Peninsula Rail Task Force response to the call for evidence from the National Infrastructure Commission.

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Submitted on behalf of the Peninsula Rail Task Force.
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1. Introduction

The Peninsula Rail Task Force (PRTF) welcomes the opportunity to respond to the National Infrastructure Commission (NIC) call for evidence for its national infrastructure assessment. PRTF also welcomes the strategic overview that the commission intends to apply across the whole of the United Kingdom.

The PRTF published its 20 year blueprint for rail in the South West [1] in November 2016, as a result of a government request to identify what was needed for the region. The PRTF has spent the last 14 months working with the rail industry and the Department for Transport examining and identifying the potential options available to improve resilience, journey times and capacity on our railways to/from and within the South West. This report has identified that improvements to the South West rail infrastructure have the opportunity to contribute to UK plc through potential transport benefits of £1.8bn and wider economic benefits of £7.2bn.

We have suffered from severe weather incidents over the last few years that have highlighted the poor resilience of our rail infrastructure, culminating in the events of flooding across the Somerset levels and the collapse of the cliffs and the seawall at Dawlish, closing large sections of our strategic rail network for several months. Businesses lost confidence, operational costs escalated: an estimated loss of £1.2bn[2] impacted the economy in Devon and Cornwall for period the Dawlish line was closed.

Network Rail warns that a line closure of between 2 and 7 days every 6 months and significant weeks of, closure to the mainline at Dawlish will occur every 25 years today rising to every 4 years by 2065,[3] if no decisive action is taken to address the problems. In addition, we suffer from significant levels of service disruption as a result of trains being used that cannot operate past the seawall at times of high winds and waves, further reducing reliability.

The ability to use diversionary routes east of Exeter is limited due to capacity constraints and has a major impact on established local services when London Paddington services are diverted via this route. Travelling west, once you pass Exeter there is no diversionary route available, with a single mainline to Penzance at an average speed of 60mph. It is acknowledged that potential exists to reopen the route between Exeter and Plymouth via Okehampton and create an additional route to that via Dawlish, however if this is a true alternative it would need to be of sufficient speed and capacity to meet the needs of the region, which would include direct access at Exeter and Plymouth to remove the need to change ends and the subsequent time penalties. In addition, there is also the option to provide an additional direct route between Exeter and Newton Abbot that provides an alternative to the seawall route.

The Exeter to Waterloo line is currently underutilised, but it is key to local transport and growth plans around Exeter and serves as an important second strategic link between the peninsula and London. It is constrained by long, single track sections which limit both the number and speed of trains, not just in the peninsula but also in neighbouring authorities of Dorset and Wiltshire.

The connection to Bristol and the Midlands is a critical artery to support regional connectivity, housing growth and the development of key infrastructure, e.g. Hinkley C.

[1] Within this response the reference to the South West applies to the Peninsula, incorporating, Cornwall, Devon, Plymouth, Torbay and Somerset
[2] Holding the Line? Report for the Devon Maritime Forum (2015)
[3] Severe closure of 1 week or more Network rail

The South West is a peninsula, has an overall population of 2.2 million with an equally significant economy of £4.2bn GVA, but is characterised by dispersed communities. As GVA drops 6% for every 100 miles from London[4], the further down the peninsula the greater the challenges become. Ensuring shorter journey times, with more opportunities to connect at a local, regional and national level is critical.
Transport spending in the South West peninsula has been an average of £35, per head, compared with an average of £97 per head across the UK and it is plain to see that we are trailing behind other areas in investment, a situation that will only get worse as a result of current and planned rail infrastructure projects like; HS2 and Crossrail.

Our trains are some of the oldest in the UK, with an average age of 32 years old and currently unable to meet the regulatory requirements from 2020.

Rail growth over the last 21 years has reached 128%, and continues to grow. It is clear that both network and train capacity will not be sufficient in the future.

In a society that values the ability to work and communicate on the move, the ability to use Wi-Fi and mobile phones whilst travelling across the rail network is at best patchy and at worst unusable.

Our response to this call for evidence is focused around the rail infrastructure requirements of the South West to achieve the benefits identified above.

2. Resilience

The South West peninsula is served by a single mainline west of Exeter and during 2014 was cut off from the rest of the UK through flooding on the Somerset levels, the collapse of the seawall at Dawlish and the landslip between Dawlish and Teignmouth. It is estimated that these events cost the South West peninsula's economy over £1.2bn. This is a known problem having occurred many times since the line was opened in May 1846, the first of these occasions being in October of the same year as opening.[5] The spectacular failure of the sea wall at Dawlish followed significant disruption in 2012 through flooding at Cowley Bridge outside Exeter, that washed the railway away resulting in 15 days closure, a similar closure in 2014, and this was repeated in November 2016.

The peninsula geography creates over dependency on the reliability of these single rail routes – and limits connectivity. For example, over 100,000 people in north Cornwall and north west Devon effectively have no access to the rail network.

This line is likely to see greater disruption in the future due to the changes predicted to sea levels in the future. Research carried out by Dr David Dawson, Leeds University, predicts that by 2040 the line will be affected by sea levels by up to 40 days a year and by 2060 up to 63 days a year (Fig 1&2), which will cost the rail industry in excess of £15m by 2060.

[4] PRTF Productivity and Wider Economic Impact Study April (2015)

[5] Dawson et al 2015- Summary of findings from a long-term study of the Dawlish mainline, southwest UK

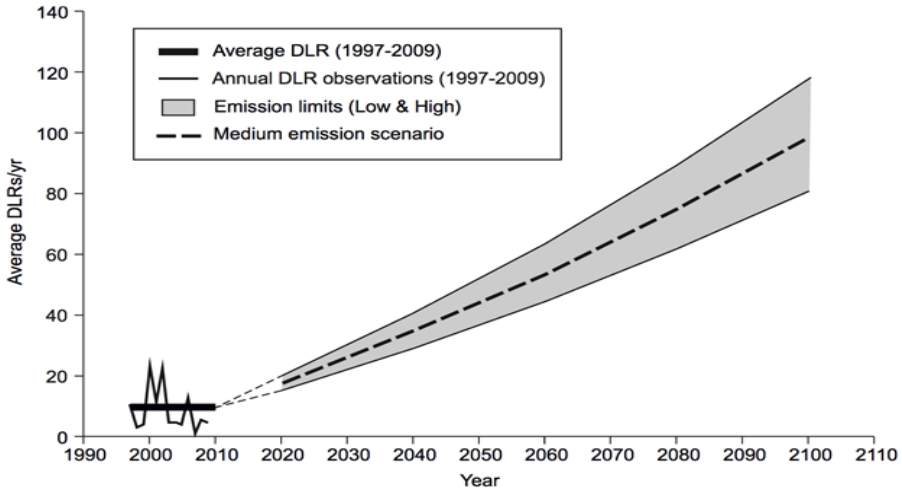

Fig 1: Projections of average number of days with line restrictions (DLRs) at Dawlish as a result of extrapolation empirical trends of sea-level rise and overtopping

Year	Sea-level rise (cm)*	Average days with line restrictions	Increase in DLRs (%)	Annual restriction (%)
1997-2009	-	9.6	-	3
High Emissions				
2020	6.8	19	99	5
2040	22.0	40	320	11
2060	39.3	63	571	17
2080	58.9	90	856	25
2100	80.6	120	1170	33
H++ Scenario				
-	190	269	2732	74

Fig 2: Predicted sea-level rise and estimated days with line restrictions for the 21st century.

The resilience of the rail lines into and out of the South West peninsula cannot just be delivered by Network Rail in isolation and requires a multi-agency approach to deal with the long term problems to drive sustainable improvements based on climate change.

The main rail line to the South West peninsula must be a resilient and reliable connection, protecting our economy, coast and communities with a resilient sea wall and stable cliffs. This does not just mean the seawall and cliffs infrastructure, but also providing an operationally robust service.

Equally other routes that serve the region should be made resilient to prevent further disruption across the Somerset levels and through Cowley Bridge, along with suitable and sufficient resilience along the diversionary route between Exeter and Castle Cary (via Yeovil) to allow London services to operate on a regular timetable when diverted, without compromising local connectivity.

The flooding events on the Somerset levels were identified by the Rail Industry to have cost in the region of £5.15m for the winter of 2011/12 based on Schedule 8 delay compensation payments. In addition, over £3m was spent on remedial works. The direct costs to NR of the 2013/14 events were estimated at £4m of immediate repairs and £13m in compensation costs.

It was estimated that the direct cost of disruption to the Somerset economy was in the region of £92m and the indirect impact, as measured by GVA, was approximately £13m. Of this

between £13m and £21m was attributed to the direct effects of disruption to the railway network. Approximately 22% of the direct impacts of the flooding of the Somerset Levels and Moors were due to the effect on the rail network

A great deal of work has been undertaken since the flooding of 2012 and the subsequent flooding in 2013/14. The works which have been undertaken by the Somerset Rivers Authority and the Environment Agency across the Somerset Levels and Moors should have reduced the impact of such an event on the railway and reduce the duration of major disruption in the future.

2.1. The PRTF has identified a number of key infrastructure schemes that need to be taken forward to deliver the resilience of the rail line to the South West; these include:

- Resilience of the seawall at Dawlish
- Resilience of the cliffs between Teignmouth and Newton Abbot
- Flood resilience works at Cowley Bridge, Hele and Bradninch and on the Somerset levels
- Trains capable of operating along the seawall during times of high tide
- Suitable and sufficient diversionary routes that are able to allow a suitable alternative service to be operated

3. Journey time

The need to reduce journey times to and from London and other key regional cities like Bristol is critical to the economy of the South West peninsula, and as research demonstrates for every 100 minutes journey time from London productivity decreases by 6%.[6]

Investing in journey time improvements will open up opportunities for the South West peninsula to improve connectivity and productivity, improve our contribution to the UK economy and unlock growth. Improved journey times and increased connectivity improves access to education, housing, employment, leisure opportunities and increases social inclusion, all vital to any thriving economy. More frequent connections to London, Bristol and the Midlands will boost productivity. Vital international connections via Heathrow, Manchester, Bristol, Southampton and Gatwick airports will make business more competitive. Improved access to Heathrow through the Western rail link is welcome.

Our average speed to and from London is only 69mph compared to 90mph on the East and West Coast mainlines and over 50% of our businesses rated faster journey times as a top priority.[7]

It should also be recognised that the South West peninsula is far behind other parts of the UK in relation to journey times and earliest arrivals from London, as demonstrated in figure 3;

[6] PRTF Productivity and Wider Economic Impact Study April (2015)

[7] PRTF business survey June 2016

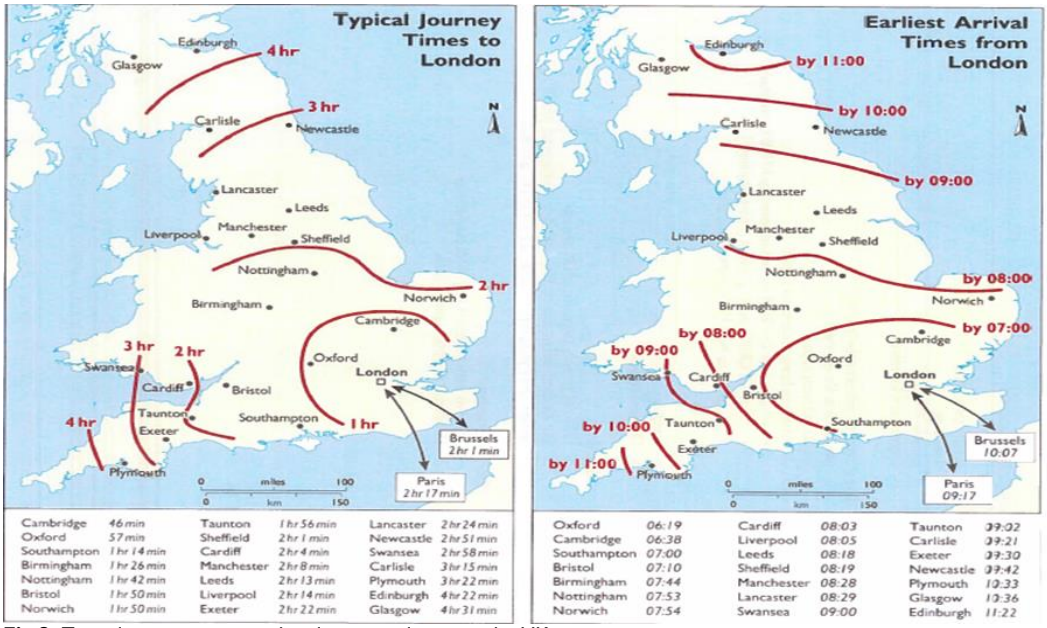

Fig 3. Typical journey times and earliest arrivals across the UK

Access to the rail network is a key element of success for a distributed economy like the South West with many small towns and businesses. Local train services provide access to the inter-city network in addition to linking towns with the major economic centres including Plymouth, Exeter and Bristol. In 2014/15 there were 25m journeys to and from the South West peninsula by rail, a rise of 4.2% over 2013/14, and many of which were to locations other than London.[8]

Through better connectivity and faster journeys there is opportunity and the environment to enable a modal shift to rail, relieving congestion on our roads and improving efficiency and certainty for business. This modal shift also reduces pollution, improves air quality and is an opportunity to maximise the efficient use of the UK's assets. Improving connectivity between urban and rural parts of the South West peninsula also opens up scope for growth with broader travel to work areas, increased tourism opportunities and improved community links.

3.1.

The PRTF identified a number of key schemes that need to be taken forward to deliver the journey time improvements of the rail line to the South West; these include:

- Increased frequency of long distance trains
- Electrification to Bedwyn and line speed improvements between Newbury and Westbury
- A number of line speed improvement schemes between Reading and Newton Abbot delivering 14 minutes journey time saving by 2029
- Further line speed improvements between Reading and Penzance that will deliver a further 19 minutes journey time improvements

[8] Regional Rail Usage (passenger Journeys) 2014-15 Annual Statistical Release January 2016

4. Capacity and Comfort

Research has shown that the Devon and Cornwall mainline has seen a 128% growth in passenger journeys over the last 21 years with comparable levels of passenger journey growth as other mainlines in the UK, without the level of investment enjoyed by those other lines. It can therefore be surmised that a significant level of untapped demand could be released if investment and improvements are forthcoming to this region. The graph in Figure 4 below demonstrates the increase in passenger journeys.

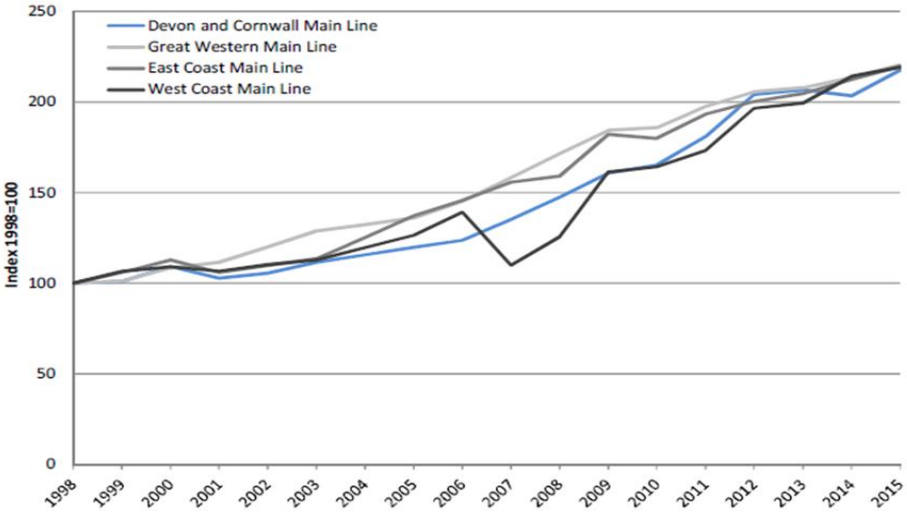

Fig 4; Indexed number of passenger journeys on various mainlines in comparison to the Devon and Cornwall Main Line[9]

Growth within the region has consistently outstripped industry forecasts, with average growth of 5.7% over the last 7 years, compared with the growth rates being used by Network Rail for planning capacity of between 2% and 3.2%[10]. This anomaly means that capacity will not be planned and delivered early enough to meet predicted demand. An example of this variation for 2014-15 saw passenger numbers rise by 8% within Devon and 13.1% to Torbay.[11] Our previous study into the growth being seen in the South West peninsula identified that industry forecasts for growth in 2019 were exceeded in 2012.[12]

The rail traveller of today expects to be able to access mobile and Wi-Fi services as the norm, with the expectation that it will be available wherever we travel. This is key for business in being able to make travel productive, for leisure and tourism to have access to online or streaming media during travel and for people within the peninsula to carry on with their daily lives.

We recognise that the Government is rolling out free Wi-Fi through the franchise process, but that is only half of the picture. There is no clear single party responsible for delivery of wi-fi and mobile connectivity on the railway system, leading to varied and sporadic implementation. Having the equipment on trains makes no difference if users cannot access or rely the service as a result of the poor mobile phone signal strength in areas that the rail lines pass through, a national rail standard on wi-fi and connectivity would help in establishing the minimum service that should be delivered. This is a particular problem in rural areas such as Wiltshire, Somerset, Devon and Cornwall where topography creates an additional challenge alongside a sparse population. Voice and data signals are affected.

[9] Dawlish Additional Line study PRTF 2016
[10] Great Western RUS (2010), across Cornwall between 2013 and 2043 in the Western Route Study (2015
[11] Regional rail usage ORR 2014-2015
[12] Spine Report PRTF 2013

Free Wi-Fi on trains is ranked as the 4th highest priority for business in the top ten national priorities for passenger improvements[13]

The benefits of electrification have long been recognised on the railways, probably more so in Europe than in the UK, which include, greater acceleration and faster journey times, lower train failure rates, improved efficiency and reduced noise pollution amongst others. Cornwall County Council and Plymouth City Council commissioned a further study in 2012, refreshed in 2013 on the benefits of electrification to the region which identified that at least £1bn would be saved in operational expenditure over 60 years through electrification in the South West. The introduction of bi mode trains also provides the opportunity to undertake small areas of electrification where there will be a significant benefit to capacity and speed i.e. the Devon Banks.

4.1.

The PRTF identified a number of key schemes that need to be taken forward to deliver the capacity and comfort of the rail line to the South West; these include:

- Improved WI-FI and mobile connectivity, with a clear identification of who is responsible in leading on wi-fi and mobile connectivity along the rail routes
- New line between Exeter and Newton Abbot to increase capacity and allow operation when the route via Dawlish is closed.
- Reopening of the rail route between Plymouth and Exeter via Okehampton
- A series of improvements along the line between Exeter and Plymouth to improve journey times
- Sections of electrification to improve the performance of new bi-mode trains
- Additional infrastructure between the Exeter to Waterloo line to increase capacity

5. Conclusions

There is a widespread consensus across the industry, government and political leadership that the South West peninsula has suffered from under-investment in the railway network, with a resultant loss of quality, reliability and contribution to the peninsula economy.
Much evidence already exists on the contribution to the economy that a reliable and resilient network with quality services and better connectivity will bring. It would be prudent at the very least for investment decisions to be taken in that overall economic context. We have set this out in our 20 year plan which was delivered to Government in November 2016.
The PRTF published its 20 year plan 'Closing the gap' in November 2016, setting out the improvements being sought for the South west peninsula. The 20 year plan outlines these improvements in three phases to 2019, to 2029 and then 2030+, which follow the 3 point plan.

Immediate Priorities to 2019:

- **Invest £284m in resilience**, including commencing the securing of the main rail line through Dawlish and Teignmouth
- **Completion** of committed flood relief schemes
- **Introduce trains** capable of operating along the seawall in all weathers

[13] Transport Focus Rail Priorities for improvement 2014

- **Invest £2.5m** in GRIP 3 options for the diversionary route East of Exeter
- **Invest £22m** in GRIP 3 options for reducing journey times
- **Increase frequency** to 2 direct trains an hour from Plymouth to London in the new franchise, reducing journey times by up to 10 minutes, whilst at least maintaining existing services
- **Work with the rail industry** to maximise the benefits of the new trains from Dec 2018 and **invest £25m** to make our journeys more productive through on board travelling office, media and mobile/Wi-Fi connectivity.

Medium Term Priorities to 2029:

- **Invest £301m** to complete Dawlish seawall and cliffs resilience, the diversionary route between Exeter and Castle Cary and estuary flood protection
- **Invest £1.5bn** to reduce journey times by up to 14 minutes to Penzance, through infrastructure improvements, partial electrification and franchise renewals
- **Invest £150m** reducing journey times and increasing core capacity on the Exeter – Waterloo line
- **Invest £358m** to improve capacity and comfort through new rolling stock, infrastructure enhancements and phased opening of the Northern Route
- Increase frequency to 2 trains an hour west of Exeter to Bristol and the Midlands

Much has also been made of the heroic efforts of the rail industry to restore services at Dawlish in 2014, however we would like to see a more proactive approach to maintaining infrastructure and development of improvement schemes before failure rather than as a result of. We recognise that this may involve more than one entity and this is where we see a benefit for the route having a strategic infrastructure plan, that maps out and funds a clear progression in upgrades and long term improvements. Key to achieving this is the DfT acknowledging that the infrastructure benefits will deliver real term economic and customer benefits and undertaking the actual work. Commitments have been made, yet remain unfulfilled so we are keen to see deliver.

The PRTF has undertaken a review into the needs and options available to improve the rail service to the South West. It is clear that there is a need for strategically important rail corridors to be considered as a complete entity rather than a series of individual areas or events to ensure that the strategic benefits are realised. The current arrangements where Network Rail considers future capacity, the DfT sets service levels and the operators look to reward stakeholders, appears to miss the point of strategic infrastructure to meet and service the customer and the economic needs of the areas that they serve.
Clearly the ability of Network Rail to undertake a route improvement has been called into question through current difficulties with key projects. The PRTF would like to see the rail route to the South West identified as strategic infrastructure and the options to build a resilient, faster railway explored through different delivery mechanisms, i.e. design & build contracts, where private business takes some risk and deadlines are maintained.

This should include the use of small scale electrification schemes that allow the benefits of new bi mode trains to be realised.

Finally, the South West suffers from only one main line west of Exeter. Moreover, this situation is compounded as although limited diversionary routes are available they have been downgraded to such an extent they are unable to function effectively. In the event of their use, other services are affected, reducing their own capacity or extending the journey time to

unacceptable lengths. We would like to see diversionary routes upgraded to allow a full service to be operated effectively as needs dictate, allowing business and customer to continue to rely on the provision of services.