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Sewta Rail Strategy

Prioritised Investment Programme

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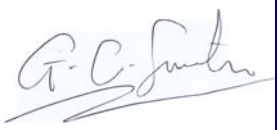
Date October 2006	 Signature	Signature 	Signature 
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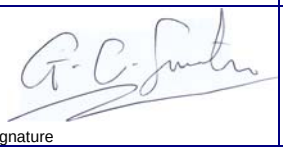
Date November 2006	 Signature	 Signature	 Signature
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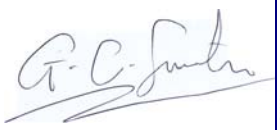
Date March 2007	 Signature	Signature 	Signature 
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EXECUTIVE SUMMARY

Following the publication of the Sewta Rail Strategy, more detailed programming has been undertaken at the request of the Welsh Assembly Government, and this Prioritised Investment Programme demonstrates the need for investment within the Sewta region and its relationship with other major rail investment projects being delivered by Network Rail. Once the principles are accepted by the Welsh Assembly Government, the costs will be firmed up and more detailed economic evaluation work will be undertaken by Sewta and its partner local authorities.

The 'Capital Network' of Wales, as defined in the Wales Spatial Plan, covers the journey to work areas of Cardiff and Newport, which are at the heart of the Sewta region. This is the most intensively developed area of Wales, with almost half of the population living within just 14% of the land area and 95% of the region's people living in urban areas.

Sewta has the busiest roads in Wales and traffic conditions on the Cardiff and Newport radials cause major delays to all vehicles, yet it is still the most economically active area in Wales, with more than half its economic activity. It is not therefore surprising that the Cardiff hinterland has the most intensively used urban rail network outside of London and the Passenger Transport Authority areas.

Transport investment in South East Wales, and rail investment in particular, should therefore be a high priority for the Welsh Assembly Government. Investment in rail provides a sustainable transport solution to these problems, providing improved access between the Valleys and the Cities, and along the M4 Corridor by attracting car trips and reducing congestion in the urban areas.

The objective must also be to break down the barriers which, in spite of enhancing the infrastructure, still work against modal shift. An holistic "door to door" approach needs to be taken which considers the wider issues such as pricing, punctuality, cleanliness, upkeep, information, security and customer service.

Sewta has an important role to play in the development of the Transport Plan for the Capital Region in Wales. In order to ensure that the appropriate contribution is made by rail, the Sewta 2009 – 2018 Rail Strategy Study is therefore seeking to develop a number of the additional services, which will benefit from being pursued in tandem with Network Rail's major re-signalling renewal projects in the region.

In the last decade rail passenger demand on the Valley Lines[1] has been growing at around 10% per annum – significantly higher than the average for the UK. Recent data analysis suggests that this high rate of demand growth is continuing and will result in significant train capacity problems requiring additional network capacity beyond the platform and train lengthening programme, which is currently underway.

The current UK transport policy shift towards the introduction of road pricing measures to manage highway congestion will lead to significant further demand growth on rail services, increasing the urgency for the proposed Sewta Rail Strategy network and its service enhancements.

[1] Valley Lines includes the Aberdare, Barry Island, Cardiff Bay, City Line, Coryton, Gloucester, Maesteg, Merthyr, Penarth, Rhymney, Treherbert and Vale of Glamorgan routes.

The Sewta Rail Strategy balances the various levels of investment and considers other external factors. It includes:

- **Reliability and capacity improvements**; changes to the network to reduce delays and improve its ability to cope with performance problems between Queen Street North Junction and Cogan Junction, with specific improvements at Barry, Cogan Junction, Cardiff Central, Queen Street and Llandaff;

- **Additional rolling stock** to strengthen peak trains to address passenger growth and to avoid overcrowding and **rolling stock renewal** to provide a more suitable build of unit that is more capable of meeting the punishing local requirements;

- **Station improvements** including improved station facilities, information, security and access - including additional parking and modern interchange facilities;

- **Frequency enhancements** on existing lines; improving the levels of service on selected routes to meet passengers' expectations and encourage increased transfer of car trips to rail; specifically to provide new services on the;

    - **Abergavenny Line**;
    - **Chepstow Line**;
    - **Ebbw Valley Line;**
    - **Maesteg Line;**
    - **Rhymney Line**;
    - **Taff Vale Line,** and;
    - **Vale of Glamorgan Line**.

- Additional services to the north of Cardiff are required to cope with the growth in passenger demand and will require a significant investment in the capacity of the network at and between **Cardiff Queen Street North Junction and Cogan Junction**;

- **New stations on existing lines**; improving access to the rail network that is integrated with the development of improved services; specifically at **Caerleon**, **Magor with Undy**, **Llanwern**, **Coedkernew** and **St Mellons**, with those on the South Wales Main Line between Cardiff and Severn Tunnel sited on the Relief Lines;

- **Network extensions and new stations**; to investigate further improving access to the rail network through extending to

    - **Ebbw Vale Town** (coupled with the further hourly service to Newport, and
    - From **Pontyclun to Beddau** (with stations at Talbot Green, Llantrisant, Gwaun Meisgyn & Beddau).

- **Rail – Link Bus Services**; to extend the reach of the rail services to communities remote from the network, specifically providing access to the Valleys to the north of Bridgend, Cardiff and Newport.

The Sewta Rail Strategy prioritised programme builds on the work already undertaken as part of the Sewta Rail Strategy study and takes account of;

- The need to deliver the Wales Spatial Plan in terms of investment in transport to meet the social, economic and environmental objectives;
- The need to integrate some schemes with the Network Rail Signalling Renewal projects in the region;
- The timetable for land-use development in the vicinity of stations where relevant to the justification of the schemes; and
- Key stages of development in accordance with Network Rail's GRIP process.

Between 2009 and 2018, the infrastructure investment identified within the Sewta Rail Strategy to deliver the prioritised programme is estimated at around £155m at 2005 prices. This figure does not include the costs associated with completion of Sewta's current 5 year plan.

The programming highlights the need for scheme development for longer term strategy schemes to be undertaken in the short term to ensure that passive provision is provided in the Signalling Renewal processes. It also recognises the importance of the Cardiff Area Signalling Renewal process in ensuring that the opportunity for a major enhancement in the critical Queen Street North Junction to Cogan Junction section of the network in the strategy period is provided in the most efficient and effective manner.

The Queen Street North to Cogan Junction capacity improvement measures, including those at Cardiff Central, are considered a high priority within the strategy due to the identified capacity constraint, which not only leads to reliability problems but also mitigates against the increase in passenger and freight traffic.

Sewta is looking for the Welsh Assembly Government to provide funding support to Network Rail and Sewta, working through its Rail Working Group and its partner local authorities, to further develop schemes in the short term for medium / long term delivery, to develop packages of station improvements and to take up the enhancement option within the Cardiff, and to a lesser extent, within the Newport Signalling Renewal projects. Sewta requests that the Welsh Assembly Government plan for the funding requirements for delivery of the Sewta Rail Strategy, including the renewal, and provision of additional rolling stock. Sewta would therefore welcome the opportunity to contribute its ideas to the Arriva Trains Wales franchise reviews in 2008 and 2013.

Sewta requests the Welsh Assembly Government and WEFO to accept the Rail Strategy and maximise the opportunity to secure EU Convergence funding to assist in the delivery of the programme. Sewta also needs Network Rail and Arriva Trains Wales to plan and implement the strategy and will continue to work in partnership with them and the other passenger and freight operators that operate within South East Wales. Sewta recognises the importance of working closely with all these partners and will also take forward the Strategy within the developing Regional Transport Plan.

CONTENTS

1 INTRODUCTION

1.1 Context

This report has been prepared by Jacobs Consultancy for Sewta (South East Wales Transport Alliance) in support of its bid to secure funding for its ten year rail strategy. It cannot be read in isolation as it builds on the information contained within the Sewta Rail Strategy Study[2], together with additional supporting information compiled with assistance from Sewta.

1.2 Foreword by Sewta Chair

This report examines the Sewta Rail Strategy for the next decade, and demonstrates the need for investment to ensure that passengers will have the services and capacity that will allow them to travel throughout the Capital Region, without having to use the car and experience the inevitable road congestion. Over the past two years, the continued engagement with stakeholders and our partners has ensured that the developing rail strategy is practical, focussed on our objectives and supports the emerging Regional Transport Plan. This relationship is important and I am grateful to Arriva Trains Wales, Network Rail, Passenger Focus, Rail Future, partner local authorities and other interested individuals who have contributed to this process.

Sewta contends that South East Wales faces the most acute transport, environmental and social problems in Wales. Therefore an increased proportion of Welsh Assembly Government expenditure on sustainable rail transport solutions should be focused here in the Sewta Region.

Also the Welsh Assembly Government should ensure that each of the Consortia evaluates rail projects on a consistent basis, using the same procedures (preliminary feasibility, cost benefit analysis, demand modelling and deliverability appraisals) as undertaken by Sewta and detailed in our January 2006 Rail Strategy documents.

Investment in rail is an important element of the developing Regional Transport Plan that will cover all means of travel in the region. This strategy builds on the investment we are currently making – as outlined in our 'Red Book' Moving People – Improving Rail - and looks forward to the challenges we will need to face in the next decade. These longer term issues were examined in last years' Sewta Rail Strategy Study which engaged with stakeholders across the region to ensure that the developing strategy is practical, focused on our objectives and prioritised.

The Strategy has 3 principal themes;

- Providing capacity for growth in rail demand
- Providing a reliable network with an attractive product proposition and;
- Improving accessibility - to spread the benefits of rail travel to more of the region.

[2] Sewta Rail Strategy Study 2009 – 2018, January 2006

The rail network in the region, especially the South East Wales Valley Lines into Bridgend, Cardiff and Newport, represents an important asset which we can utilise to achieve our wider social, economic and environmental objectives. We have developed the Strategy with this focus in mind.

We have identified a unique opportunity to integrate important investment for growth and reliability with the major infrastructure renewal activities in the region – the programmed re-signalling in the Cardiff and Newport areas. This presents a once in a lifetime chance to secure the changes we need for the longer term, rather than just providing for today's railway, minimising disruption in the future and securing it in a more cost effective manner.

We are committed to significant rail development in South East Wales, both in terms of improving the quality and frequency of existing services and routes, and the development of new ones. This is important but our approach builds on these foundations and targets improvements to stations, rolling stock and integrated transport.

We need the support of the Welsh Assembly Government and the EU to ensure that we don't miss this opportunity to work with our partners in the rail industry to continue to improve the quality and level of accessibility to the rail network that the region needs.

Latest UK Transport Policy considerations suggest that road pricing / congestion charging is becoming a reality in the major city regions, as part of a new approach to manage highway congestion - so long as it supports regional economic growth. However, such an approach would lead to increased demand for rail travel in South East Wales – realising the high growth projections in our work and emphasising the importance of investment in the capacity of the network to accommodate growth. This increases the urgency for implementing the proposed network enhancements and emphasises that this area must be recognised as being the priority for rail investment.

2 POLICY CONTEXT

2.1 Introduction

The South East Wales Transport Alliance (Sewta) includes 10 authorities in the Wales Spatial Plan defined 'Capital Network' of Wales, covering the journey to work areas of Cardiff and Newport and stretching to the Heads of the Valleys in the North, Bridgend in the West and the English Border in the East. This region is the most intensively developed area of Wales, with almost half of the population of the country living within just 14% of the land area. Sewta has the highest percentage (95%) of people living within urban areas. [3]

The region has an industrial history and, as a result of the recent change in the local economy, there is a marked difference in economic activity and employment levels between the South Wales Valleys (including Ebbw Vale, Maesteg and Merthyr Tydfil) and the Coastal Plain (including Cardiff and Newport). The dominance of Cardiff and Newport, which provide services and functions for the region, results in significant travel demands, north – south between these Cities and the Valleys and also east - west along the coastal plain and across the mid-valleys area. The region also contains a key east – west transport corridor between South West Wales and England.

The draft Wales Transport Strategy[4] compared the 4 regions of Wales and concludes that the Sewta area has the most socially deprived areas and, as a result, the lowest levels of household access to a car (72%). The report also notes that "while most of our network is congestion free for a large part or all of the day, significant problems exist on strategic routes such as the M4 and also in main urban areas"…"there is more traffic in South East Wales than anywhere else in the country".

The Sewta region has the "busiest roads in Wales" and "traffic conditions on the Cardiff and Newport radials cause major delays to all vehicles, including buses." As a result 11 of the 13 Air Quality Management Areas in Wales are in the Sewta region – in Cardiff and Newport. The report also states that "Congestion also occurs in the Valleys, where topography limits the ability of the local road network. The unreliability caused by congestion is a particular concern of industry in the region." Yet still the Sewta area is the most economically active in Wales with more than half the economic activity of the whole of Wales.

The transport policy context for Sewta is presented within a number of interrelated national and regional planning documents covering Social, Economic and Environmental objectives for Wales[5] . The Wales Spatial Strategy and Wales Transport Strategy have been developed within this context and Regional Transport Plans are being developed by each of the four consortia. The Sewta Rail Strategy[6] was developed to meet the national and regional objectives and to feed into the Sewta Regional Transport Plan. It recognises the important contribution that rail can make to alleviating the region's transport problems.

There are three key Welsh Assembly Government policies and priorities which rail investment can contribute to;

[3] Wales RPA Presentation 2nd Core Reference Group Meeting
[4] Wales Transport Strategy – Connecting Wales, consultation document, July 2006
[5] Wales: A Better Country
[6] Sewta Rail Strategy Study 2009 – 2018, January 2006

- **Social goals** – improving accessibility, equality of opportunity and social inclusion;
- **Economic goals** – supporting growth and regeneration; and
- **Environment goals** – reducing car travel and associated emissions.

The following diagrams highlight how investment in the rail network and services, radiating from Cardiff and Newport, will contribute to these objectives.

Figure 1 shows the movement of people within the Sewta area taken from the 2001 census journey to work data. This highlights the importance of Cardiff and Newport in terms of trips to and from these centres from neighbouring authorities. The highest flows are between Rhondda Cynon Taf and Cardiff and between the Vale of Glamorgan and Cardiff.

Figure 2 shows the overall index of Multiple Deprivation in the Sewta Region – highlighting the social issues in the northern Valleys in particular. The rail network provides a relatively fast and reliable travel option for people from the northern valleys to use for relatively long journeys enabling them to seek employment in Cardiff and Newport. Investment in the frequency, capacity and reliability of the Valley Lines network will make an important contribution towards resolving the regional economic and social problems.

Figure 3 shows the carbon dioxide emissions from road transport, presenting the highest concentrations of this key greenhouse gas (and reflecting the air quality issues related to traffic) along the main radial corridors and within the central areas of Cardiff, Newport and the eastern parts of the Vale of Glamorgan. The Rail network provides a more environmentally friendly travel option – particularly for longer distance trips within these corridors and to these centres. Rail services in the region are already used by car owners for longer distance trips – particularly to Cardiff where parking supply is limited and controlled. Further investment in the rail network will contribute to resolving the environmental problems caused by transport in the region.

2.2 The Wales Spatial Plan

The Wales Spatial Plan[7] translates these priorities into specific objectives within the Sewta region in terms of development and transport. This presents regeneration goals, in particular within the depressed areas of the Heads of the Valleys (Merthyr Tydfil, Rhymney and Ebbw Vale) and identifies the importance of linking the Valleys to the coastal regions to provide coherence between the two areas and reduced economic disparity.

Developing the transport network is identified to be of utmost importance. “The strategy therefore must be to strengthen and reintegrate the existing system of towns and cities within South East Wales so that the area functions as a coherent urban network and can compete internationally”.

It is stated that “the area will function as a single networked city-region on a scale to realise its international potential, its national role and to reduce inequalities. A fully integrated transport system is necessary to enable this to happen. The area will operate in a way that maintains and enhances the facility of international gateways and corridors.”

[7] People, Places, Futures - The Wales Spatial Plan, Welsh Assembly Government, 2004

Figure 1 Sewta Origin and Destination Statistics

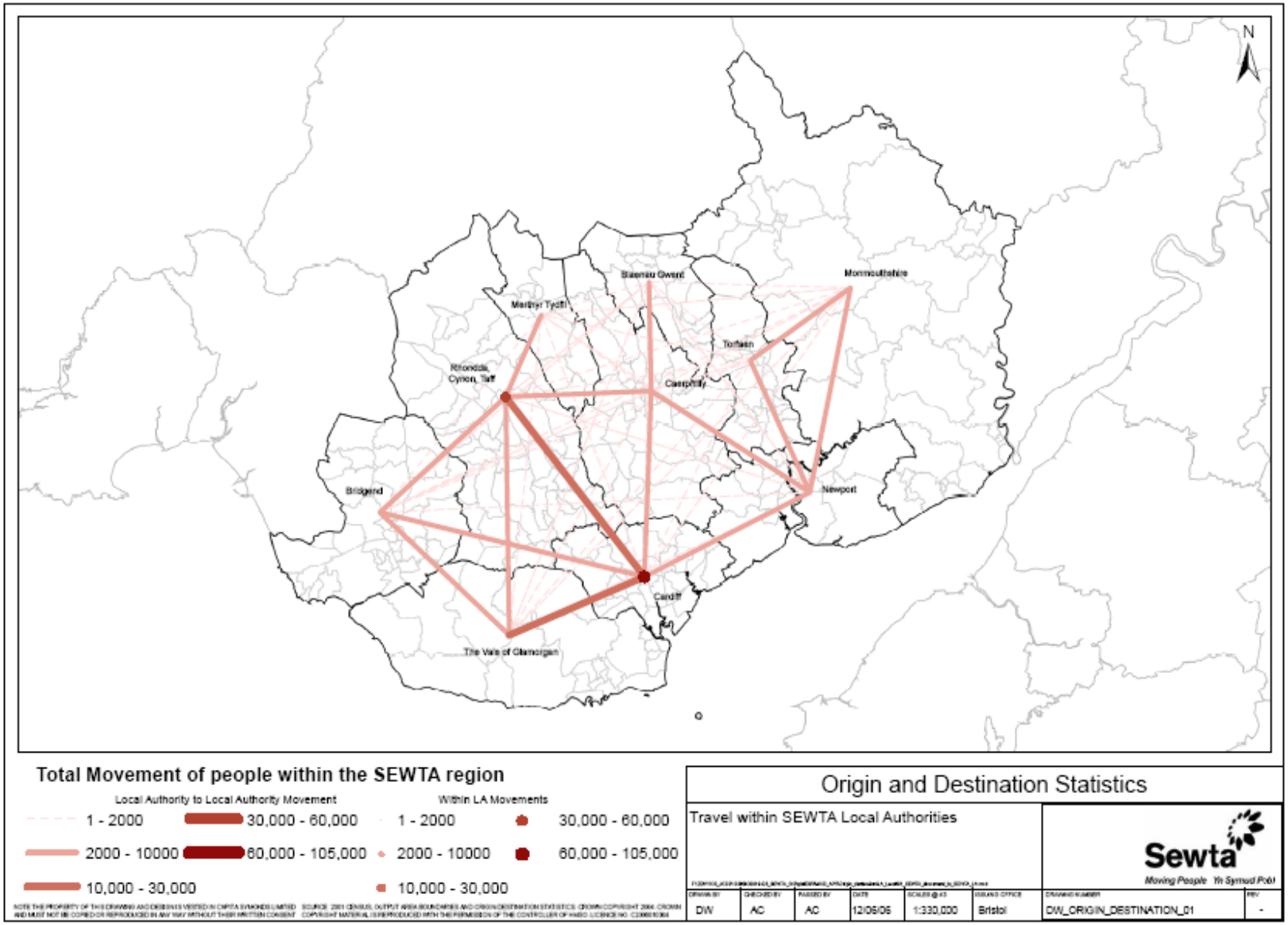


Figure 2 Overall Index of Multiple Deprivation

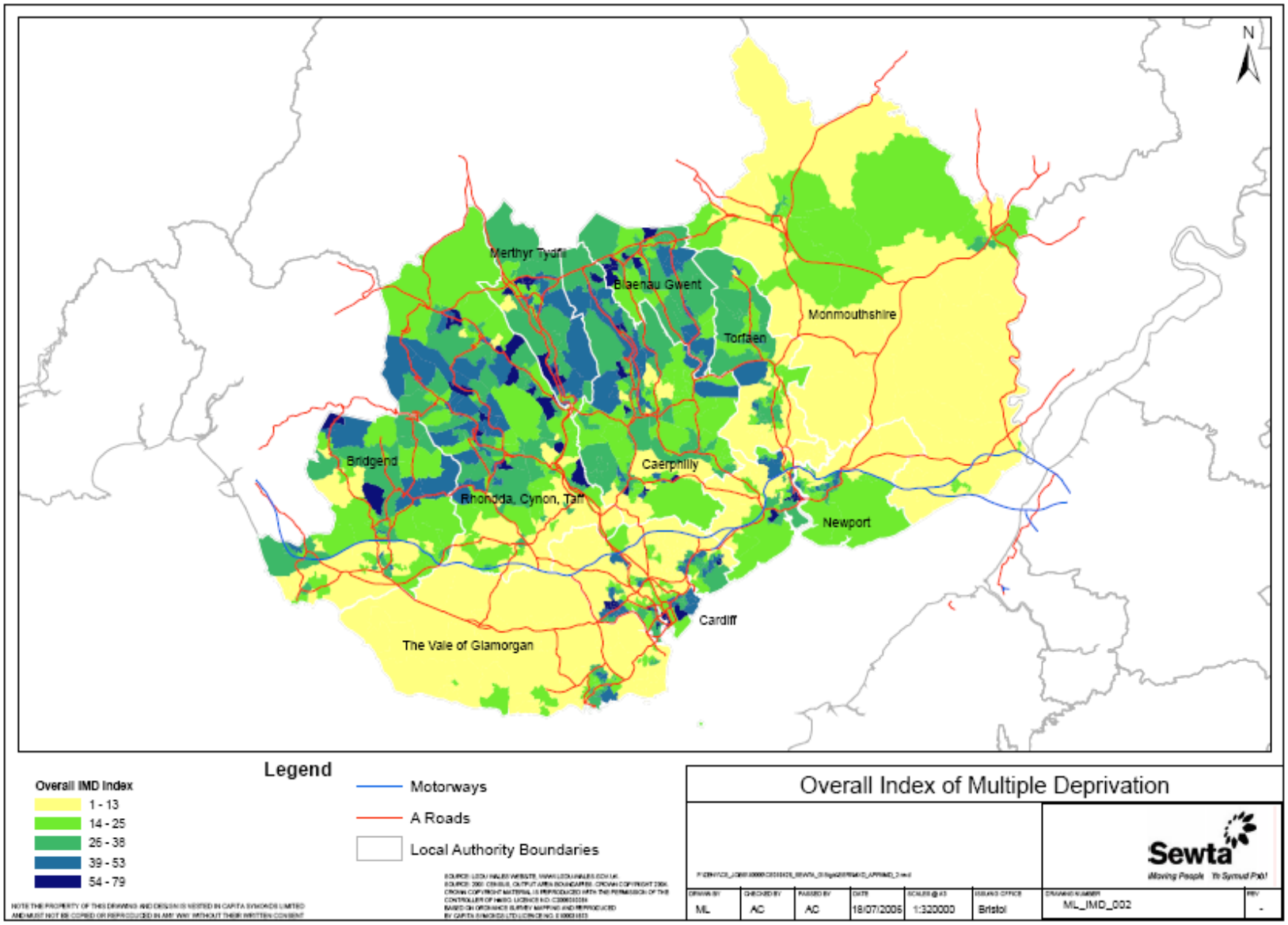
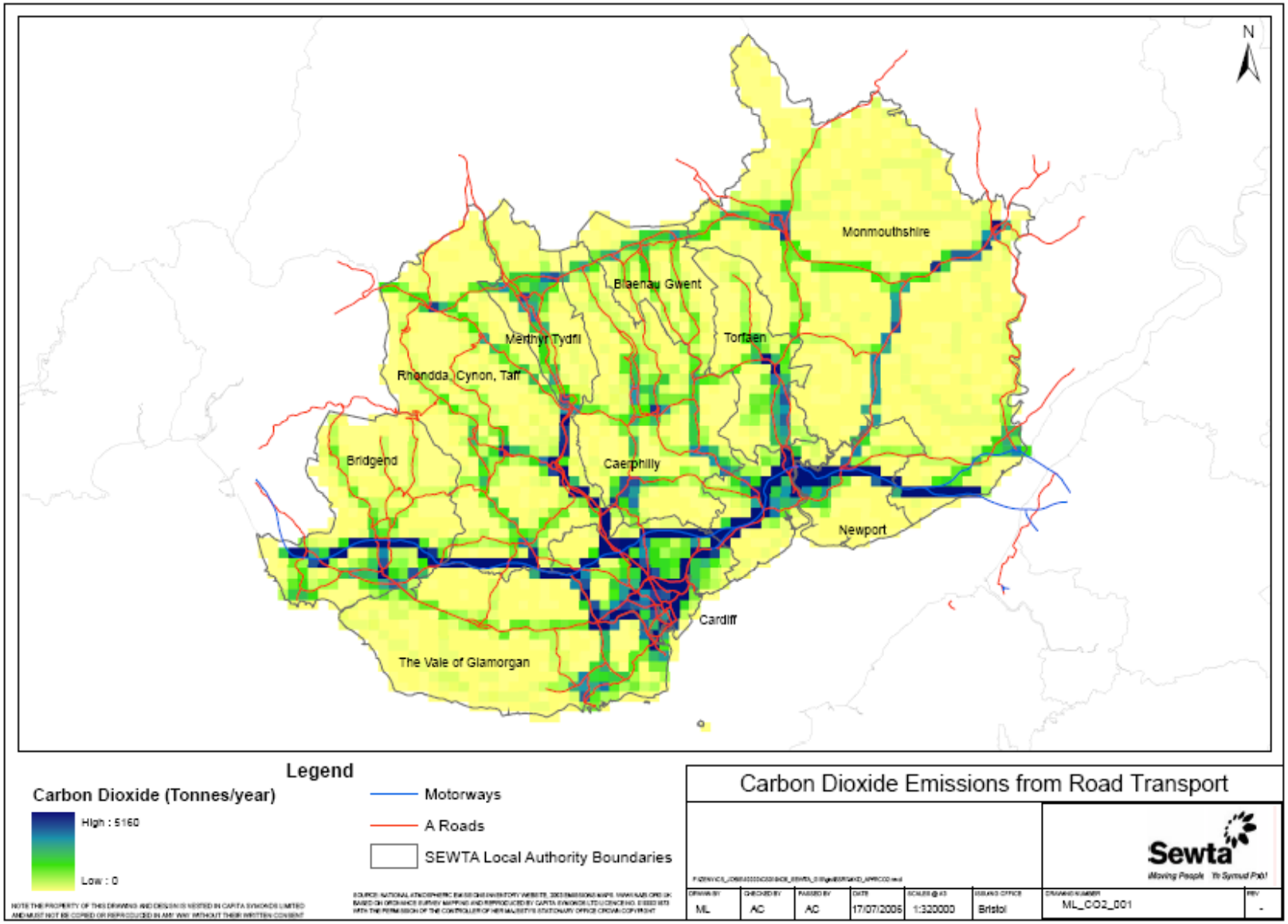


Figure 3 Carbon Dioxide Emissions from Road Transport



The integrated transport strategy will;

- **"Target improved bus, rail, inter-modal and park and ride services** facilities for commuting to provide real options and reduce dependency on the car";
- **"Provide incremental improvements to rail services in the Valleys** which will double and in some areas quadruple the capacity"; and
- "**Increase the transport capacity of the corridors and gateways to Europe** and beyond".

"Transport is fundamental to the economy, which is dependent on the effective and efficient transport of people and goods. The Welsh Assembly Government's transport programmes are designed to support the development of the economy and help to spread prosperity across all parts of Wales." Andrew Davies, Minister for Enterprise, Innovation and Networks, National Assembly Plenary 4th October 2006.

To take the Wales Spatial Plan forward six key action areas for the region were agreed, of which transport was one. For each of these areas Project Initiation Documents (PiDs) have been drafted. The Integrated Transport PiD[8] has been adopted by the Spatial Ministerial Group. After the Key Settlements PiD, **transport is regarded as the most important action for the Spatial Plan in South East Wales**. Key objectives which relate to rail are;

- Giving people in less accessible communities, for instance in the Valleys, **better access to jobs and services** by ensuring the public transport system is not an impediment to the Welsh Assembly Government objectives relating to social, economic and learning exclusion;
- **Reducing congestion** and maintaining a high quality of life in the area by **making better use of the existing transport system** and direct investment into limited but effective **capacity increases**; and
- **Reducing greenhouse emissions** by **making better use of existing travel facilities.**

"South East Wales… is the part of the Wales and the Borders franchise and the mainline service that has had the largest growth and where the pressures are the most acute." Andrew Davies, Minister for Enterprise, Innovation and Networks, National Assembly Plenary 4th October 2006.

"When it comes to trying to encourage a modal shift from private transport…. The rail network from the Valleys, Barry and the new Vale of Glamorgan line coming into Queen Street and Cardiff Central Station, where there is a big concentration of office employment, offers the biggest potential shift in Wales. Rhodri Morgan, First Minister, National Assembly for Wales, 10th October 2006.

[8] Project Initiation Document South East – The Capital Network Integrated Transport, Sewta, WSP (SE-PiD) 05-01, Version 5, 2006

The draft South East Wales Transport Strategy within the Wales Spatial Plan identifies the need to achieve sustainable accessibility through key movement corridors. It aims to link all key settlements with Cardiff or Newport through the operation of suitable high capacity public transport at least four times an hour during the normal working day. Sewta has a programme broadly agreed with the Assembly that will meet this objective for some key settlements. Its current plans do not extend this level of service to Abergavenny, Aberdare, Blackwood, Ebbw Vale and Pontypool. Additional funding over and above the current strategy will be needed in respect of services to these centres. The Transport Strategy also identifies the need to provide stretching targets for improving journey times by bus and rail, and the need to further integrate Cardiff Wales Airport to the Capital Region.

The timing of road-user charging in South East Wales will be judged so that improved public transport services are in place to offer car users realistic choices. The Welsh Assembly Government is working with Sewta and SWWITCH to ensure that two studies (the Wales Route Utilisation Study (RUS) and High Level Output Specification (HLOS)) make explicit the short, medium and long terms options for improvements in rail journey times and service standards.

2.3 UK Government and Industry Rail Objectives

The rail network has an identified important role in the UK Government's vision for transport[9] – providing a **fast, reliable and efficient** service, particularly for interurban journeys and commuting into large urban areas.

> **"The railways are a vital public service. They are an essential part of the transport system, supporting a growing economy."** - Rt. Hon. Alistair Darling MP, Secretary of State for Transport, The Future of Rail – White Paper, July 2004

The White Paper recognised that the railways are a vital part of the country's transport infrastructure, suffering from 'historic under-investment' and that the Government is determined to tackle the problems of the railways. Key priorities are specified as;

- **Control of costs** – working within the level of public funding available, and
- **Improving performance** for passengers and freight users.

Whilst passengers consistently register improving performance (punctuality and reliability) as their highest priority they also value;

- Cleanliness and quality of trains;
- Quality of station facilities;
- Improved journey times;
- Personal security;
- Good customer services;
- Accurate and timely information;
- Trains not being overcrowded;
- Affordability; and,
- Easily understood fares structure.

[9] White Paper, The Future of Transport, a network for 2030, DfT, July 2004.

Good performance on the Valley Lines network is made difficult by the infrastructure constraints including operating at the capacity level with only limited resilience to problems at Cardiff Queen Street and Cardiff Central which is accentuated by the long single track sections on many branches. However, between 2005 and 2006 Arriva Trains Wales Valley Lines performance has improved by 10.5% and the most recent figures show a 12.1% improvement attributed to the stability and capacity which the new timetable has provided. Further improvement in operational resilience requires significant investment in infrastructure.

Government also note that investment in rail should focus on what rail does best as part of a balanced transport policy – in particular;

- Passenger rail is suited to serving **long distance** business and leisure travel; and
- **Concentrated markets**, such as commuters into large urban areas.

The White Paper that preceded the Railways Act 2005 also noted that **congestion and overcrowding** may constrain economic growth and investment in transport is needed to prevent and alleviate these problems. Rail has a vital and essential role in managing road congestion and securing environmental benefits, especially in busy commuter areas.

In investment planning the Government places a high importance on securing **value for money** and targeting investment in rail where it is most effective. Sewta has responsibility for developing their transport strategies and plans taking account of this issue, whilst also ensuring that investment supports the wider economic, social and environmental objectives of the region and passengers needs.

"Rail is now carrying record numbers of passengers… the challenge ... is to ensure that these trends continue and accelerate". (The Transport White Paper "A network for 2030")

2.4 Summary

The Sewta region has the highest social, economic and environmental problems in Wales. In particular, social and economic problems are prevalent in the South Wales Valleys, whilst in the primary cities of Cardiff and Newport environmental problems from car traffic are increasing.

Investment in rail provides a sustainable transport solution to these problems – providing improved access between the Valleys, Coastal Plain and the M4 Corridor and the Cities and, by attracting car trips to rail, reduces congestion in the urban areas. Transport investment is an important element of the Regional Spatial Strategy and rail investment in South East Wales is a high priority of the Welsh Assembly Government.

Sewta has an important role in the development of the Transport Plan for the Capital Region in Wales and in ensuring the appropriate contribution is made by rail to the creation of that balanced transport policy in the travel to work area of Cardiff and Newport. Therefore Sewta contends an increased proportion of Welsh Assembly Government expenditure on rail should be focused here in South East Wales.

3 RAIL CONTEXT

3.1 Introduction

The network radiates from Cardiff, with most services running from the Valleys to the North through Cardiff Queen Street and Cardiff Central stations and on to the Vale of Glamorgan and to the North of Bridgend. The rail system in South East Wales also includes the South Wales Main Line, as well as the Marches and Gloucester Lines, and is the most extensive and most intensively used railway outside the UK Metropolitan areas. Figure 4[10] shows that the rail lines in South East Wales carry the highest numbers of passengers in Wales.

The draft Wales Transport Strategy identifies the need to improve the attractiveness of alternatives to the private car and notes that the Valley Lines network has experienced 40% growth over the last 5 years (RTS 2004). Many of the strategic rail corridors particularly into and out of Cardiff are at or nearing capacity. The potential for significant modal shift in the longer term will start to diminish without further capacity improvements.

In 2004 / 05[11], there were 13.2m rail journeys entirely within Wales plus a further 3.4m rail journeys to other UK destinations. Of these, 7.4m journeys originated in Cardiff and a further 3.7m journeys originated on the Valley Lines. Therefore **more than two thirds of all rail trips in Wales take place within the Sewta region.**

The Wales RPA study identified that the rail services in the Sewta area have the highest proportions of business/commuting ticket types in Wales. 50% of Valley Lines journeys relate to commuting and 52% of Cardiff originating journeys are commuting, leading to high peak period demands and overcrowding. The study acknowledged that Cardiff and Valley Lines trains are on average around 114% full in the morning and evening peaks and that station car parks are full. However, individual peak trains can be significantly overloaded.

Valley Lines patronage has grown at a rate of 10% per annum since 1998. The Wales RPA estimates a 25.1% passenger growth between 2006 and 2016 and 40.6% by 2026. Three quarters of this growth will be trips to and from Cardiff (40%) and on the Valley Lines (25%) and other South East Wales Destinations (9%). Sewta considers these forecasts to be conservative, based on recent trends, and that **there could be significant further passenger demand growth in the future leading to much higher levels of overcrowding.**

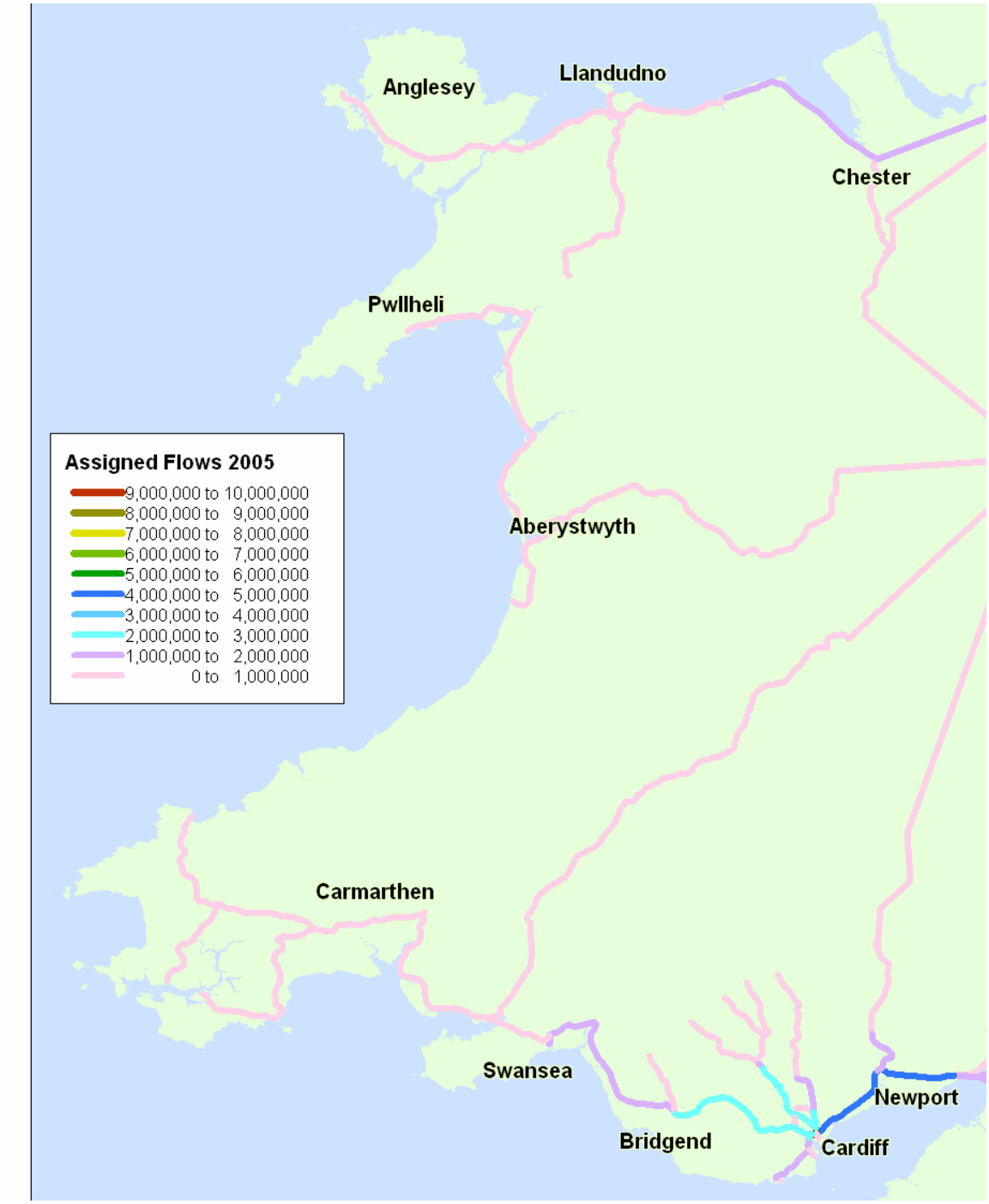
Figure 5 shows the RPA forecast passenger growth geographically, highlighting the importance of the South East Wales network and, in particular, the highest volume of growth will be on the section of the network in central Cardiff where the Valley Lines converge on the two track railway between Cardiff Queen Street and Cardiff Central.

The Wales RPA recognises the importance of the Cardiff Valleys network and makes appropriate references to its continuing strategic development. The forthcoming Wales Route Utilisation Strategy (RUS) needs to pick up the key enhancement opportunities in greater detail and feed them into the signalling renewal workstreams.

[10] Derived from data produced for the Wales RPA
[11] Wales RPA Presentation 2nd Core Reference Group Meeting

"We are now seeing the problems of success with the rail passenger services growing by 10% annually, which is significantly above the rate for the whole of the UK… I recognise that further improvements are necessary in terms of reliability, seating capacity at peak times and the overall quality of the journey experience." Andrew Davies, Minister for Enterprise, Innovation and Networks, Statement on the Welsh Assembly Government's response to the Report of the Rail Infrastructure Committee, 10th October 2006.

Figure 4 Rail Passenger Demand in South Wales[12]



[12] Map and data reproduced from Welsh Assembly Government RPA consultants Information

Figure 5 Forecast Passenger Growth[13]

3.2 Signalling Renewal Projects

Network Rail are progressing a series of signalling renewal projects across South Wales. These projects, which replace the life-expired signalling and control infrastructure, present a major opportunity to plan for the shape of the rail network for the next 30 years and involve over £1.5bn of investment. Network Rail will take the opportunity to simplify the layouts at Newport and Cardiff to improve reliability, availability and maintainability without compromising the delivery of the timetable. The projects will deliver 'Like for Like', modern equivalent form (MEF) railway infrastructure to cope with current timetable requirements, as well as incremental enhancements where there is a business case justification, particularly in terms of performance improvements. Sewta is seeking to ensure that cost effective enhancements can be delivered to address future timetable requirements.

3.2.1 Newport Area Signalling Renewal Project

The Newport Area Signalling Renewal Project is being undertaken in two phases. Phase 1 covers the area from Severn Tunnel Junction to west of Newport and Phase 2 will cover the Abergavenny, Ebbw Vale and Gloucester Lines.

Phase 1 has progressed to the completion of the Grip 3 stage (Option Assessment). The future programme is to complete the Grip 4 stage (design freeze) in October 2006, award the resignalling contract in July 2007 and complete the works in December 2009. The Newport Area Signalling Renewals Phase 2 Project will be commissioned between 2011 and 2012.

Network Rail is enhancing the South Wales Main Line relief lines, upgrading their speed to a nominal 75mph. They will remodel Severn Tunnel Junction and provide a faster ladder at East Usk, raising speeds to provide more efficient operations.

[13] Map and data reproduced from Welsh Assembly Government RPA consultants information.

Network Rail advise that any new stations between Cardiff and Severn Tunnel Junction need to be located on the relief lines. The line speed increase, when commissioned, will be delivered in parallel to Newport Area Signalling Renewal scheme. This should help to make the business case for the additional stations more positive. The Sewta Rail Strategy recommends new stations at Llanwern, to serve the East Newport Expansion Area, at Magor / Undy, at the Coedkernew development area to the West of Newport and at St Mellons to the East of Cardiff

The remodelling proposal for Severn Tunnel Junction and relief line speed enhancements would provide additional capacity. The scheme involves providing an additional line through the station creating separate routes for Gloucester and Severn Tunnel bound services. If Severn Tunnel Junction station is to be retained, this will necessitate providing a new platform 4. The costs associated with this extra platform and ramped footbridges to all platforms could be transferred towards Magor / Undy Station costs, if the decision was made to move the station. Alternatively, it could lead to the modernisation of Severn Tunnel Junction Station as an interchange station and railhead for the surrounding area, with bus links and the creation of a strategic park and ride. More work is therefore urgently required to develop the comparative business cases to a level which identifies the scheme which offers the best value. Passenger research will be important and Sewta will also work with Passenger Focus to inform this decision.

Whilst a study of Magor / Undy was undertaken in 2005 there is a need to identify where, within a 2km stretch, Llanwern station should be sited. Negotiations on the planning application for the Llanwern Regeneration Site are at a critical stage and integrated transport, with a strategic park and ride facility, is the prime focus of the Masterplan. With this work ongoing, passive provision needs to be made for providing new stations at the correct locations at Magor / Undy and Llanwern.

Sewta proposed to upgrade Severn Tunnel Junction station within their 5-year programme – a scheme is currently stalled through the need to secure land from Network Rail to improve park and ride provision, which could possibly be decked to accommodate future growth. **Sewta wish to maximise the Newport Area Signalling Renewal phase 1 investment and create a quality park and ride station at Severn Tunnel Junction and require the support of the Welsh Assembly Government to secure this.** Sewta will review the option of a further station at Magor / Undy in taking forward the strategy.

3.2.2 Cardiff Area Signalling Renewal Project

Cardiff Area Signalling Renewal covers the area from the Newport Phase 1 signalling renewal zone to the previously progressed Port Talbot Area signalling renewal project zone at Bridgend and includes the Vale of Glamorgan, the southern parts of the Valley Lines to Radyr and Coryton and to Rhymney.

The project is programmed to replace life-expired signalling equipment in 2012 and to deliver performance enhancements, through improved infrastructure reliability and availability for services, improved transit times, improved capability of the network and reduced maintenance, through removal of redundant infrastructure and simplification. The scheme involves transfer of control to the South Wales Signalling Centre (SWSC).

By the end of August 2006 the project reached Grip Stage 2 (feasibility), agreeing the scope of the enhancements and alternatives to be investigated. In March 2008 Grip Stage 3 (option development) will be completed and by February 2009 Grip Stage 4 (single option development/ design freeze) will be complete. Construction is programmed for between 2009 and the end of 2012.

3.3 Strategic Vision

The Wales Transport Strategy Group[14] evidence to the recent Welsh Assembly Government's Rail Infrastructure and Passenger Services Committee identified that the Welsh rail network has a few serious 'pinch points'. In particular, it cited the South Wales main line between the Severn Tunnel and Cardiff and the line between Cogan Junction and Queen Street North Junction through Cardiff Central Station and Cardiff Queen Street station. They suggested that "**these sections will need serious examination if they are not to suffer thrombosis within 20-years**". They also identified that the Valley Lines are vital to the functioning of Cardiff's business economy and to regeneration of the Valley's communities.

> **"The greatest pressure on infrastructure occurs on the Valley Lines ..(where) .. we are approaching an almost metropolitan density in terms of the rail network, the pressures on it and the use of it."** Andrew Davies, Minister for Enterprise, Innovation and Networks, Statement on the Welsh Assembly Government's response to the Report of the Rail Infrastructure Committee, 10th October 2006.

Arriva Trains Wales' evidence to the Committee stressed the importance of remodelling, upgrading and expanding track, signalling and stations in the Cardiff Queen Street to Cardiff Central section of the network and **the opportunity to address the issues through the forthcoming Network Rail Cardiff Resignalling Project (2008) which "must not be lost"**.

The Queen Street North Junction to Cogan Junction corridor is the critical section on the Valley Lines network and is termed 'the Golden Route' in the Western Accelerated Recovery (WAR) improved performance initiative, which is being developed and implemented by Network Rail's Route Director by March 2009. It is the **most intensively used section of the rail network in Wales**. This is compounded by the fact that the existing layout and signalling has significant operational and performance constraints undermining long term growth prospects. Analysis of key system failure within the Cardiff Area Signalling Renewal Project has identified that this route section suffers the worst asset performance.

> **"Queen Street Station … is a major bottleneck. We have been working …. to identify what needs to be done … to enhance the capacity … early delivery will enable us to increase capacity on the services that come into Queen Street and Cardiff Central Stations."** Andrew Davies, Minister for Enterprise, Innovation and Networks, National Assembly plenary 4th October 2006.

In addition, the Great Western Route Utilisation Strategy (RUS) identified that the Main Line west of Cardiff is operating at 90% of capacity. However, within the Signalling renewals project, no measures are currently proposed to improve capacity and performance in this section of the network. There are significant constraints on this stretch of the Main Line and ongoing input will therefore be necessary from all stakeholders to identify and scope suitable enhancement opportunities. The Welsh Assembly Government and the Department of Transport should consider removing the inflexibility of the First Great Western timings which are a major constraint on other operators. **There is a need to review this key stretch of the South Wales Main Line within the Cardiff Area Signalling Renewal project, taking note of the Sewta Rail Strategy.**

[14] Wales Transport Strategy Group, Rail Infrastructure Working Group Input to National Assembly for Wales Committee on Rail Infrastructure & Improved Rail Passenger Services, Feb 2006

"My ultimate vision is of full half-hourly services of four car trains, and in some cases – the areas of heaviest demand – six car trains across the extent of the Cardiff Valleys network." Andrew Davies, Minister for Enterprise, Innovation and Networks 'Railways in Wales' Conference, January 2005

To achieve this there is a need to complete the schemes already programmed and funded (**Merthyr, Ebbw Valley Phase 1 and South Wales Platform Extensions** projects) and to further develop and fund currently programmed but unfunded schemes on the **Maesteg Line, Rhymney Line, Ebbw Valley Phase 2** (second hourly service to Newport) and additional hourly service on the **Vale of Glamorgan (Barry to Bridgend).** This vision needs to be extended to the whole of the Sewta region, with an additional hourly **Abergavenny** local service and additional hourly **Chepstow** service, coupled with an improved Gloucester service also being required. These proposals are all contained within either the Sewta 5 year implementation programme[15] or the further rail strategy between 2009 and 2018[16].

3.4 Rail within the South East Wales Transport Hierarchy

Recent journey time reliability monitoring of car, bus and rail routes[17] shows that **rail services have the least journey time variability and are often the quickest point to point mode in the AM peak.** By comparison to rail, car trips have the greatest journey time variability in the AM peak and buses have the greatest journey times.

Bus services are an important element of the transport mix in South East Wales, having an important social role, as well as one which supports local economic growth and, where it is the only alternative mode, it provides a strategic transport role. However, ultimately, **trains provide a reliable alternative to car travel, especially in the peak hours and rail demand is growing significantly**.

3.5 Summary

South East Wales has the most intensive rail network in Wales. The services support the economy of the Capital and have experienced substantial passenger growth in recent years leading to overcrowding and suppressed demand.

The Sewta vision for improving the rail network is shared by the Welsh Assembly Government and seeks to provide a more attractive transport option with a minimum frequency of half hourly services made up of at least 4-car trains.

There is a particularly acute network capacity problem between Queen Street North junction and Cogan Junction – through Cardiff Queen Street and Cardiff Central stations, which impacts on reliability and the potential for further growth. The Cardiff Area Signalling Renewal project offers the scope to secure additional capacity at the core of the Valley Lines network, through an enhancement option which will require Welsh Assembly Government funding support. Similar scope is provided by the Newport Scheme.

[15] Moving People – Improving Rail, The Next Five Years, Sewta, July 2005
[16] Sewta Rail Strategy Study 2009 – 2018, January 2006
[17] Journey Time and Reliability in the Sewta Region Year 1, Capita Symonds, Feb 2006

Network Rail is working proactively with stakeholders to develop and model these enhancements, which present a 'once in a lifetime opportunity' to secure the infrastructure for providing the reliability and capability for growth that the region requires. At worst, Sewta is looking for passive provision to be made whereby nothing in the resignalling schemes will prevent the future implementation of known enhancement schemes.

Rail is an attractive alternative to the use of the private car in the Sewta region and is an important element of the transport hierarchy. Sewta have developed a rail strategy to further improve the rail network, with increased service frequencies and longer trains designed to enable the recent growth in demand to continue. The strategy is focused on the Regional Spatial Strategy objectives, prioritised in terms of its value for money and its ability to deliver the Welsh Assembly Government's priorities.

4 SEWTA RAIL STRATEGY

4.1 Introduction

Sewta is responsible for the development and implementation of public transport strategies and plans devised to serve the identified objectives of the Capital region. They are working towards the development of the Regional Transport Plan and have undertaken a number of modal studies to prepare the context and strategies across the region.

In particular, Sewta have previously developed, and with Welsh Assembly Government and European funding are implementing, a Rail Investment Programme to 2010[18] and have undertaken a Rail Strategy Study[19] to examine the longer term requirements of the network to 2018. In parallel they have undertaken work to produce regional bus and walking and cycling strategies. The forthcoming Regional Transport Plan will be produced in line with the guidance recently issued for consultation by the Welsh Assembly Government and will effectively take forward the Wales Transport Strategy within the South East region.

4.2 Sewta Rail Strategy Development

The Sewta Rail Strategy was developed to meet the requirements of the region and is in accord with the principles contained within the Welsh Transport Appraisal Guidance (WelTAG). The strategy is objective driven and guided by the national and regional planning policy, meeting the economic, social and environmental objectives and identified problems in the region.

The study developed its own appraisal criteria drawn from the national and regional objectives related to transport and examined a wide range of alternative initiatives and interventions, which were measured against the defined objectives, using multi-criteria analysis supported by technical assessment, especially in terms of the economic objectives. The study involved consultation with stakeholders to develop a long list of initiatives, which was followed by an initial coarse sieve, to assist in prioritising and formulating the programme. The study recorded options rejected and undertook a further more detailed appraisal against the regional objectives to ensure a good fit with Wales Transport Strategy outcomes.

The resulting Rail Strategy builds on the identified role of rail in the transport hierarchy in the region, serving medium and longer distance journeys, providing sub-regional connectivity, providing a realistic alternative to private car travel to the Capital and sub-regional activity centres and securing modal shift.

4.3 Passenger Growth and Capacity Issues

There has been considerable growth on Valley Lines services within the Sewta region over the last few years – leading to peak period overcrowding and investment in infrastructure and additional rolling stock to lengthen trains to accommodate the most pressing demands.

[18] Moving People – Improving Rail, The Next Five Years, July 2005
[19] Sewta Rail Strategy Study 2009 – 2018, January 2006

The current Sewta rail improvement plan to 2010 includes considerable investment in longer platforms throughout the region to enable further train lengthening to meet even greater demand growth. The Sewta Rail Strategy study undertook further demand and capacity analysis to address the period between 2009 and 2018 and establish (a) the requirement for additional rolling stock, and (b) whether the investment in longer trains would accommodate anticipated demand on the Valley Lines and (c) whether there would be a need for additional frequency – to those destinations, which in turn would require additional capacity in the Cardiff Queen Street/ Cardiff Central area.

Table 1 (from the Sewta Rail Strategy) shows the growth in patronage on Valley Lines services between 1998 and 2004 and between 2001 and 2004 by line. The table shows that there was an **average growth of 10% per annum between 1998 and 2004** with all lines growing by at least 5% per annum on average and most lines growing between 7% and 10% per year.

The table also shows that between 2001 and 2004 there was significantly less growth – 5% per annum on average across all lines. This may be because **some lines are already capacity constrained** – affecting the potential for demand to grow – particularly the Barry Line. Other lines have spare capacity– such as the Cardiff Bay, Penarth, Coryton and City Lines, however, individual peak hour trains are heavily used.

Table 1 Average Growth per Annum, Valley Lines

Line	1998 – 2004	2001 – 2004
Bay	28%	15%
City	6%	5%
Aberdare	17%	11%
Barry	8%	0%
Penarth	10%	5%
Coryton	5%	5%
Merthyr	8%	-1%
Treherbert	7%	1%
Rhymney	7%	3%
Maesteg	-	11%
All Lines	**10%**	**5%**

Similar analysis for regional services on the lines serving Newport revealed less of a capacity problem, with between 64% - 80% spare capacity on some Chepstow Line trains. With the higher capacity Class 175 trains being operated on Marches Line services, there is between 32% and 47% spare seating capacity within the South East Wales sections of these services, although at peak times / days of the week trains are at capacity in some places along the routes. There is significant scope for lengthening trains on these services, with the only constraint to 4-car length trains, the down platform at Caldicot (3-car), being addressed as part of the current South Wales Platform Extensions scheme.

Analysis of recent train counts and ticket sales data suggests that the growth of demand for Valley Lines services is continuing at a similar rate as over the last few years. **Comparison of the first 11 periods of 2006 compared to the same period in 2005 shows a 7.1% increase, and the last 6 periods to November 2006 show an increase between 8.5% and 13.7%.** However, this period covers the introduction of the Standard Pattern Timetable in December 2005 which altered many service patterns and some significant increases in service frequency, an extension of service northwards on the Rhymney Line and replacement of rolling stock. The underlying growth in the region is estimated as continuing to be around 5% per annum.

To estimate the potential impact of passenger growth on the Valley Lines throughout the evaluation period the 2004 peak train counts provided by Arriva Trains Wales were summed for the 2 hour AM peak (0730 – 0930 arrivals at Cardiff) and for the 2 hour PM peak (1630 – 1830 departures from Cardiff) for the most heavily used lines. [20]

Two demand forecasts were applied:

- Central Demand based on GDP Growth (see appendix A); and
- High Demand – using the average Valley Lines Growth between 2001 and 2004 (5% per annum).

In addition Cardiff Council is considering the introduction of a congestion charge for the Capital – to improve traffic flows and generate income to invest in transport projects. Such a scheme would probably be integrated with the current Severn Bridge Tolls and possible tolls on an M4 relief road planned to be constructed around Newport. A congestion charge would alter the relative generalised costs of travel between road and rail in the region and would be expected to have a significant impact on the demand for rail services. This was assessed as a sensitivity test.

The increase in rail demand was compared with the base capacity for each line and also the planned maximum capacity taking account of the maximum train length and frequency for each line, **assuming all peak period trains are lengthened to the maximum possible.** Both capacity measures took into account seating and standing. In addition, further peak train analysis has been undertaken on the key lines.

It was concluded that on the Chepstow Line there will be sufficient capacity to accommodate anticipated growth in passenger demand on the planned services. However, the analysis suggests that **there will be a requirement for additional rolling stock on Valley Lines services and on peak Marches Line departures if peak period demand increases are to be accommodated without overcrowding or demand suppression.**

Figures 6 to 9 show the results for peak trains on selected routes where the forecasts suggest the most serious capacity issues; the Aberdare, Rhymney, Merthyr Tydfil and Barry Island Lines. Each graph shows the base capacity, the maximum line capacity with full length trains and the maximum capacity including standing (at 25% of seat capacity). The forecast growth at the high level (continued 5% per annum growth) and with a cautious allowance for the introduction of a congestion charge is shown. Sewta recognises that the impact of congestion charging on modal shift will be the subject of further assessment.

There could be some peak spreading on most lines which might offset the need for additional line capacity. However, the analysis is based on the Arriva Trains Wales train counts undertaken by train guards which might be subject to underreporting, as when peak period train loads are high it is difficult for the train guard to undertake an accurate passenger count**. There is a need for Sewta to secure funding from the Welsh Assembly Government for carrying out independent surveys to validate the peak period train counts for the purpose of rolling stock planning and more detailed assessment of longer term capacity requirements**. To this end Sewta is working with Arriva Trains Wales to identify whether there is a role for more accurate passenger counting equipment using infra-red sensors to be fitted to several trains.

[20] The period was chosen to provide consistency between routes though it is noted that there are some heavily loaded trains outside this period – such as the 1621 departure from Cardiff Central towards Bridgend

Figure 6 Aberdare Line Capacity Analysis

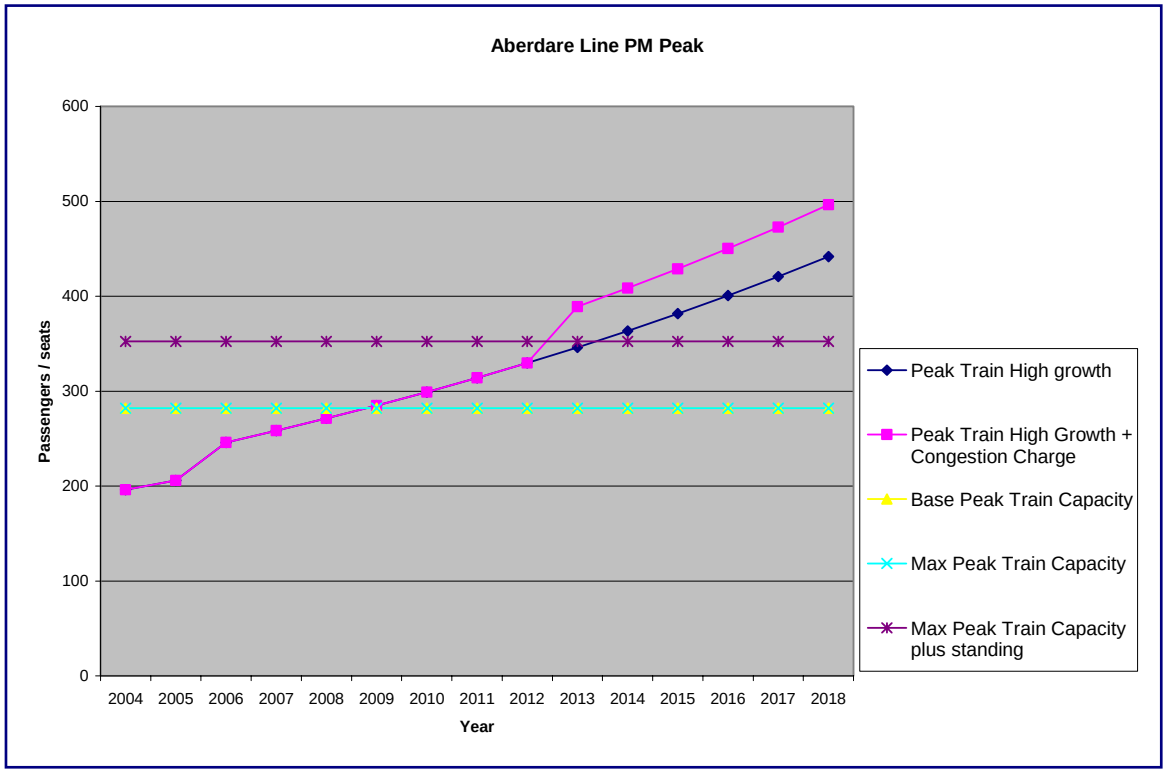


Figure 7 Merthyr Tydfil Line Capacity Analysis

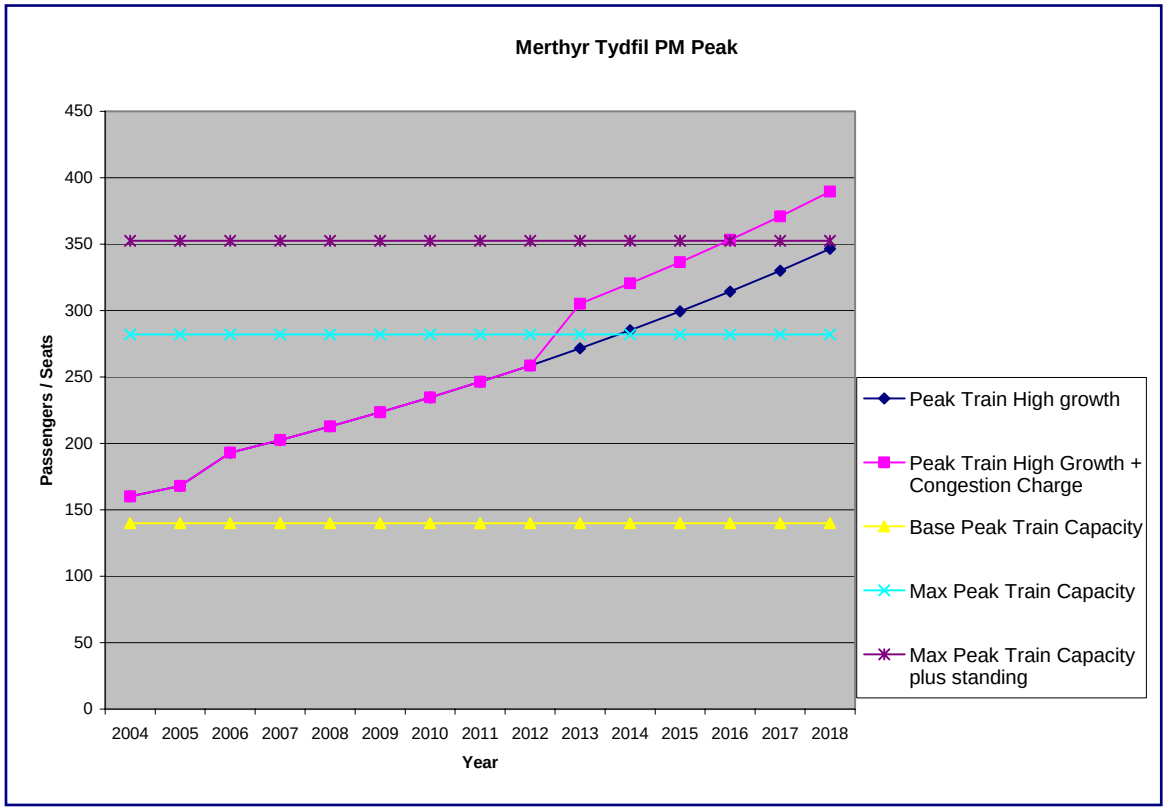


Figure 8 Rhymney Line Capacity Analysis

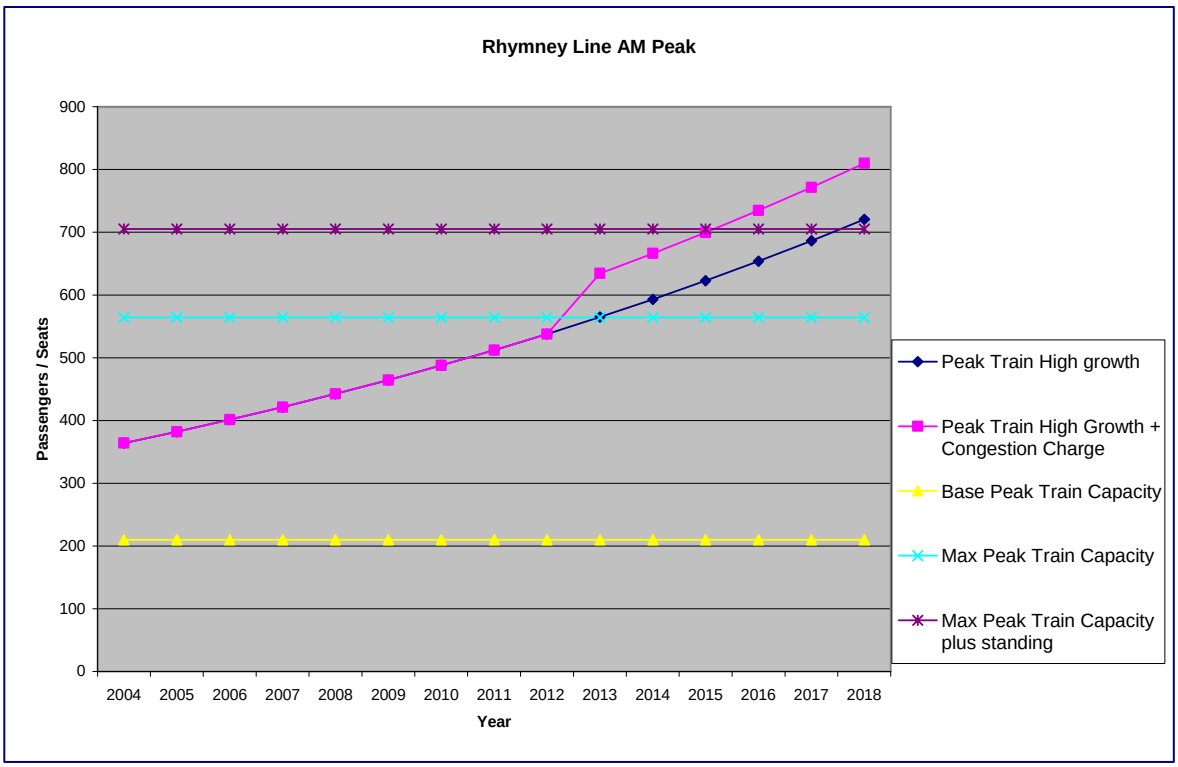
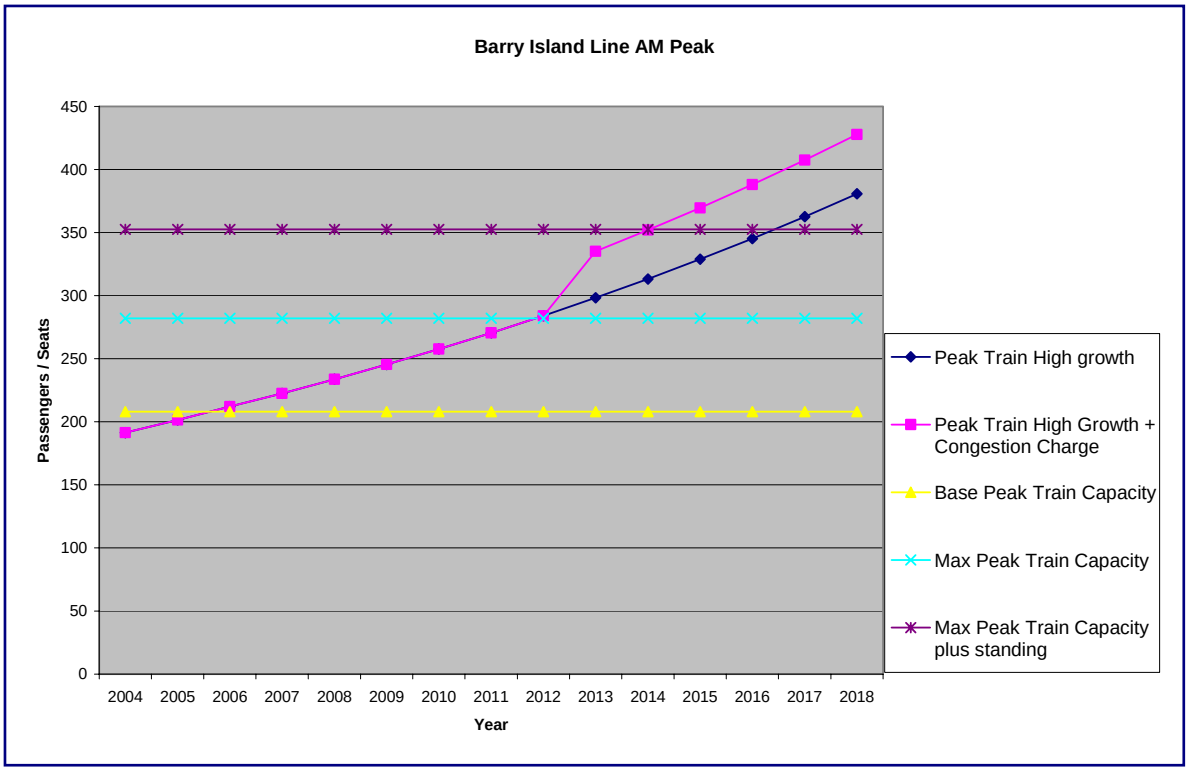


Figure 9 Barry Line Capacity Analysis



There has been significant investment in additional rolling stock to resolve peak train crowding problems in the recent past and further investment has been secured from the Welsh Assembly Government for more rolling stock to resolve crowding problems in 2007 – this will enable the introduction of longer 6-car trains at peak times on the Rhymney and Treherbert Lines (4-car on the Maesteg Line) – for which investment is being made in terms of platform lengthening.

The conclusions of the capacity analysis to 2018 were:

- There will be a need for further train lengthening to provide adequate capacity on most lines; however;

- Without further platform and train lengthening beyond the current 2007 / 2008 works, under the high growth forecast there is a **need for a frequency increase** (at least to relieve the peak train) on the Rhymney, Barry and Aberdare lines.

- The Barry Island peak trains will be unable to cope with demand and there will therefore be a **need to lengthen platforms on the Barry Line to 6-cars**. This will have a knock on impact for platform lengths on the Merthyr and Aberdare Lines or will require a review of the links with the Standard Pattern Timetable.

Assuming the high growth scenario the additional impact of the possible Congestion Charge would result in the need for **additional rolling stock** to lengthen peak trains on all of the Valley Lines and a **need to increase peak frequencies** earlier on the Rhymney, Barry and Aberdare lines and also on the Merthyr line

Increasing the frequency of Valley Lines trains requires investment in enhanced capacity between Queen Street North junction and Cogan Junction and at Cardiff Queen Street and Cardiff Central stations.

The option assessment phase of Network Rail's Cardiff Area Signalling Renewal Project will establish the options for building in additional capacity between Queen Street North Junction, Cardiff Queen Street, Cardiff Central and Cogan Junction. This project represents an opportunity to provide the capacity required for the next 30 or more years. **If enhancements for growth are to be built into the resignalling Network Rail will require commitments from Sewta / Welsh Assembly Government to enhance the scheme if the marginal cost opportunity for frequency increases is not to be lost. At the very least, passive provision must be made to ensure that nothing in the re-signalling scheme will prevent the future implementation of these enhancements.**

Combining the infrastructure alterations to secure the frequency increases within the signalling renewal project will reduce the disruption to passengers and the knock on impact on congestion and the local economy.

4.4 Sewta Rail Strategy Components

In addition to enhancing the capacity of the rail network to accommodate these increasing demands from existing communities, the recommended rail strategy contains selected improvement measures to further improve the accessibility of the rail network. It builds on the strengths of rail over other modes to attract longer distance trips to the regional centres, by providing attractive alternatives to car travel; a social and economic role, by linking communities, and increased access between the Valleys and Cardiff and Newport.

A positive campaign, reinforcing the advantages of rail as a mode of choice, will be at the heart of the Regional Transport Plan, promoting the seamless through ticketing opportunities which smartcards can offer.
The Strategy is shown geographically in Figure 10 and includes:

- **Reliability and capacity improvements**; changes to the network to reduce delays and improve the ability to cope with performance problems; specifically between Queen Street North Junction and Cogan Junction, at Cardiff Central, Cardiff Queen Street, Barry and Llandaff;

- **Additional rolling stock** to strengthen peak trains to provide for passenger growth and to avoid overcrowding and **rolling stock renewal;**

- **Station improvements** including improved station facilities, information, security and access - including additional parking and improved interchange facilities;

- **Frequency enhancements** on existing lines; improving the levels of service on selected routes to meet passengers' expectations and increase the transfer of car trips to rail; specifically new services, with additional turnback facilities where appropriate, on the **Abergavenny**, **Chepstow**, **Ebbw Valley**, **Rhymney**, **Taff Vale** and **Vale of Glamorgan** Lines. Additional services to the north of Cardiff are required to cope with the growth in passenger demand and will require a significant investment in the capacity of the network at and between **Cardiff Queen Street North Junction and Cogan Junction**;

- **New stations on existing lines**; improving access to the rail network and integrated with the development of improved services; specifically at **Caerleon**, **Magor with Undy**, **Llanwern**, **Coedkernew** and **St Mellons**, with those on the South Wales Main Line between Cardiff and Severn Tunnel sited on the Relief Lines. This will need to be slewed in places and may require Transport and Works Act procedures;

- **Network extensions and new stations**; to investigate further improving access to the rail network through extending to **Ebbw Vale Town** and from **Pontyclun to Beddau** (with stations at Talbot Green, Llantrisant, Gwaun Meisgyn & Beddau); and

- **Rail – Link Bus Services**; to extend the reach of the rail services to communities remote from the network, specifically providing access to the Valleys to the north of Cardiff and Newport.

The Strategy study evaluated the economics of the strategy elements, selecting schemes / options which demonstrated good value for money and fit with the defined regional objectives.

Figure 10 Sewta Rail Strategy to 2018, Future Improvements

4.5 Summary

Demand on the Valley Lines, and elsewhere in South East Wales, has been growing at a rate significantly above GDP – possibly as a result of the economic changes in the sub-region, including the growth of the Capital City in providing jobs, retail and leisure activities at a greater rate than other centres. If this high rate of growth in rail demand is continued and overcrowding is to be avoided, there will be a need for:

- Significant investment in additional rolling stock, providing the opportunity to secure increased benefits to the region from a new build of trains for the region;

- A moderate frequency increase on the Valley Lines north and south of Cardiff Queen Street / Central of around 2 trains per hour (tph) in the peak in the medium term, and

As Queen Street station was considered to be operating at capacity in December 2005, there will be a need for a significant investment in additional capacity for both trains and passengers to be made at the station if these peak frequency increases on the Valley Lines are to be delivered. An under-prediction in the train counts would result in a more urgent need for additional service frequency through Cardiff Queen Street station.

In addition, there is growing recognition of the importance of introducing restraints to the demand for car travel in major UK cities. Investigations of the implications of alterations to pricing for transport are being undertaken and the DfT's policy is to introduce some form of road user charging in the future. In such a scenario it will be important to provide alternative modes, which have the ability to move larger volumes of people comfortably. If a road congestion charge were to be introduced in Cardiff, and more research is being carried out to determine the impact, the resulting alteration to the pricing structure in transport will significantly alter the base demand for all modes of travel and rail travel in particular, leading to a need for further additional rail service capacity, and an increase to the forecast benefits of the rail strategy elements.

The rail strategy is based on;

- Improving reliability;
- Enhancing the quality and capacity of the existing network and services;
- Improving the frequency of existing services;
- Limited network extensions and new stations to increase access to rail services; and
- Providing longer trains to accommodate growth.

The strategy aims to encourage more use of rail within the Sewta region and to provide the capacity to meet that growth and passengers expectations.

5 RAIL SCHEME REVIEW

5.1 Introduction

This section reviews the main elements of the rail strategy and presents Sewta's priorities, which are based on the combination of the passenger priorities, regional objectives and the location, scale and nature of problems in the region. It should be noted that in formulating the prioritised investment programme some high priority measures are programmed later than other measures, and vice versa, due to the need to integrate enhancement schemes with other Network Rail investment in the region.

5.2 First Priority – 5 Year plan and Related Rail Industry Investment

5.2.1 Ongoing Sewta Investment Programme

Sewta is working with Network Rail and Arriva Trains Wales to deliver its 5 year plan for investment in rail which is outlined in the 'Moving People – Improving Rail' document. Schemes currently under development / implementation, using Welsh Assembly Government and in some cases significant EU funding, include;

- Llanharan Station – Nov / Dec 2007;
- Ebbw Valley Railway – 6 new stations and an hourly service between Ebbw Vale Parkway and Cardiff by July 2007;
- Station improvements, Newport, Cwmbran and Porth;
- Queen Street Station improvement to provide increased passenger handling capability;
- Valley Lines Platform Lengthening – March 2008, and;
- Merthyr Tydfil half hourly service in March 2008, involving capacity improvements between Pontypridd and Merthyr Tydfil and a new station at Abercynon, with a strategic park and ride facility later in 2008 / 09.

In addition the 5 year programme includes measures which are under development (currently at GRIP stage 3) but are not yet funded for implementation;

- Rhymney half-hourly service (an extension of Bargoed services) in 2009, involving capacity measures and a new station at Energlyn and park and ride at Llanbradach, and;

- Maesteg half-hourly service in 2010, involving capacity measures and a new station at Brackla and park and ride at Wildmill.

These two schemes should be completed without delay before the new strategy commences. Both lines serve areas of deprivation, the northern stretches of which have seen no road improvements and therefore should be given priority.

The Abergavenny Station improvement scheme is to be revisited in the light of the station being proposed for Disabled Access improvements in the DfT's Access for All strategy. At Severn Tunnel Junction, station improvements are currently stalled through negotiations with Network Rail over land for expanded park and ride. **Sewta will support Network Rail's proposals for changes to the station at Severn Tunnel Junction through the Newport Area Signalling Renewal scheme, if these improvements are widened to secure a quality park and ride station. Sewta requires the Welsh Assembly Government's support for this initiative.**

Sewta is looking to the Welsh Assembly Government to provide funding commitments that will enable it to deliver the remaining elements of the current 5 year plan. A further commitment to the ongoing annual subsidy support is also required. Once secured, the schemes can proceed through GRIP stage 4 to implementation.

5.2.2 Train Performance Measures

A number of relatively small measures are being developed by Network Rail to improve the reliability of existing rail services. Reliability measures are a high priority for the rail industry, to meet passengers' top priority for transport, which will also help to attract and retain new users, building on a solid base of satisfied customers. It is important to make best use of the existing network, and provide a robust timetable, which has the ability to minimise delays to passengers. The following are schemes currently being developed;

- At **Barry station** the Network Rail Western Accelerated Recovery Programme includes provision of an additional signal to enable trains to start back from the down platform by March 2009. This will allow trains to recover up to 8 minutes running time in the event of delays. A larger scheme involving a turn-back platform, which would keep trains off the main line through the station, is being examined in the Cardiff Area Signalling Renewal project.

- At **Llandaff** an intermediate signal section on the up line would allow northbound trains to proceed closer to the junction at Radyr, thereby minimising delays caused by conflicting movements. This scheme could be a quick win (so long as there would be no detriment to Sewta's agreed programme) and **Sewta would expect this to be funded through Network Rail's Discretionary Fund**.

- **Cogan junction** is a network constraint where the Barry Lines reduce from four tracks to two, combined with a single lead junction directly onto the single-track Penarth branch. Some performance benefit to southbound trains will be secured in the Cardiff Area Signalling Renewal Project by converting the freight loops to passenger operation. Options for additional performance improvements – including northbound service – are also being examined in this major project. Sewta is working with Network Rail to define the best scheme that will also accommodate business growth.

- On the **Treherbert Line** the long single track sections are a significant operating constraint. Options to improve timetable robustness need to be developed by Arriva Trains Wales and Network Rail, such as lengthening the Ystrad Rhondda passing loop. **The Welsh Assembly Government needs to support Sewta in securing a suitable improvement and funding, possibly through Network Rail's Discretionary Funding.**

In addition to these individual measures Sewta recognises that the key network constraint in the region relates to Cardiff Queen Street and Cardiff Central stations and the corridor between **Queen Street North Junction to Cogan Junction**. This corridor operates at the practical capacity of the network, leaving no margin for increasing service levels (including freight movements) and limiting the ability of the network to cope with delays. Sewta is working with Network Rail to identify and deliver a reliable layout within the Cardiff Area Signalling Renewal Scheme that will deliver performance improvements in 2011.

Within the current programme of funded works, such as on the Merthyr Tydfil frequency enhancement, Sewta is working with the industry to define and secure suitable infrastructure to provide reliable service in future, capable of accommodating growth.

5.2.3 Additional Rolling Stock and Rolling Stock Renewal

Sewta is working with Arriva Trains Wales and Network Rail to ensure that rail services have the capacity to accommodate additional passengers as demand for rail services continues to grow. The current 5-year investment programme is providing network infrastructure to facilitate the introduction of longer trains to meet peak passenger requirements. The Welsh Assembly Government has recently funded additional rolling stock to strengthen some peak hour services and the introduction of this resource along with the Standard Pattern Timetable in December 2005 has provided a further spur to passenger growth in the region. Further rolling stock was secured in December 2006, to be followed with more later in 2007 to deliver schemes within the current rail improvement programme.

However, continuation of the strong underlying growth for rail travel to Cardiff means that there will be more overcrowding of peak trains and a further need for additional rolling stock in the coming years. Although much of the demand is fixed by user habits and there is only a limited scope for movement within the prevailing half hourly service pattern, there is still scope for the cleverer use of off peak pricing, particularly as more and more commuters have the opportunity to work flexible hours. Table 2 shows the rolling stock requirements and subsidy requirements assuming growth at 5% per annum[21].

Table 2 Rolling Stock Requirements, Subsidy and Benefits 2009 – 2018

Year	Additional Rolling stock (Vehicles) (High Forecast)	Subsidy Required £k	Decongestion Benefits £k
2009	2	£327	£261
2010	3	£467	£429
2011	4	£590	£621
2012	5	£706	£822
2013	7	£1,066	£1,034
2014	8	£1,169	£1,256
2015	10	£1,504	£1,507
2016	12	£1,814	£1,794
2017	14	£2,101	£2,117
2018	17	£2,589	£2,513
Totals		**£12,332**	**£12,353**

The forecast additional demand generates revenues which would only partially offset the additional operating costs and result in additional subsidies growing from £0.3m in 2009 to £2.6m in 2018. In the context of sustainable transport, attracting more passengers to rail is fundamental but will require further support from the Welsh Assembly Government who administers the Arriva Trains Wales Franchise.

[21] Assumes train strengthening using Class 150 vehicles, available as 2 and 3 car trains which can be used in combinations, and a 50% 'bounce-back' – i.e.: that half of additional rolling stock on trains that complete more than 1 journey into Cardiff in the peak period. Performance and operational constraints at Cardiff Central and Queen Street Stations limit the opportunity to couple / decouple trains to reduce off-peak operating costs. As a result the evaluation has assumed an average operating cost of £250,000 per vehicle in April 2005 prices (£0.5m per 2-vehicle set).

Assessment of non-user (traffic decongestion) benefits shows that such subsidies would be justified. In addition there would be significant additional user benefits associated with the crowding relief provided and there would also be a contribution to the wider regional benefits associated with the journey to work opportunities taken up as a result of the capacity provided, particularly to the Valleys to the north of Cardiff.

Sewta would oppose the introduction of a fares policy which was designed to choke off growth but would support one which encouraged a clearer differential between peak and off peak travel and which facilitated peak spreading to maximise the use of available capacity.

Implementation of the strategy will necessitate further **platform lengthening** to increase train lengths to meet peak demand needs and increase the flexibility to operate 6-car trains – specifically on the Barry Line where Eastbrook and Barry Island stations have short platforms. Also, further work will be needed to identify how to address peak train overloading on the Coryton and City Lines (where there are short platforms at Coryton, Birchgrove, Tyglas, Danescourt, Fairwater and Waungron Park stations).

Sewta supports the ongoing work by Arriva Trains Wales and Welsh Assembly Government to assess the opportunity to secure **new rolling stock** instead of cascading old rolling stock from elsewhere. The stock at present in use does not compare with the modern rolling stock used in many parts of the UK and Europe. The Class 14x (Pacer) rolling stock will be at least 30 years old by 2018 and already is finding it difficult to cope with the punishing "Valleys" terrain. In spite of proactive maintenance, their miles per casualty ratio is falling. In addition, the Class 150 (Sprinter) rolling stock will also be life expired and, coupled with the need for significant investment in capacity to allow for passenger growth, there is therefore a need to secure new rolling stock. Arriva Trains Wales has begun to develop a rolling stock strategy, which recognises the need for early action. There would be a number of possible advantages of rolling stock renewal:

- **Improved passenger environment / quality**.
- **Positive image** impact for the region;
- **Specification** of Valley Lines stock;
    - Faster acceleration for journey time savings / performance benefits;
    - Larger number of doors for faster access / egress;
    - 2/3-car sets designed for improved capacity / lower operating costs / revenue protection (conductors);
    - Improved cycle carriage facilities; and
    - Better accommodation for pushchairs and wheelchairs.
- Possible link with **technological development**, such as Fuel Cells to provide the benefits of regenerative braking.

New trains in themselves generate considerable growth and the opportunity to secure new rolling stock needs to be sought as an option when the Welsh Assembly Government and Arriva Trains Wales next review the franchise in 2008. Sewta would welcome the opportunity to formally contribute to this review, and to that in 2013, as part of its commitment to rail improvement in South East Wales.

5.3 Second Priority - Queen Street North – Cogan Junction / Valley Lines Frequency

The key network constraint in the region relates to Cardiff Queen Street and Cardiff Central stations and the corridor between Queen Street North Junction to Cogan Junction. This corridor constrains the practical capacity of the network. Continued passenger growth is forecast to lead to peak train overloading and there is a need, early in the Strategy period, to increase the frequency of services operating between the key demand generators in Cardiff's Journey to Work Area.

Sewta is working with Network Rail to identify and deliver a reliable layout within the Cardiff Area Signalling Renewal Scheme that will deliver performance improvements in 2011. Sewta is also working to secure a network enhancement scheme which will provide additional capacity to improve reliability and increase services in the future. This would involve additional infrastructure measures at Cardiff Queen Street and Cardiff Central. Sewta places this scheme as its highest priority, as it affects the majority of Valley Lines Services.

The identified capacity improvement project includes trackwork and signalling and an additional platform and bridge span over Newport Road. Evaluation of the scheme coupled with additional hourly services between Cardiff and Pontypridd or Porth and Caerphilly in 2012 and a further frequency increase on both lines in 2017. The Valley Lines scheme could cost in the order of £30m[22] and would have an initial annual subsidy cost of £1.3m but would produce significant user time savings, non-user decongestion benefits and user overcrowding relief benefits resulting in a cost benefit ratio of at least 1.5. The scheme would provide;

- significant **performance** benefits to users; and
- additional capacity for further growth in rail trips from the Valleys to the north, accommodate **additional freight traffic** and provide the opportunity to fill in the gaps created by freight trains.

The Cardiff Area Signalling Renewal project will examine a range of options for improving capacity on this corridor, including combinations of the following elements to identify the best enhancement option for further evaluation;

- bi-directional signalling provision between Cardiff Central and Cardiff Queen Street;
- provision of new Platform 4 at Queen Street (for Cardiff Bay Services);
- provision of new Platform 1a at Queen Street;
- provision of new Platform 8 at Cardiff Central (plus connection to Platform 4);
- provision of third track north of Queen Street to beyond Queen Street North Junction with new cross-overs and involving a new bridge over Newport Road;
- improved access to and from Canton depot.

The Cardiff Area Signalling Renewal project represents an opportunity to improve the reliability of Valley Lines services which needs to be taken up with the support of the Welsh Assembly Government. This offers the opportunity to secure additional benefits to the region from 2011 which might otherwise be lost for a generation or which could only be secured through additional investment and further network disruption.

[22] Based on Network Rail advice in 2005 from previous designed enhancement scheme (2002 prices) and excluding the cost of the associated turnback facilities at Caerphilly and Porth.

5.4 Third Priority - Ebbw Valley Phase 2

The Sewta Rail Strategy contains a limited number of key rail network extensions, which support the spatial strategy in terms of providing improved access to jobs for those communities experiencing regeneration and renewal, to provide access to new and expanding communities and to offer an alternative mode for longer distance travel to influence the modal split. The shortlisted schemes for development tend to involve operating passenger services on existing and former freight lines – providing enhanced business cases compared with wholly new routes.

The recent successful extension of passenger services on the Vale of Glamorgan Line will be followed in 2007 by the introduction of passenger services to Ebbw Vale Parkway, involving 6 new stations and hourly services from Cardiff. The Ebbw Valley Phase 2 project will further extend the rail services on that corridor to **Ebbw Vale Town**, providing an half-hourly service, one of which will offer an hourly Cardiff facility and the other an hourly Newport service. According to the calculations set out in the Sewta Rail Strategy (2009 – 2018) the £36m scheme will be developed in co-ordination with the Ebbw Vale Masterplan and has a benefit cost ratio of over 2.0 and an increased initial subsidy requirement of £0.3m.

The timing of the scheme is influenced by the Newport Area Signalling Renewal project, improving capacity at Park Junction and Newport and the need to evaluate the initial service in 2008. The reinstatement of the down main to up main crossover at Gaer Junction is an essential precursor to the provision of a train service between Ebbw Vale and Newport. Sewta recognises that there is a clear benefit from this work being undertaken in tandem with the Newport Area Signalling Renewal project, which will warrant the advancement of this particular sub-element of the wider programme.

There are aspirations to secure a connection to Newport earlier than the Phase 2 scheme, once this connection is reinstated. This would involve diverting the initial service, or splitting trains at Rogerstone. Although Sewta supports the phasing of the work, it does not support its use for a train plan which would force interchange, create unreliable journeys, lengthen journey times and cause disruption to passengers. **Sewta will therefore seek support from the Welsh Assembly Government to further develop and implement the full Phase 2 scheme at the earliest opportunity.**

5.5 Fourth Priority – Improved Service Frequencies

5.5.1 Abergavenny – Newport – Cardiff Corridor

A package of measures is proposed on the Abergavenny Line leading to half hourly local services, calling at existing and new local stations at Caerleon and St. Mellons, developed in phases between 2011 and 2013.

A new half hourly service between Abergavenny and Cardiff would have to be additional to the existing regional services on the line which are unable to call at additional stations due to timetable constraints at both ends of those routes and need to provide fast services to meet passenger expectations.

However, the scheme will bring wider benefits by removing the need for the regional services to call at Pontypool and New Inn station which will be served by the new local services. Cwmbran and Abergavenny stations would receive increased frequency of service towards Cardiff, whilst Pontypool and New Inn would receive a regular service to support a significant development within the station catchment.

The package of measures includes a new turnback platform at Abergavenny Station, station improvement scheme at Pontypool and New Inn including additional park and ride and new stations at Caerleon and St Mellons. **Providing new stations on the South Wales Main Line is aided by the Network Rail investment in the capacity and line speed of the Relief Lines.**

The timing of the services is linked to the development timescales for the new stations specifically at Caerleon, where redevelopment of the St Cadoc's hospital site is expected post 2011, following the completion of the Phase 2 re-signalling. There is also an aspiration for the integrated transport package to include a coordinated rail link bus service from Pontypool and New Inn to Abersychan and Blaenavon to further extend the reach of the rail network to Valleys Communities. In addition, further new stations at Sebastopol and Llantarnam on the Marches line may be appropriate in the longer term, outside the Strategy period, and therefore need to be the subject of further work.

The scheme has been developed and appraised as a package including the Chepstow – Newport – Cardiff Corridor scheme costing £34m, within initial additional subsidy requirements of £2.1m and benefit cost ratio of 4.5[23].

Sewta requires further project development funding from the Welsh Assembly Government to take forward the scheme development, ensure that the Signalling Renewal Projects take account of the new station locations and line capacity requirements and further examine the business case(s).

5.5.2 Vale of Glamorgan Half Hourly

The new hourly **Vale of Glamorgan Line** services started in June 2005, serving two new stations at Rhoose (Cardiff International Airport) and Llantwit Major and providing a direct connection between Barry and Bridgend. **The aspiration for a half hourly service on the Vale of Glamorgan Line – including the improved access to the Region's Airport is considered to be a priority.** In addition, the line between Barry and Cardiff is well used and will require additional passenger capacity.

Whilst this capacity could be secured through switching a Penarth Line service, this solution would still require additional rolling stock and would either lead to an irregular service on the Penarth Branch or a recast of the Standard Pattern Timetable. **The preferred solution is therefore to secure the additional Vale of Glamorgan service at the same time as increasing capacity to Barry through the provision of an additional Cardiff – Bridgend service**. In its consultation responses to the Great Western and Cross Country Franchising, Sewta has argued that trains could be extended beyond Cardiff to Bridgend. However, any such increases in frequency, via the Vale of Glamorgan line, would therefore need to be considered in tandem with the development of local traffic and be subject to it being possible to secure satisfactory paths, effective inter-working and revenue arrangements with existing local services.

The scheme would have an initial subsidy requirement of £1.4m and a benefit cost ratio of 1.75. It is assumed that this service could be achieved through the initial phases of the Cardiff Area Signalling Renewal, which would provide additional capacity and reliability between Cardiff and Barry and, subject to Welsh Assembly Government support, enable the frequency enhancement to be delivered in 2011. The third platform at Barry, if suitably signalled could enable alternative timetables which would better optimise the eight passenger paths per hour through Cogan Junction. More work is

[23] includes Tiger Strategy development assumptions for new stations.

needed to determine the impact of reducing services to Penarth and Barry Island to enable stations to Barry and Bridgend to benefit from an enhanced service.

5.5.3 Chepstow – Newport – Cardiff Corridor

On the Chepstow Line the strategy contains a phased corridor development programme leading to half-hourly services and new stations.

Initially additional journeys to create an hourly service to Gloucester (which run through to Maesteg) would provide an hourly local service which could call at new stations at Magor with Undy, Llanwern and Coedkernew. An overall half hourly service frequency on this route would be achieved through an additional hourly service to Chepstow.

The timing of the services is linked to the development timescales for the new stations. At Llanwern, the redevelopment will only provide significant demand within the station catchment area after 2012 and at Coedkernew the developments closest to the station will not be built before 2011. Sewta will review the business case for Magor with Undy station as the Strategy is taken forward, in the light of the decision on development of Severn Tunnel Junction station.

Newport Council have commissioned a review of the proposed location of Llanwern Station to inform the consideration of the planning applications for developments in the vicinity of the station and which will also feed into the ongoing Newport Area Signalling Renewal programme. Sewta has been made aware that the realignment of the proposed new M4 to the south of Newport has an implication on the assumed location of Coedkernew Station and there is a need for a similar station location review study to inform both the review of the land-use and Transport Framework for West Newport and Network Rail's ongoing Newport Area Signalling Renewal programme.

Sewta requires further project development funding from the Welsh Assembly Government to take forward the scheme development, ensure that the Signalling Renewal Projects take account of the new station locations, to take forward the relief line capacity issues and further examine the business case. In addition support is needed to secure the holistic station improvement plan for Severn Tunnel Junction station, which will influence the business case assessment of Magor with Undy.

5.6 Fifth Priority - Station Improvements and Integration Measures

5.6.1 Station Facility Improvements

In parallel with service capacity changes, and to ensure continued rail passenger growth, there is a need to improve the attractiveness of rail stations and improve access to the existing rail network. It is important not to underestimate the role of station improvements in affecting modal shift. The overall travel experience must not be overlooked. Measures include:

- **Station facility improvements** – such as improved waiting shelters and, at larger staffed stations, toilets and heated waiting accommodation;
- **Station access improvements** – such as improved pedestrian and cycle access, cycle parking, integrated bus and taxi facilities, and facilities for the mobility impaired;
- **Customer information** improvements – including real-time information (and associated trackside train detection) which increases passenger confidence;
- **Safety and security** measures, including CCTV and lighting; and
- **Park and ride** expansion and quality improvements.

Future station improvement schemes could be developed either as packages of works at individual locations or as line improvements, where the investment involves line-side / whole route measures, such as provision of electronic Customer Information Systems and upgrading and extending CCTV systems.

The former Strategic Rail Authority (SRA) undertook an investigation into station investment to meet minimum standards and recommended specific improvement measures. Some UK pilot schemes were undertaken, including Trefforest Station. In addition, the SRA initiated the Access for All programme to improve access for the Mobility Impaired, including a series of station audits. The DfT have initiated a match-funding scheme for stations throughout the UK. Investment programming will take into account a number of criteria including, importance (throughput), regional importance (including the spatial strategy), station roles (such as interchanges) and local factors, such as neighbouring land-uses.

The DfT 'Access For All' programme aims to improve access for mobility impaired travellers and has recommended customer information and public address system improvements at some stations in the Sewta region. The first phase of schemes to be developed and implemented by Network Rail includes Abergavenny and a small schemes programme is being developed with match-funding available between £250k for larger stations in the region (such as Cardiff Queen Street, Newport, Caerphilly and Pontypridd) and £6k for Maesteg Eweny Road – one of the least used stations.

Network Rail are developing a new approach for station design, which is being piloted at Penarth. The design is modular and offers economies of scale and supply chain savings. Whilst unsuitable for sites where heavy vandalism is experienced, where the mono-canopy is preferred, it offers another alternative. **Sewta needs to work in partnership with the DfT / Welsh Assembly Government to develop jointly funded station improvement packages within the strategy and secure the funding.**

The priority locations for general station facility improvements are;

- Aber
- Aberdare
- Abergavenny
- Bargoed
- Barry
- Bridgend
- Cadoxton
- Caerphilly
- Cardiff Central
- Cathays
- Chepstow
- Cwmbran
- Eastbrook
- Heath High Level
- Lisvane and Thornhill
- Llandaff
- Llanishen
- Penarth
- Pencoed
- Pengam
- Pontyclun
- Pontypool & New Inn (when service frequency is increased)
- Pontypridd
- Porth
- Radyr
- Severn Tunnel Junction
- Taffs Well
- Treherbert
- Ystrad Mynach

These stations are amongst the busiest within the Sewta region. However, the list should not be taken as suggesting that these are the only stations in need of improvement. A clear understanding of the issues at every location, with an action plan, is essential.

5.6.2 Park and Ride

Park and ride schemes will also enable improved access to rail and enable further patronage growth. The schemes could contribute to the spatial strategy by providing improved access to jobs for residents of the valleys. Schemes within the Sewta rail improvement programme are; Cwmbran, Severn Tunnel Junction[24], Abercynon and Wildmill. Further park and ride opportunities will be provided in association with the new station proposed at Llanharan and a further expansion of Caerphilly Station is planned alongside an improved access scheme. This programme could deliver in the order of 1,000 additional spaces which will assist the continued growth in use of the rail network in the period up to 2010.

Modal shift is a key objective of the Transport Strategy for Wales and the regional Spatial Strategy. An analysis of parking usage has revealed those areas where improvements should be targeted, taking account of the fact that park and ride is most attractive where service frequencies are at least 2 trains per hour. Locations for expansion between 2010 and 2018 are;

- Aberdare (and other stations along this branch where possible);
- Barry;
- Cadoxton;
- Llanbradach;
- Pentrebach;
- Pontyclun;
- Pontypool and New Inn (when the service frequency is improved);
- Radyr;
- Severn Tunnel Junction;
- Taffs Well and;
- Trefforest.

Some of these sites may require a decked structure to be constructed because insufficient adjacent land is available.

Sewta needs additional funding from Welsh Assembly Government for specific feasibility studies, or increased corporate funding, to prepare station improvement and park and ride schemes for implementation between 2008 and 2018.

In the short term Sewta needs to plan for the period between 2008 and 2013 when EU Convergence funding is available. Also, there is a need to develop schemes to take advantage of Access for All match-funding opportunities. Coordinated packages of investment in the Valley areas to the north of Bridgend, Cardiff and Newport would secure improved access to and from the regeneration assistance zone. These packages could also be programmed to coincide with frequency increases.

5.6.3 Rail-link Bus Services

Rail-link bus services currently provide access to communities in the South East Wales Valleys between Maesteg and Caerau, Ystrad Rhondda and Ferndale / Maerdy, Aberdare and Hirwaun / Rhigos, Ystrad Mynach and Blackwood, and Rhymney and Tredegar. These services provide increased access to rail for social and economic reasons as well as in some cases enabling a direct rail connection to replace those that have been lost or are impractical. However, they require significant subsidy.

[24] Sewta urge the Welsh Assembly Government to support Sewta's request for Network Rail to release land for park and ride expansion and an overall station improvement scheme.

In some locations, given the economics of rail-link bus services, it may be possible to divert service buses, and make better use of the 'PlusBus' concept.

This is not always possible and, more recently, coordinated bus services have been introduced between the new Rhoose station and Cardiff International Airport and (when the Ebbw Vale Parkway – Cardiff services are introduced in 2007) further Rail-link bus services are planned for access to Ebbw Vale Town, Abertillery / Brynmawr and Newport. A common livery is being developed for all these services to enable improved recognition, awareness and marketing.

When the train service frequencies are improved within the next 5 years there are aspirations to extend and increase the frequency of existing rail link bus services to maximise the benefit of the investment. Sewta considers that, as these services extend the influence of the rail network, they would perform best if integrated with rail ticketing and information systems. Whilst Sewta feels that they should be incorporated into the Rail Franchise process through a partnership between the train operator and local authorities with dedicated funding, discussions with the Welsh Assembly Government have concluded that the funding should remain a matter for relevant local authorities. **Sewta will therefore use its Regional Transport Plan to secure the ring fenced additional revenue budget to maintain the existing and develop a network of new services.**

5.7 Sixth Priority - Beddau – Cardiff Network Extension

This scheme involves introducing passenger services on a former freight line between Pontyclun and Beddau. This would provide a new rail link to a rapidly expanding area needing improved access to Cardiff. The strategy study business case assessment suggested the best option for this corridor would be a half hourly service between Cardiff and Beddau - with new **stations at Talbot Green, Llantrisant, Gwaun Meisgyn and Beddau (Tynant).** A new crossing and branch connection will be required at Pontyclun, reopening the level crossing and new track and signalling will be needed throughout the branch.

The evaluation suggested that the £23m scheme has a cost benefit ratio of between 2.0 and 4.2 and an initial subsidy requirement of around £1m per annum. However, continued development in the corridor is estimated to have increased the catchment population by almost 4,000 people since 2001 and future developments which are likely to happen will bring a further 8,000 people into the corridor. The scheme could also provide rail operational benefits for through running services from Cardiff Central and the east.

However, there are concerns regarding the main line capacity between Cardiff and Pontyclun and the sensitivity of the demand forecast which require further work taking account of the tangential route of the line compared to direct road and bus routes.

Network Rail is assessing the requirements for the passive provision to deliver this enhancement. Further development of the scheme will assess these critical factors and requires Welsh Assembly Government funding to Sewta for engineering, operations and business case assessments. In addition a 'pre-rail' rail link bus service in the Pontyclun – Beddau corridor could be introduced in advance of the major scheme and would also need Welsh Assembly Government funding. **Sewta is also urging Network Rail to provide passive provision for the scheme within the Cardiff Area Signalling Renewal project and requires the Welsh Assembly Governments' support.**

5.8 Strategy Delivery and Funding

The Sewta Rail Strategy will be further developed and delivered in partnership with the rail industry, with Sewta working with Network Rail and Arriva Trains Wales, and having the support of the Welsh Assembly Government.

Schemes will progress through the formal **GRIP stage process** (Guide to Railway Investment Projects) which takes a scheme from outline conception, through optioneering, single option development, construction, commissioning and handover including assessment of risks at each stage. **Sewta will require the Welsh Assembly Government to continue to support the development of the programme through their framework agreement with Network Rail and through financial support to Sewta for revised scheme evaluations and the detailed design and implementation stages.**

The capital cost of the strategy is estimated at circa £155m over the period 2009 to 2018 (in 2005 prices)[25]. This in addition to the costs of currently programmed elements of the 5-year plan which do not yet have funding commitments – namely;

- Rhymney Line Phase 2 (Bargoed to Rhymney Frequency Enhancements and Energlyn Station) £12.884m (2008/09) and £7.150m (2009/10), and;
- Maesteg Line Frequency Enhancements, (including Brackla Station) £9.0m (2008/09) and £13.0m (2009/10).

The strategy costs are considered realistic in terms of available funding - representing approximately 10% of the Network Rail Signalling Renewal Project costs in the Region and, on average, around 18% of the annual Transport Grant allocation in Wales. Table 3 highlights the initial programme and expenditure between 2009 and 2018. It should be noted that there is an ongoing (declining) subsidy requirement beyond 2018.

Table 3 Capital and Revenue Costs (2005 prices)

Year	Capital Funding	Revenue (Subsidy) Requirement	Schemes
2009	£27.993m	£2.247m	Station Improvements, Barry Station, Abergavenny Frequency (Magor with Undy, St Mellons)
2010	£20.975m	£3.115m	Station Improvements, Queen Street[26], Cogan Junction
2011	£18.761m	£3.149m	Station Improvements, Queen Street, Llandaff Signal
2012	£12.134m	£5.386m	Station Improvements, Chepstow frequency, Llanwern, Coedkernew
2013	£20.606m	£5.287m	Station Improvements, Ebbw Vale Phase 2
2014	£20.606m	£5.135m	Station Improvements, Ebbw Vale Phase 2
2015	£2.500m	£5.632m	Station Improvements
2016	£14.237m	£5.719m	Station Improvements, Beddau Line
2017	£14.237m	£6.562m	Station Improvements, Beddau Line
2018	£2.500m	£7.298m	Station Improvements

[25] Sewta Rail Strategy Study Jan 2006 and Technical Appendices.
[26] Queen Street scheme costs estimated at £30m in 2002 prices by Network Rail, these costs do not include costs associated with providing turnback facilities at Caerphilly and Porth stations.

Note that this table is drawn from the Sewta Rail Strategy 2006 and the profile of costs will be altered by the prioritisation / programming of the schemes in section 7. This will evolve as the Rail Strategy is taken forward.

Sewta commissioned a **Funding Study** to review and recommend principal sources of rail funding. These were identified as;

- Welsh Assembly Government Transport Grant;
- EU ERDF, convergence funding;
- Jessica;
- Network Rail – Discretionary fund, and
- Arriva Trains and First Great Western – through the Franchise Process.

JESSICA (Joint European Support for Sustainable Investment in City Areas), is a mechanism to facilitate EIB loans for sustainable urban development, by allowing Structural Funds Managing Authorities to invest ERDF funding from the operational programmes in so-called urban development funds alongside funds from EIB. The funds would support new projects within Integrated Urban Development Plans where Private – Public Partnerships (PPP) mechanisms are appropriate.

Network Rail has a duty to invest in the rail network to meet the needs of their customers. Sewta will support the Welsh Assembly Government in securing investment to improve the reliability of existing services through Network Rail's maintenance and renewal processes and discretionary funding scheme. Sewta's aim will be to maximise efficiency and the effectiveness of investment through coordinated processes – the most significant being the ongoing Signalling Renewal programmes.

Sewta will work to secure investment in rail services and stations through the **Franchise processes** and understand that the £1.1bn premium from the Greater Western franchise will be reinvested back into the railways to remove main line capacity constraints. Sewta believe that the Welsh Assembly Government should ensure that a fair share of this funding comes to Wales and is delivered to the Sewta region where there is the greatest concentration of rail infrastructure and that they work to secure investment on the Main Line within Wales between Severn Tunnel and Bridgend, as well as between Wales and London. This work should be undertaken to improve regional as well as long distance service journey times and reliability.

The funding study also suggested setting up a **framework for Section 106 agreements** to fund transport strategies from significant developments, Private Finance Initiatives (**PFI**'s), new funding sources such as **Road User Charging** and '**Marco Polo'** funding for freight elements of the Regional Transport Strategy. The Sewta partnership needs to work to develop integrated schemes which maximise the potential for funding to deliver the strategy – such as securing joint freight and passenger investment funding for upgrading the Main Line Relief Lines.

The **EU ERDF convergence funding** will apply from 2007 to 2013 and is available to the South Wales Valleys. ERDF funding has been an important element of the previous delivery programme and Sewta is engaged with WEFO in the consultation and development of the principals and procedures for the forthcoming programme. An important element will be improving connectivity through transport investment in a sustainable manner and the focus on larger schemes will be targeted at the Convergence criteria. The Sewta Rail Strategy has been developed to focus on the regional spatial strategy which embraces the ERDF focus on 'growth and jobs'.

The European Convergence programme will bring funding of £1.3bn to West Wales and the Valleys. Funding will apply to the 6 Authorities in the ERDF Objective 1 programme[27]. In administering the allocation of funding, strategic frameworks have been defined covering priorities and themes, two of which relate directly to rail:

- Making the Connections - including building capacity to deliver higher quality services; and

- Sustainable Transport – including increasing accessibility through infrastructure and supporting the Regional Transport Plan.

However, the other 4 Sewta Authorities[28] fall within the East Wales area qualifying for a new Regional Competitiveness and Employment Programme with resources yet to be agreed. In addition the successor to the INTERREG cross-border programme with Ireland and Atlantic Area and North-West Europe trans-national programmes will also apply to Wales, which may bring other funding opportunities.

There is a need for the Welsh Assembly Government to further support Sewta in developing the rail strategy to maximise the effectiveness of ERDF convergence funding – enabling Sewta to develop Strategic Framework and single project proposals. **The majority of funding sources will require additional or match funding from the Welsh Assembly Government so it is important for the Welsh Assembly Government to allocate sufficient funding to secure the Sewta Rail Strategy, or at least incremental elements of it, in the coming years.**

In addition, there is a need for the Welsh Assembly Government to provide sufficient funding to Sewta for the development of the identified schemes through the feasibility, preliminary design and business case assessment phases to ensure that schemes are developed sufficiently to secure match funding and be able to be delivered to programme. The current funding regime restricts the ability of Sewta to undertake scheme development and results in a lack of quick win opportunities. **Sewta require the Welsh Assembly Government to provide scheme development resources in the order of £200,000 per annum to progress the strategy.**

[27] Blaenau Gwent, Bridgend, Caerphilly, Merthyr Tydfil, Rhondda Cynon Taff and Torfaen.
[28] Cardiff, Monmouthshire, Newport and Vale of Glamorgan.

6 OUTSTANDING ISSUES

6.1 Introduction

Sewta is continuing to work with its rail industry partners in the development of the detail of the Rail Strategy. The strategic study recommendations need to be taken forward through further development stages, taking account of the ongoing investment plans, principally signalling renewal in the region. Some key issues are outstanding at the time of producing this report.

6.2 Rolling Stock Renewal

Sewta is looking for the Welsh Assembly Government to investigate in detail the issue of replacement of the Pacer fleet and the potential to secure the benefits of modern rolling stock in the region. The Pacer fleet will become increasingly less reliable in future and in spite of proactive maintenance are already recording an alarming rate of casualties per mile operated. The increased franchise costs resulting from renewal need to be set against the wider benefits of the investment in the region and the positive impact that reliability will bring.

6.3 Main Line Capacity and Relief Line Speed Issues

Sewta is in discussion with Network Rail regarding the capacity of the Main Line east and west of Cardiff and the increase of the relief line speed to a nominal 75 mph on the route to the east of Cardiff will help to secure new stations. It is hoped that Network Rail's Discretionary Fund could be successfully used to deliver this scheme.

There are ongoing timetable, planning and route utilisation studies which may inform the need for further investment in capacity. **However, Sewta recommends the Welsh Assembly Government reviews the issue of grandfather rights and unused freight paths in establishing the physical capacity of the routes**.

Sewta requires detailed capacity analysis and is looking for Network Rail to demonstrate the need for further investment in the relief lines to accommodate the new stations and services proposed and to ensure that an appropriate scheme is developed.

Although primarily focused on the North – South links, which serve Cardiff and Newport, Sewta recognises the importance of East – West links. The Newport to Swansea corridor contains the largest towns in Wales, yet its core service is only half hourly. Sewta will continue to work with SWWITCH to identify a common strategy, which would be capable of implementing an enhanced frequency on this strategic rail route, and which could attract a significant number of commuters away from the already heavily congested M4 corridor.

6.4 Severn Tunnel Junction Station

Sewta is working with Network Rail on their proposals for the development of Severn Tunnel Junction Station. As part of the Newport Area Signalling Renewals Phase 1 scheme, Network Rail propose to introduce a 4th track through the station and introduce a 4th platform with associated access and passenger facilities.

Sewta's Transport Grant funded scheme to improve the facilities at this station and develop park and ride has been delayed because of the need to retain land for emergency access and maintenance. Network Rail is keen to discuss the issue in an attempt to maximise the use of non railway land. **Sewta wishes to maximise the planned investment by Network Rail and require the support of the Welsh Assembly Government to provide additional funding to secure the full station and park and ride improvement scheme.** Sewta will review the issues relating to a new station at Magor with Undy in the light of the decisions at Severn Tunnel Junction in taking the strategy forward.

6.5 Queen Street North Junction – Cogan Junction

Options to enhance this important section of the rail network are being examined in the Cardiff Area Signalling Renewal (CASR) project. This has reached the end of GRIP stage 2, and has defined the options for assessment in the next stage. Sewta have concerns regarding two aspects of the work undertaken to date as follows;

6.5.1 Cogan Junction and Penarth Line issues

The Sewta Rail Strategy study identified a key project to improve the reliability of services passing through Cogan Junction, a key pinchpoint in the network. Network Rail has discounted the scheme suggested in that study on technical grounds and proposed two schemes involving alternative treatments of the freight loops to the north of the junction.

There is a need to target schemes at resolving the problems and to appraise the benefits against these objectives. Sewta's concern is to resolve the reliability problems for the Vale of Glamorgan (Bridgend, Barry and Penarth) services and provide network resilience, which should be identified separately from wider aspirations - the provision of additional capacity for freight and an additional hourly Vale of Glamorgan service.

The problems relate to the single track branch line to Penarth and the timetabling constraints imposed. The base CASR scheme will allow passenger trains to use the down freight loop which might provide the majority of the benefits sought from a larger scheme utilising the freight loops. However, further infrastructure might be required to maximise performance through the junction (including northbound) given the intense use of the branch.

Sewta has requested Network Rail to undertake more assessment of doubling the junction (alternatively extending the up loop back beyond the junction) and/or providing more capacity on the branch within the ongoing CASR work.

6.5.2 Treforest Curve / City Line

Within the CASR Grip 2 stage enhancement options work increasing capacity on the Treforest Curve (City Line route) was suggested as an alternative to capacity increases at Cardiff Queen Street. With Arriva Trains Wales, Sewta has examined the timetable, demand and business case issues for this initiative in relation to the aspiration for additional frequency of services to Caerphilly and to Pontypridd / Porth. The work included a cost benefit analysis in the same manner as the 2005/06 Sewta Rail Strategy Study.

Although these would be additional trains, their operation to Pontypridd / Porth via the City Line has a number of disbenefits;

- There is significant demand for travel to Cathays Station and Queen Street Station from the Treherbert line 15% and 60% of southbound travellers respectively. Many of those people attracted by the more frequent service will be **forced to interchange** to reach Cathays and ride for longer to reach Queen Street.

- The scheme would lead to a reduction in the number of seats available to and from Llandaff and Cathays as there would be additional pressure on seats from passengers deterred by the time penalty who would seek to transfer at Radyr. **There would be a real problem of leaving people behind at Llandaff and Cathays.**

- The performance of the existing City Line service is affected by the need to cross over the main lines at Cardiff West to reach platforms 6 and 7, the additional trains would suffer the same **reliability problems**.

- This scheme would **not secure the long term aim to increase the frequency on the Barry and Vale of Glamorgan lines**.

- The scheme **would not improve the performance of the section between Queen Street North and Cardiff Central** as there would still be 12 tph each way – the practical capacity of the network.

- There would be **no additional capacity for freight**.

The conclusions drawn from the work were that;

- Whilst the more affordable scheme could achieve some of the aspirations of Sewta, **the investment will not provide the same benefits**.

- The scheme may have a **poor economic case.**[29]

- The scheme has **significant negative impacts**. It will not produce capacity and performance improvements at Queen Street and will not provide additional capacity for freight movements.

The investment would not contribute towards the long term aspiration to invest in the Queen Street North Junction – Cogan corridor. The results of this work have been sent to Network Rail for focusing the CASR Grip stage 3 work. Sewta considers that the Network Rail scheme is an engineering solution which does not adequately take into account passenger flows and demand which may limit potential for further service development. Network Rail fully recognises that this scheme is a tactical solution to the capacity constraint imposed by the absence of an additional bridge span over Newport Road but see it as a first phase ahead of the major development of the Queen Street North junction.

Sewta encourages the Welsh Assembly Government to focus on the enhancement options which deliver the passenger improvements that are required on the highest demand corridor in Wales as soon as possible.

[29] The economic case assessment utilised the Moira Models with combined demand forecasts for Cardiff Queen Street and Cardiff Central, Thus the analysis would not fully reflect the disbenefits of the scheme.

6.6 Summary

This document is the result of Sewta's best endeavours to programme the rail strategy, providing the long term vision, within the short timescale available. The programme, however, will be subject to change as scheme's progress, as developments come on line, as more information becomes available and as risks and costs are assessed in more detail.

Sewta has examined some issues in more detail and is looking for the Welsh Assembly Government to;

- Investigate the replacement of life-expired rolling stock within the franchise process, to develop and secure a fleet renewal and growth strategy with the train operator;
- Investigate further and secure the main line capacity improvements to increase the level of passenger services needed to deliver the rail strategy;
- Support Sewta's endeavours to secure a comprehensive station improvement scheme at Severn Tunnel Junction;
- Support Sewta's request for Network Rail to investigate more options at Cogan Junction;
- Support Sewta's rejection of the City Line option and focus the enhancement option in Central Cardiff on Sewta's rail strategy objectives.

7 PROGRAMME

7.1 Introduction

The prioritised Sewta Rail Investment programme has taken into account Network Rail's Stage Gate process for the development of schemes from concept to delivery and operation and the current stage of each scheme. The programming has taken on board advice from the Welsh Assembly Government and Network Rail, utilised information from the Sewta Rail Strategy Study and reviewed development timescales. Programming has taken account of interrelationships between projects, particularly the Newport and Cardiff Signalling Renewal programmes and the result is a robust programme for the next 10 years

7.2 Network Rail Stage Gates

The Guide to Railway Investment Projects (GRIP) describes how Network Rail manages and controls projects that enhance or renew the national rail network throughout the project lifecycle from inception through to post-implementation realisation of benefits. It includes a staged approach to enable projects to be developed in a structured manner with reviews of the ongoing business case being undertaken at key stages. The intention is to manage projects in a manner that minimises and mitigates risk.

Deliverables are specified at each stage to facilitate logical development of the project and support the review process. The specific deliverables for a particular project are drawn from a matrix and agreed with the Network Rail Project Manager.

The investment stages within the lifecycle reflect the significant business and technical milestones in the project's development and delivery. The following description of the stages is taken from the GRIP Policy Manual published by Network Rail:

Stage 1 - Output Definition

The stage establishes the scope of the investment in terms of the incremental network capability required by the investment's "client, such as journey time, capacity, loading gauge etc.

Stage 2 - Pre-feasibility

This stage ensures that asset condition, safety or standards requirements are identified and included in the scope of the investment; ensures that investment is aligned with organisational strategy and contributes to targets; identifies the constraints on the network that prevent the delivery of the client's outputs and defines the incremental capability that must be delivered by the investment; and provides confirmation that the outputs can be economically delivered by addressing the identified constraints.

Stage 3 - Option selection

This stage develops options for addressing the identified constraints and delivering the required incremental network capability. It also assesses the options and selects the most appropriate one, together with confirmation that the outputs can be economically delivered.

Stage 4 - Single Option Development (Preliminary Design)

This stage develops the selected option to the point of engineering scope freeze in sufficient detail to allow finalisation of the business case and scheduling of resources.

Stage 5 - Detailed design

This stage produces a complete and robust engineering design that allows risks, costs, timescales, resources and benefits to be fully understood prior to commitment to implement.

Stage 6 – Construction test and commissioning

This stage delivers the asset change / renewal to the appropriate specification and provides confirmation that the asset and system work in accordance with their design and that they deliver the incremental network capability.

Stage 7 – Scheme Handback

This stage introduces the asset into operational use and obtains acceptance of the Works. The key product from Scheme Handback is acceptance of the Project Works.

Stage 8 – Project Close Out

This stage ensures that the project is closed out in an orderly manner with updated asset management information, capitalised assets, settled contractual accounts and any contingencies and warranties are put in place. Logging up and other funding arrangements finalised and assumed business benefits are captured in the Business Plan.

Certain development stages up to stage 4 may be combined. The Network Rail Sponsor makes this decision in consultation with the Project Manager and records it in the management plan prepared for financial authorisation at the end of stage 1.

7.3 Programme Development Issues and Assumptions

Account has been taken of the current known GRIP stages of schemes and the requirements for each project. For example funded elements of the programme are at different stages from GRIP level 3 (Maesteg) to approaching GRIP level 6 (Llanharan and Ebbw Valley Phase 1). We have taken specific account of the Signalling Renewal programmes within the programme and linked related projects to the constraints involved.

Whilst in some cases the actual works of a stage may be undertaken in a relatively short period, we have assumed that the specification, funding, commissioning, approval and acceptance processes lengthen the overall timeframe for each scheme at each stage. The commissioning organisations also need to work with their available resources and will need to schedule resources within overall timeframes, requiring flexibility. **It is therefore possible that an individual project could be delivered sooner than shown in the programme if it is not linked to a signalling renewal or other major investment scheme and is desired to be 'fast-tracked'.**

Some business cases are closely linked to development and redevelopment timescales. Caerleon Station, an element of the Marches Line Scheme, is partly dependent on the redevelopment of St Cadoc's Hospital which is expected post 2011. The major development at Llanwern will eventually create a significant catchment for a new station but the phasing will only lead to a catchment large enough to support a station some time between 2012 and 2023. At Coedkernew, development sites closest to the railway line and therefore in the immediate catchment of the station are programmed for post 2011.

7.4 Outline Programme

The programme is shown in Figure 11 and the more detailed programme is shown in Appendix B. The programme covers the period from 2006 to 2018 and reflecting Sewta's position, in consultation with Network Rail and Arriva Trains Wales, is formed from the linked GRIP Stages for each scheme and new service introductions are highlighted. Linkage has been made between Sewta enhancement projects and the ongoing signalling renewal projects and account has been taken of the Network Rail requirement for the identification of disruptive possessions (output of stage 4) 80 weeks before the timetable change period in the construction phase (stage 6).

The top half of the programme, above the NASR, and CASR programmes (and shown in green in the detailed programme in Appendix B), shows the current 5 year programme with all the outstanding elements, including individual station improvement and park and ride schemes shown. The bottom half of the programme shows the major schemes only and the programme will need to be developed further as individual station improvement schemes / packages are developed. An overall project for developing further station improvement schemes is shown in the programme.

Several schemes entered their construction phases in 2007, however the programme highlights the forthcoming needs for further development on the following schemes;

- Bargoed to Rhymney frequency and Energlyn new station schemes;
- Maesteg Line frequency and Brackla new station schemes.

The Queen Street North – Cogan scheme is reliant on the Cardiff Area Signalling Renewal scheme and it is assumed that this enhancement option is secured within the process to enable the reliability benefits to be secure as soon as possible, to provide the flexibility for improved frequency to be provided to manage overcrowding in the peaks and to provide capacity for freight as well as passenger services. GRIP stage 4 of the scheme is linked to GRIP stage 5 of the CASR scheme. It should be noted that if the enhancement scheme drops from the CASR programme it would probably result in at least 3 additional years delay to securing the enhancement and a likely significant increase in cost.

The Signalling Renewal projects require some short term attention to take forward the initial stages of some of the additional network enhancement schemes, which are within the Sewta Strategy. Most critical are the GRIP Stages 1 to 3 for the location of the new stations on the Main Line to feed into the GRIP stage 5 of the Newport Area Signalling Renewal phase 1. **Newport City Council, through Capita Symonds has commissioned some work in relation to Llanwern station but further work may be required for Magor, Coedkernew and St Mellons Stations in the short term – especially for schemes involving slewing the relief lines.**

In addition, the initial phases of 2 other major schemes need to be initiated in the short-term. The Ebbw Valley Phase 2 scheme needs to reach GRIP stage 3 to feed into Newport Area Signalling Renewal Phase 2 GRIP Stage 4. The start of GRIP stage 4 of the Ebbw Vale Scheme will be reliant on the outcome of Ebbw Valley Phase 1 and revised evaluation. The initial stages of the Beddau Scheme need to be undertaken for the identification of the Pontyclun connection with the main line to inform the passive provision in the CASR GRIP Stage 4. The programme for the remainder of the scheme would follow on at a later stage. There is also a short term need to initiate the further station improvement schemes project to develop individual schemes for delivery after 2010.

The further development of the programme could be influenced by the forthcoming ERDF Convergence funding programme, which will only be able to support schemes within part of the region; the Valley Authorities to the North of Cardiff and Newport. Possible projects to receive early support are therefore; Abercynon Park and Ride, Bargoed – Rhymney and Maesteg Line frequency enhancements, and Ebbw Valley Phase 2, followed later in the programme by elements of the Abergavenny Line scheme. However, the Beddau Branch scheme, whilst within the assisted area, is not currently programmed to be within the funding timescale. ERDF Convergence funding could secure earlier delivery of Sewta's programme and possibly expansion of the programme through bringing forward schemes that would otherwise not be delivered in the period. Sewta will therefore continue to be proactive in maximising the share of European funding for the programme.

Figure 11 Summary Sewta Rail Investment Programme

Project	2006		2007		2008		2009		2010		2011		2012		2013		2014		2015		2016		2017		2018		2019	
	H1	H2	H1	H2	H1	H2	H1	H2	H1	H2	H1	H2	H1	H2	H1	H2	H1	H2	H1	H2	H1	H2	H1	H2	H1	H2	H1	H2
Llanharan Station																												
Ebbw Valley Railway																												
Ebbw Vale-Cardiff Hourly																												
Station Improvements																												
Queen Street Station Improvements																												
Valley Lines Platforms																												
Pontypridd-Merthyr Frequency																												
Abercynon Station																												
Extension Pontypridd-Merthyr Tydfil																												
Newport Station																												
Energlyn Station																												
Bargoed to Rhymney																												
Llanbradach P&R																												
Extension Bargoed to Rhymney																												
Wildmill P&R																												
Maesteg Frequency																												
Maesteg-Cardiff1/2 Hourly																												
NASR Phase 1																												
CASR																												
NASR Phase 2																												
QS North-Cogan																												
Cardiff-Caerphilly Hourly																												
Cardiff-Pontypridd Hourly																												
Cardiff-Caerphilly 1/2 Hourly																												
Cardiff-Pontypridd 1/2 Hourly																												
Station Improvement Schemes																												
Caerleon, P&NI Abergavenny																												
Cardiff-Abergavenny Hourly																												
Cardiff-Abergavenny 1/2 Hourly																												
Rail Link Bus Services																												
Vale of Glamorgan 1/2 Hourly																												
Magor St Mellons Relief Line																												
Gloucester-Cardiff Hourly																												
Llanwern Coedkernew Stations																												
Chepstow-Cardiff Hourly																												
Ebbw Valley Phase 2																												
Ebbw Vale-Newport Hourly																												
Beddau Branch																												
Cardiff-Beddau 1/2 Hourly																												

APPENDIX A - PASSENGER GROWTH AND TRAIN CAPACITY

Central Growth Assumptions

The Central GDP based forecast is the approach recommended in the Rail Passenger Demand Forecasting Handbook (PDFH) used in the rail industry. The Forecast GDP growth was derived from the Royal Bank of Scotland Quarterly Economic Update (5th April 2005) for the period between 2004 and 2007 and the long term GDP growth forecast was taken from the Treasury Budget March 2005 report. The GDP rates applied were 2.6% to 2005, 2.7% to 2006, 2.5% to 2007 and 2.25% per annum between 2008 and 2018.

The impact of planned frequency increases between 2004 and 2010 were also taken into account on the Rhymney Line, Merthyr Line and Maesteg Line.

High Growth Forecast Assumptions

The High Growth forecast was based on the recent background passenger growth trend between 2001 and 2004 for the Valley Lines. It was assumed that this average annual growth rate of 5% per annum would continue to all lines over the evaluation period.

Congestion Charge Sensitivity Test

The estimated impact of a Congestion Charge on rail demand used the procedures recommended within the Rail Passenger Demand Forecasting Handbook (PDFH) assuming a flat rate congestion charge of £2.50 per day introduced in 2013. For a typical trip (Pontypridd – Cardiff) the scale of impact on the total journey costs for car users was estimated by applying a cross elasticity of rail demand to car cost of 0.4 (a 100% increase in car costs would lead to a 40% increase in rail demand). The resultant factor was an 18% increase in rail demand.

APPENDIX B - DETAILED SEWTA RAIL INVESTMENT PROGRAMME

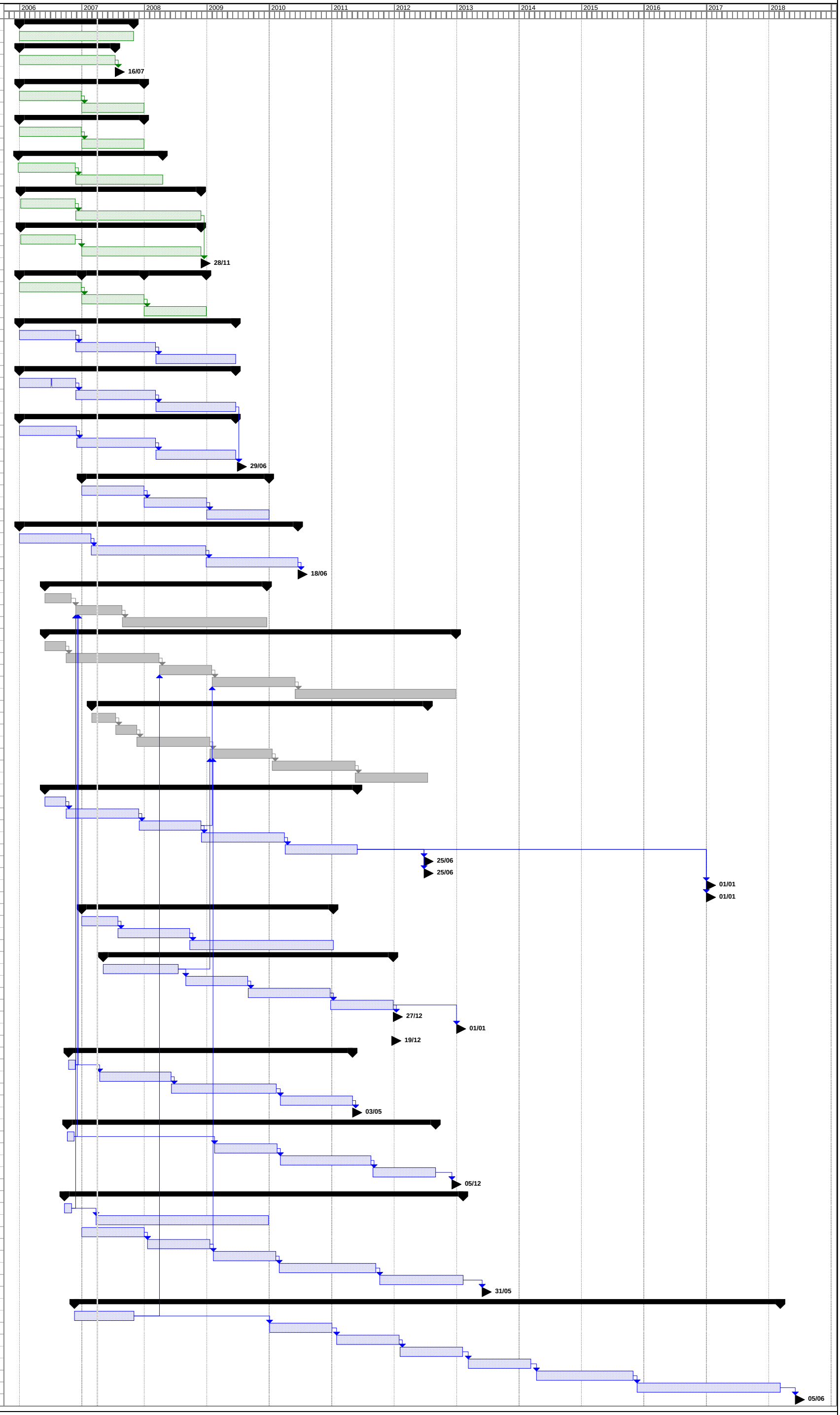
Within the detailed Sewta Rail Investment Programme the bars representing key project stages are in 3 colours as follows;

- Green – Current Sewta 5-year Rail Investment Programme committed and funded schemes;
- Grey – Network Rail's Signalling Renewal Project Programmes; and
- Blue – Sewta projects which do not have funding commitments at this stage.

The Milestone flags in the programme show when new or extended passenger services will be introduced – largely influenced by the infrastructure works that enable them to be operated.

SEWTA RAIL STRATEGY PROGRAMME 2006 - 2018

ID	Task Name
1	**Llanharan Station**
2	**Llanharan Station GRIP 6**
3	**Ebbw Valley Railway**
4	**Ebbw Valley Railway GRIP 6**
5	**Ebbw Vale - Cardiff Hourly**
6	**Station Improvements**
7	**Station Improvements GRIP4 #**
8	Station improvements Grip 5/6 #
9	**Queen Street Station Improvement**
10	**Queen Street Station GRIP 1-4**
11	Queen Street Station GRIP 5/6
12	**Valley Lines Platforms**
13	**VL Platform Extensions GRIP 4**
14	VL Platform Extensions GRIP 5/6
15	**Pontypridd - Merthyr Frequency**
16	**Ponty' - Merthyr Freq GRIP 4**
17	Ponty' - Merthyr Freq GRIP 5/6
18	**Abercynon Station**
19	**Abercynon Station GRIP 4**
20	Abercynon Station GRIP 5/6
21	**Extension Pontypridd - Merthyr Tydfil**
22	**Newport Station**
23	**Newport Station GRIP 1-3**
24	Newport StationGRIP 4
25	Newport Station GRIP 5/6
26	**Energlyn Station**
27	**Energlyn Station GRIP 1-3**
28	Energlyn Station GRIP 4
29	Energlyn Station GRIP 5/6
30	**Bargoed to Rhymney**
31	**Bargoed to Rhymney GRIP 1-3**
32	Bargoed to Rhymney GRIP 4
33	Bargoed to Rhymney GRIP 5/6
34	**Llanbradach P&R**
35	**Llanbradach P&R GRIP 1-3**
36	Llanbradach P&R GRIP 4
37	Llanbradach P&R GRIP 5/6
38	**Extension Bargoed to Rhymney**
39	**Wildmill P&R**
40	**Wildmill P&R GRIP 1-3**
41	Wildmill P&R GRIP 4
42	Wildmill P&R GRIP 5/6
43	**Maesteg Frequency**
44	**Maesteg Frequency GRIP 1 - 3**
45	Masteg Frequency GRIP 4
46	Maesteg Frequency GRIP 5/6
47	**Maesteg - Cardiff 1/2 Hourly**
48	**NASR Phase 1**
49	**NASR Phase 1 GRIP 4**
50	NASR Phase 1 GRIP 5
51	NASR Phase 1 GRIP 6
52	**CASR**
53	**CASR GRIP 2**
54	CASR GRIP 3
55	CASR GRIP 4
56	CASR GRIP 5
57	CASR GRIP 6
58	**NASR Phase 2**
59	**NASR Phase 2 GRIP 1**
60	NASR Phase 2 GRIP 2
61	NASR Phase 2 GRIP 3
62	NASR Phase 2 GRIP 4
63	NASR Phase 2 GRIP 5
64	NASR Phase 2 GRIP 6
65	**QS North - Cogan**
66	**QS North - Cogan GRIP 1/2**
67	QS North - Cogan GRIP 3
68	QS North - Cogan GRIP 4
69	QS North - Cogan GRIP 5
70	QS North - Cogan GRIP 6
71	**Cardiff - Caerphilly hourly**
72	**Cardiff - Pontypridd/ Porth Hourly**
73	**Cardiff - Caerphilly 1/2 hourly**
74	**Cardiff - Pontypridd / Porth 1/2 Hourly**
75	**Station Improvement Schemes**
76	**Station Improvement Schemes Grip 1-3**
77	Station Improvement Schemes Grip 4
78	Station Improvement Schemes Grip 5/6
79	**Caerleon, P&NI, Aberg'y**
80	**Caeleon, P&NI, Aberg'y GRIP 1-3**
81	Caerleon, P&NI, Aberg'y GRIP 4
82	Caerleon, P&NI, Aberg'y GRIP 5
83	Caerleon, P&NI, Aberg'y GRIP 6
84	**Cardiff - Abergavenny Hourly**
85	**Cardiff - Abergavenny 1/2 hourly**
86	**Vale of Glamorgan 1/2 hourly**
87	**Magor, St Mellons, Relief Line**
88	**Magor, St Mellons, Relief Line GRIP 1-3**
89	Magor, St Mellons, Relief Line GRIP 4
90	Magor, St Mellons, Relief Line GRIP 5
91	Magor, St Mellons, Relief Line GRIP 6
92	**Gloucester - Cardiff Hourly**
93	**Llanwern, Coedkernew Stns**
94	**Llanwern, Coedkernew Stns GRIP 1-3**
95	Llanwern, Coedkernew Stns GRIP 4
96	Llanwern, Coedkernew Stns GRIP 5
97	Llanwern, Coedkernew Stns GRIP 6
98	**Chepstow - Cardiff Hourly**
99	**Ebbw Valley Phase 2**
100	Gaer Junction Grip 4
101	Gaer Junction Grip 5/6
102	**Ebbw Valley #2 GRIP 1/2**
103	Ebbw Valley #2 GRIP 3
104	Ebbw Valley #2 GRIP 4
105	Ebbw Valley #2 GRIP 5
106	Ebbw Valley #2 GRIP 6
107	**Ebbw Vale - Newport hourly**
108	**Beddau Branch**
109	**Beddau Branch Pontyclun GRIP 1-3**
110	**Beddau Branch GRIP 1**
111	Beddau Branch GRIP 2
112	Beddau Branch GRIP 3
113	Beddau Branch GRIP 4
114	Beddau Branch GRIP 5
115	Beddau Branch GRIP 6
116	**Cardiff - Beddau 1/2 hourly**



Project: Sewta Strategy Programmev5
Date: Fri 30/03/07

Task | Progress | Summary | External Tasks | Deadline
Split | Milestone | Project Summary | External Milestone

Green Tasks = Sewta 5-year Investment Programme Committed Schemes