Portsmouth

the island city
1 - mainline rail connectivity

a proposal for change

Walter Menteth,
Portsmouth - The Island City papers
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Contents

THE VISION

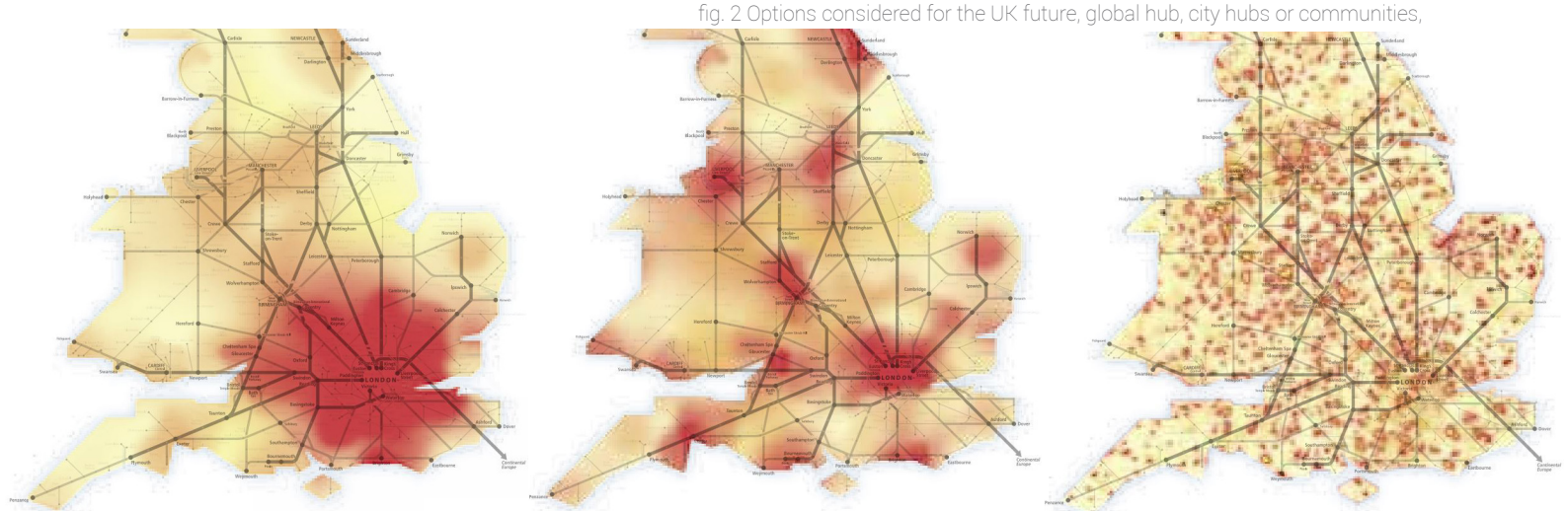
High speed south England (HSSE)

- sustainable regional growth

INFRASTRUCTURE / CONNECTIVITY/ ACCESSIBILITY
NETWORKING / CAPACITY /SPEED
PUBLIC TRANSPORT MODERNISATION

How the City of Portsmouth working with cities in the south of England has an opportunity to develop a future transportation strategy with government to improve connectivity, sustainability and economic benefit.

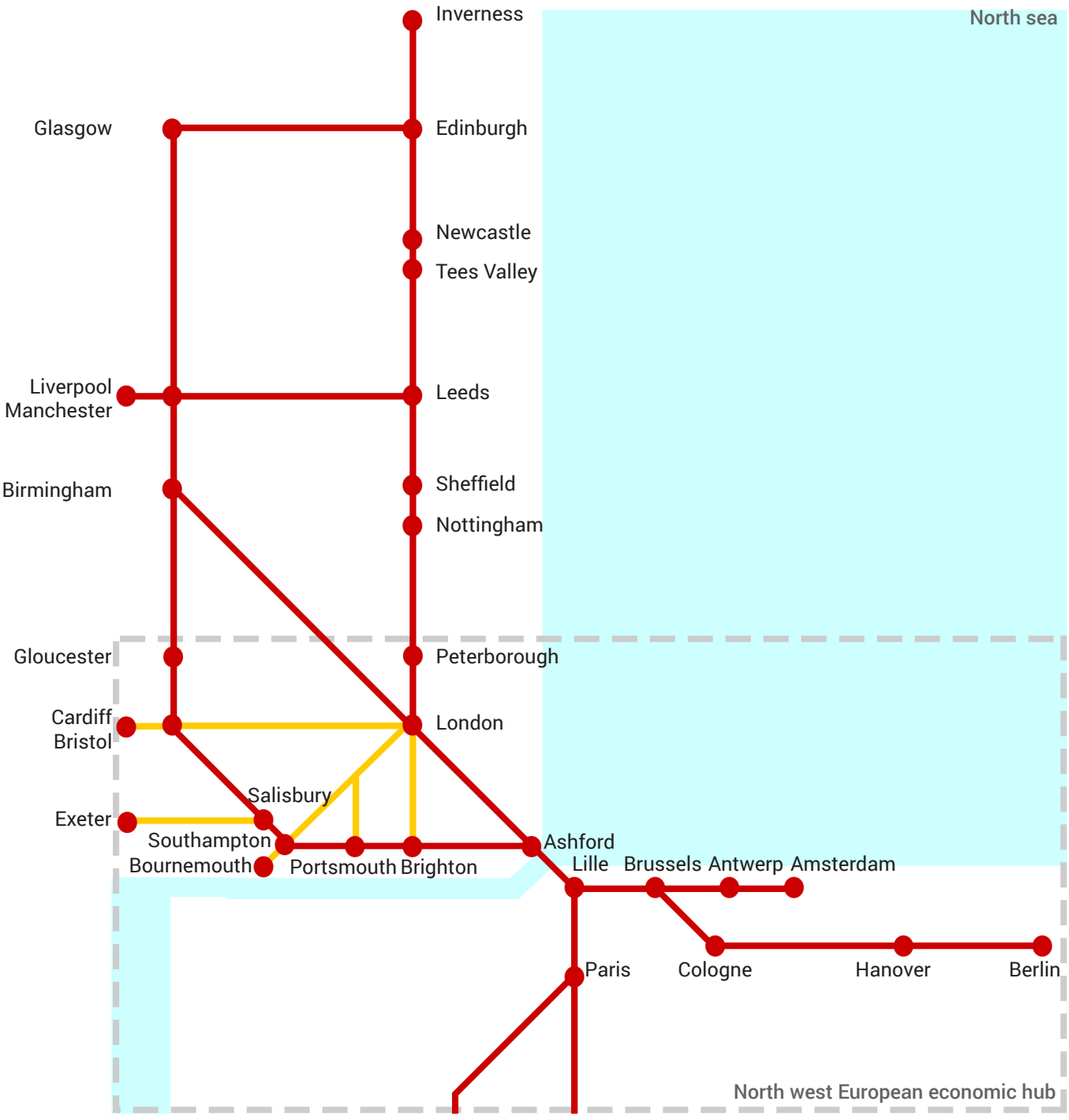
fig. 2 Options considered for the UK future, global hub, city hubs or communities,



"Transport investment is proven to support economic activity within and between our cities."

Andrew Carter, Centre for Cities

fig. 3. Proposed primary rail network
Red - High speed rail network >270 kph, Yellow - 200-230 kph network



1 Foreword

The area considered in this report (fig. 5 Areas A + B) has an urban population exceeding 6.142m, almost half of metropolitan London at 13.879m, with the south of this region alone contributing over 15% of the UK's GVA output. This compares to London at 22.6% and Scotland at 7.7%[1].

With significant UK rail network improvements, such as HS1, taking over 25 years in planning and development it is imperative that the South West and South Coast region promote forward planned rail development to secure the economic and environmental benefits of a high capacity, faster rail service, at local, regional and intercity level.

To be fit for a successful low-carbon economy there is a need for new and improved capacity in primary rail infrastructure. This makes long term planning necessary.

Despite high usage the UK's rail network investment has been lagging. This is a disadvantage in the move towards more sustainable mixed mode transport policies[2].

Since the mid-1990s, there has been sustained growth in rail passenger demand, at a rate far in excess of any other mode of transport. Demand is soaring (fig.7): over the 10 years to 2013, rail passenger journeys in Great Britain have increased by 57%[3].

By 2043 further growth of 40% is anticipated for the London and southern services yet, even before growth is considered, approximately 20% [4] additional capacity is required in the south east to deal with existing over crowding on services (fig.11).

Therefore, and as a minimum, 60% additional capacity is required by 2043.

Network Rail's 'Wessex Route study' in 2015, makes a valuable contribution to forward planning however it lacks the vision necessary to address these long term issues; let alone the pressing current need to further improve rail transportation to relieve roads and better serve the Solent region. In 2012 there were 12,000 trains run every day, 13,000 more per week than five years previously; but none of Network rails works programme will provide any increase in fast line capacity before 2043 (fig.11&12)[5] or other capacity increases sufficient to fulfill significant market share growth. On growth over the last 10 years alone, this might be considered inadequate.

A significant issue with rail planning is that to achieve investment, works require core, high and low scenario analysis which is typically developed on demand projections precedented on existing and established markets. This is known as the 'own-cost elasticity model'. Largely this is modeled on projections of existing determinable patterns of usage and behavior. This methodology reinforces knowns, and is not necessarily well suited to the need for disruptive or visionary change.

Historically the rail network has been responsible for many towns being established and growing where none previously existed. Projections then could not forecast this expansion, or the subsequent decline, in the use of the railways in the mid C20th, when the car was invented.

Today, to transform into a low carbon economy and build resilience against climate change, we urgently need to plan forward investment in new rail infrastructure and significantly grow market share.

Many recent major UK rail proposals have to date been driven by the economies of London and the northern cities; with an absence of due consideration for the needs of the south west and south coast.

The needs of the south and south west within forward proposals needs to be balanced. A centralising and northern policy bias may have long term detrimental impacts on established southern settlements; and the Solent region may be at risk of becoming a poor satellite of London.

These outline proposals for future rail infrastructure in the Solent region aim to contribute to expanding this debate, anticipating demand growth.

Proposals for light rail, water, bus, bike and pedestrian connectivity within the local areas of Portsmouth, Gosport and Havant are reviewed separately.

2 Summary proposals

The aspirations to deliver a low carbon economy call for rail service improvements to be further promoted and delivered; and to think ahead beyond the existing limited scope and ambition of Network Rail and existing franchise holders.

Implement the report proposals to improve line speed and capacity to achieve high speed, safe, comfortable, punctual, frequent and cost effective journeys.

Intercity level

General items capable of being delivered in the short to medium term on all services radiating from London include:

- Install in-cab signaling to all routes to Portsmouth.
- Promote and support capacity building and speed improvements including new track, extending from central London out to Surbiton.
- Upgrade to overhead AC electrification
- Use the maximum number of carriages.
- Upgrade stations where necessary for longer trains to increase passenger capacity.

To improve distributive capacity in London, as part of the Crossrail 2 programme, it is proposed that:

- Clapham Junction station be rebuilt to increase passenger, station and track capacity, with tunnel access or flyover connection of the London overground to the new hub allowing direct through running,
- The new Northern line from Nine Elms be extended through to Clapham junction and the Northern lines new western branch train frequencies and capacity to be upgraded to be equivalent to the Victoria line.
- Support the extension of Crossrail 2 to Surbiton with new track capacity as a priority

The Solent to Europe

To enhance access the European markets and serve the future sustainable development of the south coast urbanisation

- A new high speed 174 km high speed rail line from Eastleigh to Ashford with a designated track speed of 270-300 kph.
- Stations are proposed between Eastleigh and Ashford at: Waterlooville (Portsmouth), Brighton and Eastbourne/Hastings. It is also proposed there be a direct channel tunnel connection.

The Solent to Bristol

To serve future sustainable development of south west UK Cities

- A new high speed 107 km rail line with a designated track speed of 270-300 kph should be constructed from Eastleigh to Bristol, bypassing Romsey, Warminster Trowbridge and Bath with a new Salisbury interchange, to connect with the London Exeter service, as part of the regional arc.

Portsmouth London Direct

Summary specific improvements to the direct Portsmouth London line connection include:

- Engineering works to the Godalming tunnel,
- Relaying track from Petersfield south,
- Reducing the number of halts,
- Providing additional north bound capacity with new length of track from Godalming via Cobham, to bypass both Guildford and Woking.
- Laying supplementary track and widening stations to provide more and better passing places.

Southampton London Direct

Summary specific improvements to the direct Southampton London line improve speed, increase capacity (33% over existing) and reduce the direct travel distance; by whole or part reuse of the historic Watercress Line infrastructure. This includes:

- Reconnecting and upgrading the Alton line from the Crompton Twyford area through to Alresford and on to Woking via Aldershot. Providing an additional minimum of 2 tracks bypassing Winchester.
- Widening 7km of line to provide 4 rail tracks from Twyford to Eastleigh
- Track realignment at Farnham/Aldershot, to improve speed.

Or by re-use of the former route alignment

- Re-instating 2 tracks from Kings Worthy to Alresford on the former rail beds along the Itchen valley with onward connection through to Aldershot and Woking.

Portsmouth Southampton High Speed Direct

Summary specific improvements to the direct Portsmouth Southampton London line connection to improve speed and capacity include:

- Upgrading the existing line between Knowle and Eastleigh be upgraded to min. twin high speed tracks.
- New 2 track high speed line from north west of Porchester connecting to Knowle junction.
- Knowle junction be configured to allow future connection of east and west bound traffic from the Meon Valley railway (see following)

The Meon Valley Rail

To increase future regional capacity (33% above existing) towards London and provide new suburban services for the Solent region it is proposed that

- The historic Meon Valley Railway be further investigated.
- Detailed investigation and analysis of the line be commissioned to explore its potential for increasing capacity to London, and/or as a suburban commuting service for the Solent cities.
- All relevant authorities work to secure future opportunity of the route of the Meon Valley Railway; by securing land rights and precluding further development on the line of the route and through forward policy planning;
- A programme of remediating maintenance against further decay be implemented.

"we've lost sight of a bigger discussion: what is the purpose of the railway in the first place? What's it for? What role does it play in national life, in our economy, in our national identity? .... towards a railway fit for a successful low-carbon economy – but the debate about the railway remains caught up in day-to-day issues"

Tomorrow's railway. Forum for the future 2012

Regional level

Administrative

Integration of transport service provision across the City region needs to be addressed. The Solent region should work further towards:

- Development of an integrated regional transport authority having meaningful capabilities and capacity, as part of the developing 'Solent City' region or towards a Solent regional authority. In transport planning an authority combining seven Solent councils into a metropolitan region would likely have enhanced capacity to affect meaningful change in the longer term.

Franchises and integration

There are currently a range of different rail operation franchisers delivering a range of services having with variuous charges, systems, terms and levels of provision etc.

- To improve uptake of mixed modal transportation, improve efficiency and effectiveness, and reduce reliance on vehicle traffic requires that the public transport system be better integrated.
- In all franchise contracts agreed planning objectives should be moved forward further and faster.
- A public transport pricing structure should be agreed across the region. This might best be by a twin centred zonal system, similar to the London ring zones, but radiating out from two centres based on Portsmouth island and central Southampton. Viability might best be determined by detailed option appraising.

fig. 4 Waterloo station ticket barriers.

Public Utility

Public comprehension of the service provision across the region is not supported by readily available information. For example a wide variety of transport maps are available and determination of schedules and prices for single or onward journeys remains an issue.

Portsmouth has recently improved the maps of its services but they lack integration with neighbouring authorities.

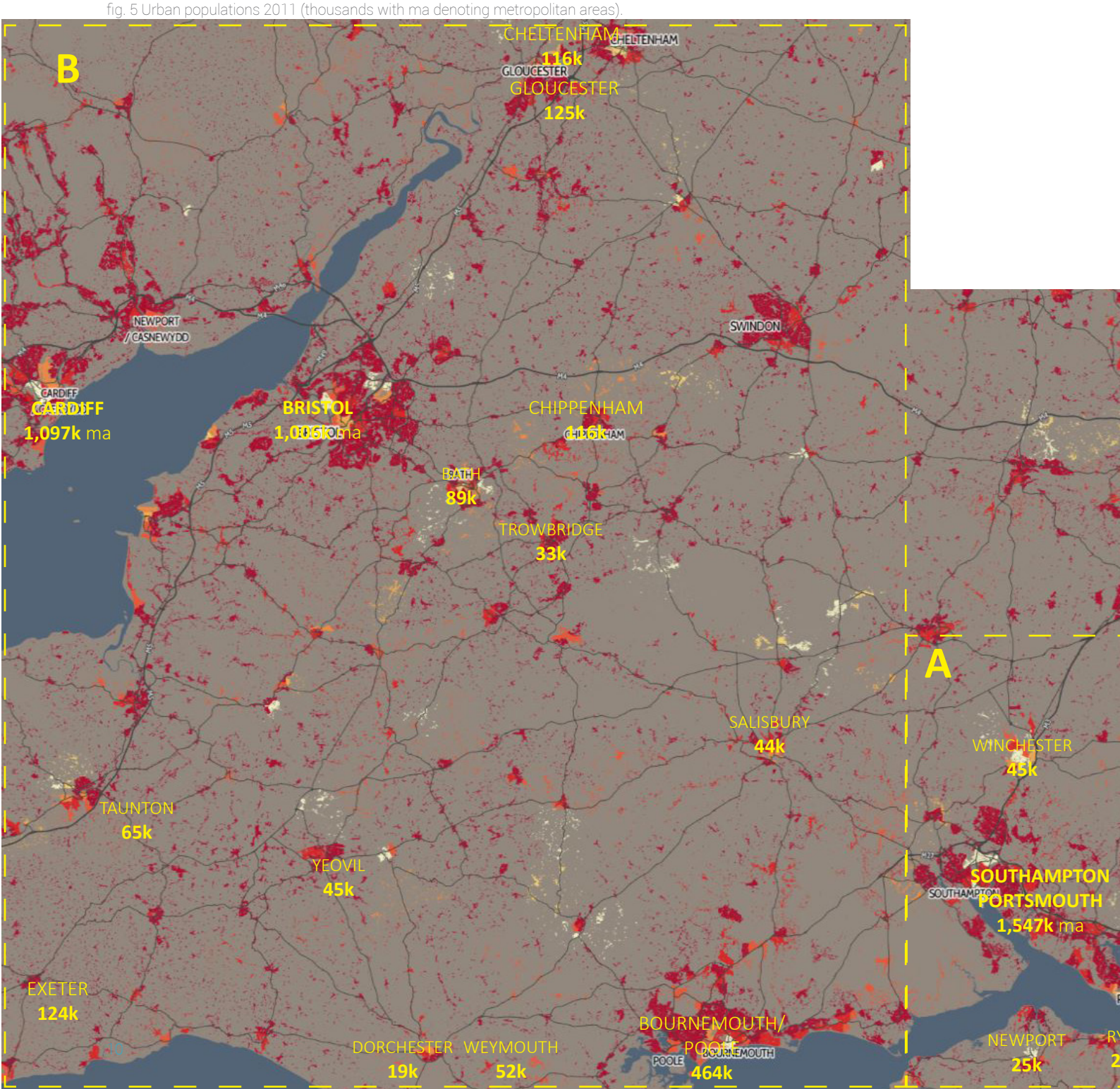
- A web based Solent 'Journey Finder' service wpuld address these issues.
- Similar to those published by TfL , there should be an integrated Solent region map showing the primary public transport arteries. This should communicate the zone based charging structure simply and include all water based services .

To enhance economic activity, infrastructure contributions, and service uptake; and to relieve congestion and develop more sustainable transportation forward:

- A Solent area PTAL (Public Transport accessibility level) mapping should be commissioned, embedded in policy and used to give incentive to development densification rationally around public transportation hubs. This simple mapping approach has been successfully adopted in London (PTAL) and Manchester (GMAL) to support sustainable development and the funding of infrastructure.
- Based on PTAL evaluations, a sequential roll out of car free development should be embedded early within policy within all central urban and high PTAL rated areas. This principle should be upheld as a developmental incentive delivering infrastructure levies and closely linked to forward transport investment programmes.
- A Solent area 'Oyster/Bank Card' style electronic public transport payment system be implemented. The capability to operate this by a specified deadline should be embedded in all future transport franchise contracts.
- Payment should allow single price payment for onward journeys using mixed modes of public transport by bus, rail, light rail, water and bike etc, to allow mixed modal integrated public transport use.
- Lower rates outside peak hours might be charged to encourage distributions of journeys through the day and reduce peak capacity issues,
- Provision should also be considered for fare reductions for those having bikes, prams or wheelchairs, and those purchasing for a longer commitment, such as season tickets; to provide an incentive that can reduce car dependence in specific locations, such as Portsmouth/Portsea island and/or central Southampton,

Indicative urban populations	
Area A	3,283,425
Area B	2,858,682
Total area A + B	6,142,107
London	13,879,757 ma.

fig. 5 Urban populations 2011 (thousands with ma denoting metropolitan areas).



3 The planning context

This paper envisages regeneration across an arc of southern England where the capacity and pressure on London is relieved through growth across the existing urban centres of the wider region (fig.3). The ring comprises the southern urban settlements and those arcing to the north through Bristol extending towards Birmingham in the north (fig.5 Areas A +B).

The proposal investigates opportunities for Portsmouth and the Solent region working in conjunction with other regional interests, to contribute towards developing a long term national rail infrastructure strategy across this region to contribute towards enhancing regional opportunities.

Regional economic distributions across the UK are reflecting significant imbalances. London has grown significantly, and in national GDP it has become economically predominant. It is diverging further from cities such as Portsmouth and Southampton, many of the smaller south coast towns such as Hastings, Shoreham, Havant, or locations such as the Isle of Wight. In these locations growth has been constrained and is lagging.

Increasingly, in terms of economic growth, education and health, London no longer a balanced model for comparison..

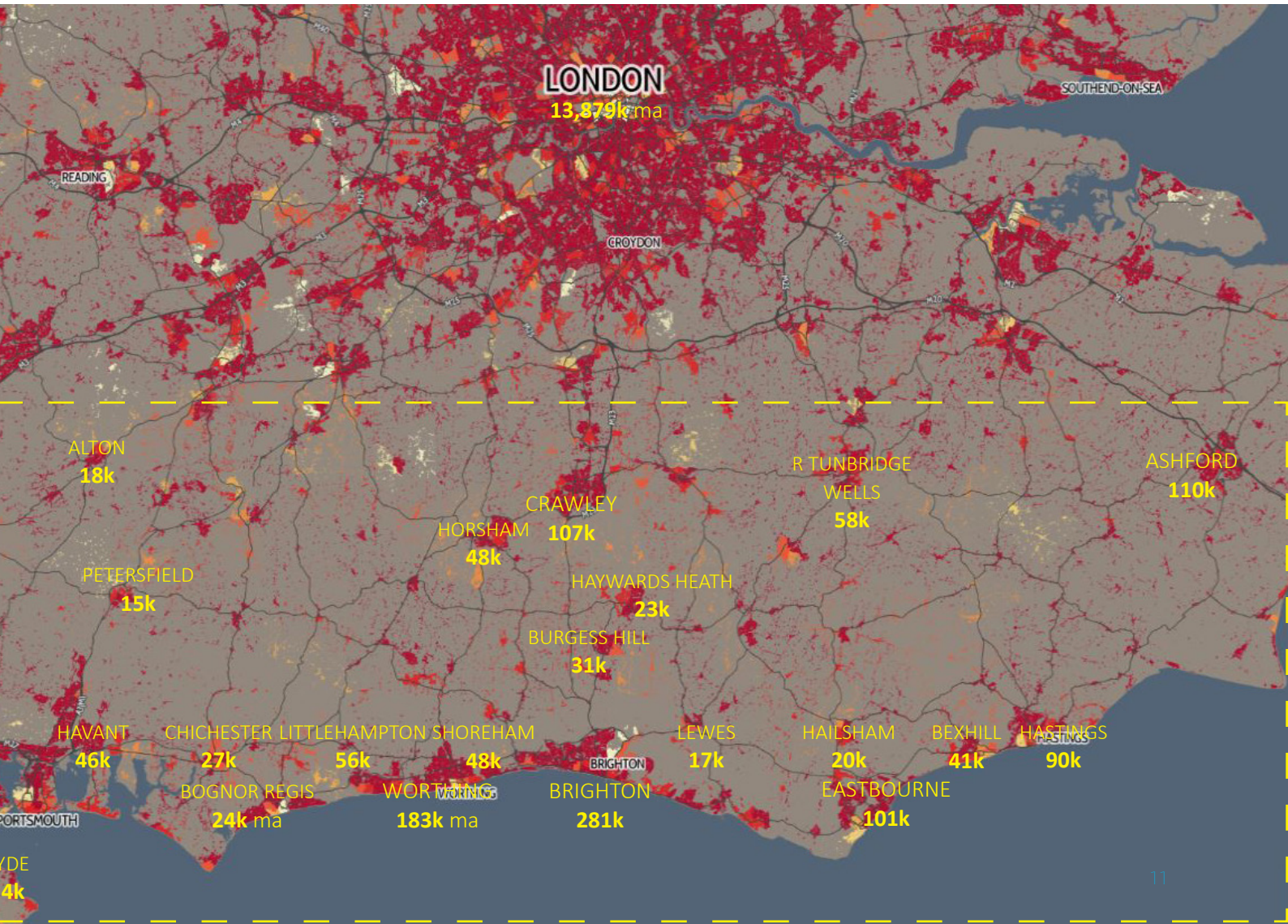
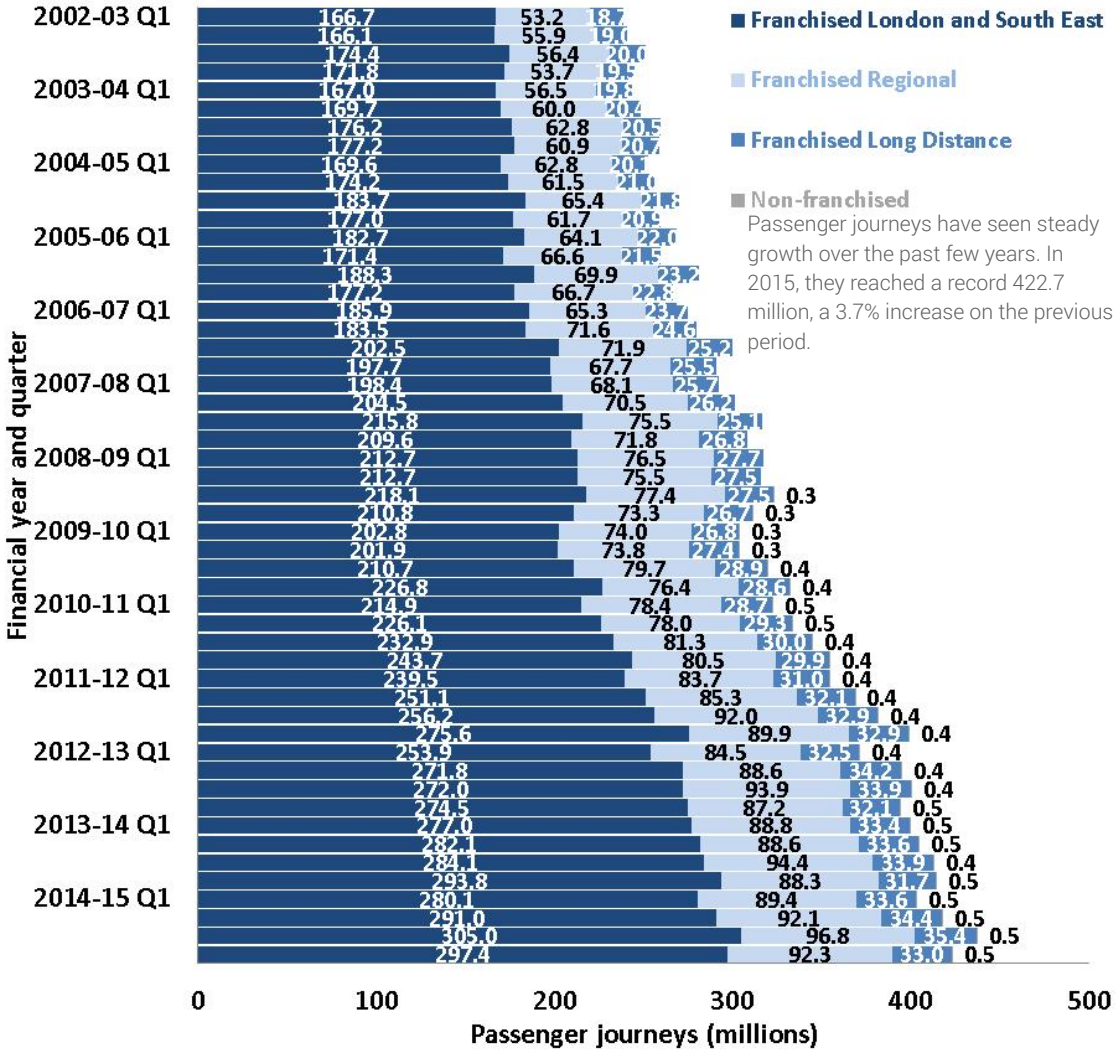


Fig. 6. UK travel to work mode share 2014.
There are over 28 m cars in the UK today

Fig. 7. UK Passenger journeys by sector. UK 2002-03 Q1 to 2014-15 Q4



By many measures London, however, is reaching crisis. The housing supply is under pressure, scarce land is driving up prices, costs are becoming disproportionately expensive and unstable relative to residents incomes. Detrimentally to their quality of life many are now spending more time commuting into London and traveling further than anywhere else in Europe.

To address this further densification and outward expansion of London is under consideration, one consequence of which has been an increasing pressure to build on the greenbelt.

Primary infrastructure investment is considered to be holding back regional opportunities, and integrated rail services having mixed modal transport connectivity is identifiably one of the most significant constraints on growth outside London. In turn these very same constraints sustain further pressure for growth in London at the expense of the regions.

It is a vicious cycle - with constraint on regional economic potential, growth civic development and quality of life in some of the economically deprived southern areas increasing pressure on scarce resources, land and housing in London.

In recent history London has always been seen as central to the UK's transport strategy with commuting routes prioritised. Future strategy should consider more outlying redistribution of infrastructure investment.

This spatial plan offers better opportunity to support and enhance the Solent region, whilst allowing for long term low carbon sustainable growth (fig,3,5 & 28).

This spatial plan offers better opportunity to support and enhance the Solent region, whilst allowing for long term low carbon sustainable growth.

Fig. 8. South west rail, network rail departures board.

The region

In the long term trade routes giving access to the markets of mainland Europe, the UK's northern cities and London are equally important. It is also considered that greater opportunity to expand export market opportunities and improve connectivity to these other locations holds more possibility of bettering UK plc GDP. This should be a strategic trading imperative.

Better future direct connectivity to mainland Europe and the UK's regional cities holds the opportunity for a more viably sustainable future, reducing the Solent region's dependency on London and its focus on connectivity to it.

In this scenario the Solent region is prioritised in the focus of the rail network, reflecting the regions historic eminence. Therefore in this report the global map is described from Portsmouth, the heart of the Solent and the southern powerhouse.

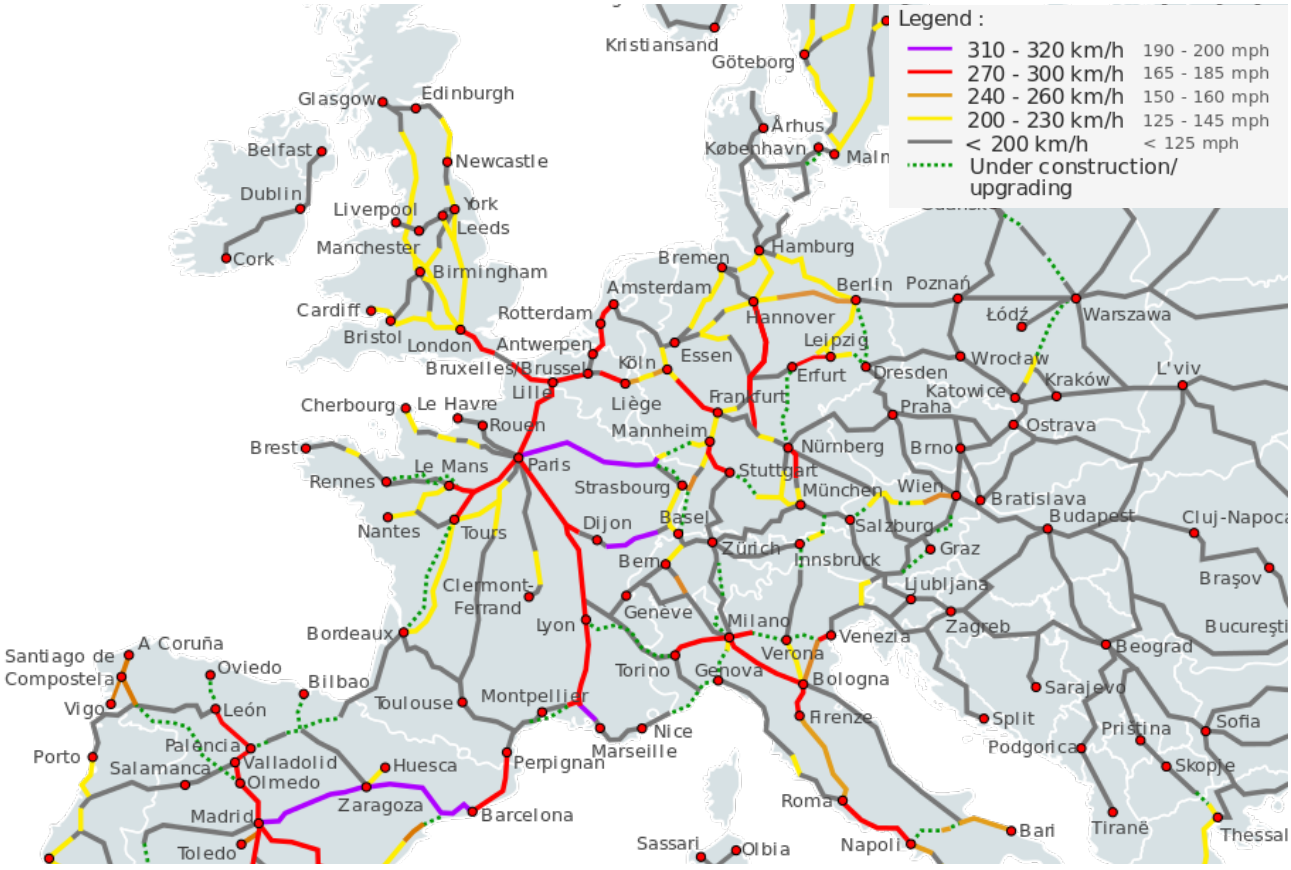
From this perspective it is considered logical that there should be a south west and south coast high speed rail line that bypasses London. This would offer direct access to both the markets of the northern European economic hub and the northern UK cities, without the need for delays and transfer of transport modes across central London (fig.3).

This strategy is aimed at long term regionally based prosperity, whilst alleviating the increasing capacity problems in London

In Portsmouth and Southampton the arterial routes of the M27, M3, A3 and A3(M) have become heavily congested and with the A27 further east have little additional capacity.

In 2011, transport contributed around 25% of the UK's greenhouse gas (GHG) emissions[6]. Of these around 22% were from road vehicles, with trains contributing around 0.8%. National and international studies[7] confirm that rail transport, and high speed rail in

fig. 9 European high speed rail network



There is a pressing need for more ambitious mixed mode sustainable transport policies that include public transport, support for cycling provision and, in the Solent region, better rail and water based strategies.

particular, is consistently amongst the most carbon efficient mass transport modes. Rail can save over 90% per passenger mile of CO2 emissions relative to planes[8].

There is a pressing need for more ambitious mixed mode sustainable transport policies that include public transport, support for cycling provision and, in the Solent region, better rail and water based strategies.

Intercity level

Prioritising better connections to London is urgently required, and a number of proposals are presented to improve speeds, capacity and increase access.

There is also a long term strategic need along the south coast to gain access to wider markets to sustain employment independently of London. This requires that early consideration be given to also improving rail transport to other destinations.

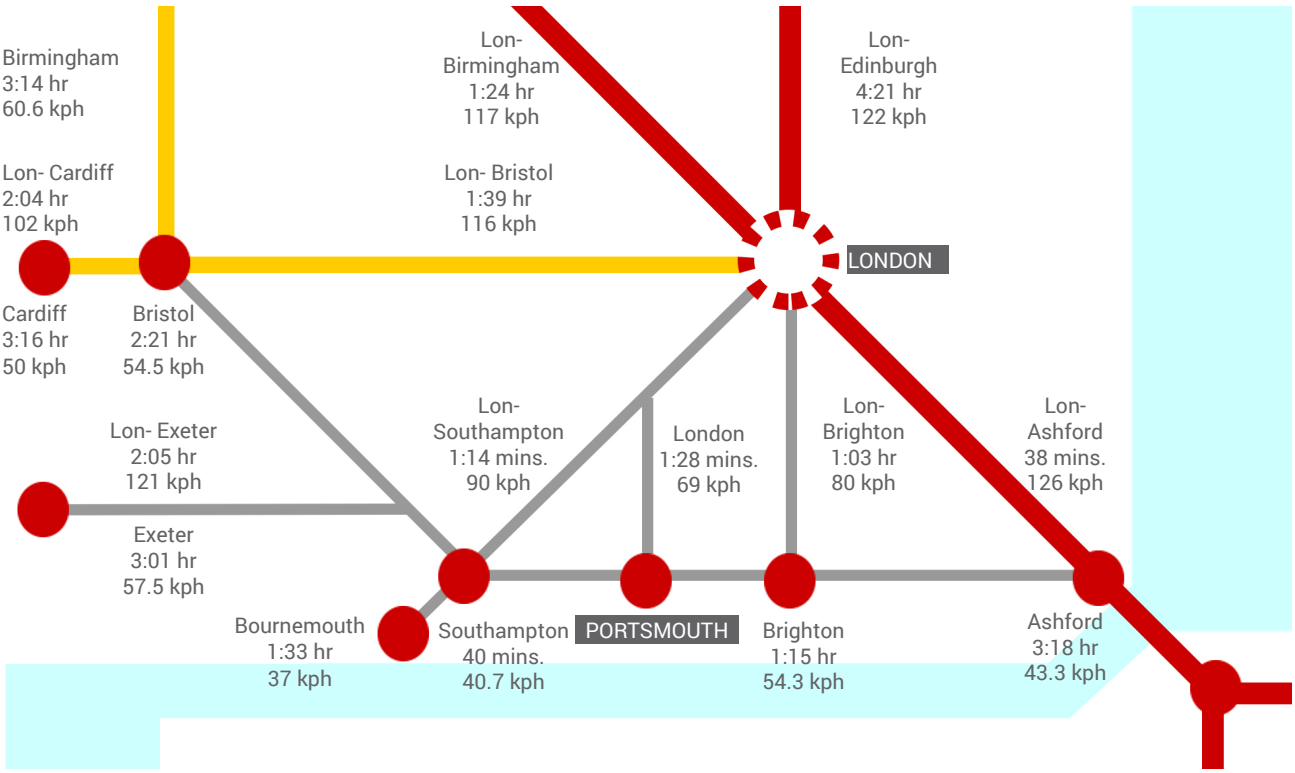
Regional level

Efficient and effective regional and suburban public rail services are a necessary component of a successful integrated public transport network, and are no less important than intercity connectivity.

In the Solent region the travel times by public transport to locations in relative proximity are currently unacceptable (fig.10 and Appendix A, B & C).

In the 1960's the rail network was reduced following the Beeching reports (1963-65). Subsequently the regional population has increased with both road and rail capacity now exceeded. In cases, were there is perceived value in doing so, this report explores the reuse of the existent infrastructure of former rail lines, as a method of increasing capacity in the medium term.

Fig. 10 Current best rail travel times and speeds from Portsmouth and London to the given destinations (speed average on point to point distance)



Rail service issues

Capacity

- The numbers of passengers carried on individual trains. This can for example be increased by longer trains where platform lengths and other infrastructure permit.
- The frequency of trains running on track. Where there is capacity to do so the frequency of trains running on track can be raised to improve capacity. Electronically advanced signaling enables more trains to be run at greater frequently along the same length of track.
- The number of rail tracks on which services can be run. For example if there are only two tracks, and no passing places, trains need to run sequentially, constraining use of the same track. The significance of this problem increases the greater the difference in speed between eg slower suburban commuting services and higher speed intercity services.
- Higher speeds can increase capacity by enabling more trains to be run over the same track over any set interval of time.

Speed

- As speeds increase trains require more level, straighter track with longer radius bends and infrastructure capable of withstanding greater physical forces.
- More locomotive power is required for higher speeds.
- UK legislation currently requires in-cab signaling for speeds of over 200 kph (125 mph) eg this is the primary reason preventing the Intercity 225 train-sets from operating at their design speed of 225 kph (140 mph) in normal service.
- Station halts take up time. There is a direct relationship between journey speed and the number, frequency and distance apart of stops en route. As halts for disembarking/ embarking require a comparatively fixed time period, the greater the number of stops the slower the journey travel time. Over a specified distance the higher the train speed the greater proportion of time will be taken by the same stops.
- Acceleration and braking strength for deceleration. The greater the time and distance required for both functions the lower the overall speed.
- Where high speed trains run through stations space is needed as their proximity to passengers is a danger.

Freight

- Freight transport capacity can relate to the tonnage which can be carried by individual wagons on individual line track.
- Proximity quays or depots providing direct loading and unloading without additional transport over distance.
- Each freight train can take more then 30 lorries off the roads

Passenger choice

While this report is mainly about the primary physical infrastructure, its capacity and speed, a large number of other issues affect whether passengers choose to use the railways. It is recognised that these are equally important to the success of public transportation and include cost; distance of travel; proximity, travel time, frequency of connecting services and accessibility of rail stations; the facilities and onwards connectivity at departure and destination stations; service reliability, punctuality, and convenience; safety and comfort; and environmental impact. A robust fully integrated service should successfully account for all such factors.

Programmed improvements

Britain's railway network is relatively slow compared to some of our continental neighbours. No trains currently using the UK's legacy mid C19th infrastructure run faster than 201 kph (125 mph). The new HS1 is an exception. The lack of modern in-cab signaling is an additional restraint capping speeds at 200kph on some lines that have already been upgraded to achieve 225 kph (140mph), which otherwise would by definition make them high-speed railways.

From 2015 Eurostar e320 trains have been capable of speeds of 320 kph (200 mph) on HS1. These are also the speeds projected for the proposed HS2 on which the first phase of construction is due to begin in 2017, reach Birmingham by 2026, Crewe by 2027 and be completed in 2033 (16 years).

Locomotive power capable of reaching 203 kph (126 mph) has existed in Britain since 1938, when the LNER's Mallard broke the steam locomotive speed record on the east coast line.

East Coast mainline London to Edinburgh (632 km) was significantly upgraded from the early 1960s, when the purpose-built Deltic locomotive was developed by English Electric to run on lines upgraded to allow 160 kph (100 mph). The maximum current line operating speed is now 200kph (200mph)

Improvements to the existing 192 km GMWR line from Paddington to Bristol Temple Meads are currently programmed to deliver speeds of 225 kph (140 mph) which by definition would also make it a high speed line.

Much of the Victoria Southampton line has been modernised and is now faster, with large stretches cleared for up to 160 kph (100 mph), although this still remains relatively slow.

The Solent regions programmed capacity is to be addressed primarily by increasing the numbers of peak hour vehicles. No significant works are programmed for the Portsmouth direct line otherwise (fig. 11) despite it being one of the slowest in the country (Appendix A,B & C).

fig. 11. Assessment of passenger capacity conditional outputs on Main line long distance services.

Conditional output reference	Description	Assessment of capacity required
CO3	To provide sufficient capacity for passengers travelling into central London during peak hours, taking into account anticipated growth over the period to 2043 – Main Line long distance services	An additional 156 vehicles in the high-peak hour
CO6	Consistent with the longer term strategy identified to meet CO3, to provide sufficient capacity for passengers travelling into central London during peak hours, taking into account anticipated growth to the end of Control Period 6 (2024) – Main Line long distance services	An additional 72 vehicles in the high-peak hour

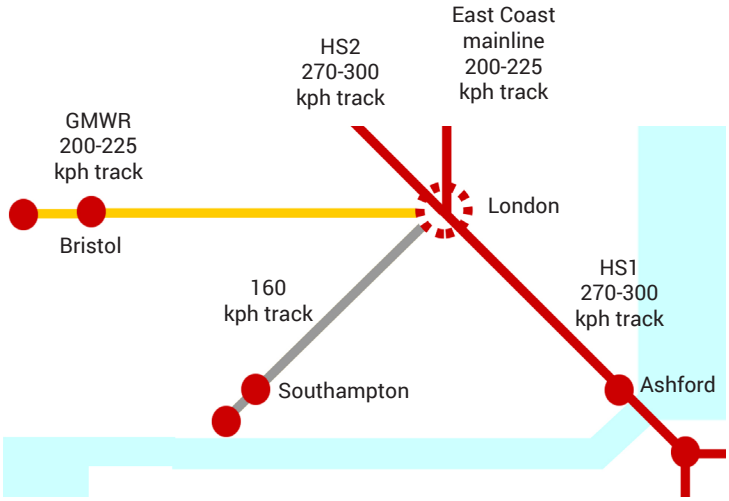


fig. 12. Network Rail projected rail track speeds - current programme upgrades, relative to HS1

London capacity issues

The scale and density of the London hub along with the multiple station terminals is a significant planning issue for future rail infrastructure, capacity and journey times. This restricts speed, capacity and can preclude high speed rail transport. There are also legacy issues to be faced with track radius's, gradients, widening and in cabin signaling that constrain future services.

For example new facilities such as HS1 approach London from the east terminating at St Pancras in the north, whilst HS2 approaching from the west will terminate at Euston. A further new station is to be built at Old Oak common in north west London to provide a solution for passenger transfer.

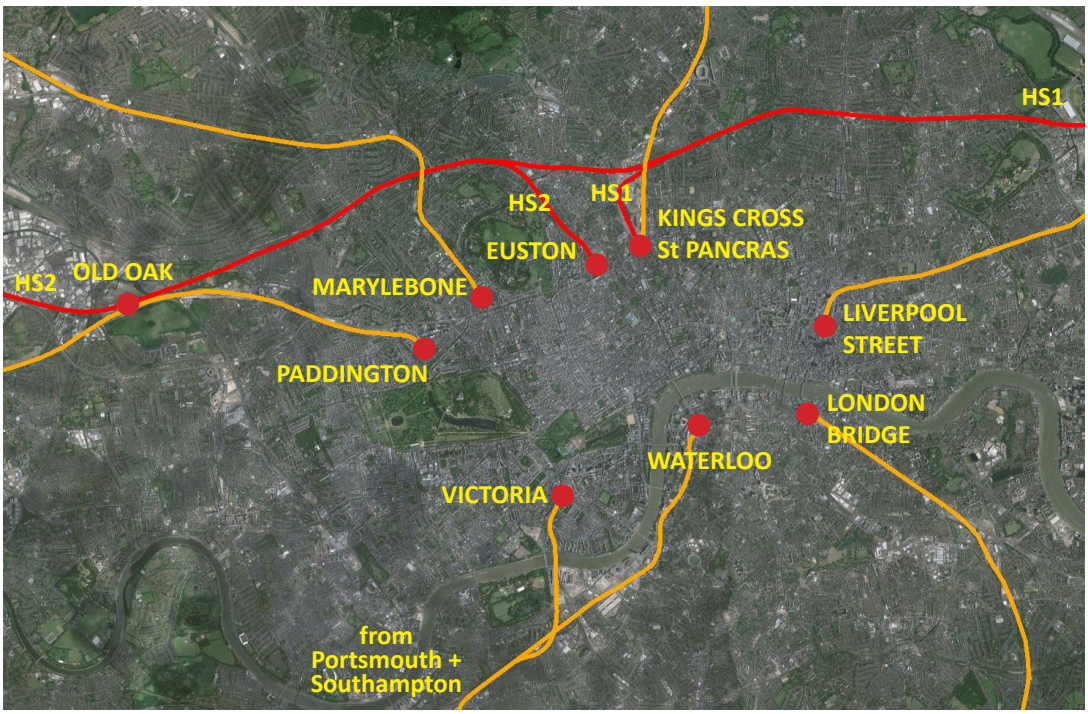
The network serving the west, south west and southern region which radiate out of the terminals at London Bridge, Waterloo, Victoria, Marylebone and Paddington are currently constrained by available route capacity. Connecting to the existing high speed network already requires prolonged time, changing transport and crossing London using existing underground services. For those with young, the infirm or elderly this problem is compounded.

Making future connectivity to HS1 or HS2 from the south or south west through London therefore already poses significant accessibility, connectivity and integration problems. Cross Rail 2, when built, will only partially resolve these issues. Despite this increase in capacity, for those on onward journeys it will not reduce the need to change lines at least twice.

A fundamental underlying problem for those traveling onwards from the south west and the south, seeking access to the markets of European or the northern cities is that their routes are largely diverted through London, extending journey distances, increasing time and driving demand into an area having an already saturated capacity; and where improvements are disproportionately costly, time consuming and inefficient.

To fundamentally address this issue these proposals advocate a London bypass, promoting better focus on the south and south west. In the short to medium term however there are pressing problems with the London approach which the following proposals also contribute to addressing.

fig. 13. The London terminals, showing programmed HS lines (red) with other primary routes out of London Rail



Proposals:

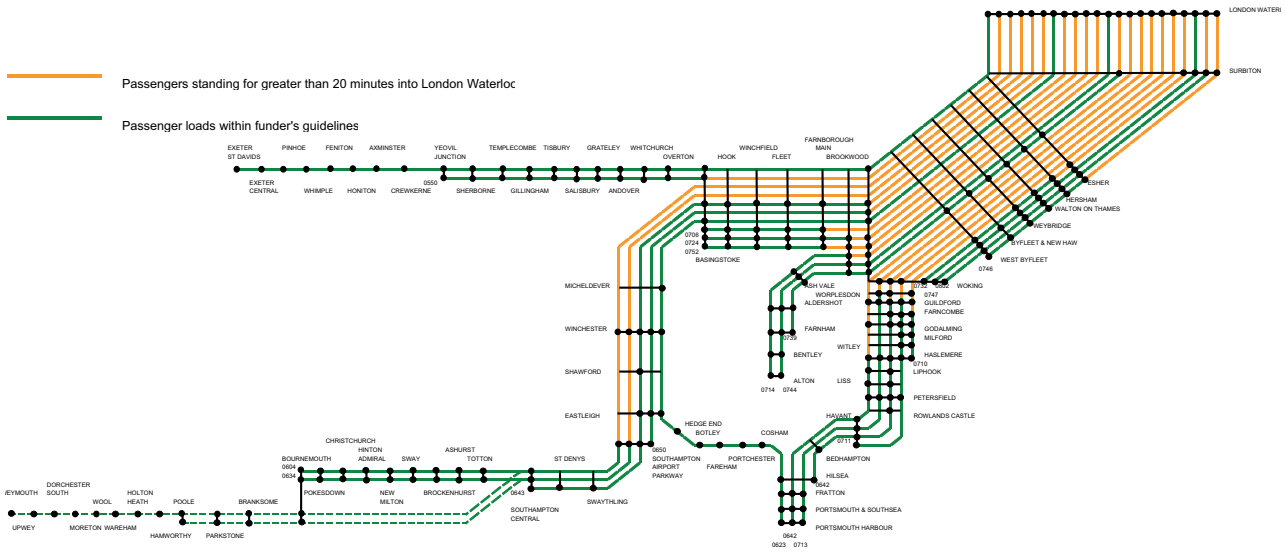
Promote and support capacity building and speed improvements including new track, extending from central London out to Surbiton.

- Overhead AC electrification on all routes
- Utilisation of maximum carriage numbers.
- Upgrading stations where necessary for longer trains to increase passenger capacity.

To improve distributive capacity upon entering London, as part of the Crossrail 2 programme, it is proposed that:

- Support the extension of Crossrail 2 to Surbiton with new track under ground to permit new track above ground and increase capacity.
- Clapham Junction station be rebuilt to increase passenger, station and track capacity.
- London overground be provided with grade seperation, tunnel access or overpassing, to allow direct through route connection to the new Clapham Station hub, allowing high capacity rail services direct through running, and releasing capacity at Clapham.
- The new Northern line from Nine Elms be extended through to Clapham junction. This line which should have a capacity and frequency upgrade to give performance equivalent to the Victoria line, at least.

fig. 14. Passenger loads on high-peak Main Line long distance services (2013-14)
source: South West trains automated passenger count data.



"Two centuries of railways show how economic and social value can be delivered in tandem."

Ed Cox, IPPR North

fig. 15.

4 Detailed rail route proposals

The following detailed intercity and regional railway proposals explore improvements to increase connectivity, capacity, journey times and access.

- *Proposals for rail, light rail, water, bus, bike and pedestrian connectivity within the local areas of Portsmouth, Gosport, and Havant are addressed under separate cover.*

Since the mid-1990s, there has been sustained growth in rail passenger demand, at a rate far in excess of any other mode of transport. Demand is soaring: over the 10 years to 2013, rail passenger journeys in Great Britain have increased by 57%[3].

Already, by Woking, all peak hour journeys from the Solent to London, are well over capacity (fig.14).

By 2043 further growth of 40% is anticipated for the London and southern services, yet even before growth is considered, approximately 20% additional capacity is required to deal with existing over crowding on services[4]. As a minimum 60% additional capacity is therefore required by 2043. Given growth over the last 10 years this might be considered a conservative figure.

In anticipation of higher demand growth the following outline proposals for future rail infrastructure in the Solent region aim to contribute to expanding the debate

Key for detail route proposal in the following pages

Route Key

- Existing railway lines
- Proposed main line routes
- New and existing high speed lines
- Cross rail (London only)

Current rail distance

Portsmouth to Brighton	79.2 km
Brighton to Ashford	44.3 km
Portsmouth to Ashford total	128 km

Track type
2 line W7 gauge track Southampton to Ashford

Current line speed designations
40-75mph (65 - 120kph)

Best Journey time
Portsmouth Southsea Ashford 3 hr 18m
Portsmouth to Brighton 1 hr 15 min

fig. 16. Proposed south coast route of HSSE (High speed south England). Key p.21

The Solent to Europe

Along the south coast, and despite heavy congestion on the arterial road network, particularly the A3 and M27, it is faster to travel by car. To Ashford it takes at least c 38min. less by car relative to the best available rail journey time. Most rail journeys take far longer. This is unwarranted. Along the south coast between Portsmouth South sea and Ashford there are over 50 stations, and any journey along this route stops at a majority of them (Appendix D, fig. 3).

Other than through London, rail access between the south coast communities and north Britain is also limited.

When considering how long it takes to get to anywhere on continental Europe, times are even more unattractive. From Portsmouth by rail it takes 4 hr 06 min to Lille and 4 hrs 45 mins. to Brussels. To the continental European mainland access from all but the eastern most fringe of this area is largely by sea or increasingly by air, or diversion towards London.

Proposals

- A new W9 gauge high speed 174 km high speed rail line from Eastleigh to Ashford with a designated track speed of 270-300 kph.
- New station interchanges for high speed lines at Eastleigh and Ashford with secondary halts at Waterlooville, Brighton and Hastings/ Eastbourne. A direct channel tunnel south bound branch is proposed before Ashford.

For the proposed line indicated, the following journey times are projected:

- Portsmouth to Ashford 45 min.
- Portsmouth to Lille 1:20min
- Portsmouth to Brighton 21 min.
- Bristol to Lille 2hr 2 min

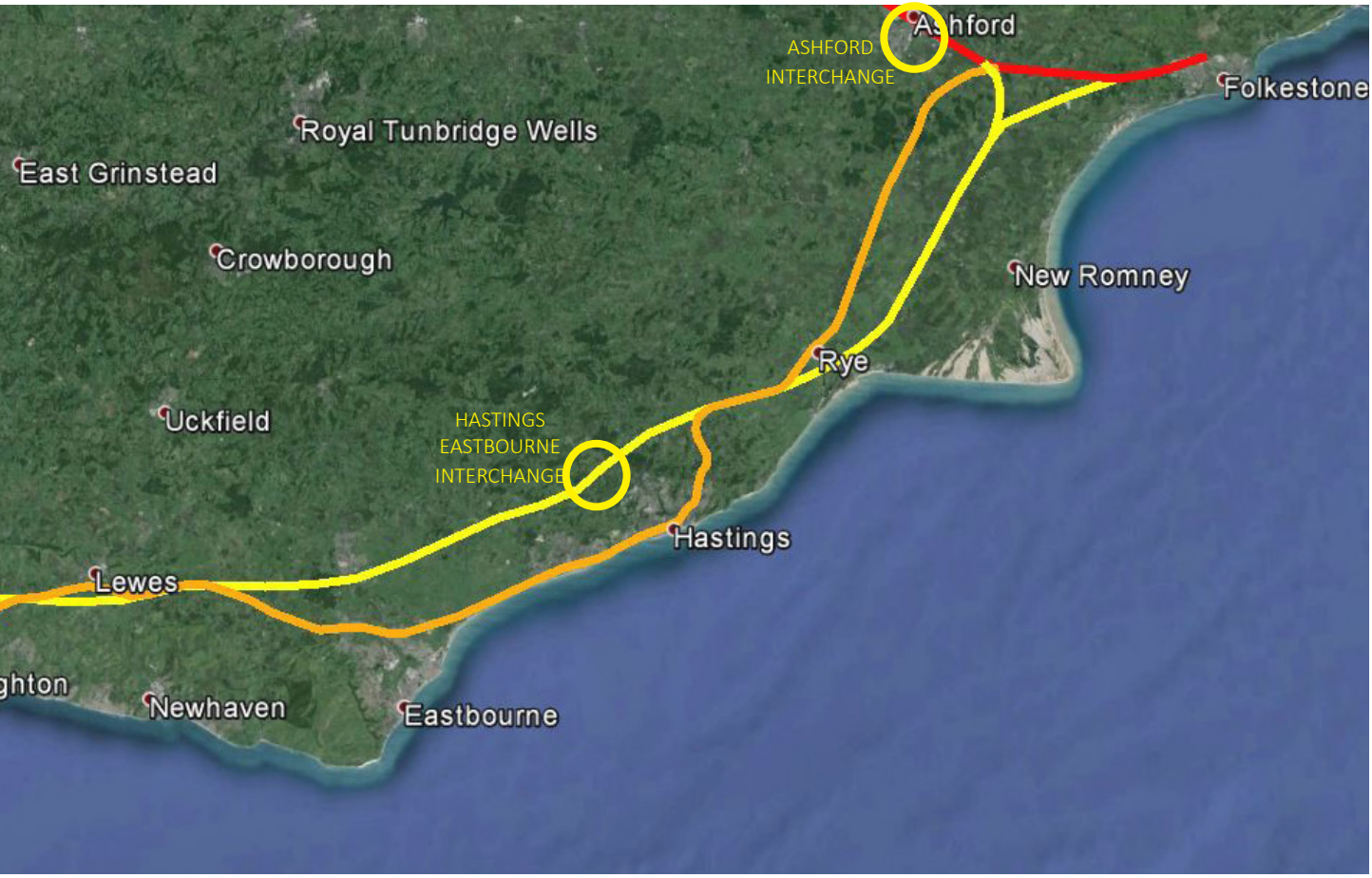


fig. 17. Proposed Wessex route of HSSE (High speed south England). Key p.21

Current rail distance

Portsmouth to Eastleigh	79.2 km
Eastleigh to Bristol	44.3 km
Portsmouth to Bristol	128 km

Track type
2 track line Southampton to Bristol
Part single, W7 gauge track line from Fareham to Botley

Current line speed designations
40-75mph (65 - 120kph) Cosham to Eastleigh

Best Journey time
Portsmouth Southsea Bristol Temple Meads direct 2 hr 21m

The Solent to Bristol

Best journey times from Portsmouth to Bristol take 2hr 21min. More typically it can take between 2hr 42min to over 3 hr. By car the equivalent journey best time takes 1 hr 57 mins. and is faster by at least 24 min.

At Salisbury and from Warminster onwards the line is circuitous with, on all but the direct train, frequent stops. These are a significant barrier to reducing long term journey times.

The existing line is currently under used with spare capacity for additional traffic. But a significant problem with any such demand analysis on this line is that journey times are now so long few elect to travel this way, when they have a car.

A new high speed route could contribute towards strengthening the regional economies and provide fast onward connection obviating the need for multiple changes and delays at other stations.

Proposals

- A new W9 gauge high speed 107 km rail line from Eastleigh to Bristol with a designated track speed of 270-300 kph.
- New station interchanges for high speed lines indicated

If implemented in conjunction other line improvements detailed this would give a capability to reduce journey times from:

- Portsmouth to Bristol to max. 48 min. (c.34%)

with onward journeys to Cardiff, Birmingham and elsewhere enjoying proportionate benefit.

Current rail distance

Portsmouth Harbour to Woking	80.5km
Woking to Waterloo	39.2 km
Portsmouth to London Waterloo total	119.7 km

Track type
2 track, W7 gauge line to Woking

Current line speed designations:
80 -105 mph (130- 170kph) Fratton to New Malden
40 - 75 mph (65 - 120kph) otherwise

Best journey time

Portsmouth Southsea London Waterloo	1 hr 37m

Bottleneck. Proposal 4
Woking and Guildford
peak period capacity issues

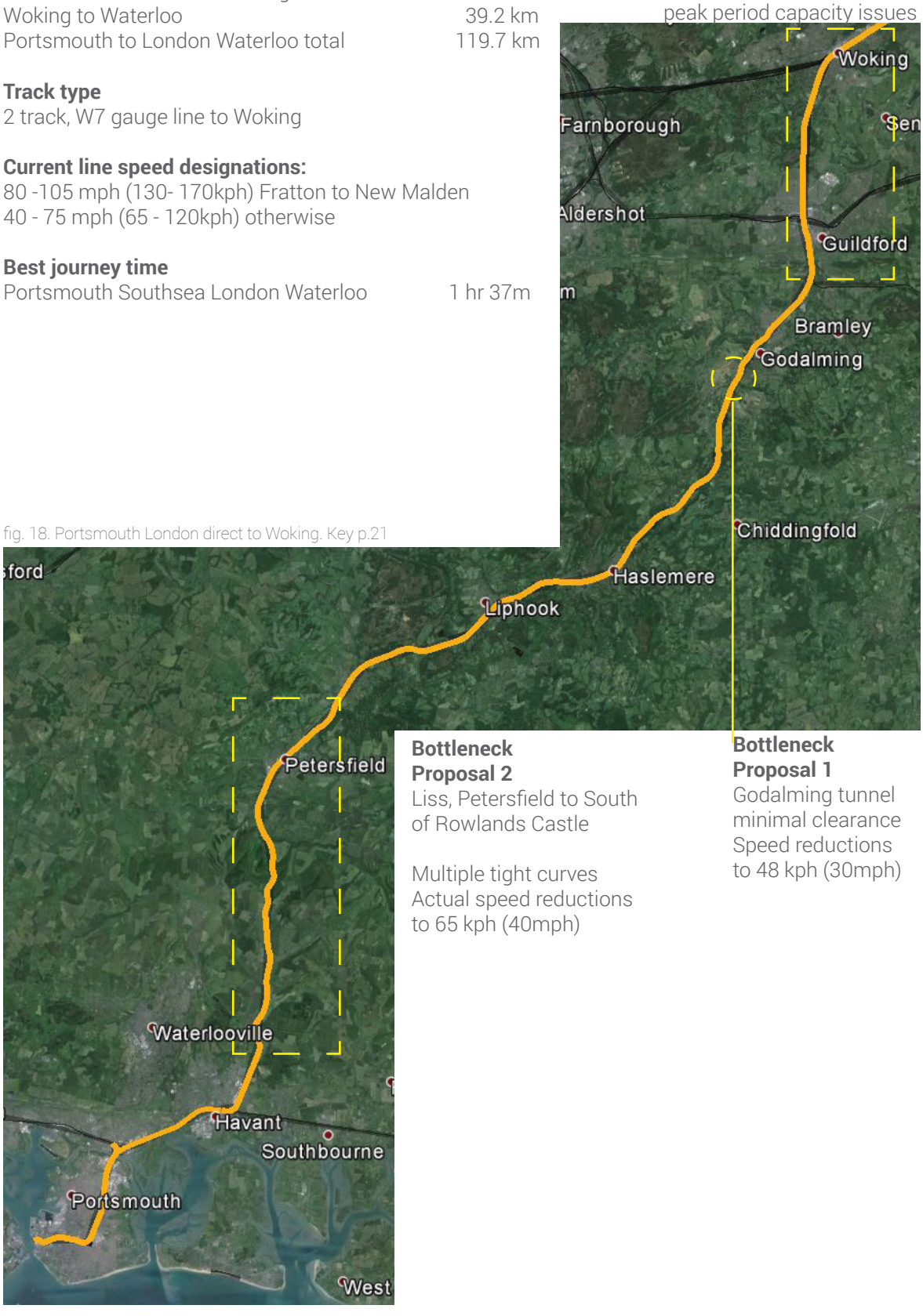


fig. 18. Portsmouth London direct to Woking. Key p.21

Bottleneck Proposal 2
Liss, Petersfield to South of Rowlands Castle

Multiple tight curves
Actual speed reductions to 65 kph (40mph)

Bottleneck Proposal 1
Godalming tunnel minimal clearance
Speed reductions to 48 kph (30mph)

Portsmouth London direct - to Surbiton

Significant improvement to the Portsmouth direct line would have immeasurable economic impact, not only for existing travel, but for expanding its leisure and conference economy, and improving access to the deprived Isle of Wight.

In the short to medium term the service speeds from Portsmouth to Waterloo are severely constrained by three bottlenecks south of Surbiton comprising:

- The multiple tight curves through the South Down national park from south of Rowlands Castle to the stretch between Petersfield and Liss, reduce actual speeds to 65 kph (40mph).
- The current model of rolling stock are heavily constrained by minimal clearances at the tunnel to the south of Godalming, where speed reductions to 48kph are required for safety. This constrains introduction of overhead electrification.
- Between Portsmouth Harbour and London Waterloo the fast train makes 7 stops at Portsmouth and Southsea, Fratton, Havant, Petersfield, Haslemere, Guildford and Woking.

Proposals

Significantly improved journey times are achievable with service alterations and planned track infrastructure works addressing existing bottlenecks.

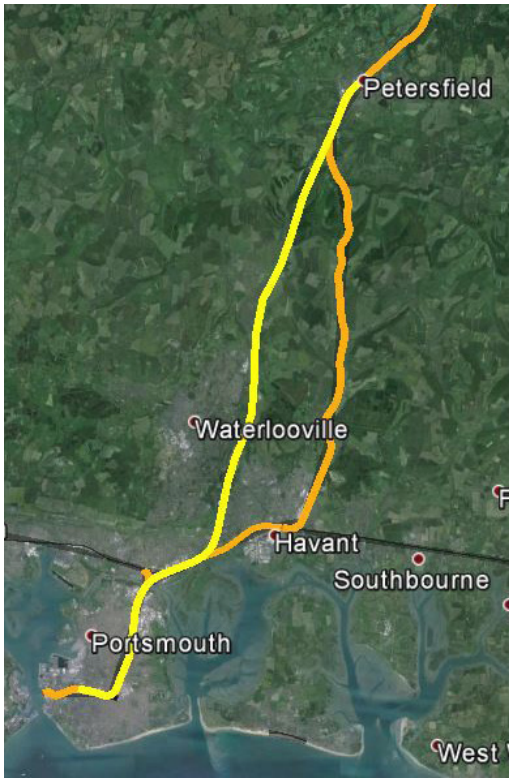
1 The Godalming tunnel bottleneck be resolved by enlargement, diversion, use of alternative rolling stock or lowering the track bed within the tunnel.

2 A newly aligned route between Petersfield to Rowlands Castle requires early planning. Like the A3 Hind Head road tunnel, this would deliver significant long term journey time benefits. An alternative high speed route tracking the A3 is illustrated.

3 As Portsmouth Harbour and Fratton are 2.4km apart, halts at one of the three Portsmouth stations for fast services should cease (with the stop at Fratton saving most time).

To reduce journey times from Portsmouth to London further it would also be appropriate to consider removing halts at some or all intermediate stations for some or all services, and to provide additional track for high speed trains to pass slower trains

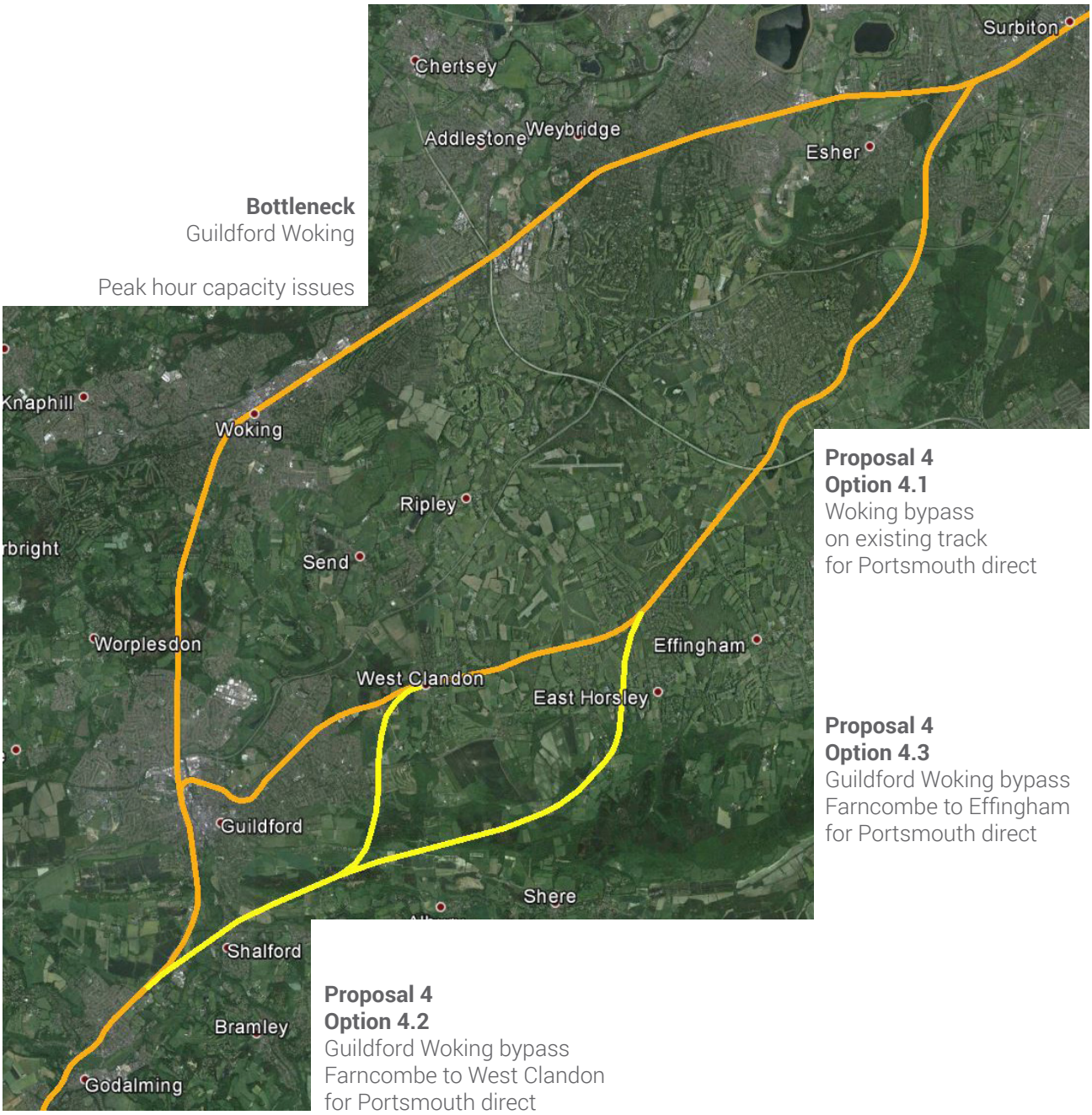
fig. 19. Proposal 2. Portsmouth London direct



Proposal 2
Liss, Petersfield to South of Rowlands Castle

Proposed track realignment
Delivers higher speed connectivity
Reduces distance c.3.5 km

fig. 20. Proposal 4, Options. Portsmouth London direct . Key p 21



Bottleneck
Guildford Woking

Peak hour capacity issues

Proposal 4
Option 4.1
Woking bypass
on existing track
for Portsmouth direct

Proposal 4
Option 4.3
Guildford Woking bypass
Farncombe to Effingham
for Portsmouth direct

Proposal 4
Option 4.2
Guildford Woking bypass
Farncombe to West Clandon
for Portsmouth direct

Portsmouth London direct - to Surbiton

4 From Guildford and Woking peak hour rail capacity has already been reached.

Option 4.1

- The Portsmouth service should be diverted at peak times via Cobham to West Clandon on the existing track to bypass Woking; with this track suitably upgraded. This would allow in the short term and at peak times higher speeds on the direct Portsmouth train and additional capacity from Woking,

Option 4.2

- A fast new bypass around Guildford from Farncombe to West Clandon would avoid tight radius track alignments north of Guildford, obviate the need for a halt at Guildford and further reduce London journey times.

Option 4.3

- A fast new bypass around Guildford from Farncombe to Effingham might delivers a higher speed route than option 4.2 bypassing Guildford from

5 Additional track should be laid between Surbiton and Clapham junctions to increase capacity and reduce journey times, with overhead electrification provided the length of the Portsmouth line.

In conjunction with signaling and other track improvements it is projected these modifications would be cumulatively capable of delivering higher capacity for freight and a best passenger journey time from

- Portsmouth to London direct in 50 mins. max. saving at least c.47 mins. (c. 48%) on current time.

Current rail distance

Eastleigh to Woking	79.2 km
Alresford to Woking	44.3 km
Kings Worthy to Alresford (Option 2 Beeching Cut)	10.8 km

Track type

2 track ,W8 gauge line Southampton to Basingstoke
2 track, W6 gauge track from Alton to Farnborough
single track historic railway 'The Watercress line' from Alton to Alresford.

Current line speed designations

80 -105 mph (130- 170kph) Farnborough to Winchester via Oakley
40-75mph (65 - 120kph) Farnborough to Alton

Best journey time

Portsmouth Southsea London Victoria via Eastleigh 2 hr 17 m

fig. 21. Capacity building - Southampton London direct. Key p.21

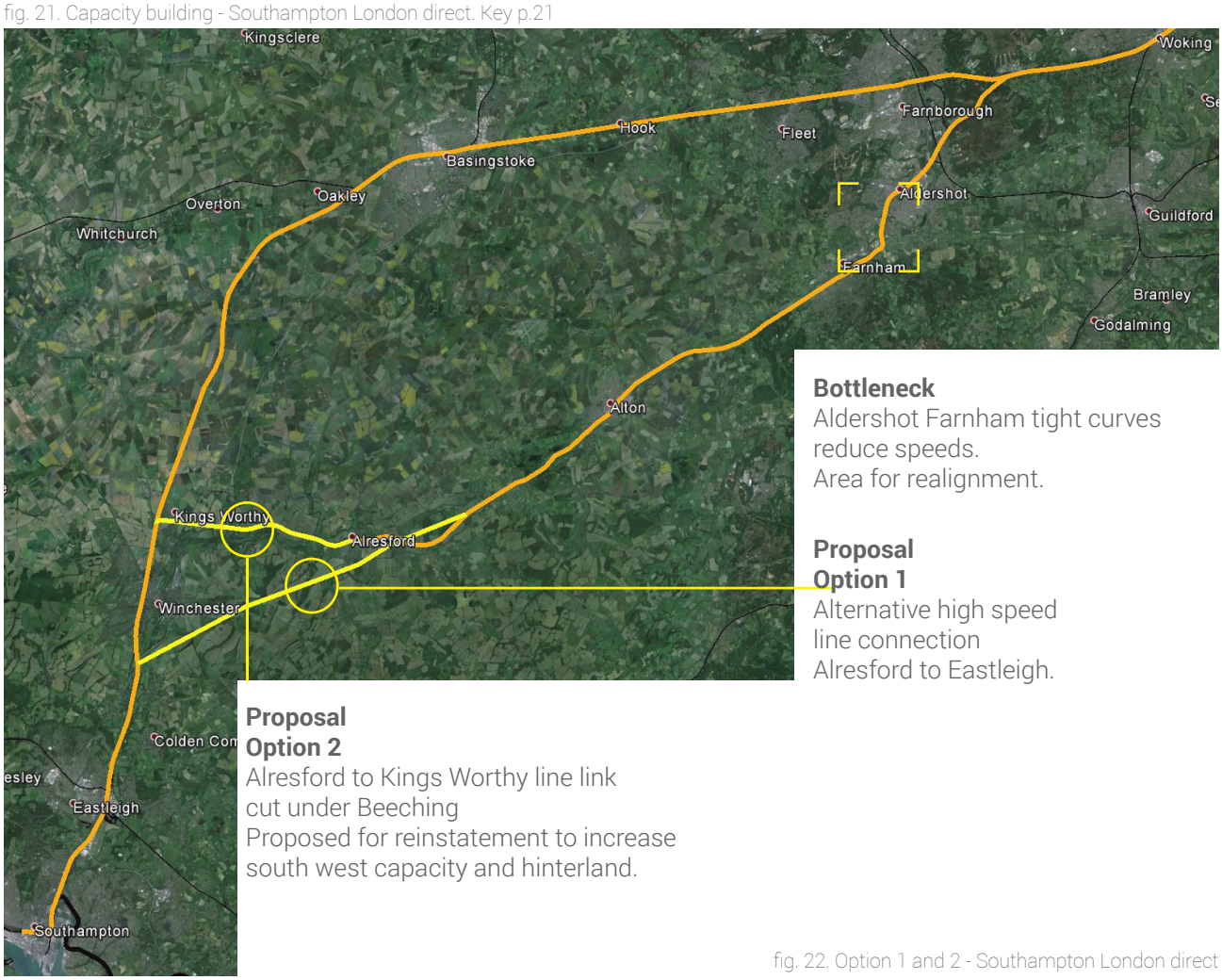


fig. 22. Option 1 and 2 - Southampton London direct

Southampton London direct - Eastleigh to Woking

Solent cities are currently served by only 6 tracks north to London, this constrains the capacity of the existing network to develop future intercity, regional, urban rail passenger and freight transport.

Increasing the 4 existing Southampton London direct tracks from Eastleigh to Oakley junction to 6 would increase future capacity. The line is already bottlenecked down to two tracks due to the constraints imposed by the long, deep and steep cuttings through central Winchester, and this Southampton route is already congested. Entirely upgrading this line along its existing length therefore poses significant, costly and practical issues.

After the Beeching reports (1963-65), the Kings Worthy to Alton branch off the Winchester line was severed (1973). Part of this, the Watercress Line, from Alresford to Alton is maintained as a historic railway. The remaining line length between Kings Worthy and Alresford is a country walk in the South Downs National Park, with a very limited number of route incursions from small but avoidable developments.

This rail line was laid with 2 tracks, but from Alton to Alresford, the Watercress Line now only operates a single track. Current tight radius curves, which might restrict high speed use, lie between Farnham and Aldershot in the north east. This line is otherwise generally straight, with large radius curves indicating a general layout with capacity for higher speed services.

The options here increase capacity through to Woking using the pre Beeching infrastructure and offers significant opportunity for the Solent conurbation.

Proposals

Based on partial or full track reinstatement, with the addition of track realignment at Farnham/Aldershot

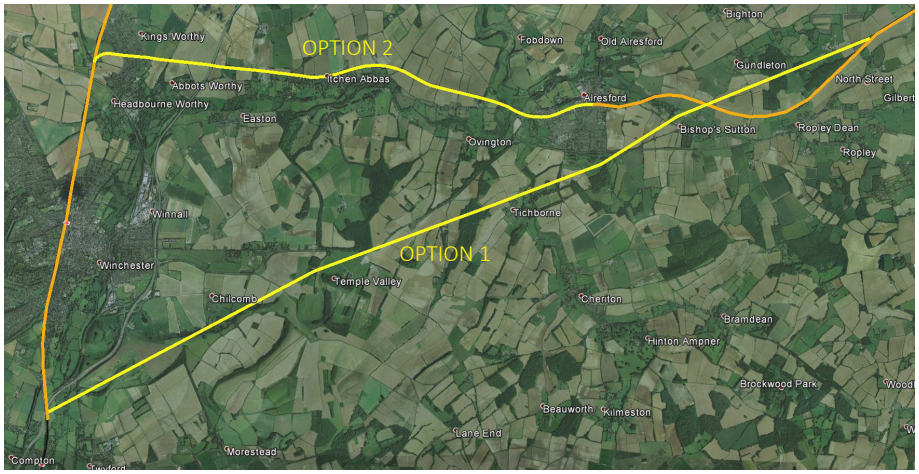
Option 1

- Higher speed services be achieved by reconnecting the Alton line from the Crompton Twyford area through to Alresford. This provides the most direct connection, with an additional (min.) 2 tracks avoiding the Winchester bottleneck, but passes through sensitive and challenging landscape.
- Widening the final 7km of rail line from Eastleigh to Twyford to 6 tracks delivers a new c 55.4 km 2 track high speed Southampton/ Portsmouth to London, through route; reducing travel distances by at least 8km and offering significant additional capacity and time savings.

Option 2

- Along the Itchen valley re-instate the former 2 track line from Kings Worthy to Alresford. This reconnection through to Aldershot and Woking would deliver better capacity and connectivity for Winchester, Southampton and Portsmouth.

In this case the objectives of increasing capacity, speed and reducing distance maybe more readily and viably achievable in the short to medium term by use of existing infrastructure and warrants a fuller investigative commissioning.



Proposal 1 (Area enlarged) Twyford to Alresford

Proposed 2 tracks with realignments

Option 1
Delivers high speed connectivity
Reduces distance to London c. 8-9 km

Option 2
Reinstates Beeching cut

Current rail distance

Portsmouth Harbour to Eastleigh	35.6 km
Eastleigh to Woking	79.2 km
Woking to Victoria	37.1km
Portsmouth to London via Eastleigh total	151.9 km
Portsmouth to Southampton via Swanwick	41.6 km

Track type

2 track ,W8 gauge line Southampton to Basingstoke
Part single, W7 gauge track line from Fareham to Botley
2 track, W6 gauge track from Fareham to Southampton via Swanwick

Current line speed designations

80 -105 mph (130- 170kph) Eastleigh to New Malden
40-75mph (65 - 120kph) Cosham to Eastleigh and Southampton

Best journey time

Portsmouth Southsea to Southampton central 40min

fig. 23. Portsmouth Southampton direct . Key p.21

Bottleneck

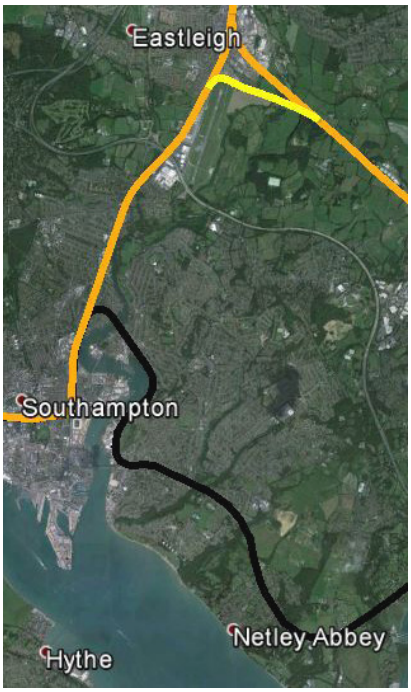
Cosham to Southampton via Eastleigh

65-120 kph low speed line

Single track line from Botley Green to Fareham.

Tight curves from Botley Green to Cosham.

fig. 24. Eastleigh junction



Proposal 2 (enlarged area)

Eastleigh southbound connection

Proposed 2 track high speed bypass

Delivers 2 line track W9 gauge high speed connection.

Portsmouth Southampton direct

The Portsmouth to Southampton Central train takes 40mins. From Cosham the line via Swanwick is slow and circuitous, migrating along the coast for 41km, although the point to point distance is only 24.6 km. Although it delivers a valuable regional commuting service, there appears little opportunity to significantly improve this route easily.

It would be better to improve the Portsmouth to Southampton connection with a high speed route to Southampton central via Southampton Airport and Eastleigh. This link is also advocated by the Solent LEP. However this route is constrained by:

- Slow track speeds between Cosham and Eastleigh (65 - 120kph)
- A single track between Fareham and Botley.
- Tight curves around Fareham.

fig. 25 Fareham bypass and Knowle junction

Proposal 3 (enlarged area)
Cosham to Eastleigh (& showing Meon Valley rail connection)

Proposed 2 tracks with realignments

Delivers high speed connectivity

Reduces distance c. 3.5 km

Proposals

1 The line between Knowle and Eastleigh be upgraded to W9 gauge min. 2 track high speed lines.

2 A new south bound high speed junction be created at Eastleigh connecting trains traveling north west from Portsmouth to Southampton Central.

3 New length of W9 gauge high speed 2 track line be built west from Porchester to connect, around Knowle, with the upgraded line onwards to Eastleigh.

- For the Meon Valley railway at Knowle junction be provided with west and east bound branch connections (see detail following).

This route proposal at 44km is only 3 km longer than the existing Swanick route, but the higher speeds and limited halts can deliver journey times to Southampton Central of c.16 mins. (over 60% on current best times). This improves Portsmouth Southampton connectivity along with access to Winchester and Southampton Airport.

Service improvements on the Victoria to Southampton line to deliver a high speed 200-230 kph track are a scheduled priority. The extent these will be delivered remains to be seen, but this proposal would also impact this route.

- Portsmouth to London Victoria via Eastleigh at 1:05 hrs. max projected.

Rail distance

Meon Valley railway	35.4 km
Alresford to Woking	38.5 km

Track type

2 track ,W8 gauge line Southampton to Basingstoke
2 track, W6 gauge track from Alton to Farnborough
single track historic railway 'The Watercress line' from Alton to Alresford.

Current line speed designations

80 -105 mph (130- 170kph) Farnborough to Winchester via Oakley
40-75mph (65 - 120kph) Farnborough to Alton

Best journey time

Portsmouth Southsea London Victoria via Eastleigh 2 hr 17 m

The Meon Valley railway

Infrastructure removed, in parts, north of West Meon.

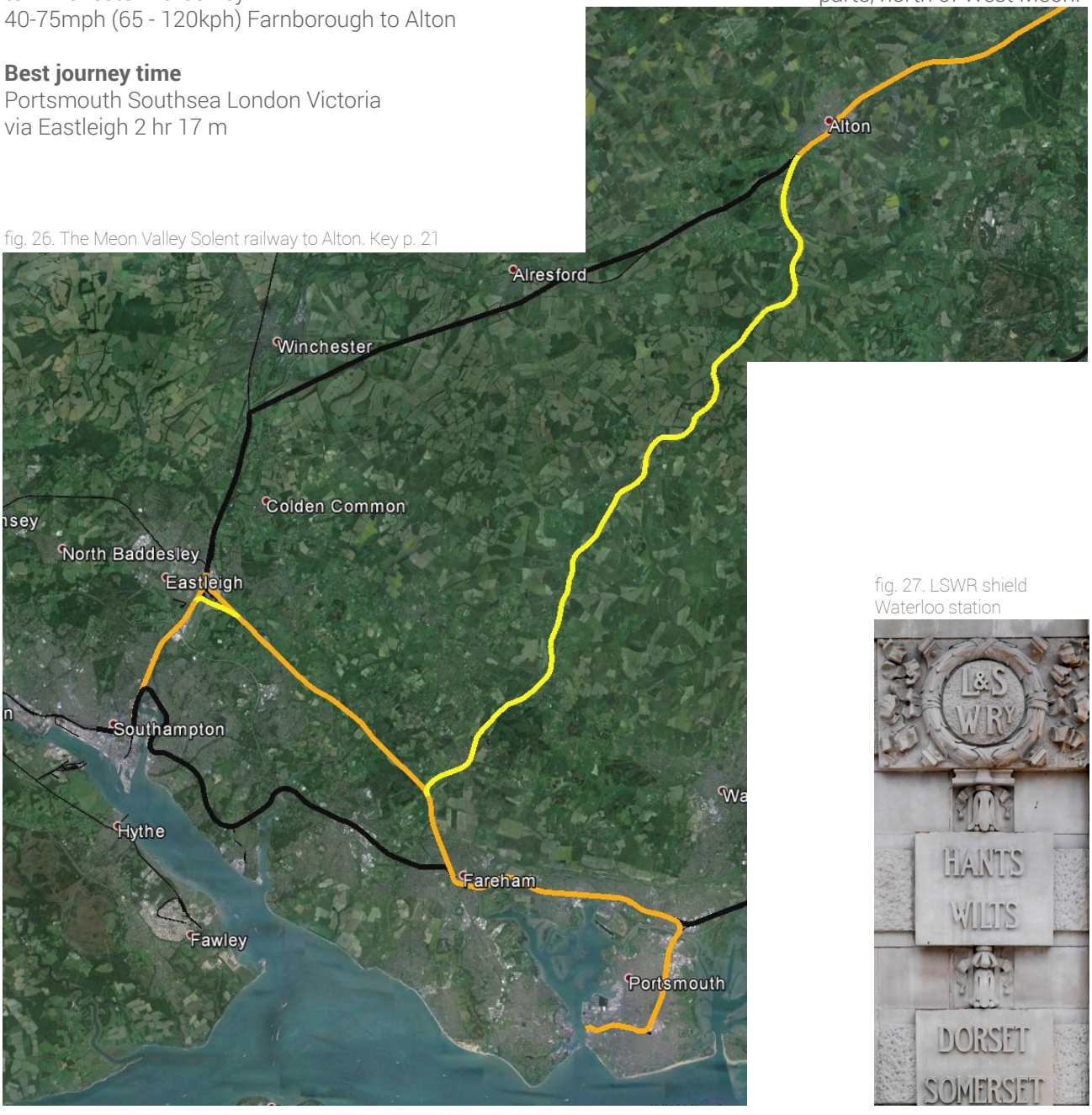


fig. 26. The Meon Valley Solent railway to Alton. Key p. 21

fig. 27. LSWR shield Waterloo station

The Meon Valley Solent Railway, Knowle to Alton

The Meon Valley Railway opened in 1903 and closed to passenger services in 1955. As it is capable of significantly increasing regional and suburban capacity this former rail line provides an opportunity.

The regions population has increased significantly since it's closure, so this mature route infrastructure could be considered to be reaching viability - as part of a wider Solent regional plan.

The line extending from Knowle junction to West Meon is now an 18 km bridleway with the infrastructure largely intact, as it is between Farringdon and Chawton to the northern end approaching Alton. North of West Meon however bridges have been removed and cuttings infilled. Between Wickham and West Meon the track turns into part of a South Downs National Park cycle way.

Although it's earthworks were only constructed with a single track it was originally built as an express route from London to Gosport having main line standards with gentle curves, no gradients greater than 1%, with all bridges and tunnels built to dual track standards and grade separation avoiding many level crossings. This historic infrastructure represents an opportunity. Reopening this line has been previously proposed, by railway enthusiasts, without success.

As the Solent conurbation is currently served by only 6 tracks towards London in the north, this constrains the network's long term development capacity for future inter city, regional and urban rail passenger and freight.

With current 30 year demand projections reporting the need for 60% on rail services, the reopening of this line could secure an additional 2 tracks to the north, serving London, Reading, and Woking, largely upon existing infrastructure. This represents a capacity increase of 33% at least above the existing from the Solent to Woking.

On the A32 and A31 traffic volumes have grown indicating the potential now exists for a viable regional commuter service, to attract commuters off Hampshire's roads. This demand will continue to rise with a projected 12,500 new homes in central Hampshire alone by 2031 and growth in Eastleigh.

Proposals

- The Meon Valley Railway be investigated further.
- The Solent and Hampshire authorities with network rail, work to secure the future opportunity of the Meon Valley Railway route: in planning and other relevant policy, by securing land rights and precluding further development on the line of the current, or an adjusted modified route.
- Detailed investigation and analysis of the line be commissioned to explore its potential for increasing London bound capacity and/or as a suburban commuting line serving the Solent cities.
- A programme of remediating maintenance be instigated to secure the asset for the future.
- Subject to these more detailed evaluations the line be re-opened.

Re-using the pre Beeching Meon Valley railway infrastructure could offer significant future opportunity providing additional north bound Solent capacity and a commuting service.

Part of CPRE's vision for 2026, our centenary year, is a revival of rural railways. This is not just to give more people and freight a choice about how to travel, it is also needed to reduce the traffic on roads and the resulting impact on the countryside.

Although rail travel has reached record levels, in rural areas the rail network remains a fraction of its former self and stations can be hard to get to. We believe government and the industry should ensure rural railways are more than just an afterthought, by being as ambitious for them as they are with their plans for cities and high speed rail.

Campaign to Protect Rural England, Our Railways Future

fig. 28.

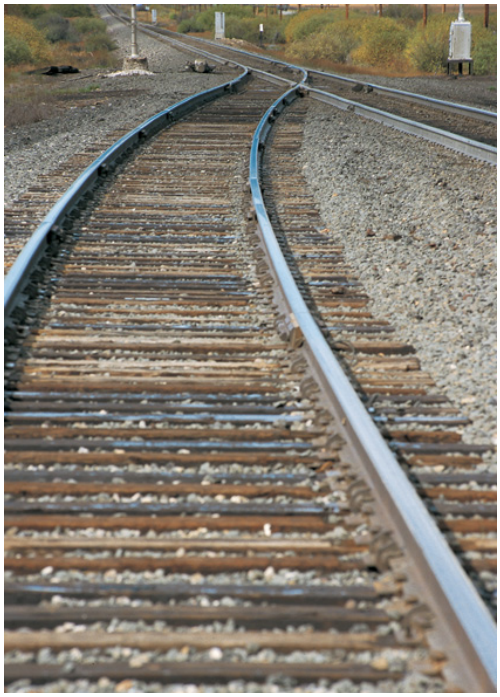
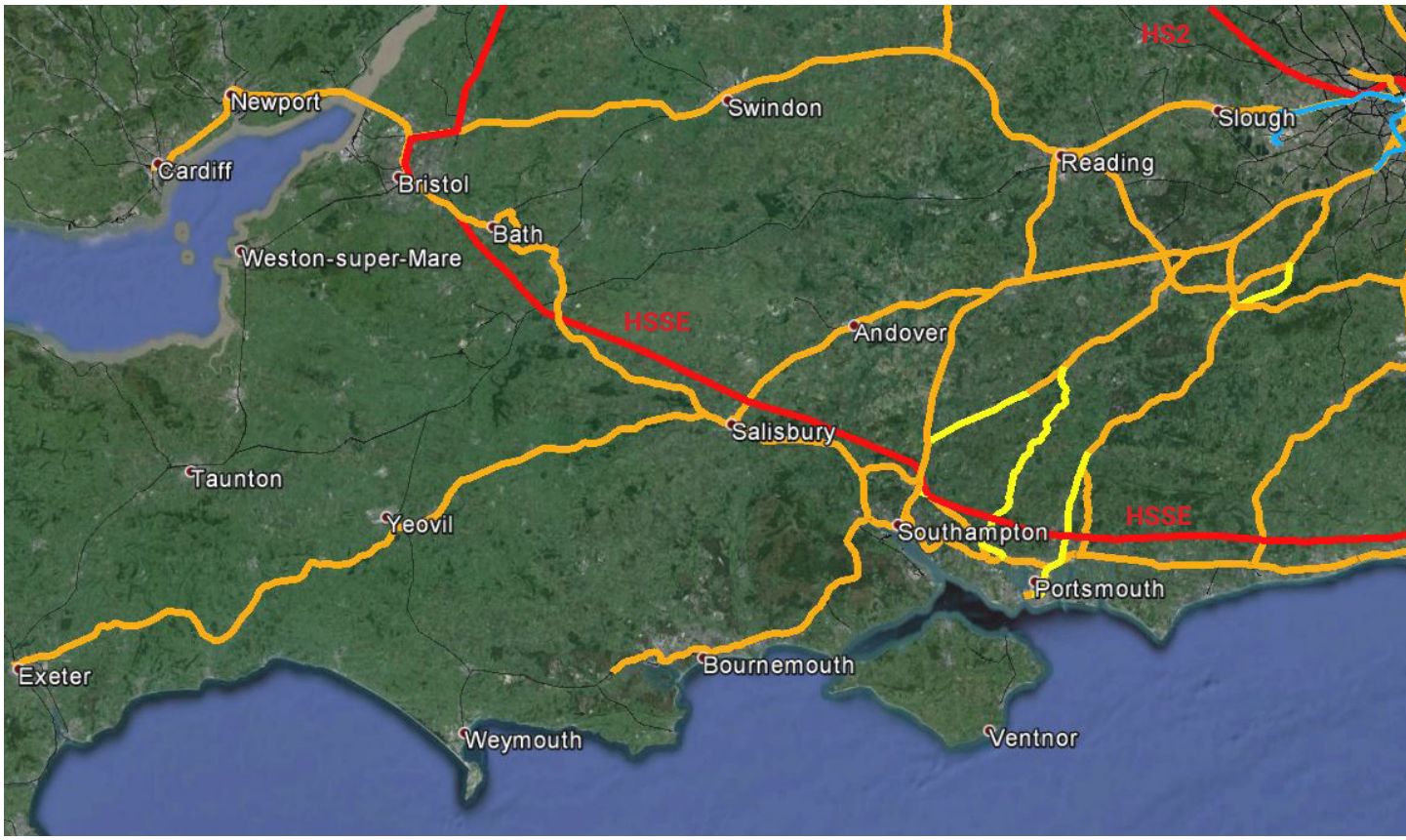


fig. 29. Composite mapping of detailed proposals with key rail lines

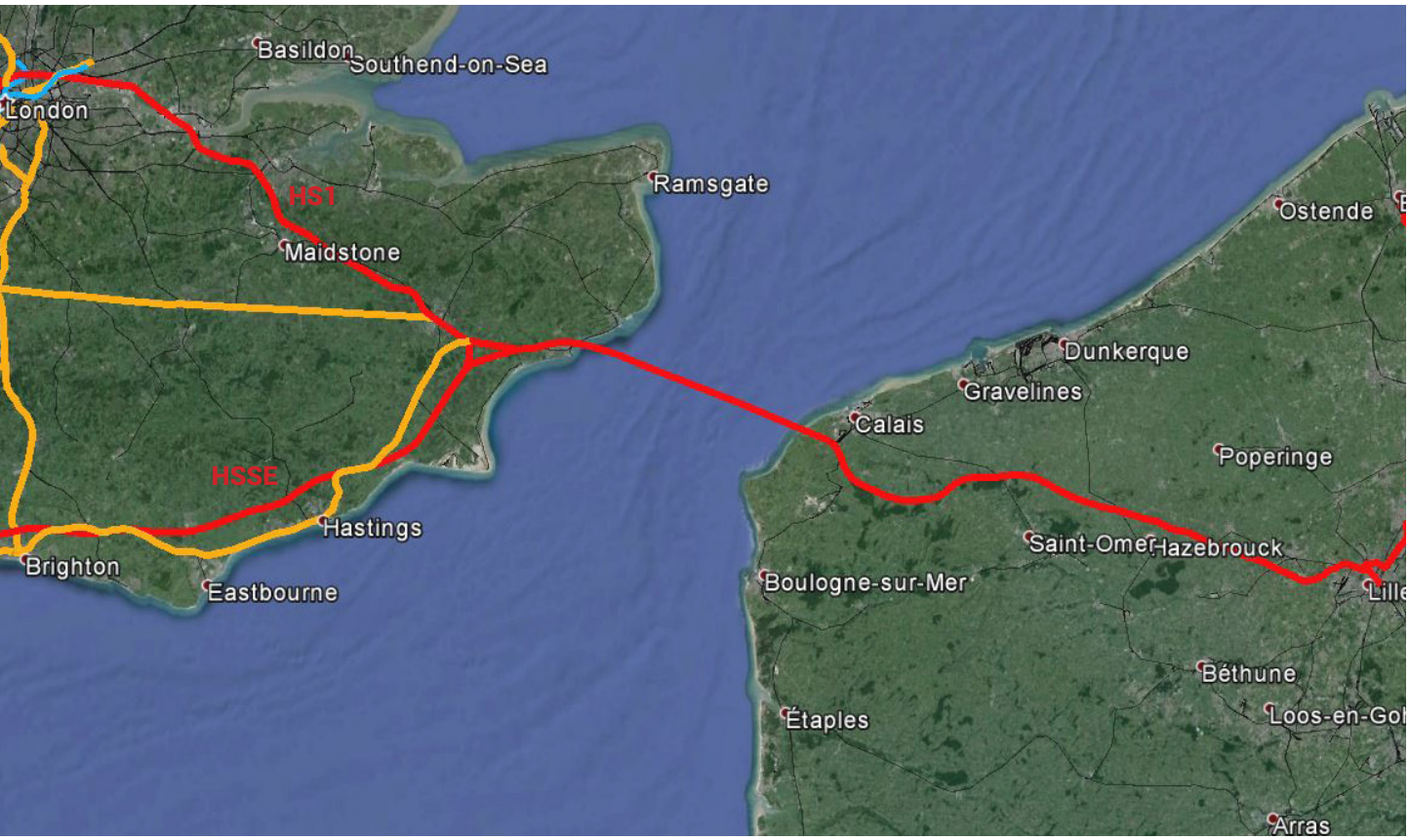


The composite map (fig. 28) shows all report route proposals described in this report in geographic context along with other key regional rail lines. (ref also fig.3)

Critical for the distribution of freight from Southampton docks is the route known as the electric spine running north from Southampton through Reading.

Route Key

- Existing railways
- Proposed main line routes
- New and existing high speed lines
- Crossrail (London only)



...both Ben Ainslie, by boat (75 kph), and Bradley Wiggens, by bike (54.5kph), could get to Southampton, Hastings, and Brighton faster!

COLOUR KEY - SPEED
0-50 kph
51-75 kph
76-100 kph
101-150 kph

fig. 30 Best journey times and average speed over point to point distances; by distance from Portsmouth
data sources: Trainline Europe, National rail journey planner, google maps

best journey time

	PORTSMOUTH	Southhampton	Brighton	Bournemouth	Gatwick	London	Hastings	Bristol	Ashford	Cardiff	Exeter
PORTSMOUTH		00:40	01:15	01:33	01:20	01:28	02:40	02:21	03:18	03:16	03:01
Southhampton	40.7		01:46	00:37	02:00	01:14	03:18	01:42	02:43	02:34	02:23
Brighton	54.3	49.8		02:27	00:31	01:03	00:57	03:11	01:47	03:51	04:19
Bournemouth	37.0	61.6	49.8		02:20	01:45	03:42	02:26	03:14	03:16	03:03
Gatwick	57.0	45.0	69.7	55.3		00:31	01:24	02:41	01:07	03:23	03:47
London	69.5	90.0	80.0	86.3			01:36	01:39	00:38	02:04	02:05
Hastings	43.9	42.1	45.5	46.8		53.8		04:06	00:40	04:23	05:01
Bristol	54.5	60.6	58.4	39.5		116.4	56.1		03:08	00:49	01:00
Ashford	43.3	58.9	44.9	61.9		126.3	58.5			03:30	03:23
Cardiff	49.9	54.2	58.4	38.0		102.6	61.6				02:22
Exeter	57.3	63.8	55.6	38.0		121.0	57.8				
Birmingham	60.6	71.1	68.9	64.3		117.1	66.5				
Lille	72.2	82.8	65.8	79.3		183.8					
Manchester	67.7	69.2	86.2	65.5		122.3					
Brussels	80.6	88.6				172.4					
Antwerp	65.6	71.0				96.2					
Rotterdam	52.9	64.3				91.1					
Paris	60.7	74.5				153.3					
Amsterdam	54.4					78.3					
Cologne	81.8					118.8					
Glasgow	83.7	88.9				122.4					
Edinburgh	83.6	84.9				122.8					

average journey speed from point to point distance

5 APPENDIX

A. Best rail journey times with average speed, from Portsmouth

This table provides comparisons between the current best rail journey times between a range of UK and European destinations; along with a sample of the average speeds.

The table is arrayed by distance from Portsmouth.

The Portsmouth direct line at 69.5 kph is, with the exception of Hastings (53.8 kph) the slowest London intercity service. The intercity connections excluding London out of Portsmouth, to Gatwick and the English cities, operate an average speed of 51.5 kph

Radial intercity connections from London provide all the UK highest speed services by a clear margin, with an average speed to English cities of 96.3 kph (87% faster than Portsmouth's services).

Despite the longer journey, the Southampton direct train (90 kph) to London is significantly faster than Portsmouth direct (69.5 kph).

Both Ben Ainslie (75 kph), by boat, and Bradley Wiggens (54.5kph), by bike, could get to Southampton, Hastings and Brighton faster!

It is to be noted that the speed of rail travel in this assessment has been taken as a direct point to point distance. This affects precise direct relationships particularly where geographic features such as the Solent or Channel incur. Over longer distances and across the sample attributable differences should be less material. The data however provides valid comparators for interpretation.

Birmingham	Lille	Manchester	Brussels	Antwerp	Rotterdam	Paris	Amsterdam	Cologne	Glasgow	Edinburgh	
03:14	04:06	04:33	04:45	05:55	07:36	05:23	08:14	06:55	07:11	07:02	PORTSMOUTH
02:31	03:52	04:14	04:35	05:45	06:32	04:47	07:04	06:45	06:36	06:47	Southhampton
03:15	03:28	03:49	04:01	05:03	05:44	04:25	06:26	06:21	06:14	06:12	Brighton
03:03	04:27	04:44	05:06	06:16	07:57	05:18	08:43	07:16	07:08	07:23	Bournemouth
02:38	02:53	03:20	03:32	04:42	05:32	03:44	06:04	05:42	05:50	05:38	Gatwick
01:24	01:20	02:09	01:51	03:17	03:34	02:15	04:36	04:11	04:33	04:21	London
03:50	02:18	04:38	03:29	04:39	06:20	03:09	06:58	05:39	06:33	06:42	Hastings
01:23	04:25	02:58	04:56	05:58	06:39	05:20	07:21	07:16	06:11	06:06	Bristol
02:35	01:26	03:24	02:06	03:05	03:37	02:22	04:12	04:17	05:45	05:37	Ashford
02:00	05:00	03:10	05:31	06:33	07:14	05:55	07:56	07:51	06:22	06:17	Cardiff
02:32	04:03	01:32	04:33	05:36	06:16	04:20	06:58	06:53	04:07	04:15	Exeter
	04:02	01:32	04:33	05:36	06:16	04:20	06:58	06:53	04:07	04:15	Birmingham
		04:30	00:35	01:28	02:03	01:06	02:35	02:45	06:46	06:35	Lille
	108.9		05:01	06:03	06:44	05:25	07:26	07:21	03:16	03:19	Manchester
	154.3			00:26	01:09	01:28	01:42	01:41	07:25	07:06	Brussels
	78.4		94.6		01:11	02:11	02:01	02:30	08:35	08:08	Antwerp
	82.9		104.3			02:46	00:40	02:59	09:22	08:49	Rotterdam
	188.2		180.7	137.4	133.7		03:13	03:29	08:07	07:30	Paris
	91.7				85.5			02:46	09:54	09:31	Amsterdam
	98.8						78.1		09:35	09:26	Cologne
										01:00	Glasgow
											Edinburgh

B. Rail journey times relative to car from Portsmouth

Journey times by car and rail from Portsmouth highlight the regional issues to be addressed for a sustainable and low carbon economy.

Only two UK cities, London and Edinburgh, are more rapidly accessible by train than by car. 3 hr 18min by train to Ashford is more than 1hr longer than it now takes to go from London to Paris, or c. 1hr 30min longer than the journey from London to Brussels.

The discrepancies between road and rail travel times to northern cities such as Birmingham and Manchester evidence especially poor rail connectivity.

This is a huge constraint on access to European and northern markets and the future development of the Solent region.

	Portsmouth distance by road km	Car journey times	Rail Journey times	CAR FASTER THAN TRAIN (mins)	TRAIN FASTER THAN CAR (mins)	TRAIN SPEEDS
Southhampton	37.8	00:32	00:40	0:08:00		40.7
Brighton	82	01:10	01:14	0:04:00		54.3
Bournemouth	85.2	01:00	01:33	0:14:00		37.0
Gatwick	106	01:18	01:20	0:15:00		57.0
London	121	01:36	01:28		0:08:00	69.5
Hastings	136	01:51	02:40	0:49:00		43.9
Bristol	151	01:57	02:21	0:24:00		54.5
Ashford	190	02:40	03:18	0:38:00		43.3
Cardiff	222	02:32	03:16	0:44:00		49.9
Exeter	216	02:49	03:01	0:12:00		57.3
Birmingham	259	02:32	03:14	0:42:00		60.6
Lille	378	04:14	04:06		0:08:00	72.2
Manchester	391	04:03	04:33	0:30:00		67.7
Brussels	466	05:13	04:45		0:28:00	80.6
Antwerp	473	05:14	05:55	0:41:00		65.6
Rotterdam	554	06:11	07:36	1:25:00		52.9
Paris	555	06:07	05:23		0:44:00	60.7
Amsterdam	633	06:37	08:14	1:37:00		54.4
Cologne	688	07:12	06:55		0:17:00	81.8
Glasgow	717	06:51	07:11	0:20:00		83.7
Edinburgh	723	07:20	07:02		0:18:00	83.6
COLOUR KEY						
Car faster than train by:		0-20 mins				
		20-40 mins				
		40-60 mins				
		>60 mins				
Train faster than car by:		0-20 mins				
		20-40 mins				
		>40mins				
Train Speeds		0-50 kph				
		51-75 kph				
		76-100 kph				

fig. 31. Rail travel from Portsmouth Southsea relative to car travel: ranged by distance from Portsmouth distance, times and speed.

C. Rail speeds, relative travel times and distance from Portsmouth

Trains to Southampton, Hastings, Ashford and Cardiff, at less than 50kph, are particularly slow.

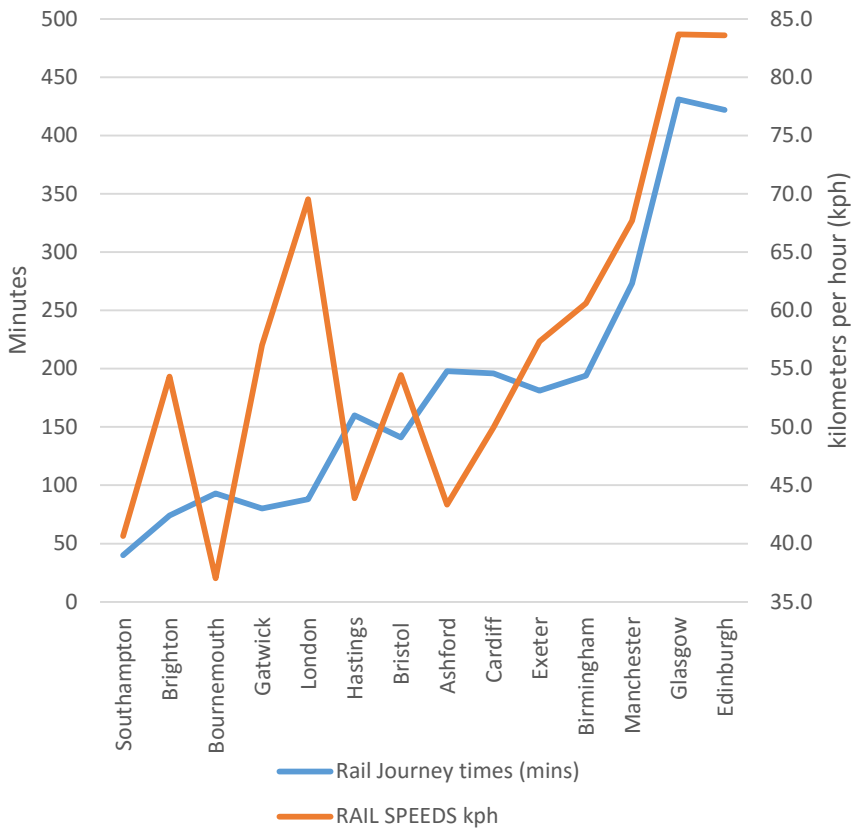
Although Bournemouth is also slow, proportionally this route is considerably extended by Southampton water.

Despite both routes being pretty direct, travel to Bristol and Brighton achieves speeds less than 55kph. In this context the routes are slow.

Train speeds to Glasgow and Edinburgh are the highest reflecting on the higher speed trains (the 225). This is achieved despite the need to change trains twice and await transfer.

It is to be noted that the speed of UK rail travel in this assessment has been taken as a direct point to point distance. This affects precise direct relationships particularly where geographic features such as the Solent or Channel incur. Over longer distances and across the sample attributable differences should be less material. The data however provides valid comparators for interpretation.

fig. 32 Rail speed and travel times to destinations ranged by distance from Portsmouth



D. South West Trains and Southern Rail existing network maps

Network maps included for reference. The number of south coast stations is notable.

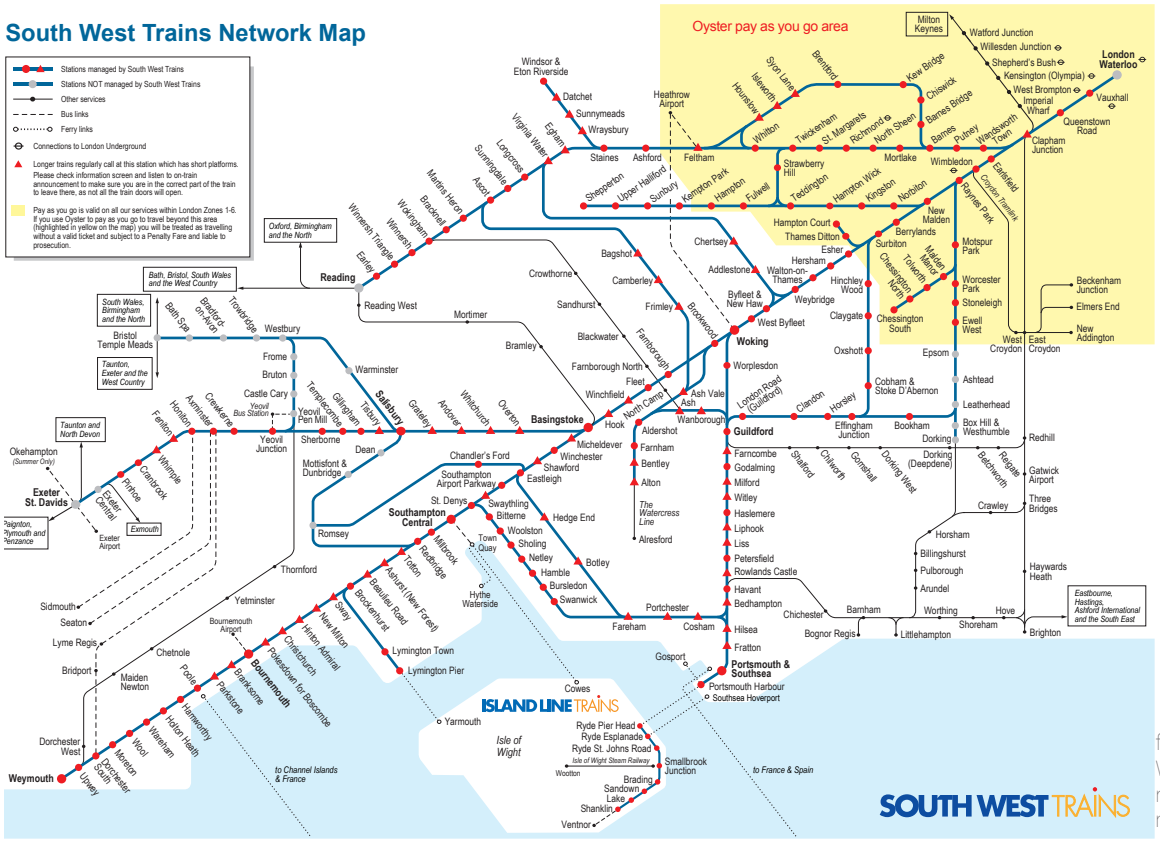


fig. 33. South West Trains network map 2016

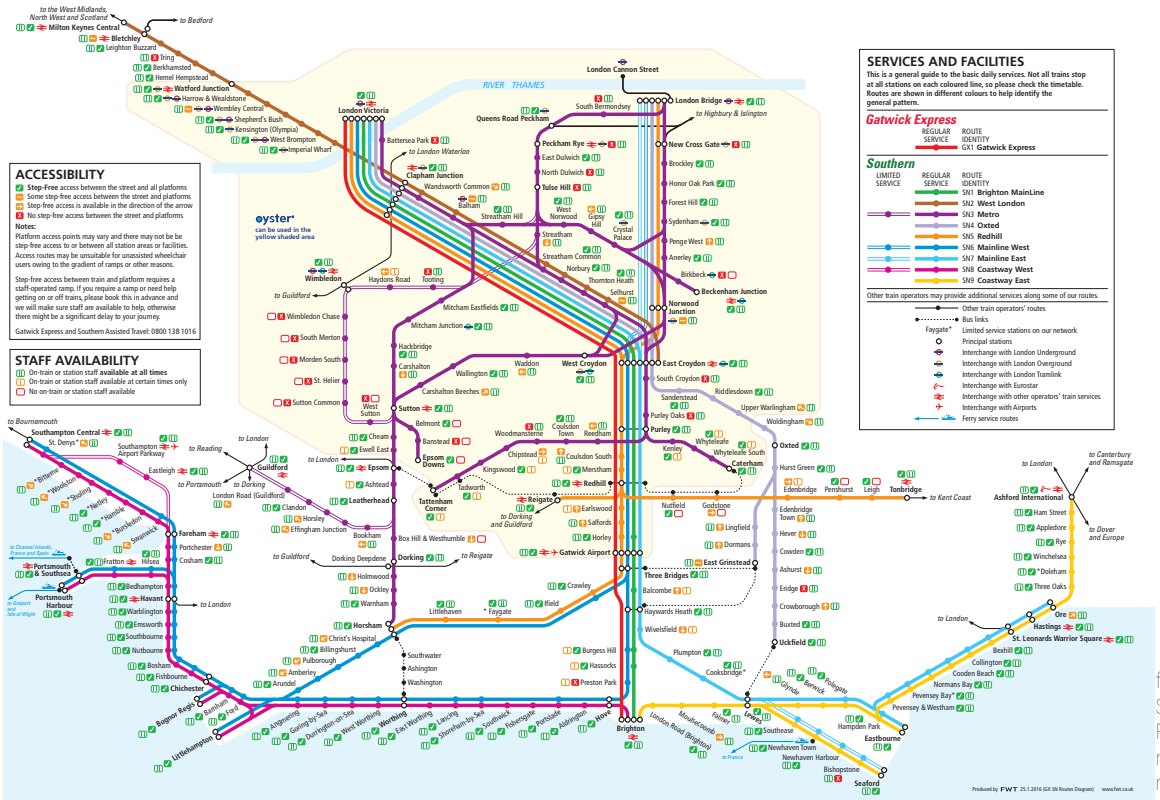


fig. 34 Southern Railway network map 2015

6 Notes

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is modeled either using an own-cost elasticity model or a variable demand choice model approach. The own-cost elasticity model approach is most commonly used for (demand forecasting) rail schemes, because:
• it is often difficult and expensive to collect sufficient data of adequate quality to construct a choice model for rail schemes, which usually cover a large geographical area;
• rail is a minority mode, and so its demand is not expected to be constrained in proportion with population growth in the same way as more common modes, such as car or walk

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Data relating to track types and line speed designations in this document have been extracted from Route Plans 2008 Route 2 South West Main Line. Network Rail.

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fig. 35

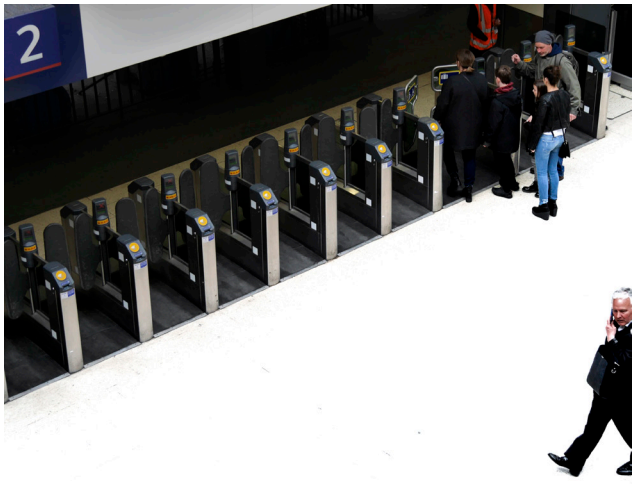

Image credits

fig. 2 Source: Our Railways Future. Network Rail 2012
fig. 5 W Menteth on www.datashine.org underlying image. Sources: Census 2011, wikipedia
Fig. 6. Source: Transport Statistics Great Britain 2015
Fig. 7. Source: Passenger Rail Usage Statistics, 2014-15 Quarter 4 Statistical Release. Office of Rail & Road, June 2015
fig. 9 www.wikepedia
fig. 11. Source: Wessex Route Study 2015, Long term Planning Process: London and South East Market Study Network Rail Aug 2015 Network Rail
fig. 14. - Fig 4.3 from: Long term planning process. Wessex Route Study. August 2015 source: sourced from South West trains automated passenger count data.)
fig. 18 - 26 & 29. W Menteth Architects
path drawings on google earth
fig. 33. South West Trains 2016
fig. 34 Southern Railway 2015
All figures otherwise ©W Menteth.

fig. 36 St Pancras station plaque. extract from: The Four Quartets. T.S Eliot

About

This article by Walter Menteth develops on analysis undertaken by University of Portsmouth School of Architecture masters students during the period 2013 -2016, under the authors supervision.

As consultant for NSCDG Walter Menteth wrote the 1982 initiating study identifying the London Overground route from Shoreditch to New Cross, New Cross Gate and Clapham Junction. He was also a member of the team who developed initial studies on the London Docklands Light rail. Both projects successfully re-use existing track infrastructure.

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