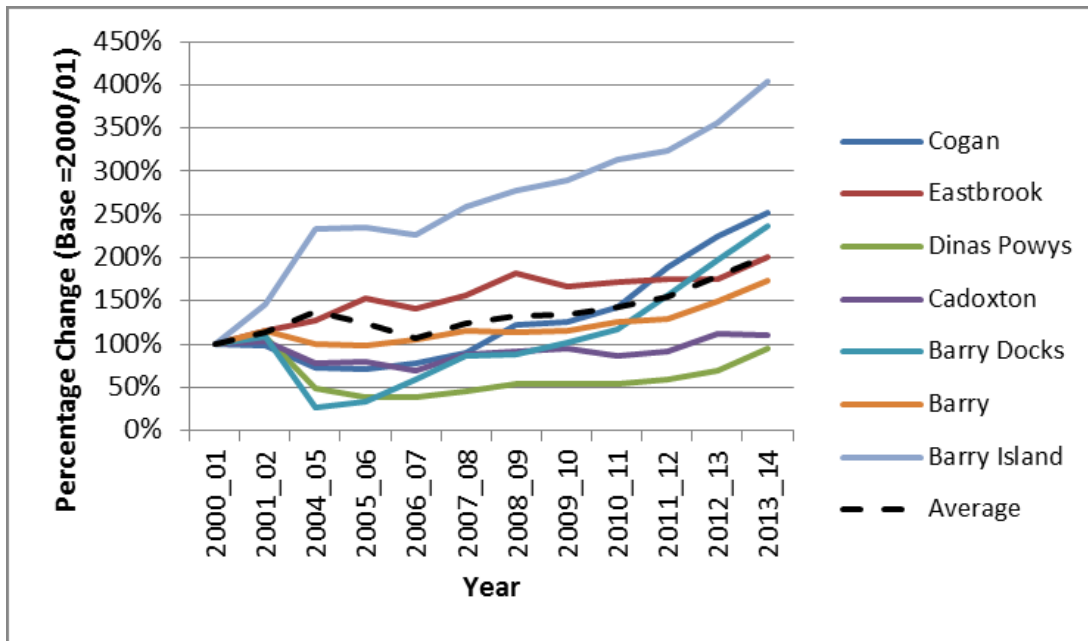
Figure G.8: Change in the Number of Entries and Exits at Stations on the Grangetown – Barry Island Section



Source: ORR (2015)

In terms of seasonal entries/exits, overall numbers on this section fell over the period 2004/5 -2006/7 although as shown in the figure season ticket entries at both Barry Docks and Eastbrook increased over this period.

Figure G.9: Change in the Number of Seasonal Entries at Stations on the Grangetown – Barry Island Section

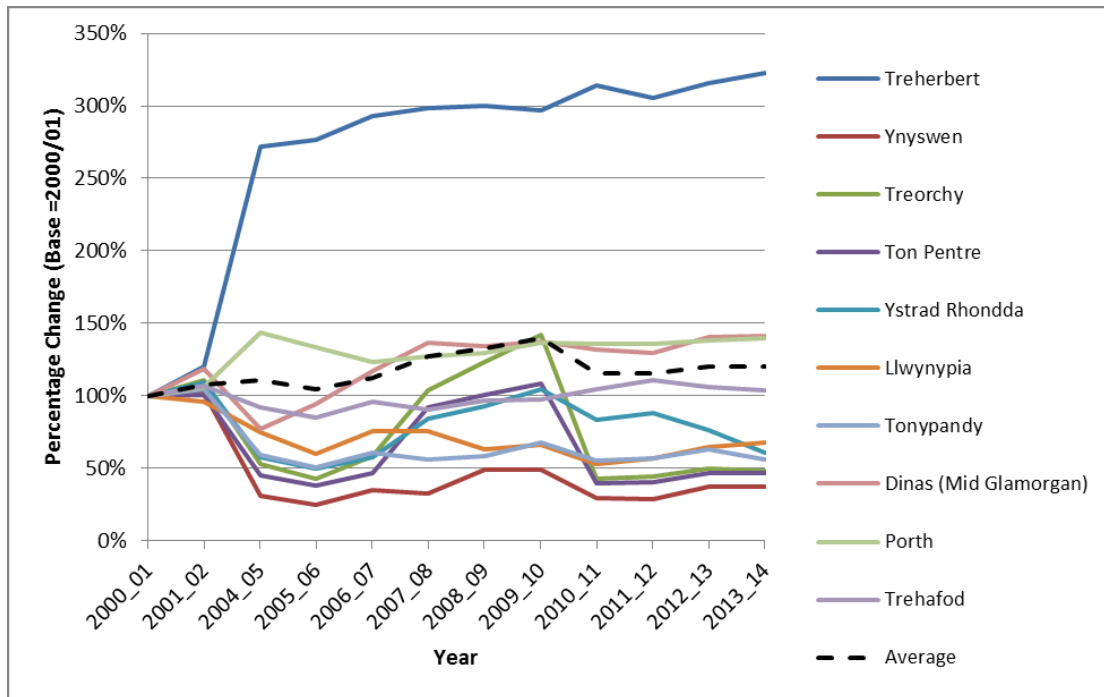


Source: ORR (2015)

Treherbert – Trehafod

Overall, there was an increase in the number of entries and exits on this section from 2005/6 onwards. As shown in the figure below, the number of entries and exits remained relatively stable for the majority of stations over the period 2004/5 -2006/7 having undergone a period of decline in numbers prior to 2004/5.

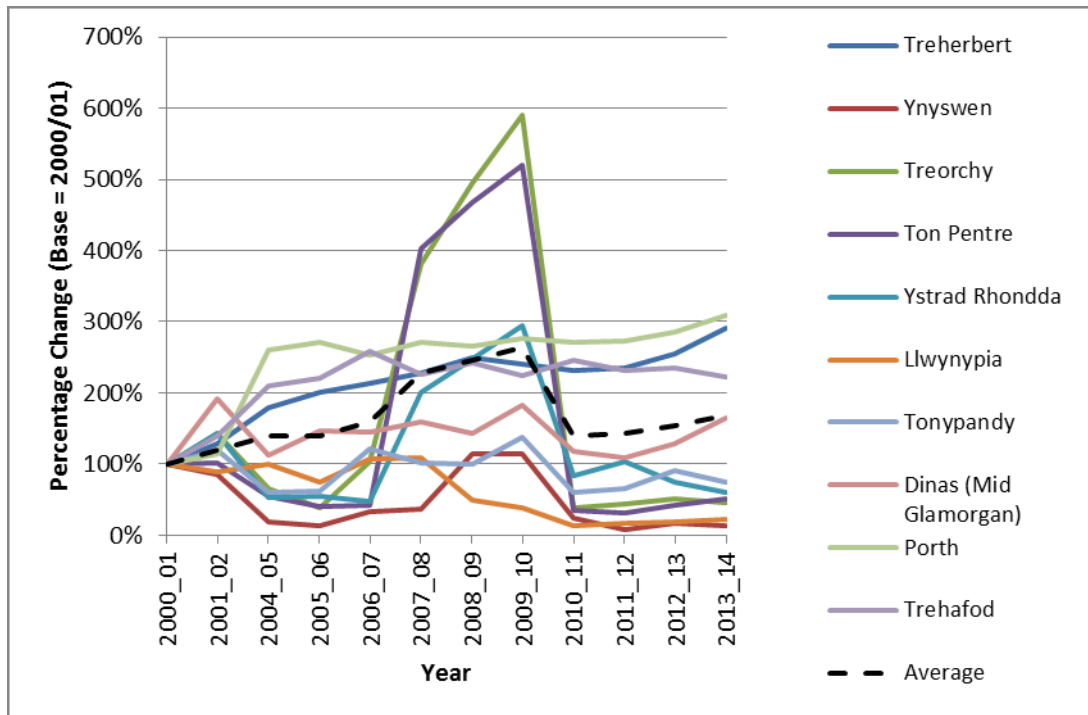
Figure G.10: Change in the Number of Entries and Exits at Stations on the Treherbert – Trehafod Section



Source: ORR (2015)

As shown in Figure H.11, overall the number of season entries on the Treherbert – Trehafod section grew between 2004/5 and 2006/07, with numbers increasing more rapidly thereafter. However, the patterns differed across the stations, with for example, Treorchy and Ton Pentre experiencing a rapid increase in passengers from 2006/07 until 2009/10.

Figure G.11: Change in the Number of Seasonal Entries at Stations on the Treherbert – Trehafod Section

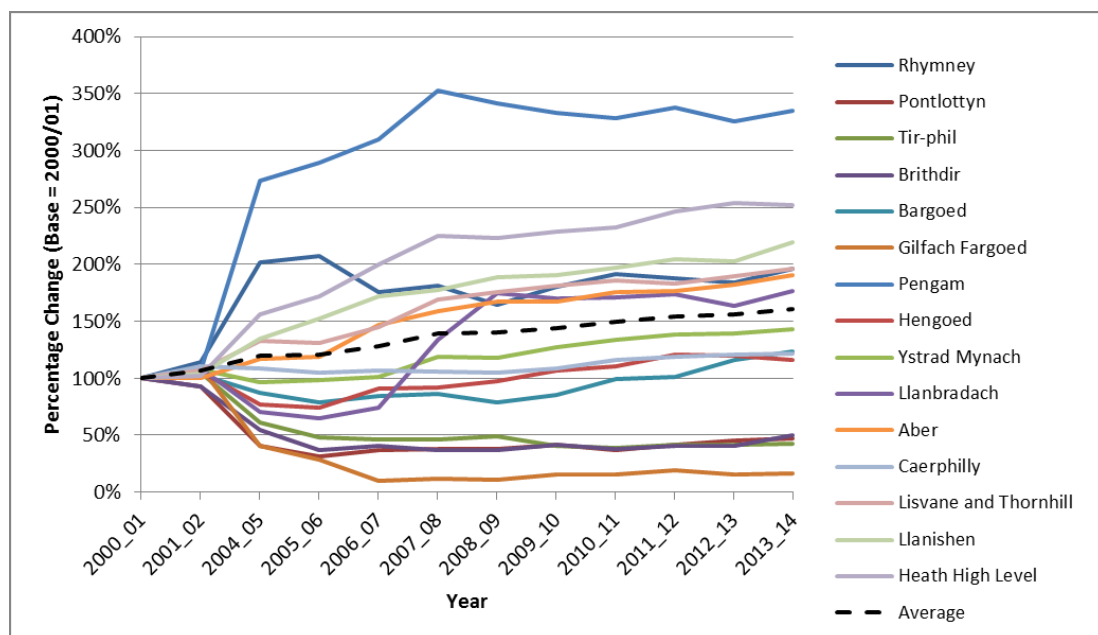


Source: ORR (2015)

Rhymney – Heath High Level

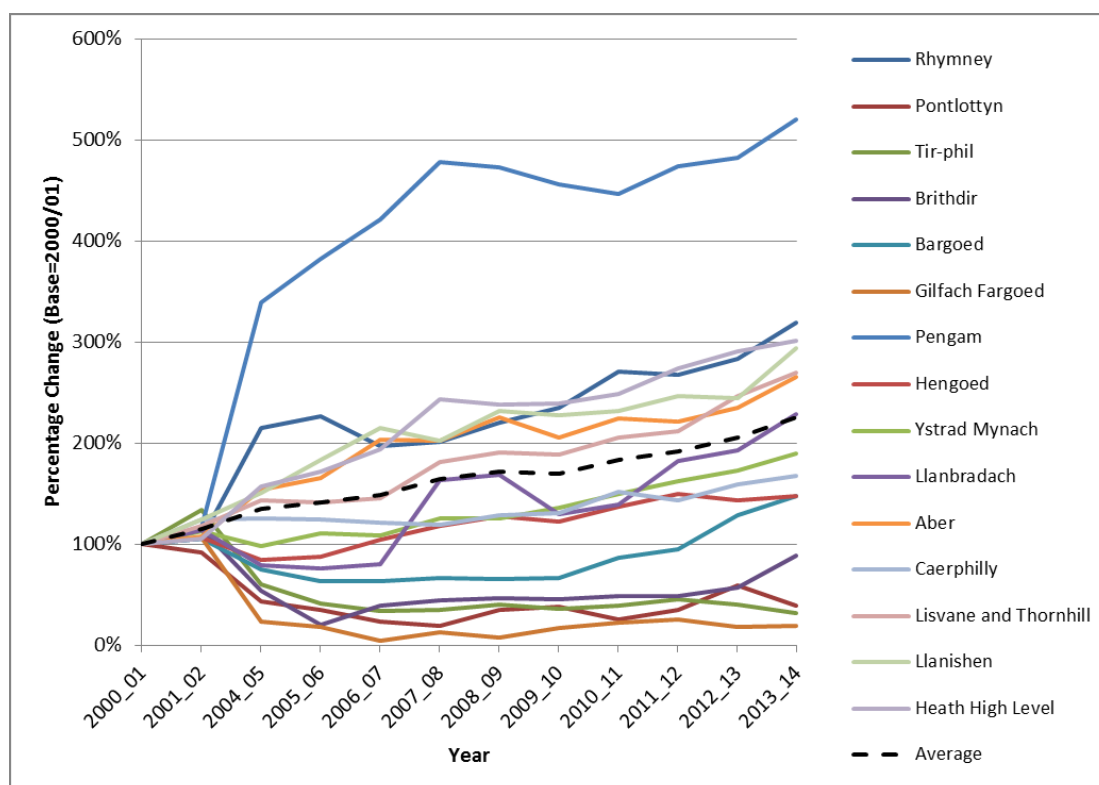
The total number of entries and exits on the Rhymney - Heath High Level section has grown since 2000/01. As shown in the figure below, between 2004/5 and 2005/6 growth rates appear to plateau somewhat, before increasing again from 2005/6 onwards which may coincide with the introduction of strengthening. The pattern varied by station, with numbers at some stations increasing, others declining and some, such as Caerphilly, remaining relatively consistent throughout the period. As shown in Figure H.13 similar trends are evident in terms of seasonal tickets.

Figure G.12: Change in the Number of Entries and Exits at Stations on the Rhymney – Heath High Level Section



Source: ORR (2015)

Figure G.13: Change in the Number of Seasonal Entries at Stations on the Rhymney – Heath High Level Section



Source: ORR (2015)