



**The Case for Greater Investment across the South West Peninsula Railway Network**  
February 2013



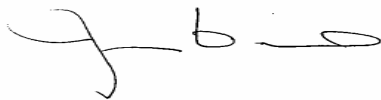
# The South West Spine

A report by:

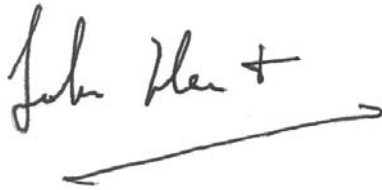
Cornwall Council  
Devon County Council  
Plymouth City Council  
Somerset County Council  
Torbay Council

- on the urgent need for increased investment to improve network resilience and to meet unprecedented rising numbers of passengers.

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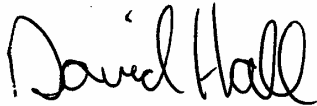
**Councillor James Currie**  
Leader of Cornwall Council



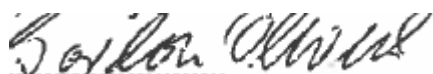
**Councillor John Hart**  
Leader, Devon County Council



**Councillor Tudor Evans**  
Leader, Plymouth City Council



**Councillor David Hall**  
Cabinet Member for Economic Development, Infrastructure & Innovation,  
Somerset County Council



**Gordon Oliver**  
Mayor, Torbay Council

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## **Summary Report**

### **Economic Context**

The Far South West (the SW peninsula from Somerset westwards) has a population of almost 2.2 million people, twice as large as Tyne & Wear, one third larger than Glasgow City Region and similar in size to West Yorkshire (2011 data). The peninsula has:

- a large but underperforming economy with low economic productivity; GVA per head in the Far SW is significantly below the national average: GVA per head in Cornwall is 66.3%; in Torbay it is 60.5%; this is reflected in the new post 2014 European funding programmes: Cornwall qualifies for Convergence funding (the highest level of European assistance) while Devon, Plymouth and Torbay qualify for Transition funding;
- needs and opportunities that are distinct from the rest of the SW region: the European funding programme offers the potential to drive further growth;
- high levels of economic potential with a high rate of population and economic growth: at almost 70% (1999-2011) is above the UK average of 63% but has started from a low base;
- a strong correlation between its most populated and most productive areas and the railway; Plymouth (257,000 people) is the fifteenth largest city in England.

However the size, importance, economic potential and need for investment in the peninsula economy, compared to large city regions, is often under-recognised, seemingly as it comprises a group of urban and rural communities rather than a single city.

### **Unprecedented Passenger Growth**

There is a trend of consistently high passenger growth on all railway lines in the peninsula over the past decade; 2012 saw many lines with around 10% growth. In the ten years up to 2012 patronage grew by 94% across the Far SW lines.

Despite this there are no discernible plans to accommodate this growth in the current, new, interim, or long term Great Western Franchise.

### **The Importance of the Railway to the Far SW**

There is significant evidence that supports the case that connectivity improvements will be the key to unleashing economic growth in the sub-region and which would in turn provide a major contribution towards the national economy.

It is time that the rail network is recognised as a key element of the South West's connectivity and economy – as its true “spine” to help unleash this growth. To date the needs of the area have been relatively poorly served by the national rail network, which has provided proportionately less investment in the Far SW in recent years.

The need for investment has been undersold by Government and within Network Rail plans, which have also repeatedly under-forecasted passenger growth in the Far SW.

The recent closure of Plymouth airport further emphasises the increased importance of the railway as the key long distance strategic link from much of the peninsula to the rest of the country and beyond.

These concerns have become further amplified at the start of 2013 as recent industry plans fail to recognise this. Both the national investment plans (*Network Rail Strategic Business Plan for Control Period 5; 8/1/13*) and interim plans to extend the Great Western Franchise (announced on 31/1/13) fail to reflect the importance of the railway to the Far SW economy, or the importance of the area's economy to the rest of the country, particularly in terms of the growth in patronage and its actual economic size, its historic growth and its future growth potential.

### **The Effect of Disruption Events: A Peninsula Cut Off**

Repeated weather-related disruption events at Cowley Bridge (north of Exeter) and the Dawlish/ Teignmouth seawall now highlight the urgent need for additional investment, over and above current national investment plans, and in addition to investment argued for in this report in relation to capacity and economic growth.

The whole South West peninsula was cut off from the rail network for days on end, twice, in November and December 2012. While the impact on the peninsula economy cannot be quantified, the effect on businesses at the time, and on longer term confidence in the Far SW economy is a major concern of the business community.

Recent ministerial announcements committing to invest in works to improve network resilience at Cowley Bridge are welcomed as an important step in Government recognition of the importance of the rail network to the Far SW economy. However the devil may still lie in the detail regarding options and funding. Further, this does not go far enough in committing the resources necessary to secure a high level of reliability and quality across the network at other locations where there has been repeated disruption, or at high risk locations where there is the potential for further disruption in future.

### **Current Investment Plans**

The Far SW Councils are extremely concerned about current investment plans, and in particular how these do not reflect the needs of the Far SW. Disturbingly, these failures occur widely across all industry plans. To be more specific:

1. Network Rail's Strategic Business Plan does not set out plans to invest in measures to reduce disruption due to weather events at sites of repeated resilience failure.
2. Network Rail's Strategic Business Plan does not recognise the unprecedented passenger growth in the Far SW or set out plans to ensure that growth will be catered for.

3. There are no Government plans to provide sufficient train capacity to cater for growth, even though the growth in the Far SW has been both sustained and high for many years.
4. Cascaded diesel trains from the Thames Valley, post-electrification, while too late to cater for growth in the Far SW before they become available, have as yet not been committed to the SW.
5. Government's interim arrangements for extending the Great Western Franchise, initially to October 2013 and then for a further two years, make no reference to the urgent need for increased train capacity across the Franchise area to accommodate growth since the current Franchise was let, and in the next three years until the new Franchise starts.
6. Government and Network Rail seem unaware of the effect on business confidence of the uncertainty that these shortcomings will cause.
7. Government's focus in the SW seems to be primarily on the large conurbations in the region, even though the peninsula population and economy is larger than any of the conurbations in the SW.
8. Electrification plans (after the current phase of electrification of the main line to South Wales) have not been published – leaving the Far SW as the only main railway line in the country that will not be electrified once the current phase of electrification is completed.
9. The lack of Government recognition that the Far South West has the slowest main line speeds in the country and that increasing the number of faster trains between the Far South West and London/Birmingham can unleash economic growth through better connectivity. This can and should be rectified by a relatively small amount of investment in track and signalling compared to that committed to rail projects elsewhere in the country.

### **Necessary Next Steps**

The recommendations of this report support government policies on carbon reduction and investing in infrastructure to promote transport links that support the UK economy including the UK tourism economy.

Above all we need to avoid both repeated weather-related disruption, and the risk that growing patronage will be choked off by a lack of train capacity. This is a very real risk given the high rates of passenger growth that continue unabated across the Far SW, with overcrowding increasingly prevalent on services.

There is a very strong case for current industry investment plans to be revised to ensure that critical needs in the Far SW are met, in order to:

- (i) improve resilience at locations where repeated flooding or other weather-related events have occurred;
- (ii) ensure that train services have sufficient capacity to support economic growth and avoid rising travel demand being stifled by a lack of capacity - by providing additional rolling stock and track capacity on key sections;

(iii) reduce journey times on the main line through relatively modest investment in track and signalling and capture the synergy from electrification between Taunton and Plymouth for use by both XC and FGW trains to Birmingham and London respectively to strengthen the business case for electrifying the whole Far South West.

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## **Recommendations**

1. That Network Rail undertakes an urgent feasibility study (to include all relevant partners including the Environment Agency and Local Transport Authorities) to determine the best options for providing network resilience against weather-related disruption, in relation to:

- (a) Cowley Bridge/ Stoke Canon,
- (b) the Dawlish/ Teignmouth seawall,
- (c) other sites of potential repeated disruption on the Berks & Hants line including the Somerset Levels and across all lines in the peninsula.

2. That Government recognises the under-forecasting of patronage growth, and the limitations of current rail investment prioritisation which works against areas with a more dispersed population, and:

- (a) draws up detailed plans on how to meet the need for the increased capacity that is required to tackle overcrowding and accommodate patronage growth in the Far SW railway from 2014 onwards;
- (b) accepts the need to provide sufficient rolling stock capacity on time, without being dependent on the Thames Valley electrification timetable which is likely to be too late to meet the needs of the Far SW.

3. That the capacity of the Exeter-Waterloo line be enhanced to reinstate this line as a diversionary route, so that it can be used in the event of disruption on the main line (as prevailed up to 2009).

4. That Government commits to funding these recommendations as a matter of the highest priority.

5. That a new more consensual approach to patronage forecasting is established in the Far SW, engaging with Local Transport Authorities.

6. That Government commits to a programme of track and signalling improvements to reduce journey times between the Far South West and London and Birmingham.

7. That electrification of all main lines from London to the Far SW, including Taunton-Bristol, and major branch lines, is included in the next phase of electrification after London-South Wales.

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# Full Report

## Introduction

The Far SW is a significant area of economic activity that is largely centred on its rail network, but poor access to key business destinations is holding it back. With many more people using the same services, overcrowding will make these problems worse and choke off growth.

This report sets out the challenges faced in providing the rail services the Far SW needs to fulfil its potential for economic growth – the South West Spine. The challenges are divided into three sections: reducing disparities compared with the UK economy (Section 1), vulnerability to weather-related disruption (Section 2) and investment plans that don't meet our needs (Section 3). Section 4 sets out what is needed to meet these challenges and provide the South West Spine with the rail network that the country needs.

## 1. The Far South West Economy

### 1.1. Population Distribution and the Railway

The Far SW - the Heart of the South West (HotSW) and Cornwall and Isles of Scilly (C&IoS) LEP areas - has a combined population of almost 2.2m, equal to or greater than the fourth and fifth most important cities in England outside London (Fig 1) and over 900,000 jobs with a GVA of almost £36bn.

*Fig 1. The Far SW Population compared to Major Urban Areas*

Area	Population (2011 Census)
West Midlands urban area	2,736,460
Greater Manchester	2,682,528
West Yorkshire	2,226,058
<b>Far South West Peninsula</b>	<b>2,198,190</b>
Greater Glasgow	1,772,800 (2011 mid year estimate)
Tyne and Wear	1,104,825
West of England (Bristol / Bath area)	1,069,583
Southampton	236,882
Cambridge	123,867

Source: ONS 2012

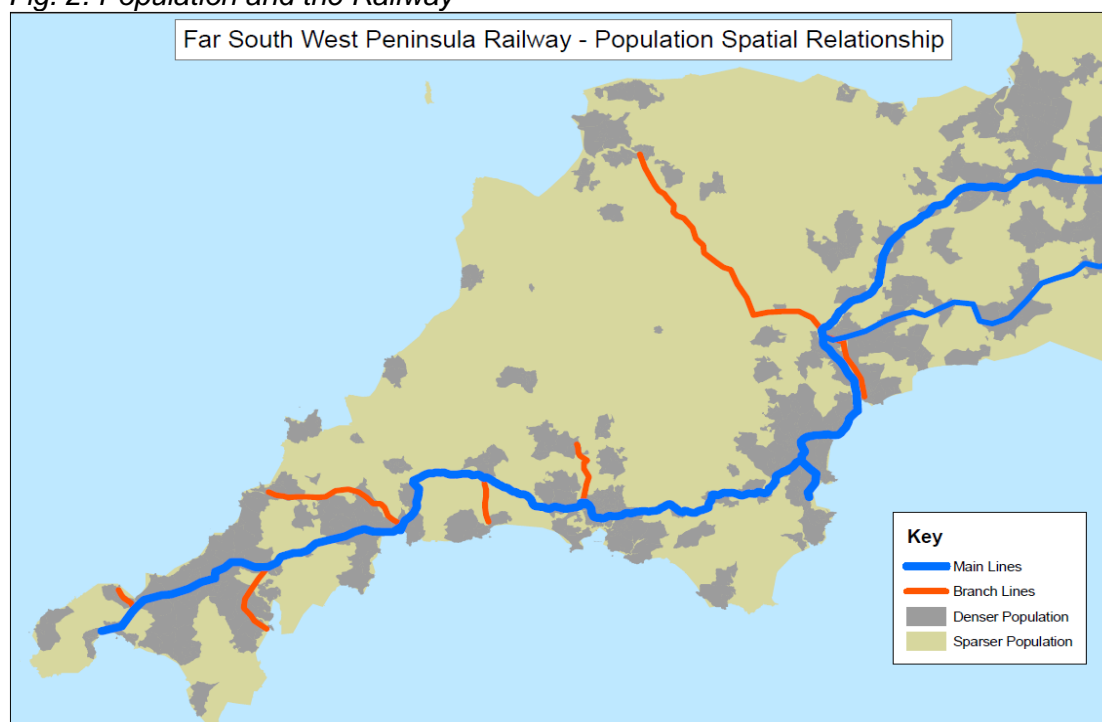
Population distribution and growth in the Far SW is closely aligned to the railway network (Fig. 2). The most densely populated parts of the Far SW correlate very strongly with the main railway lines west of Taunton.

However, despite the Far SW economy being a major contributor to the overall UK economy, it still has the lowest levels of productivity as measured by GVA per head of population of anywhere in Southern England with Devon, Plymouth and Torbay at 80% of the UK average and Cornwall & the Isles of Scilly at 66% of the UK average; while Torbay alone is at 60.5% of the UKL average. The low productivity levels



resulted in these areas recently qualifying for enhanced levels of European funding post 2014. Cornwall qualifies for Convergence funding; Devon Plymouth and Torbay qualify for Transition funding.

*Fig. 2. Population and the Railway*



Source: Devon County Council

## 1.2. Growth and the Economy

The population and size of the Far SW economy is significant and larger than, for example, the Greater Bristol area or the area covered by the South Wales main line and Valley lines, when measured by Gross Value Added (GVA) (Fig. 3). In addition, recent economic growth rates have also been much higher than the Greater Bristol and South Wales areas (Fig. 4).

*Fig. 3. Economy and Population (2011).*

<b>Area</b>	<b>Total size of economy - GVA 2011</b>	<b>Total population – mid year estimates 2011</b>
<b>Far South West</b> - Cornwall, Devon, Plymouth and Torbay	£26.72bn	1,671,500
<b>West of England</b> - BANES, Bristol, North Somerset and South Gloucestershire	£26.03bn	1,070,100
<b>South Wales line</b> - Monmouthshire, Newport, Cardiff, Vale of Glamorgan, Bridgend, Neath, Port Talbot and Swansea	£22.67bn	1,227,400
<b>Christchurch to Weymouth line</b> - Bournemouth, Dorset and Poole	£13.36bn	745,400

Source: ONS 2012

The Far SW's economic structure is no longer overly reliant on the holiday trade, and it is now similar to the UK average with agriculture, forestry and fishing making up just 1.95% of total output in 2010 (ONS). By contrast private sector services

(business services and IT) make up 28.6% of output, with production making up a further 14.1% of output (as much as 19.7% in Plymouth). Knowledge-intensive employment in the Far SW formed 47% of all employment in 2011 (ONS BRES).

Fig. 4. Economic Growth 1999-2011

Area	Percentage growth 1999 to 2011	Total GVA 1999	Total GVA 2011
<b>Far South West</b> - Cornwall, Devon, Plymouth, Somerset and Torbay	69.39%	£21.14bn	£35.81bn
<b>West of England</b> - BANES, Bristol, North Somerset and South Gloucestershire	68.15%	£15.48bn	£26.03bn
<b>South Wales line</b> - Monmouthshire, Newport, Cardiff, Vale of Glamorgan, Bridgend, Neath, Port Talbot and Swansea	56.99%	£14.44bn	£22.67bn
<b>Christchurch to Weymouth line</b> - Bournemouth, Dorset and Poole	64.33%	£8.13bn	£13.36bn
<b>UK Average</b>	62.79%	---	----

Source: ONS 2013

### 1.3. Connectivity

Unprecedented high levels of passenger growth have taken place in recent years on the main line between Bristol and Plymouth, and there are relatively important economic links between Bristol and the Far South West. Nonetheless a report produced by University of the West of England (UWE, 2002) for the West of England Strategic partnership, found that longer-distance business linkages in the Far South West were primarily with London and the rest of the UK and to an extent tended to 'leapfrog' the West of England (Bristol area).

The Berks & Hants line (via Westbury) to London provides the route for essential connectivity to London and the South-east.

The size of the Far South West's economy, its population and its recent high growth rates point to significant economic potential. Investment in transport infrastructure plays a major role in unlocking this potential. However, the area's economy still underperforms and has considerable untapped potential. Evidence produced by the Universities of Bath and UWE (*Meeting the Productivity Challenge, 2005*) found that connectivity improvements to major conurbations, but in particular London, can unleash significant economic growth. The report found that productivity decreases by 6% for every 100 minutes of journey time from London. Tackling this underperformance through improved journey times would provide a major boost to local growth, which would in turn provide a significant boost to the UK economy.

Using these assumptions for the Far South West, a 20 minute average journey time improvement applied across the area could amount to an economic boost of up to £321m per annum in terms of GVA at 2011 values. Over the period of a decade the cumulative effects of such a boost could be huge.

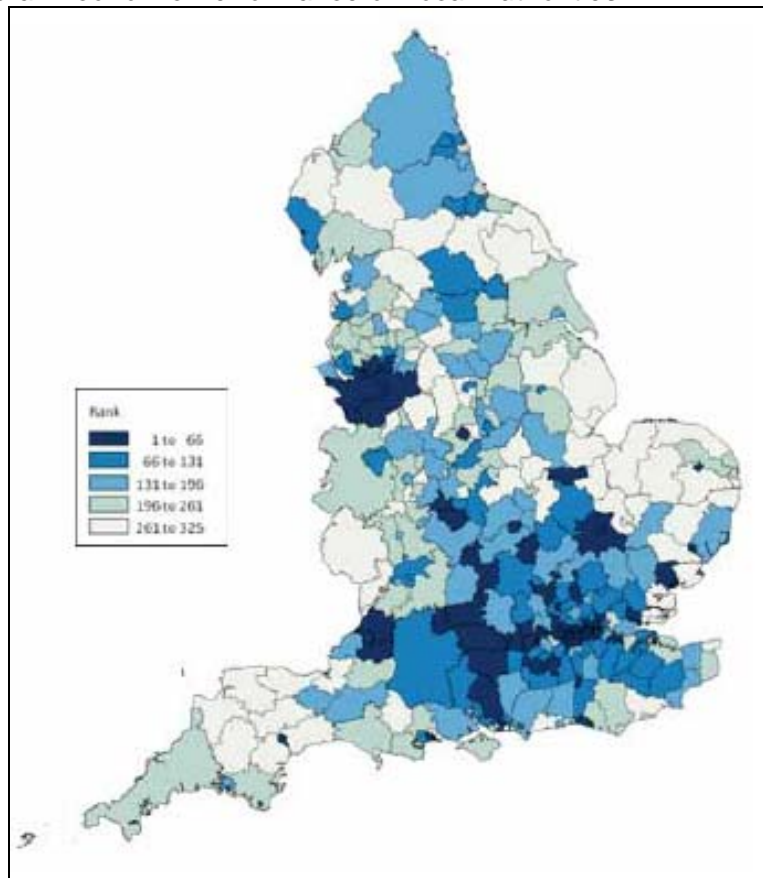
Analysis undertaken for Plymouth City Council in 2011 found that the benefits of speeding up just the Plymouth to London services to an average time of 2h45m could add £94m per annum to the UK economy by 2026.

Fig. 5. Average Journey Time Isochrones from London



Source: Devon County Council

Fig. 6. Overall Economic Performance of Local Authorities



Source: Local Futures: Global change: local strategies. An inward investment guide to England (2013).

The isochrone map (Fig. 5) shows that the Far SW suffers from longer journey times than most other areas of the country which are a similar distance from London. Rail

services in the Far SW already suffer from longer journey times or slower average speeds compared to most other broadly equidistant towns in other parts of the UK.

This feature shows a close correlation to the map in Fig. 6 which summarises the economic performance of local authority areas within England using a summary economic performance score.

In the longer term, even improved rail journey times between Plymouth and London at 3 hours will still be the slowest amongst all settlements with a population of over 80,000 in England and Wales. Plymouth's current population is 257,000 without taking into account nearby settlements.

#### 1.4. Rail Passenger Growth

Unprecedented Growth has occurred in the last ten years consistently across all lines and flows, both branch lines and the main peninsula line in the Far SW (Figs. 7 & 8). These increases in passenger numbers have been accommodated with only minimal rolling stock additions since the start of the franchise in 2006.

*Fig. 7. Rail Passenger Growth 2002-12*

<b>Line</b>	<b>Patronage Growth 2002 - 2012</b>
Exeter/ Paignton/ Plymouth	+108%
Exeter/ Barnstaple	+159%
Exeter/ Exmouth	+75%
Plymouth/ Penzance	+184%
Plymouth/ Gunnislake	+47%
Liskeard/ Looe	+57%
Par/ Newquay	+107%
Truro/ Falmouth	+208%
Penzance/ St Ives	+56%
<b>Total</b>	<b>+109%</b>
<i>National Regional Rail Sector</i>	+52%
<i>National Rail All Sectors</i>	+55%

Source: First Great Western, 2013

Growth continues unabated to the present day, with signs of the rate of growth increasing in recent years, as can be seen from the increase in footfall at key stations between 2011 and 2012.

*Fig. 8. Rail Passenger Growth at Key Stations 2011-12*

<b>Station</b>	<b>Patronage Growth 2011 – 2012 (Footfall)</b>
Taunton	+4.7%
Exeter St David's	+7.2%
Paignton	+10.1%
Plymouth	+8.6%
Truro	+11.1%

Source: First Great Western, 2013

## **2. Lack of Network Resilience**

### **2.1. Network Vulnerability**

The Far SW rail network is vulnerable to weather-related disruption, which can shut the whole network for days on end. The recent disruption events at the end of 2012 are by no means new phenomena, as they are repeats of earlier similar incidents. Whilst difficult to quantify accurately, there is little doubt that these events result in significant costs to the industry, users and the Far SW economy. With extreme weather events expected to become more common, this problem will only get worse.

There is an absence of alternative routes beyond Exeter, with reliance on the single spine route. The railway in the peninsula, because of topography, had to be built with many embankments, bridges, tunnels and seawalls which are becoming increasingly vulnerable to ever more frequent extreme weather events.

### **2.2. The Effect of Recent Weather Events**

#### **2.2.1. The Peninsula Cut Off**

The disruption events in late 2012 resulted in the whole South West peninsula being cut off from the rest of the country by public transport for days on end. While the financial effect of this is hard to accurately quantify, the business community regards these disruption events as extremely serious to the economy of the Far SW, both in the short term and to longer term business confidence.

#### **2.2.2. The scale of the disruption**

The number of days when the line was closed due to weather-related disruption in November/ December 2012 are:

- Cowley Bridge: 15 days
- Dawlish/ Teignmouth seawall: 6 days
- Honiton (Exeter - Waterloo Line): 5 days
- Exeter–Barnstaple: 22 days (including during planned closure for maintenance works which were not completed)
- Exeter–Exmouth: 2 days.

In addition, there were speed restrictions and block/ single line working which resulted in significant additional disruption and inconvenience for travellers for many more days.

On the main line between Taunton and Penzance, 1336 First Great Western trains were delayed or cancelled as a result of the disruption between 21<sup>st</sup> and 28<sup>th</sup> November and 22<sup>nd</sup> and 28<sup>th</sup> December 2012. An estimated further 560 Cross Country trains were also affected.

There is no data currently available on the number of passenger journeys affected, or those lost, by the weather disruption in November and December 2012. But, as an example, footfall at Exeter St David's station indicates that in excess of 120,000 passengers at this station alone were affected during these periods. The number of passengers affected overall is expected to be many times higher than this number, and for many of them the disruption to their journeys and subsequent inconvenience

was significant, and often acute. An adverse effect on longer term perceptions about the ease of travel to the Far SW and willingness to visit again can also be expected.

### 2.2.3. The Cost to the Industry

The true cost to the industry alone of these disruption events is not yet clear, but there is no doubt that the overall cost to the industry is considerable when taking into account the cost of restoring the line, ballast and signalling equipment; revenue loss/compensation payments; and the cost of a high volume of rail replacement bus services. Industry sources have quoted £7m as the initial cost.

To take but one of these elements, Network Rail estimates the cost of delay minutes payments as a result of the November and December 2012 flooding and landslip events was £12.2m on the Western route. Flooding and landslips in Devon accounted for around 43% of the delay minutes from flooding and landslides on Western route. This data suggest that a rough estimate of the cost of the delay minutes compensation alone is around £5.3m in delay costs for Devon. This of course needs to be added to the cost of repair work required at these locations to make the railway operational again.

Using the data on these overall costs and delay minutes, the costs relating to the key locations are:

- Cowley Bridge £3.3m (of which £2.6m occurred in Nov. and £0.7m in Dec.).
- Teignmouth landslip would represent about £1m
- Whiteball tunnel would have represented about £0.7m.

### 2.2.4. The Cost to the Far SW Economy

Whilst not possible at this stage to quantify, there is also no doubt that the cost to the economy across the peninsula is significant, both direct costs to businesses and indirect costs resulting from passenger delays. But in addition, given the images of rail disruption at Cowley Bridge beamed across the world, there is also real concern about the further long term effects of the disruption on confidence in relation to:

- existing businesses in the Far SW
- prospective new businesses considering relocating to the peninsula
- future visitors and tourists
- the reputation of the region in general.

### 2.2.5. Freight Traffic

The effect of the recent disruption to rail freight traffic, and the potential loss of business confidence, is also a concern. With three new intermodal freight facilities planned in the peninsula - Truro and Plymouth (using existing facilities) and Cranbrook (near Exeter, where work has started on a new intermodal freight depot) - there is a need to secure the ongoing commitment to these facilities by businesses.

To encourage future growth, potential users need to be confident that resilience problems have been resolved – not just reduced. A comprehensive and effective solution is urgently required.

## **2.3. Future Weather Trends**

Government's own climate change predictions (UKCP09) starkly illustrate the changing weather patterns that are likely to be experienced in the UK as a whole, and in the South West in particular. For example, under the medium emissions

scenario there is a 90% probability that winter rainfall will increase by +20% by 2020; +38% by 2050; and +54% by 2080.

The Met Office issued a report on 3<sup>rd</sup> January 2013 predicting a more frequent incidence of “extreme rainfall” in the future than that experienced in the past. This follows widespread meteorological research indicating that climate change is likely to result in more extreme weather events, including extreme rainfall, occurring more frequently. In particular the Met Office refers to “once in 100 days extreme weather events” that are now expected around once in every 70 days.

An emerging rail industry view is that former once in 20 years events are now occurring every 5 years. What is beyond doubt is that a greater incidence of these events must be matched by greater resilience through investment to minimise these effects in future. This must include reinstating former diversionary routes that are now needed more than ever.

### **3. Current Industry Investment Plans**

#### **3.1. Introduction**

Recent ministerial announcements (in January 2013) to seek solutions to reduce disruption at Cowley Bridge are welcomed. However it is perhaps inevitable that the devil still lies in the detail – in particular regarding the Terms of Reference of the study, appraisal of different options, and selection of options and the role of partner organisations in the process. It is hoped that the ministerial statements will be translated into an absolute commitment to provide all the funding required to implement the best options to provide these much needed improvements to the reliability of the Far SW's connectivity, as early as possible.

The announcements were made in the context, stated at the time, of the need to improve network resilience at locations where there is a risk of repeated occurrences. However the announcements stopped short of referring to other sections of line which have similarly experienced repeated weather-related disruption events, such as the track along the Teignmouth/ Dawlish sea wall.

The recent disruption has highlighted the damage to the economy and to people's connectivity when disruption occurs. A clear commitment to provide infrastructure improvements at all locations where there is the risk of repeated disruption, and to reinstate recently lapsed diversionary routes, would seem to be the least that should be expected and the very least that Government should agree to commit funding to.

The Network Rail Strategic Business Plan needs to ensure that the railway is fit for the future, and to recognise the importance of investing to future-proof the railway. It is accepted that the Business Plan was finalised prior to the recent disruption events; however for all the main sites of disruption this was not the first time that disruption had occurred. It is a serious omission that the Plan fails to specifically identify these sites for urgent improvement.

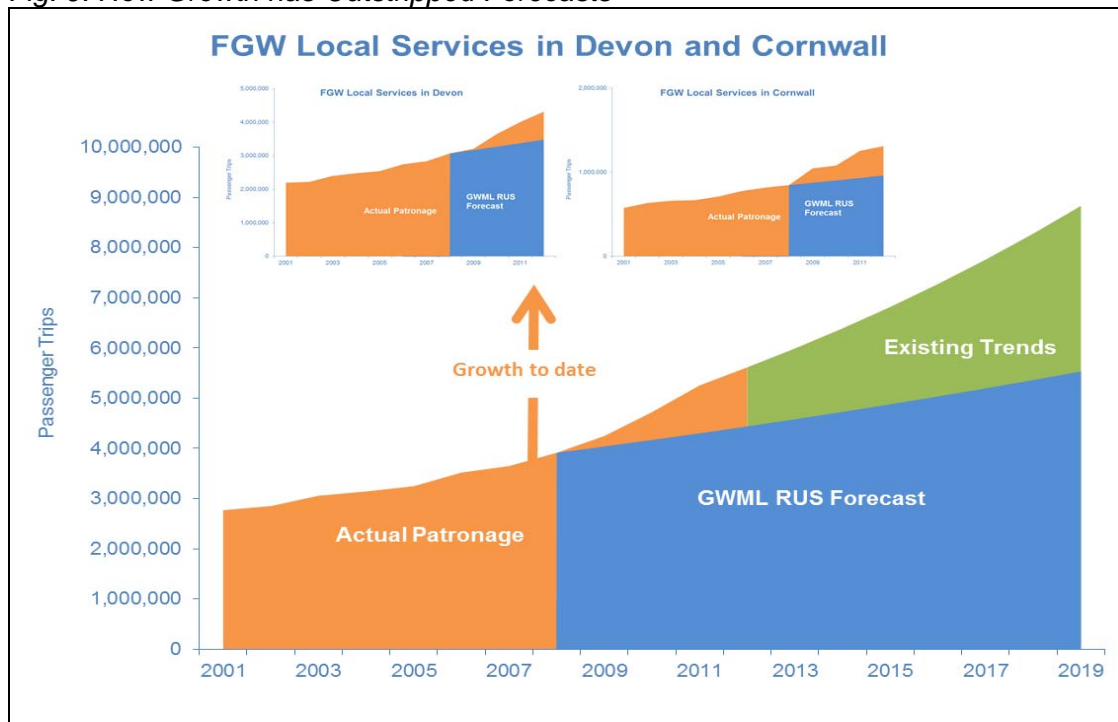
#### **3.2. Passenger Growth Under-Forecasting**

Unfortunately there is a history of rail industry growth forecasts repeatedly under-

estimating train passenger growth in the Far SW, and there is little evidence in current investment plans that they have got it right this time. As past under-forecasting is not corrected in each subsequent period, in effect it continues to falsely indicate a lower need for investment without being corrected: this imbalance in turn risks becoming accentuated with time - with the increasing risk of planned capacity falling short of what is required.

In 2012 patronage had already exceeded the industry forecast for 2019 (Fig. 9). Given that these forecasts are used for drawing up rail investment plans, growth projections need to be revised as a matter of some urgency, to ensure that decisions on investment in rolling stock and track infrastructure are from now on aligned with actual growth rather than poor forecasts, as is currently the case.

Fig. 9. How Growth has Outstripped Forecasts



Source: Network Rail and First Great Western data, 2012

It is hard not to infer that under-investment in the Far SW rail network has resulted from under-forecasting. A more collaborative approach to growth forecasting in the Far SW in future, with partner Local Transport Authorities and Train Operators able to provide input in a jointly owned process, would seem to be a logical and practical way to approach demand forecasting from now on.

### 3.3. Historic Under-Investment

It is understandable that, nationally, potential rail investment schemes with the strongest business plans would be seen as a high priority for funding, in what amounts to a first-past-the-post investment scoring system. But this process needs to be augmented to ensure that more peripheral parts of the country also attract sufficient funding when there is a strong case. Otherwise there is a risk that, year on year, these areas may be starved of sufficient funding to provide the transport network that their economies require.



Therefore proportionality in investment, across areas which do not score highest, also needs to be reflected in investment plans alongside the need for absolute value for money. This is a necessary measure if economic growth from the rail network is to be optimised across the country, to take due regard of smaller but vitally needed investment schemes away from the centres of population and higher passenger flows.

The result of the current investment regime over the years is that a misalignment of rail investment compared to the size of the economy in the Far SW risks becoming accentuated. This is in spite of the Far SW's high levels of growth which rank it as one of the economic power-houses of the country since 1991, and the capacity pressures on the railway that this policy is making more acute.

### **3.4. Rolling stock**

There is clear evidence that recent growth, that has continued steadily to date, will not be accommodated by current train capacity - and that this is likely to happen soon across the peninsula on both branch and main lines.

The tight reins held by Government on rolling stock procurement has resulted in a lack of trains, particularly diesel multiple units (DMUs). This shortage, which may be eased once Thames Valley electrification is in place, is in danger of stifling passenger growth in the SW peninsula through an inability to cater for increased demand to travel.

But, as yet, Government has provided no certainty that these units will be cascaded to the Far SW. So, with rapidly approaching capacity problems, and a known surplus of DMU stock from the Thames Valley from 2016 onwards, no plans have yet been published which set out exactly how sufficient capacity will be delivered from 2014 onwards!

Whilst this may be eased once Thames Valley electrification is in place through potential post-electrification cascades, this is increasingly looking like being too late, if we are to avoid choking off rising demand through a lack of capacity. It cannot be acceptable for an overrun on electrification implementation in the Thames Valley to result in a lack of capacity in the Far SW. This risks rising patronage being choked off by lack of train capacity, adversely affecting the economy - and future franchise costs.

Of further concern is that we are not aware of any contingency plans being in place to ensure that sufficient capacity will exist in the Far SW in the event of late implementation of electrification in the Thames Valley. An urgent assessment is therefore required to identify likely passenger demand increases, and to put in place plans to meet these increases. There is no evidence to date that any such plans are in place.

It is clear, if Government is serious about optimising the performance of the Far SW economy, that robust industry plans are needed that will ensure sufficient capacity in the Far SW **before capacity limits are reached** and that these plans need to be decoupled from the Thames Valley electrification plans. Consideration of new DMU rolling stock, to cater for the need for increased capacity in the near future in the Far SW, is essential if the Far SW economy is not to suffer from a lack of capacity.

The Long Term Rolling Stock Strategy (LTRSS) published on the 12<sup>th</sup> February 2013 makes reference to the cascade of relatively new mid-life DMUs to non-electrified routes where growth is currently being constrained by a lack of sufficient diesel vehicles.

### 3.5. Relative and Absolute Decline

Figures from the Treasury show that expenditure per head on transport in the wider South West is well below that of all other English regions and the devolved administrations (Fig. 10). Rail investment is a major part of this investment, which indicates an absolute decline in spending across the SW while nationally there has been an increase since 2006/7.

All other regions, with the exception of the South-east (which still enjoys £239 per head), experienced an increase over the period.

*Fig. 10. DfT Spending per Head*

	<b>2006/7</b>	<b>2009/10</b>	<b>2010/11</b>	<b>Difference (2006/7 to 2010/11)</b>
<i>SW Region</i>	£244	£217	£212	- £32 (-13.1%)
<i>UK Average</i>	£322	£363	£363	+ £41 (+12/7%)

*Source: HM Treasury 2012 Public Expenditure Statistical Analysis.*

There continue to be concerns, once current electrification plans are completed, that unless these are extended throughout the SW peninsula it would appear inevitable that the Far SW economy will fall further behind other areas of the UK, as the relative disadvantage of journey times to and from London will only serve to add to the Far SW peripherality.

As existing rolling stock gets older and as pressure on the network increases with more passengers being carried, a consequence of lack of investment in the Far SW is that the peninsula is likely to fall behind much of the rest of the country in absolute terms for rail.

Significant additional investment (additional to current Network Rail plans set out in the *Network Rail Strategic Business Plan for Control Period 5; 8/1/13*) to both improve resilience/ network reliability, and ensure sufficient capacity, is needed to avoid this prospect - and the adverse effects on the Far SW economy that are likely to result.

### 3.6. Electrification: Not Far Enough

Current plans for electrification between London and Bristol will have little direct positive impact on the Far SW economy. As mentioned above, an indirect by-product of electrification may be that it will enable some cascades of current diesel stock to the Far SW; while this stock is already over 20 years old they will still provide some

improvement to the age profile and quality of rolling stock as well as provide much needed additional capacity on local services.

This report shows above that the economy of the far SW makes the same or higher contribution to the national economy as the Greater Bristol economy. This is despite the productivity penalty imposed by the shorter journey time between London and Bristol compared to London and Plymouth. It is understood why Bristol would be electrified before the Far SW, but the absence of a commitment to extending electrification further west is not acceptable.

The first (and still current) Network Rail (NR) Electrification Rail Utilisation Study (RUS) made the incremental case for electrification to Plymouth from the north and the east of Taunton. The Long Term Passenger Rolling Stock (LTPRSS) explains in Section 'D. Electrification – Prioritisation and Analysis' the categorisation and ranking process for schemes in that RUS, which is the starting point for LTPRSS. The Bromsgrove/Plymouth and Reading/Taunton schemes were category A – Tier 1 schemes in the RUS. After the Great Western Main Line London – Bristol (GWML) the electrification of the Cross-Country route including from Bromsgrove to Plymouth (Table 6.5 in NR Electrification RUS) had a Benefit to Cost Ratio (BCR) of 5.1 to 1. Electrifying the Berks & Hants line between Newbury and Cogload Junction (Taunton), to fill the gap and allow electric trains from London to use the Cross-Country wires west from Taunton had a positive financial (business) case (Table 6.5) and the BCR was described as “effectively infinite”.

Government, through their HLOS are committed to a rolling programme of further electrification and have asked the industry and stakeholders to consider appropriate schemes. This report seeks to demonstrate that electrification to Plymouth from the north and the east of Taunton is a strong candidate. A more detailed assessment of the economic case for electrification to Plymouth, Paignton and Penzance is being undertaken by Plymouth City Council and Cornwall Council.

The LTPRSS (paragraph 26) explains that DfT have suggested electrification between Derby and Bristol, which is endorsed in the London North Western (LNW) Route Plan at page 41. This is very sensible as the Midland Main Line (MML) electrification will wire Derby/Sheffield, and the London North Eastern (LNE) Route Plan at page 30 suggests for CP6 electrifying Sheffield/Doncaster. This would combine to allow electric operation of Cross Country between Edinburgh and Bristol. The LNW Route Plan (page 77) shows that the whole of the Birmingham/Plymouth route as a key passenger flow and the extant NR Electrification RUS shows Bromsgrove/Plymouth with a high BCR.

It is regrettable that DfT have chosen to “suggest” that the extant NR Electrification be ignored and effectively pre-empt the outcome of the new RUS. At the ORR workshop on 13/02/13 on the NR SBP, NR explained that their core value of a better railway for a better country included helping the regional economies across the country. The Far SW wants their economy to maximise its input to the national economy. The population of the far SW is heavily clustered around the rail spine and the railway is in a unique position to help the far SW maximise its economic input to the country. Rail connectivity to cities other than London is also important.

The synergy of using the wires between Taunton and Plymouth by both Cross Country and FGW trains to Birmingham and London respectively should be captured to maximise the Value for Money and the strengthen the business case for electrifying the whole Far South West..

The LTPRSS is a living document and will be updated by the next Network Rail Electrification RUS and other inputs as appropriate. Therefore this report should be used to inform the LTPRSS of the need for electric rolling stock for Cross Country between Edinburgh and Plymouth and between London and Plymouth via the Berks & Hants line.

Network Rail workshops on their Long Term Planning Process (LTPP) show that 2 or 3 trains per hour (tph) were justified to Exeter and Plymouth from London. These would be 100mph end to end speeds, requiring a journey time between London and Plymouth of 2 hours 15 minutes. It is regrettable that this is not reflected in the DfT suggestions for further electrification and that the Western Route Plan ignores further electrification whilst the LNE and LNW Route Plans list schemes for CP6.

Finally, current rail electrification plans for the Great Western main line from London to South Wales via Bristol will serve Exeter and Newton Abbot no better than it will other places at a similar distance from the new electrified line elsewhere. Only if electrification is extended throughout the peninsula will the Far SW realise its true benefits and will the “sparks effect” happen through a positive impact on the Far SW economy and connectivity. This would unleash economic growth through journey time improvements (see 1.3. above ref. *Meeting the Productivity Challenge*), in the way that is expected to occur in South Wales – an area with a smaller population and economy than the Far SW.

## **4. Gap Analysis: What Needs to be Done**

### **4.1. Overview**

There is a clear need for additional investment, to augment current national investment plans, in order to ensure that the SW economy is not damaged either by poor resilience of the railway, or insufficient train service capacity. This will ensure that the South West Spine - the economic powerhouse of the Far SW that is closely aligned with the railway - continues to perform. The Travelwatch South West *Greater Western or Lesser Western* report (September 2011) also highlights the clear need for investment if the economy is to continue to perform.

Given that the peninsula has only one strategic road link with the rest of the country, the reliance on rail resilience is even more crucial, and reliance on a single line is far from satisfactory - as the Exeter-Waterloo line has virtually no spare track capacity for use as a diversionary route.

Below are listed the minimum measures required to improve resilience and avoid choking off growth through a lack of capacity:

### **4.2. Specific Resilience**

#### **4.2.1. Cowley Bridge:**

The work to restore resilience and reliability needs to include both:

- (i) **mitigation:** working with the Environment Agency and other agencies, to identify the scope for reducing flooding occurrences;

(ii) **adaptation**: to identify if alternative means of securing the track can be applied at Cowley Bridge to avoid the need to replace ballast each time the railway floods, so that the railway can be running again as soon as flood levels subside.

#### 4.2.2. Diversionary Route

The line between Exeter and London Waterloo has always been the diversionary route for hourly Great Western services to Paddington via Yeovil Junction and Castle Cary in the event of disruption on the main line. However the introduction in 2009 of the hourly South West Trains (SWT) service has prevented this, as the line is now working almost to capacity with insufficient paths available for an hourly Paddington train in each direction between Exeter and Yeovil Junction.

This facility needs to be restored to provide this much needed protection from disruption events affecting the peninsula. To this end, additional passing loops on the Exeter/ Salisbury line need to be reinstated to facilitate the current SWT hourly timetable pattern while allowing for an hourly Great Western service in each direction between Exeter and Yeovil Junction when required.

#### 4.2.3. Dawlish/ Teignmouth Seawall

Disruption on this section is mainly due to two causes. In relation to cliff falls, it is understood that more effective options raised in the past may now need to be considered. In relation to the regular disruption by the sea, repeated disruption is caused by wave action, rather than by the sea level height itself which even at the highest tides remains well below track level.

Given the great cost of building a diversionary route, whilst there have been many studies on different aspects of the seawall problems, these have tended not to consider options away from the vicinity of the track alignment. A detailed and comprehensive assessment of all options to minimise disruption due to wave action therefore needs to be commissioned. This should include considering whether wave breakers or breakwaters can be effective - and unobtrusive in relation to the coastal landscape, recreation and holiday trade and avoid negative impacts on longshore drift of coastal sediment in relation to beaches and the environmentally sensitive Dawlish Warren, and whether these can also be beneficial in providing greater protection to properties from coastal flooding, and from coastal erosion generally.

Above all, a clear aim of this work should be an acceptance that, if the seawall can be made significantly more resilient than it is now, then the necessary work to do this is funded and carried out.

#### 4.2.4. Other Repeat Locations for Disruption

If we are serious about managing the risks to the SW peninsula from rail network disruption, there needs to be an audit of the entire Far SW rail network including the Berks & Hants line and Somerset Levels, to identify the frequency of occurrence of all disruption events in the last twenty years.

This audit should then inform an assessment of how Network Rail proposes to mitigate against potential disruptions in future at all locations where repeated disruption is possible. This would form part of its general duty to maintain the railway as efficiently and effectively as possible.

### **4.3. Catering for Passenger Growth**

#### 4.3.1. The Need for Greater Investment

The effect on the economy and on long term franchise costs of reaching capacity saturation will be substantial. Many lines are already at times overcrowded and this is becoming increasingly prevalent as the consistent trend of growth in passenger numbers continues unabated.

Major growth areas in the Far SW are in danger of suffering from a lack of rail investment to serve these areas, where increased frequencies are required to provide an effective service for the needs of new development. Train services should be a prominent part of the transport infrastructure serving these new communities and employment areas. It is hoped that this vision will be shared by Government in drawing up revised investment plans for the peninsula.

#### 4.3.2. Meeting Rolling Stock Needs

Growth on Paddington services is pointing to the need for increasing the frequency of train services which in turn will require additional trains. The SW peninsula branch lines and local services similarly have a need to cope with greater passenger numbers that can often only be met through longer trains, or in some cases, more trains to provide an increased service frequency.

While some of these capacity improvements will be needed in the next few years, the lack of diesel rolling stock, and continued uncertainty over whether current Thames Turbo Diesel Multiple units (DMUs) will cascade to the Far SW, points to a need for Government to identify urgently how the growing Far SW capacity requirements of the next few years will be met.

It is also becoming increasingly clear that the timing of the Thames Turbo cascades post-electrification will be too late to meet capacity problems that are forecast before then - and that alternative plans to increase capacity are therefore urgently needed irrespective of the cascade programme. And by the time these units arrive in the Far SW they will be relatively old, so they may improve capacity with only limited improvements to quality.

Investment to ensure gauge clearance for any new trains in the SW peninsula is also required. This does not appear to feature in current Network Rail investment plans for the coming years.

#### 4.3.3. Improved Line Capacity

Increased frequencies will also require additional line capacity on some lines, e.g. additional passing loops and resignalling, and/ or passive provision made for this in resignalling plans ahead of implementation.

### **4.4 Faster Journey Times and Electrification**

#### 4.4.1. Faster Main Line Journey Times

The need for improved connectivity through improving the relatively slow journey times between the Far SW and London should be able to be rectified by a relatively small amount of investment compared to that committed to rail infrastructure improvements elsewhere in the country. In particular this can be achieved by track and signalling improvements on the main line between Reading, Taunton, Exeter, Plymouth and Penzance, and by improved main line rolling stock with greater acceleration and automatic doors.

#### 4.4.2 Main Line Electrification

Under current plans, the London-Penzance Line will be the only main line left out of the electrification programme. In the longer term it is hoped that Government is receptive to the business case for expanding electrification across the SW peninsula, by including it in its plans for the next stage of electrification after London-South Wales.

### **5. Conclusion**

The weather-related disruption events of late 2012 provided a much needed reminder of the dependence of the Far SW economy on the railway, and on how these events, that have happened before, have a great adverse effect on the peninsula economy and population.

It is hard not to conclude that there is a link between under-investment in the Far SW rail network and under-forecasting of passenger demand, and that this now needs to be redressed as a matter of high priority. Action is required both to redress current under-forecasting, and to work with partner Councils to provide new growth projections to avoid this misalignment continuing into the future.

The rail network should be regarded as the SW peninsula's spine, and be a key lever to realise its economic potential. An effective railway will significantly improve the economic resilience and performance of the Far SW. It is hoped that Government recognises that we need to avoid, at all costs:

- (a) repeated line closures due to lack of maintenance or lack of investment in improving network resilience,
- (b) lack of sufficient passenger carrying capacity that will choke off passenger journey growth.

It is critical that these risks are therefore reflected in investment plans as a matter of priority, together with a commitment to ensuring that sufficient funding is in place, as a matter of urgency, with a view to:

- significantly improve resilience at locations where there has been repeated weather-related disruption, and
- provide additional rolling stock and infrastructure improvements needed to cater for likely future growth and unleash the region's massive untapped economic potential.

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