

TURNING SOUTH
LONDON ORANGE:
REFORMING SUBURBAN
RAIL TO SUPPORT
LONDON'S NEXT WAVE
OF GROWTH

*Sam Sims
Jonathan Roberts
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FOREWORD

The idea behind this valuable report is very simple. When I was Minister for Transport with special responsibility for London in the mid-1990s, I was invited to experience the joys of the North London line, which together with the West London line and the Barking to Gospel Oak extension circles north London. Regular users of the line at that time will no doubt know precisely what I found. The short, three-car train I was due to travel on failed to arrive, having broken down. The station I stood on was grubby, graffiti-strewn and littered with detritus of all sorts both on the platform and track. Someone had clearly had far too good a night a day or so before, as the contents of their supper were spread liberally over the station stairs. It was a miracle that any commuter subjected themselves to this service. It simply wasn't good enough. One of the reasons I campaigned so hard in my own party for the introduction of an elected Mayor for London after the 1997 General Election was the frustration I felt at not being able to invest the funds that were needed to restore a semblance of decency to that line.

Ken Livingstone fulfilled my ambitions as well as I could ever have hoped to. He negotiated with the Department for Transport to take over the line, invested in decent rolling stock, improved signalling, reinforced viaducts and cleaned up stations. The line is now coloured orange on TfL's comprehensive transport map and is one of the best-performing and most appreciated of all rail operations in the UK. It was this that prompted the Centre for London team to consider whether a similar solution could be applied south of the river. It was my good friend Andrew Adonis, a former Secretary of State for Transport, who suggested we entitle the report *Turning South London Orange*.

The good news is that there is no immediate parallel with the North London line south of the river, in the sense that nowhere was quite as awful. But the study has thrown up some important issues around how

capacity can be increased, how better use can be made of available train paths, how dwell times at stations can be reduced, better orbital journeys facilitated and above all how we can turn suburban rail services south of the river into what Isabel Dedring, the Deputy Mayor for Transport, calls “a second Underground”. The report also highlights the important issue of how to reconcile the necessarily competing demands of regional rail users commuting into London with those who use the system in London itself, the so-called Metro users. This is much more of an issue south of the river than it is in the north and has proved a Gordian knot that has so far not been cut. Modelling a solution on the recently formed Rail North, the authors make a good case for a governance regime that is fair to all sides. That is what London, the fastest-growing major city in the Western world, so desperately needs.

I have high praise for the efforts of the three authors of this report, Sam Sims, Jonathan Roberts and Brell Wilson, who have worked tirelessly and patiently on it. The professional advice from our advisory group and others has been invaluable and the support of colleagues from TfL and the rail industry has been hugely appreciated. It has been a pleasure to chair the report’s progress, and I commend it as a valuable contribution to an important issue for London’s next Mayor.

Steve Norris

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EXECUTIVE SUMMARY

London is growing fast. The recent boom in professional and creative services has seen firms gravitate towards big cities where they can easily interact with clients, suppliers and collaborators.¹ London has capitalised on this trend, adding 1.4 million additional service sector jobs since 1996. The population has grown in step, increasing by 1.6 million over the same period.²

But London is experiencing growing pains. The need to transport an ever-larger workforce has seen overcrowding on the rail network in London and the South East double over the last twenty years.³ The failure of house building to keep up with population growth means house prices have quadrupled over the same period.⁴ South London's infrastructure is no less strained. The five Underground lines that serve south London suburbs account for 77 per cent of delays due to overcrowding,⁵ and nine of the ten busiest bus routes are south of the river. Meanwhile, five of the twelve south London boroughs are ranked by Shelter as amongst the least affordable in the country.

Many of the existing policy responses for accommodating London's growth are now running out of steam. Within current density limits, the total stock of land available for house building is enough for 430,000 homes over the next decade,⁶ but analysts believe London needs to build at least 500,000 homes over that period.⁷ And while Tube upgrades have accommodated around 40 per cent of growth in rail journey stages over the last twenty years, by 2035 the Underground network will have been upgraded to the practical limit of its capacity.⁸ Yet demand for tube and rail is expected to grow by 60 per cent and 80 per cent respectively, by 2050.⁹ A new approach to managing London's growth is therefore needed.

The reforms we propose are modelled on the successful *London Overground* network, with its distinctive orange branding. The Overground was created in 2007 by consolidating a number of suburban services into an integrated network managed by Transport for London. Since then, the orange network

has become a benchmark for high-quality suburban rail, providing high frequencies of up to sixteen trains per hour; offering a reliable ‘turn up and go’ service; higher-capacity carriages; first until last train station staffing for improved safety and accessibility; and improved station facilities with seating, shelter and modern passenger information. Ridership jumped 80 per cent in the four years after the Overground network was created, with around three quarters of this growth being directly attributable to the upgrades.¹⁰ Savills have also attributed a localised house-building boom along the line to the arrival of the Overground.¹¹ This report makes the case for adapting the Overground model to the suburban rail network in south London.

Despite congestion on nearby bus routes and the tube reaching capacity, the suburban rail network in south London is currently not delivering on its potential. For example, while Brixton station on the Victoria line sees twenty-nine million entries and exits per year, the nearby suburban rail station gets just one million.¹² Similarly, while Morden underground station sees almost nine million entries and exits per year, nearby Morden South mainline station sees only one hundred thousand.¹³ Transport for London estimates that by 2050 demand for travel on the London rail network will grow by 80 per cent.¹⁴ We estimate that in south London demand growth could be 100 per cent. Accommodating this increased demand will require the suburban rail network to become, in the words of Isabel Dedring, a “second Underground.”¹⁵

This will not be easy. The track layout, station facilities and rolling stock currently used on these services are not designed for a modern high-frequency urban rail system. But our research with Thales and Jonathan Roberts Consulting suggests that an ambitious package of upgrades could deliver an orange-standard, high-frequency service in south London.

This would need to include:

- Improved signalling and train management systems.
- Track layout amendments including flying junctions.
- Improved rolling stock.
- Better platform management.

As well as these network-wide reforms, we advocate the creation of a number of new stations and interchanges, as well as major remodelling of the network near Wandsworth and Streatham. Reallocation of some used and unused freight slots out of the two three-hour passenger peak periods to other times of day would also help release additional capacity.

The key transport benefit of turning south London orange is increased frequency and therefore capacity. We estimate that with a radical modernisation of the network, including automatic train operation, the south London suburban rail network could deliver around 130 per cent additional capacity. Experience from the existing Overground network suggests that the additional capacity freed up by these reforms will also help relieve congestion on existing transport links.¹⁶ For example, 48 per cent of those currently entering Brixton underground station travel there by bus, often from as far south as Norbury.¹⁷ Providing an orange rail alternative would help to relieve congestion on busy bus routes running along Brixton Hill to the station. Similar benefits would likely result from relieving busy tube routes such as the Victoria and Northern lines.¹⁸ Reliability, connectivity and accessibility would also be improved. Without these reforms, by contrast, the south London network as a whole will struggle with progressively worse crowding and congestion as demand continues to grow.

Turning south London orange will also bring economic benefits to south London, supporting house building and job growth. In order to quantify these benefits, we worked with Atkins to conduct a detailed study of what could be achieved on the south-central section of the network. Experience with the existing Overground network shows that once security and frequency rise to ‘orange standards’, the service becomes trusted by users and they adapt their travel patterns in response. This will attract more Londoners to the south by bringing the south closer to the rest of London. We estimate that improved connectivity would accelerate development of almost 13,000 additional homes in south central London only, by boosting confidence among investors and demand among Londoners, as well as unlock a further 3,000 homes in south central by enabling building at greater density. Between 2025 and 2035, we estimate that approximately 34,000 new jobs will be created within 1km of potential orange station. Given the clear pressures already visible on the network, Overground frequencies and reliability will be vital to ensuring people can travel to and from these jobs.

Delivering orange standards in south London requires reform of the way in which the suburban network is managed. The power to specify, let and manage the rights to operate the trains – as well as control of the station assets – will have to be devolved from the Department for Transport to Transport for London (TfL). This will allow TfL to specify orange standards for rolling stock, station staffing and service frequency. It will also give TfL incentives to invest directly in improved station environments and enable them to work with Network Rail to upgrade the track and signalling. Many of these lines currently terminate outside of the Greater London Authority boundary, raising questions about governance. However, Kent and Surrey County Councils as well as a number of rail user groups have signalled their support for such an arrangement, on the condition that services beginning

outside London will not be adversely affected.¹⁹ We support this approach to reform as an important step in increasing frequency and capacity on the south London rail network.

Even so, our research suggests that this approach may not be enough to deliver full orange frequencies. In particular, the work we commissioned from Thales and Jonathan Roberts Consulting found that delivering orange standards would require full exploitation of all four of the upgrades set out above. Some of these upgrades, such as signalling and junction upgrades, could be implemented under the arrangements set out above. Others could only be partially implemented. For example, Transport for London could specify improvements to all rolling stock on the services for which it is responsible, but all services running from outside London would still be operating under a Department for Transport franchise and would not be subject to the same requirements. This would put limits on capacity at certain pinch points. The additional capacity that could be unlocked from train management systems would also be limited because trains sharing a line would still be operated by different train operating companies.

It is possible that these limitations – all of which stem from the difficulties in coordinating standards across different users of the network – can be resolved through close partnership working between TfL, DfT and the various train operating companies. However, the need to accommodate a 100 per cent increase in demand means that greater formal integration of the network may have to be considered. One model for this is to transfer all of the services running between south London terminals and the counties of Kent, Surrey, West and East Sussex into a single concession let jointly by these authorities. This would allow coordination of standards across the network and full exploitation of the network's potential capacity. Whether or not this is necessary will depend on the trajectory on which London's population develops, and on what can be

achieved through the informal approach to coordination set out above.

Turning south London orange would have many benefits. In the short term, it would allow a number of quick wins by providing the incentives for upgrading stations on the network. Experience with the existing Overground network and Merseyrail suggests that this alone will make a big difference to how the railway is used.²⁰ In the medium term our proposals would allow for a substantial increase in capacity, potentially delivering the full 100 per cent increase in capacity required by 2050, as well as supporting employment growth in the area. And in the longer term, our proposals would change the connectivity and lifestyles possible in south London, stimulating significant new housing development around stations.

The public investment required would also be significant: our high-level estimates, using similar projects as benchmarks, suggest that total costs would be higher than Thameslink (circa £6.5bn) but below Crossrail (circa £14.8bn).²¹ In order to contextualise these costs, it is worth thinking through the alternatives. Failing to provide for a doubling of rail demand would likely cause severe crowding and congestion in south London, as well as constraining housing and employment growth. On the other hand, accommodating a doubling in demand without upgrading the existing network would require a new tunnelled mainline through London, effectively another Crossrail, with far higher costs.²² While the costs of turning south London are significant, the opportunity costs would therefore be even higher.

We recommend that:

- The Department for Transport devolve suburban rail services terminating inside or just outside the southern GLA boundary to Transport for London, as the current franchises expire.

- Central government provide a grant sufficient to cover the costs of turning south London orange, beyond what can be funded from TfL revenue and business contributions. This is essential to keep south London moving.
- Transport for London work with Network Rail in order to implement the upgrades necessary to deliver orange standards across this network, in particular aiming to deliver six or more trains per hour where possible.²³
- Transport for London work with the Department for Transport to coordinate standards across the various south-of-London franchises where this can help unlock additional capacity within south London.
- Network Rail and the Office for Rail Regulation should make the changes necessary to swap freight slots out of the peak passenger transport periods, in order to free up additional capacity in south London.
- Transport for London's commercial development team work with London Boroughs to exploit the additional development potential around stations converted to Overground.
- If it proves difficult to deliver the necessary capacity increases under these governance arrangements, then the Department for Transport consider replicating the Rail North model in order to establish Capital to Coast Rail. CCR should then work to harmonise standards across the local network and achieve the maximum possible increases in capacity.

1

THE CAPACITY GAP IN SOUTH LONDON

London is expanding rapidly. Developments in information technology over the last quarter of a century have led to a rapid expansion in professional and creative services.²⁴ These firms benefit from face-to-face interaction with clients, suppliers and collaborators and have therefore gravitated towards big cities. London has capitalised on this trend, adding 1.4 million additional service sector jobs since 1996. The capital is now a global hub for financial, accounting, legal, architectural, planning and design services. These new jobs have attracted new people to the city, with the population swelling by 1.6 million over the same period.²⁵

Economic and population growth have created their own problems, with transport and housing in particular coming under strain. The failure to build enough new homes to accommodate the expanding population means that the cost of housing in London has quadrupled since 1996.²⁶ The need to transport an ever-larger workforce has seen overcrowding on the London and southeast rail network double over the same period.²⁷

These growing pains are just as acute in south London. The five underground lines serving south London suburbs account for 77 per cent of all overcrowding-related delays on the tube network.^{28,29} The Jubilee, Northern and Victoria lines in south London are particularly stressed and are forecast to be 'very crowded' or 'maximally crowded' during the morning peak by 2026.³⁰ The situation is perhaps even worse for bus users, with the London Assembly listing nine of the ten most overcrowded bus routes as being in south London.³¹ Despite inner-west and inner-east London capturing many of the headlines around housing, south London also has severe problems with affordability. Seven of the twelve south London boroughs appeared in Shelter's ranking of the least affordable local authorities in which to rent.³²

The population growth generating these pressures is set to continue apace in the coming decades.

Greater London Authority population projections for south London show that the area is expected to grow by 35 per cent, or almost a million people, by 2041.³³ TfL has estimated that by 2031 its rail network will need to deliver an additional 100 million passenger kilometres each year. Within this, the suburban rail network across London will need to accommodate an 80 per cent increase on current levels.

Although our modelling is not as detailed, we have estimated future rail travel demand for south London. Over the past decade there has been remarkable growth in demand in the area, stimulated by a number of factors including:

- Increasing road congestion.
- Additional population.
- Introduction of Oyster and Pay As You Go ticketing.
- Better services from the mid-2000s, some paid for directly by TfL on the south London network.
- Introduction of Overground services on several corridors.

Table 1 shows how demand at suburban stations, measured by entries and exits, has increased in recent years. In the last year alone there has been a remarkable 10 per cent growth in demand at Zone 2 mainline stations, 3–4 times the underlying economic growth rate. This seems to be part of a long-running trend, with demand almost doubling over the preceding ten years. If this rate of growth is sustained even for the next five years, this would put serious pressure on the network. Looking ahead 15 years to 2031, it could create fundamental capacity problems on existing mainline services. It is instructive to note that the change in demand in Zone 2 tube stations is much less than at

equivalent mainline stations, suggesting perhaps that the crowded tubes within Zone 2 are already beginning to push users onto the mainline rail network in this area. Zones 3–7 have seen a fairly uniform 4–6 per cent increase in usage in the last year, about twice the rate of economic growth. Again, this appears to be part of an established underlying trend with demand also doubling over ten years in Zone 3 and Zone 4. London 2050 planning envisages significant additional population growth in many of the outer suburbs, which could push up Zone 4–6 growth rates in future years.

Table 1: Entry and exit figures by Oyster zone

ZONE	NUMBER OF SUBURBAN STATIONS	ANNUAL FIGURES			% CHANGE	
		2005–06	2010–11	2014–15	2005 TO 2014	2013 TO 2014
ZONE 2 MAINLINE STATIONS IN STUDY AREA	21 STATIONS INCLUDING CLAPHAM JUNCTION	38,305,641	50,070,905	74,575,290	95%	10%
ZONE 3 MAINLINE STATIONS IN STUDY AREA	22 STATIONS INCLUDING WIMBLEDON	33,659,799	56,573,362	71,431,898	112%	5%
ZONE 4 MAINLINE STATIONS IN STUDY AREA	16 STATIONS	9,356,256	14,785,569	18,332,908	96%	4%
ZONE 5/6/7 MAINLINE STATIONS IN STUDY AREA	14 STATIONS INCLUDING EAST CROYDON AND EPSOM AS 'Z'	28,344,066	39,238,605	45,922,776	62%	4%
TUBE STATIONS IN SOUTH LONDON (ZONE 2)	9 STATIONS	68,062,290	87,241,570	112,323,001	65%	7%

In order to model future demand we have made a number of assumptions. As with all the original quantitative estimates in this report, we have confined our work to the list of stations shown in Figure 1 below, in order to make the problem more tractable.

The baseline has been taken from the recently published Office for Rail and Road (ORR) data for 2014–15.³⁴ This shows that there are currently 224.2 million passengers entering and exiting in our study area stations in 2014–15. We assume an annual 2 per cent growth in demand deriving from the

Figure 1: Stations included in the 'Turning south London orange' study area



economy and add to this an annual population growth element of 0.57 per cent. The latter is the study area's estimated share on a straight-line basis of the forecast increase in London population to 2050. This implies a 38 per cent increase to 308 million entries and exits per annum by 2031. Applying the same method

to 2050 implies a doubling in passenger demand to 448 million. Projecting growth decades into the future is subject to huge uncertainty, but given that demand has approximately doubled over the south London mainline network in the past ten years alone, this figure is by no means implausible.³⁵ Accommodating this level of demand growth will require a radical transformation of the suburban rail network.

This report proposes that the successful London Overground model, with its distinctive orange branding, should be replicated across much of south London in order to close the capacity gap and help build new homes south of the river. Chapter two details the development of the Overground network in north London, the ‘orange standards’ that it provides for users, and the effect that it has had on increased ridership and local economic development. It also points out that the antiquated and complex nature of the south London suburban rail network means that achieving the same standards there will not be easy. Chapter three therefore delves into the type of engineering upgrades that will be required to create a modern high-frequency metro rail system south of the river. In short, we conclude that turning south London orange is feasible, but will require significant upgrades to the network and greater cooperation between the various bodies involved in managing it. Chapter four then makes the case for our proposed reforms by quantifying the housing development and employment benefits that would result. Chapter five considers the governance reforms necessary to deliver these changes. Chapter six then concludes with our recommendations.

2

THE OVERGROUND

This chapter provides context for the rest of the report by taking a detailed look at the development of the London Overground network. It also sets out the impact that the introduction of orange standards had on ridership and housing development. In doing so, it sets up our argument for turning south London orange.

London Overground was created in 2007 by consolidating a number of different suburban services into an integrated network controlled by Transport for London. The origins of this reform can be traced back to 2004 and the Department for Transport's (DfT) *Future of Rail* white paper, which established the principle of expanding the Mayor of London's powers over rail in the capital.³⁶ The DfT argued that the size and complexity of the London transport network meant suburban lines would be better managed by the Mayor alongside the rest of the London network. They stopped short of transferring the tracks, which would remain in the ownership of Network Rail. There had previously been limited moves towards increasing the Mayor's influence, for example by requiring the Strategic Rail Authority to pay regard to the Mayor's Transport Strategy, but the white paper went further in proposing that the Mayor be given the power to introduce and specify new services on certain lines.

London Overground developed as a result of these new powers. The North London line (Richmond to Stratford), West London line (Clapham Junction to Willesden Junction), Gospel Oak to Barking, and Euston to Watford lines were transferred from the poorly-performing Silverlink franchise to Transport for London in November 2007, and the Overground network continued to grow in the following years.³⁷ The historically poorly-used East London line was transferred to London Overground in 2010 with extensions north from Whitechapel to Dalston Junction and south from New Cross Gate to West Croydon and Crystal Palace. In 2011 there was a further extension north from Whitechapel to Highbury and Islington, and in 2012 the integration of the old South London

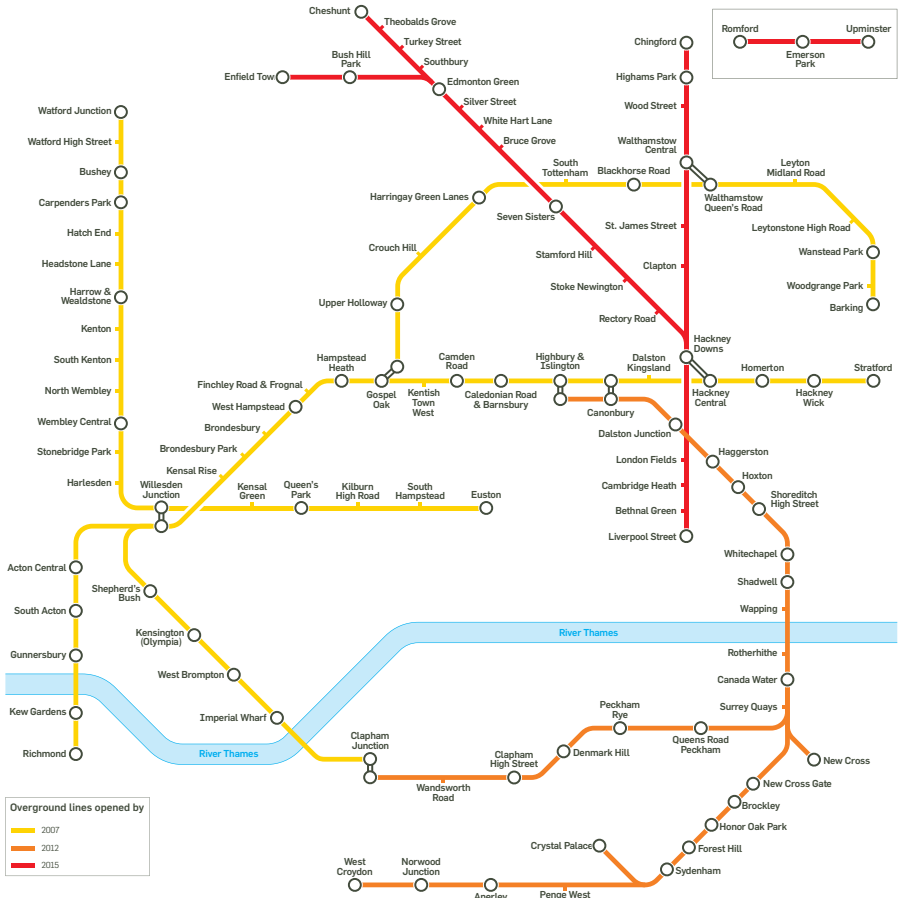
line (SLL), running from Surrey Quays to Clapham Junction, completed the circular ‘orbital’ route around London.³⁸ This created new connectivity, relieving crowding on radial routes and congested central termini.³⁹ In 2013 the Department for Transport agreed to devolve further lines to Transport for London and in spring 2015 the Greater Anglia lines from Liverpool Street to Enfield Town, Cheshunt and Chingford, and Romford to Upminster services joined the London Overground network. At the time of writing, these services are in the process of being upgraded to Overground standards. An attempt to transfer additional services in southeast London stalled in 2012.

The Overground ‘offer’

Prior to conversion, many of the stations and much of the rolling stock were in poor condition. Anecdotal evidence suggests that many users felt unsafe spending time on the platforms waiting for trains. After services were transferred to the Overground network a number of improvements were made:

- Services were made more frequent, providing between four and sixteen trains per hour (with the exception of the Euston to Watford Junction line), allowing users to ‘turn up and go’ rather than checking a timetable:
- New rolling stock was introduced incorporating:
 - Walk-through carriages to give passengers a greater sense of security⁴⁰
 - Longitudinal seating to provide additional capacity⁴¹
 - Air conditioning
 - Two double-doors per carriage

Figure 2. The Development of the Overground Network



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- Stations were deep-cleaned and refurbished, with improved weather cover and better passenger information.
- Stations were staffed from first to last train, increasing accessibility and security.
- The network was integrated into Oyster Pay as You Go.

As well as these important passenger-facing improvements, changes were made to the way the railway was run. Most rail services in England are let as franchises by the DfT. Train Operating Companies (TOCs) bid to DfT for the right to run the services that make up a franchise. The DfT specifies the routes taken, the stops involved, the standard of rolling stock and a minimum frequency of services that must be delivered. The franchisee either (i) is paid a subsidy by the DfT to deliver that service, based on expected fare revenues being less than the operating costs and an agreed profit margin or (ii) pays the DfT a premium for operating the services based on the expected fare revenue being more than the operating costs and agreed profit margin. London Overground uses a different model, known as a concession. The contracting authority, TfL, specifies all services and also sets fares and manages rolling stock, while the concessionaire is responsible for the day-to-day operation of trains and stations to standards set in the contract by the governing body. TOCs bid for a contract to deliver those services for a set fee from TfL. TfL then retains revenue from fares. The fee paid to the concessionaire will be dependent on a performance regime, aimed at achieving the strategic goals of the line.

Perhaps the most important difference between a concession and franchise is the way in which risk is allocated. In a franchise agreement, revenue risk is held by the franchisee: if fare revenues decline then the franchisee makes less money and vice versa. In a concession, the revenue risk remains with the public authority letting the concession. The public authority retains fares but also absorbs the loss of revenue if ridership falls.⁴² At present, franchisees have little incentive to invest in fixed capital enhancements such as station upgrades because they may lose the franchise before they can recoup that investment. Under the concession model, by contrast, TfL can invest in stations safe in the knowledge that they will reap any rewards from subsequent revenue growth.

TfL therefore has both the incentive and the power to invest.

Impact

London Overground has transformed connectivity in north and east London. Since gaining control of services, TfL have used increased frequencies and extensions of the network to double the number of kilometres per annum operated on the network, from 3.4 to 7.8 million (Fig. 3). The number of passenger journeys has increased even faster from 28.8 (38 if the East London line is included) to 139.8 million between 2007/8 and 2014/15 (Fig. 4). In the first four years of the Overground alone, ridership jumped 80 per cent, with around three quarters of this growth being directly attributable to the upgrades rather than wider economic factors which also drive passenger demand.⁴³ The Mayor's 2012 Rail Vision highlighted an increase in passenger satisfaction since the services were converted, and the Overground now scores higher than the other London-serving franchises on the National Rail Passenger Survey.⁴⁴ As well as these transport benefits, Overground has helped spur new development, particularly in northeast London. Savills have attributed a localised housebuilding boom along the line to the creation of the Overground.⁴⁵

London Overground has also led the way in improving accessibility for disabled passengers. TfL has invested in stations, introducing tactile paving and step-free access. TfL are also investing in portable ramps and platform humps (permanently raised parts of the platform) to improve train access.⁴⁶ The commitment to station staffing has also had important benefits for less able rail users, allowing assistance on demand rather than requiring booking.^{47,48} London Overground's rolling stock also has accessibility features such as onboard audio and visual train running information and wider doors for improved accessibility.⁴⁹

The Overground has brought transport and development benefits to London. So far, these have

Figure 3: Kilometres operated per year on London Overground (millions), 2008–09 to 2014–15

Source: TfL Annual Report 2012 (Operational Performance, p11) and TfL Annual Report 2015 (Operational Performance, p15)

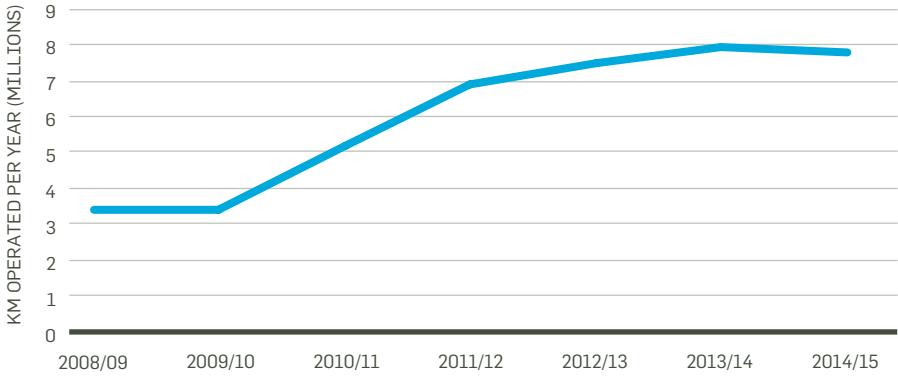
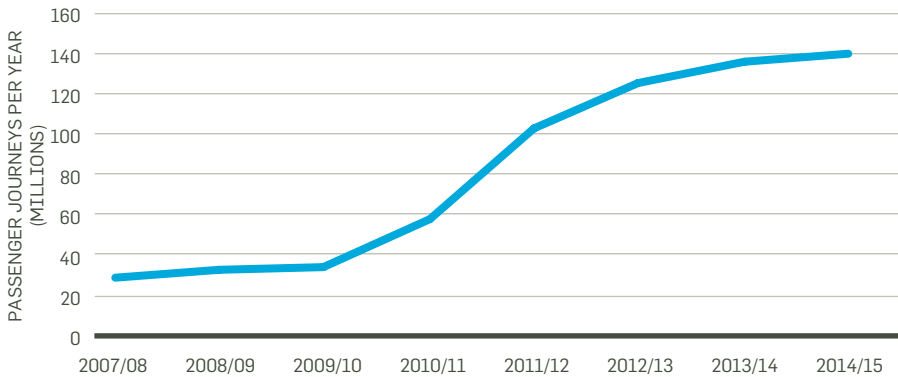


Figure 4. Passenger journeys per year on London Overground (millions), 2007–08 to 2014–15

Source: TfL Annual Report 2012 (Operational Performance, p11) and TfL Annual Report 2015 (Operational Performance, p15)



largely been concentrated in north London. As Figure 2 shows, 89 Overground stations are located north of the Thames while just 22 are to its south. This is despite the fact that south London is far more reliant on National Rail for its transport.⁵⁰ Trains in south London are operated under five franchises: London Overground, Southern, South West Trains, Southeastern and Thameslink. Of the 186 suburban (zone 2–6) stations south of the river, 21 are on the underground and 22 are on London Overground.⁵¹ This leaves 149 suburban

stations, 80 per cent of all those in south London, which are still not served by Overground. Many of them are served by low (less than 4 tph) frequency services of the sort that used to be common on lines in north London prior to conversion to the Overground.⁵²

The next chapter looks at the investment that would be needed to bring these services up to Overground standards – turning south London orange.

3

**CREATING
AN ORANGE
NETWORK IN
SOUTH LONDON**

South London's suburban network is still based largely on the lines laid by the Victorian railway pioneers.⁵³ Despite upgrades, today's network is still vulnerable to ageing infrastructure and operational complexity due to features of the original layout. Recent data from the Office of Rail and Road showed that, in the second quarter of 2015–16, the three train operating companies running south London's suburban services were, on average, cancelled or significantly late almost twice as much as services on London Overground.⁵⁴ Creating a modern, orange-standard rail system therefore requires significant engineering work, taking the railway through decades of long-overdue upgrades and modernisation in a single programme. But it also follows from this that upgrading the network has the potential to create a big impact: delivering as much as 130 per cent additional capacity.

Network-wide upgrades

Thales have assessed the network-wide upgrades necessary to deliver a service comparable to that on the existing London Overground, including a minimum of six tph during the peak.⁵⁵ These services would combine on the approaches to either Victoria or London Bridge to create a frequency of between 14 and 18 suburban trains per hour. Our work⁵⁶ suggests four main mechanisms for achieving this increase in frequency (and capacity):

- Updated signalling and control systems.
- Track amendments.
- Improved rolling stock design.
- Better platform management.

If implemented properly, these upgrades would enable more trains to fit on the same network by reducing the amount of time that trains spend stationary

(currently 15 per cent of journey time on a sample journey between Sutton and Victoria) and allowing more trains to fit safely onto the same length of track. In order to maximise impact these upgrades would need to be implemented together in a phased technical strategy.

1. Signalling and control systems

The signalling and control systems on the south-central section were installed in the 1980s, though parts have been renewed through projects like Victoria Area Resignalling and London Bridge station upgrade. Modernising this system using automated signalling and control systems presents opportunities to increase capacity and reduce journey times for passengers.

Analysis of five specific ‘delay hotspots’ on the south-central section showed signalling operations, such as trains waiting for signallers to set the route ahead, to be one of the top three causes of delay.⁵⁷ This is a reflection of the difficult job the signallers face in a very busy area when operating 1980s control systems with manual route setting. Modern control systems, often referred to as Traffic Management Systems, give the signallers the opportunity to:

- Look ahead and resolve conflicts before they arise, for example managing the flow of trains across a junction.
- Set routes for trains automatically so that the signaller’s attention can be focused on resolving issues or disruptions rather than dealing with the day-to-day operations.
- Advise train drivers of the optimum speed at which to approach junctions if connected to driver advisory systems.
- Share information on train running easily with station staff and customers through automatic links to customer information systems.

Although we have not been able to conduct detailed modelling on the network to assess what could be achieved, experience from other simulations indicates that traffic management could reduce delay by 10–20 per cent, and in doing so improve customer journey times and release additional capacity.

As train frequency is increased, the ‘dwell time’ at stations becomes a critical limit. Our analysis shows that at Victoria and London Bridge, during a sample hour in the morning peak, platform dwell times are currently between 5 and 20 minutes. Service patterns are complex, with trains splitting and joining, and appear to be optimised more for rolling stock or train crew changes rather than determined by capacity requirements. At busy stations such as Clapham Junction a peak hour sample showed south-central suburban dwell times between 30 and 120 seconds, further limiting frequency.⁵⁸ Automatic train operation could play an important role in helping to free up additional capacity in this busy part of the network by ensuring that trains move at the optimum speed, particularly on approach and departure to stations. It would however require the deployment of a signalling system like the European Train Control System including the fitment of all trains to achieve this. There are also some important limits to what can be achieved by improved signalling and control systems. If the track layout and junctions remain very complex for example, then these will still limit the capacity improvements that could otherwise be achieved through signalling and control upgrades.

2. Track amendments

Perhaps the single biggest improvement that could be made to the track layout in south London is to replace flat junctions with flyovers. This enables two trains to cross a junction at the same time, rather than one having to wait for the other to cross in front of it. This reduces dwell time at junctions and stops trains having to go through the time-consuming process of braking and accelerating more times than is necessary. This has

particularly high potential in locations such as Croydon, Tulse Hill and Streatham. Passing loops or other track amendments also have the potential to free up additional capacity by reducing the time trains wait to access a piece of track. Where there is space available to provide them, this has particularly high potential outside terminal stations such as London Bridge where access is tight.

In addition to remodelling junctions, there is also significant work to be done on station platforms to allow them to accommodate more trains. Balham's single island platform, for example, will likely need to be remodelled, particularly if Crossrail 2 stops there as the route consultation published in October 2015 has proposed. Platforms at Clapham Junction and Norwood Junction would also require remodelling and expansion. Additional turn-backs at suburban termini such as Epsom, Cheam, Wallington and West Croydon would help facilitate increased frequencies by allowing trains to turn around faster, and new interchanges at Lewisham and Brockley would unlock a greater variety of quick, easy journey-options. New sections of track, such as a tunnel between Brixton and Herne Hill, will also help relieve critical pinch points (see below).

Again, the gains from making such amendments to the track will be limited unless they are implemented in conjunction with other improvements. Without reducing dwell time at stations, for example, allowing faster movement through junctions may lead to trains having to dwell outside stations until a platform becomes free.

3. Better rolling stock design

Rolling stock (train carriage) design has a big impact on dwell time at stations.⁵⁹ The more doors a train has, the faster passengers can get on and off. Wider corridors along the centre of trains help passengers sitting between doors to access them more quickly. Better braking and acceleration also allows trains to spend less time entering and exiting stations.

These sorts of upgrades, many of which have already been introduced on the existing Overground

network, could have significant benefits if applied in south London. Analysis shared with us by TfL shows that station dwell time between Selhurst and Clapham Junction could be cut by up to 42 per cent just by upgrading the rolling stock from the Class 377 (currently used on several parts of the Southern franchise) to the multi-door S Stock currently used on the Metropolitan, Hammersmith & City, Circle, and District lines.

4. Platform management

Providing better information and guidance to passengers also enables them to board and alight trains faster. This can either be achieved through station staff providing real time information and advice, or through electronic systems. LED screens directing passengers toward the least crowded carriages have been shown to cut dwell times by around 7 per cent, for example.⁶¹ Again, these types of upgrades are most effective when implemented in conjunction with others, such as larger doors.

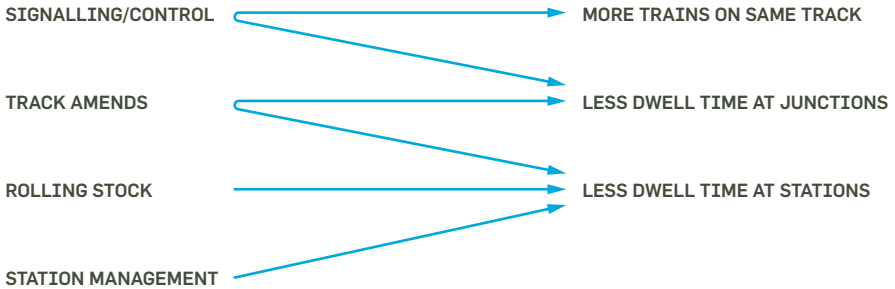
Figure 5 summarises the ways in which these four types of upgrade can help improve frequency/capacity by either fitting more trains onto the network or reducing dwell time at stations.

We have analysed each of these four factors separately, but as we have already indicated, many of these upgrades will only have their full impact if implemented as a package. The network will also need to be upgraded in a holistic way. A rail corridor is only as strong as its weakest link and constraints on frequency in some places impose limits on what can be achieved elsewhere. In the current fiscal and policy climate it is unlikely that funding for all four upgrades could be secured at once. What is required is a strategic, staged series of investments aimed at delivering orange standards for south London.

Specific investments

In addition to the network-wide upgrades required, Jonathan Roberts Consulting have analysed a range

Fig 5: Upgrades to South London's rail network



of possible specific upgrades that will help provide the necessary increase in capacity in south London. We discuss four here in detail, with further schemes discussed in the online annex. Readers less interested in the technicalities may wish to move straight to chapter four.

Streatham 'Virtual Tube'

Streatham has three mainline stations with low-frequency services to different terminals: Streatham to Thameslink and London Bridge; Streatham Common to London Bridge and Victoria; and Streatham Hill to Victoria. In 2014/15 the three stations catered for 10m passenger entries and exits. Based on our projections, this will rise to nearly 14m by 2031 and 20m by 2050. These numbers make a clear case for radical change.

There have long been calls for the extension of a tube line to Streatham. There were at one time official proposals for a Victoria line extension from Brixton, but the Victoria line is now nearly full. A Northern line extension was canvassed, but the opportunity was taken up by the Battersea extension. The other option for extension, the Bakerloo line, is now planned to travel to the East. But even without the prospect of extending a tube line to Streatham it is possible to achieve a 'tube-type' service frequency. TfL has proposed a Streatham interchange. This would be positioned south of Streatham town centre at the convergence of the Thameslink, London Bridge and Victoria lines near

Streatham Common. This would allow a simpler service structure, better service frequencies (e.g. 6 rather than 4 tph at Streatham Hill) and greater reliability. However, Streatham town centre would continue to be poorly served for travel in the direction of Clapham Junction, Victoria and the West End including the new Crossrail 2 interchanges.

Our proposal is to take advantage of existing railway tunnels east of Streatham Hill and north of Streatham station and build a tunnelled flying junction between the two lines. Streatham station would be 4-tracked with parallel lines in each direction and cross-platform interchange between services. A second flying junction with the Streatham Common local tracks would also be implemented. This would allow a much higher frequency at Streatham Hill at the north end of the town centre and allow many Victoria-stopping trains to be rerouted via Streatham Hill and Streatham to provide extra services. Streatham station would see a service frequency of 2–3 minute intervals in peak periods.

A new South London Line

The South London Line is the east-west railway across South London within Zone 2. Starting at Victoria or Clapham Junction, it nominally but incompletely serves the town centres of Clapham, Brixton, Peckham Rye and Lewisham. It also serves the major hospital campus at Denmark Hill, and other suburban locations. It is a 4-track railway for much of its route, but the different tracks do different things. The East London Line (ELL) service over the southernmost pair of tracks goes through Brixton town centre without stopping (the engineering to enable this would cost upwards of £100m). The South Eastern service from Victoria is now an all-day service at 2tph, and 3tph in peaks, but doesn't stop until Denmark Hill. Its low frequency also denies a business case for a new east-west station at Brockley near Lewisham, which could open up a new interchange there with the north-south Overground route serving cross-river travel, Crystal

Palace and Croydon. Looking to the future, Zone 2 is an area of increasing development densities and fast-growing travel demand, as we have seen with the 2014–15 data. The GLA Opportunity Area plans, for example, include a high-density housing objective in the New Cross, Lewisham and Catford Bridge areas. The existing stations handle nearly 28m entries and exits between them each year. Growth projections without additional services point to this being 38m by 2031 and nearly 56m by 2050. Taken together these observations make the case for investing in this line to create a high-frequency corridor across south London.

Subject to the business case for necessary route investment, we support an increase in ELL services from Clapham Junction to 6tph and an increase to 6tph on the south-eastern route to Lewisham. To serve the GLA Opportunity Area better and to avoid operating complexities at Lewisham junction, we propose that the additional 3tph be continued to Catford and Beckenham Junction to terminate there. This keeps the extra trains continuously on the south side of Lewisham junction. While we are aware of TfL proposals to extend the Bakerloo Line to Lewisham by the 2030s, we believe that early upgrades to these lines would be valuable.

Thameslink, Herne Hill, and a resolution for Brixton

We have not focused in detail on Thameslink service options, which are beyond the scope and resources of this study. We have noted and support the TfL proposal to double the Thameslink loop services via Streatham, Wimbledon and Sutton, from 2 tph to 4 tph each way. The main constraints on the Thameslink route within the suburbs are at Herne Hill, where they can conflict with fast trains on the Victoria/Bromley/Kent services, and at Tulse Hill where Thameslink also has flat junctions with the south London services to London Bridge. Reorganising the junctions here will be essential in order to avoid conflict and enable longer trains to be used. At Herne Hill one option is to put Thameslink into a tunnel with overall costs of about

£100m per single track kilometre, plus an underground station costing at least £200m unless cut-and-cover were possible. A lower cost would be incurred at Tulse Hill which has the space for a flyover and an additional platform on that line.

The high costs of this approach lead us to propose a different solution for both Brixton and Herne Hill. The common feature at both locations is the Victoria/Kent fast services, which could be put into a new tunnel running from near Wandsworth Road to a location southeast of Herne Hill. This would incur tunnelling costs but avoid the need for a tunnelled station on the Thameslink route at Herne Hill. It would free track capacity for additional stopping services and new Brixton platforms on the Southeastern line towards Peckham. In turn the ELL trains using the South London Line (SLL) might be able to use those tracks and platforms, and so avoid the need for an expensive new raised station. The existing ELL tracks through Brixton would then be freed up to provide additional capacity. Fast trains should gain more line capacity through the busy inner suburbs and a faster run giving shorter journey times. The full costs and (much larger) benefits of this scheme should be explored in detail.

New stations, platforms and interchanges

We have reviewed the south-central and Thameslink part of the network for sites where new stations should be considered. Our analysis identified all built-up areas that fall more than 800 metres from an existing station. This distance represents the range over which a new station would improve the public transport accessibility level of the surrounding area, allowing housing development to occur at a greater density (see Chapter 4). Another check was made to see if high-density areas only had limited access from services which passed by, and where a demand case might be made for a new station or new platforms to increase accessibility and service volume. We have taken into account the proposed Bakerloo line extension, assuming

it will be routed through Old Kent Road, New Cross Gate and Lewisham. Taking all this into account, we propose that new stations be considered at: Battersea (near Battersea Dogs Home, on the South London line); Beddington; Brockley; Camberwell; Clapham High Street and Wandsworth Road (southeastern platforms); Clapham East; and Tooting St Georges. Interchanges should also be considered at: Streatham (as discussed); Penge West to Penge East; New Cross to New Cross Gate; Lewisham and Lewisham South. The full rationale for each of these can found in the Online Annex.

Putting it all together

Assuming all the upgrades set out above are implemented, we have estimated the maximum desirable peak-time frequencies that could be achieved on each section of the suburban network (see Online Annex for details). The ultimate constraint on what can be achieved is determined by the limits on capacity at terminal stations after implementation of automatic train operation and dwell time at busy suburban interchanges. Assuming 200 metre Crossrail-type trains we estimate that this could deliver a 130 per cent increase in capacity over existing levels on stopping suburban services. This increase in capacity would of course be delivered in stages as the relevant upgrades were implemented. It is beyond the scope of this report to calculate a precise estimate of the costs of these reforms. However our high-level estimates, using similar projects as benchmarks,⁶² suggest that the costs would likely be higher than the Thameslink project (circa £6.5bn) but lower than Crossrail (circa £14.8bn).⁶³

4

HOUSING AND EMPLOYMENT BENEFITS

This chapter begins by setting our policy proposals in historical context, showing how rail has played a central role in delivering new housing development in London over the last two hundred years: first by expanding the boundaries of the Victorian city, then by re-densifying post-industrial London and more recently by helping to densify outer London. Our argument is that turning south London orange can play an important part in this third wave of rail-led development. We then provide original quantitative estimates of the housing growth that could be achieved by turning south London orange and argue that the creation of a dense, high-frequency rail network is the right way to support economic development and employment growth in south London.

The role of rail in London's growth

Early nineteenth-century London was tightly circumscribed by the distance that its working population could commute by foot.⁶⁴ The 1851 census first described a London cornered by Hampstead to the northwest, Hackney and Bow in the northeast, Plumstead to the southeast, and Wandsworth in the southwest.⁶⁵ This compact city crammed in a remarkable two-and-a-half million residents, operating as the economic and administrative centre of the British Empire.⁶⁶ Victorian London was also overcrowded, and suffered from road congestion and outbreaks of cholera as a result.

The arrival of railways made it possible for people to live further from their place of work. The capital's first suburban railway, the London and Greenwich, opened in 1836 and quickly had to be expanded to cope with demand.⁶⁷ New housing built along the lines attracted families looking for cleaner, cheaper, less-crowded living conditions. As more tracks were laid, further housing developments sprung up. Perhaps the most famous example of the close relationship between housing and transport in this era was the Metropolitan Railway which helped suburbanise much of Middlesex during the first half of the 20th century. In south

London, the arrival of the Northern line in 1926 saw the Morden area grow from three streets of cottages and an inn to a town of 12,600 people within five years.⁶⁸ The public sector also exploited the opportunities for rail-led development, building the Watling Estate to accommodate 19,000 council tenants, in the empty fields around Burnt Oak Station.⁶⁹ Thus the railways played a significant part in expanding the boundaries of crowded Victorian London.

The capital's population declined in the mid-part of the 20th century, but by the 1980s it was beginning to expand again. Influential planners such as Sir Peter Hall⁷⁰ argued that in this second stage of London's growth, rail investment should be used instead to regenerate and redensify London's post-industrial centre. The construction of the Docklands Light Railway and Jubilee Line Extension to Canary Wharf are perhaps the best examples of this approach. The newly-created Greater London Authority helped continue the expansion of rail capacity in the capital with the creation of London Overground and the East London Line Extension, which has helped bring significant house building to Hackney and the surrounding area.⁷¹

A third stage of transport-led housing development is now coming into view. Crossrail is set to open in 2018/19 and is beginning to unlock housing development in outer London areas such as Abbey Wood, Woolwich, Southall and beyond the city boundary into Maidenhead.⁷² Planning applications in these areas have attributed higher density and more sustainable development to the arrival of the new line.⁷³ In our view, turning south London orange is a natural extension of this next stage of transport-led development of outer London, helping to achieve in south London what Crossrail is already doing in the east and west.

Responding to south London's housing need

House prices in London have quadrupled since 1996.⁷⁴ While the least affordable boroughs in the capital

are in north London, the affordability challenge in south London is also mounting. Average earnings to average price ratios are an imperfect proxy for housing affordability, but they benefit from being available at a borough level. In Richmond-upon-Thames, Kingston-upon-Thames and Wandsworth, the median house price in 2013 was between 10 and 15 times median income. Bexley was the only borough south of the river where median house prices are within 5–7.5 times median income, while all others had a median income to median house price ratio of 7.5–10, putting them out of reach to many.⁷⁵ Privately-rented properties are also becoming increasingly unaffordable. Shelter's Private Rent Watch identified the 30 local authorities across the UK with the most unaffordable rents.⁷⁶ Seven south London boroughs made the list, including Southwark (median rent at 63 per cent of median take-home pay), Lambeth and Wandsworth (both 59 per cent) and outer boroughs, such as Merton (54 per cent) and Kingston-upon-Thames (51 per cent).⁷⁷ This problem is only likely to get worse with south London's population expected to grow by 270,000 by 2025.⁷⁸ The London Plan estimates that the south London boroughs could between them contribute an annual minimum of 14,431 units towards London's overall minimum target of just over 42,000 units per year.⁷⁹ The latest London Plan Monitoring Report (March 2015) reported that in 2013/14 only 10,500 homes were completed across south London, leaving a quarter of the necessary homes unbuilt.⁸⁰ To combat these mounting challenges, more homes need to be built.

We have partnered with Atkins to develop estimates of the volume of housing that could be brought forward if our full proposals for turning south London orange were implemented. In order to make the problem more tractable, we again limit our estimates to the areas around the stations in our south-central study area. Atkins used two methods to estimate the housing impact of our reforms. The first focuses on how much demand would be generated by the improved rail links. We looked at 1km catchment areas⁸¹ around the stations

in our study to identify sites with potential for additional development which could be brought forward by rail upgrades. These units may come forward without any infrastructure improvements, but it is likely that rail upgrades would accelerate this building and ensure they are fully developed. Our estimates found almost 13,000 units across 196 development sites that could be accelerated by our reforms, a proportion of which would be affordable. This is an increase of 62 per cent on current development in our stations' catchments.

Table 2: Housing growth enabled around south-central stations by turning south London orange

Source: Atkins technical note in Online Annex

LOCAL AUTHORITY	POTENTIAL ADDITIONAL HOUSING UNITS
BROMLEY	417
CROYDON	954
LAMBETH	4,569
LEWISHAM	2,163
MERTON	406
SOUTHWARK	3,205
SUTTON	481
WANDSWORTH	411
EPSOM & EWELL	0
REIGATE & BANSTEAD	74
TOTAL	12,681

Our second approach looks at how much extra density would be unlocked by our reforms. Density limits in London are set in the London Plan in accordance with an area's Public Transport Accessibility Level (PTAL). The better connected an area is, the higher its PTAL and the higher the densities it can accommodate. The PTAL uplift from turning south London orange would therefore enable denser development around stations on the upgraded lines. We estimate that our reforms could unlock an additional 3,102 units across the 196 development sites.

Combined, the potential for new housing development from increased demand and increasing

densities at these sites would be almost 16,000 units – a 79 per cent increase on current levels of committed development in the area. In terms of the targets set out in the Further Alterations to the London Plan, this equates to over a year-and-a-half of housing supply across the boroughs in our study area.⁸² Further increases would be possible in southeast and southwest London beyond our study area.

Supporting south London's economic potential

Turning south London orange is not just about building new homes for commuters travelling to jobs in the centre of London. It will also play a critical role in supporting economic growth in the area. South London is polycentric, with economic activity distributed across multiple centres such as Croydon, Bromley, Sutton and Kingston-upon-Thames. The region has a number of economic hubs such as the growing tech cluster in Croydon, the emerging cancer hub at Royal Marsden which could create up to 13,000 jobs⁸³ and cultural centres such as Goldsmiths College. As the South London Partnership points out in their Economic Prospectus for the area, what is needed is a dense network of high-quality transport links in order to better link up these different centres of activity.⁸⁴ The high-frequency, high-density network that would be created by turning south London orange is therefore a good fit with the investment priorities identified by the south London boroughs' economic development work.

Atkins' analysis (based on Oxford Economics forecasts) shows that, across the eight boroughs in our study area, 125,000 additional jobs will be created between 2025 and 2035.⁸⁵ Within 1km catchments of our study stations the figure is 34,000. This rapid employment growth will put significant strain on the already-overstretched rail network. Turning south London orange will therefore play an important role in helping people get to and from these new jobs. Better connectivity should also support additional job creation by broadening access to product and labour markets.

5

GOVERNANCE

Delivering orange standards in south London requires reform of the way in which the suburban network is managed. The power to specify, let and manage the contracts to operate the trains, as well as control of the station assets, will have to be devolved from the Department for Transport (DfT) to TfL. This will allow TfL to specify orange standards for rolling stock, station staffing and service frequency, where possible. It will also give TfL the incentives to invest directly in improved station environments as well as work with Network Rail to upgrade the track and signalling. Many of these lines currently terminate outside of the Greater London Authority boundary, raising questions about TfL's remit. However, Kent and Surrey County Councils (as well as a number of rail user groups) have signalled their support for such an arrangement, on the condition that services beginning outside London will not be negatively affected.⁸⁶ We support this approach to reform as a valuable step in increasing frequency and capacity on the south London rail network.

Our research nevertheless suggests that this approach may not be enough to deliver full orange frequencies. In particular, the work we commissioned from Thales and Jonathan Roberts Consulting found that delivering orange standards would require full exploitation of all four of the upgrades set out above. Some of these, such as signalling and junction upgrades, could be implemented under the reforms set out above. Others could only be partially implemented. For example, Transport for London could specify improvements to all rolling stock on the services for which it is responsible, but all services running from outside London would still be operating under a Department for Transport franchise and would not be subject to the same requirements. This would limit the extra capacity that could be delivered on the network. The gains from implementing train management systems would also be limited, as trains sharing a single line would still be operated by different train operating companies. It is possible

that these limitations, all of which stem from the difficulties in coordinating standards across different users of the network, can be resolved through close partnership working between TfL, DfT, train operating companies and other network users. However, if the projected 100 per cent increase in demand cannot be accommodated within the limits of this governance model, greater formal integration of the network may have to be considered.

One way of achieving this would be to transfer all the services running between south London terminals and the counties of Kent, Surrey, West and East Sussex into a single concession let jointly by these authorities. For convenience we refer to this body as Capital to Coast Rail (CCR). CCR could be modelled closely on Rail North, which already brings together 29 local transport authorities to manage two rail franchises in the North of England. As with Rail North, CCR would begin as a formal partnership between DfT and the relevant local authorities, and move towards full devolution over time. Once this handover process is complete, we propose that TfL nominate half (four) the Directors of the board, and the four county councils would each nominate one further Director. This fifty-fifty split between London and the county councils reflects the concentration of rail traffic within London, and Transport for London's expertise in managing major rail projects.⁸⁷ As with Rail North, the board would nominate an independent Chair and would make decisions by majority vote, with the proviso that at least one of both the county council Directors and one of the TfL Directors agree. This would provide protection for the county councils and ensure no decisions were made against their collective will. Because the Secretary of State for Transport would remain the operator of last resort, both *de jure and de facto*, the Department for Transport would retain the ability to intervene in decisions made by the board under certain circumstances. This would have a similar effect to the 'golden share' system used during rail privatisation.

The CCR model would have additional benefits for the local authorities outside London. All non-major stations would come under the control of the relevant top-tier authorities which would then be able to redevelop the high-value land in and around stations, providing new housing and other regeneration benefits. The county councils would also benefit from the option to join the Oyster fare stage system, simplifying and integrating ticketing for users

In summary, our proposal is for devolution of rail powers to London with the aim of enabling an 100 per cent increase in capacity on the network. We are pragmatic about how this is achieved. If the necessary capacity increase can be delivered through devolving responsibility for suburban services to TfL then this approach should be pursued. If, however, it proves difficult to deliver the necessary capacity increases in this way, then a more radical form of devolution to both London and the southern Home Counties may be necessary.

6

CONCLUSION AND RECOMMENDATIONS

Turning south London orange would have many benefits. In the short term, it would allow a number of quick wins by providing the incentives for upgrading stations. Experience with the existing Overground network and Merseyrail suggests that this alone will make a big difference to the way the railway is used.⁸⁸ In the medium term our proposals would allow for upgrades of the rolling stock, signalling and track layout in order to boost frequency and capacity, potentially helping to deliver the full 100 per cent increase in capacity required by 2050, as well as supporting employment growth. In the longer term, it would change the connectivity and lifestyles possible in south London, stimulating significant new housing development.

Costs would also be substantial. Our high-level estimates put the necessary level of investment somewhere between Thameslink (circa £6.5bn) and Crossrail (circa £14.8bn).⁸⁹ This would make turning south London orange the fourth largest rail project in the capital after Crossrail 1, Crossrail 2 and High Speed 2.⁹⁰ It is worth noting that this investment would likely be spread over four or five rail investment periods (20–25 years) and would include some investment already anticipated by Network Rail. In order to contextualise these cost figures it is worth thinking through the alternatives. Failing to provide for a doubling of rail demand would likely cause severe crowding and congestion, as well as constraining housing and employment growth. On the other hand, accommodating a doubling in demand without upgrading the existing suburban rail network would likely require a new tunnelled mainline through London, effectively another Crossrail, with far higher costs.⁹¹ While the costs of turning south London orange are high, the opportunity costs would therefore be even higher.

We recommend that:

- The Department for Transport devolve suburban rail services terminating inside or just outside the southern GLA boundary to Transport for London, as the current franchises expire.
- Central government provide a grant sufficient to cover the costs of turning south London orange beyond what can be funded from TfL revenue and business contributions. This is essential to keep south London moving.
- Transport for London work with Network Rail in order to implement the upgrades necessary to deliver orange standards across this network, in particular aiming to deliver six or more tph where possible.⁹²
- Transport for London work with the Department for Transport to coordinate standards across the various south-of-London franchises where this can help unlock additional capacity within south London.
- Network Rail and the Office for Rail Regulation should make the changes necessary to swap freight slots out of the peak passenger transport periods, in order to free up additional capacity in south London.
- Transport for London's commercial development team work with London Boroughs to exploit the additional development potential around stations converted to Overground.
- If it proves difficult to deliver the necessary capacity increases under these capacity arrangements, then the Department for

Transport consider replicating the Rail North model in order to establish Capital to Coast Rail. CCR should then work to harmonise standards across the local network and achieve the maximum possible increases in capacity.

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South London's infrastructure is struggling under the weight of population growth. Yet its suburban rail network remains infrequent, unpopular and underutilised.

With a foreword by Steve Norris, *Turing South London Orange* sets out an ambitious reform agenda to transform south London's railway network into a trusted, high-frequency, urban rail network.

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