The Future Railway at Grove Park

Jonathan Roberts, 10th August 2015

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Background to travel requirements

Grove Park in the SE London suburbs was created by the railway and tram services. The South Eastern Railway originally reached Tonbridge and further into Kent via Croydon and Redhill. It built a new cut-off line from St Johns near Lewisham to Tonbridge, via Orpington and Sevenoaks, which opened in 1868. Grove Park station opened in 1871 and a branch to Bromley (North) opened in 1878, while the main line was 4-tracked in 1902-1904. Rail electrification reached as far as Orpington in 1925, Sevenoaks in 1935 and the Kent Coast in 1961. Meanwhile trams were extended to serve the new LCC Downham Estate in the mid 1920s. A tram extension towards Woolwich (then a major industrial centre with the Arsenal) was authorised but not proceeded with in the 1930s.

With these transport stimuli, Grove Park grew up very quickly as a residential suburb in the 1900s-30s. It is still a location with high commuting levels, although these days the journey patterns are more diverse, with the Thames Gateway, cross-river flows to Canary Wharf and Stratford, local flows to Bromley, Croydon, Lewisham and major educational and hospital complexes also having large staff numbers, as well as Central London. The change in travel directions is illustrated diagrammatically alongside.

Trend of station usage at Grove Park

The past 16 years' official data on annual usage of Grove Park station is summarised below. The general position is that this data under-estimates actual usage – the Office of Rail Regulation has been poor at estimating accurately the volume of travel on Zonal, Oyster and Travelcards, and then allocating those estimates on a station-by-station basis.[1] Transport for London does not rely on the ORR data. However it is useful in showing a trend in demand. The detailed station data is shown in two following tables:

Station usage at various South East London stations, 5-year data plus recent						
Station/operator	**Zone**	**1997-98**	**2002-03**	**2007-08**	**2012-13**	**2013-14**
Total all passengers (entry/exit)		25,419,553	34,456,321	48,265,966	47,001,836	50,168,566
Change in usage (2013/14 = 100)		51	69	96	94	100
Grove Park entry/exit % of total		5.7%	4.8%	4.3%	4.1%	4.2%
Detailed inputs set out below following table						

Million passengers per annum, entry and exit combined (interchange excluded)						
Station/operator	**Zone**	**1997-98**	**2002-03**	**2007-08**	**2012-13**	**2013-14**
New X Gate (S, LO)	2	1,003,801	2,269,294	1,954,687	4,368,856	4,328,079
New X Gate (LU)	2	*405,969*	*1,117,894*	*1,366,726*		
New Cross (SE, LO)	2	1,307,647	2,582,982	2,035,480	2,480,054	2,630,606
New Cross (LU)	2	*404,656*	*722,126*	*871,570*		
St Johns (SE)	2	223,459	316,024	935,690	714,084	788,676
Lewisham (SE)	2/3	2,584,653	3,606,427	8,247,628	8,191,564	8,669,820
Lewisham (DLR)	2/3					
Blackheath	3	2,057,115	2,280,945	2,893,474	2,929,406	3,055,518
Hither Green	3	1,634,382	2,137,713	2,901,002	3,004,984	3,245,130
Lee	3	971,570	1,151,104	1,505,373	1,500,244	1,574,410
Ladywell	3	498,757	658,202	924,616	972,784	1,052,096
Catford Bridge	3	885,411	1,071,014	1,708,891	1,896,018	2,029,742
Catford	3	603,768	882,143	969,422	944,090	1,068,898
Bellingham	3	351,275	452,026	644,620	656,868	730,948
Beckenham Hill	4	99,387	115,422	291,351	286,772	312,312
Ravensbourne	4	88,581	122,023	179,016	158,760	179,646
Shortlands	4	816,297	1,007,715	1,401,592	1,471,166	1,576,124
Mottingham	4	790,858	1,006,571	1,233,259	1,102,460	1,176,502
New Eltham	4	1,561,507	1,764,192	2,471,319	2,370,770	2,483,492
Grove Park	**4**	**1,455,633**	**1,638,610**	**2,053,334**	**1,948,604**	**2,102,508**
Grove Park (I'change)	***4***	*326,938*	*425,350*	*1,477,802*	*847,300*	*834,914*
Elmstead Woods	4	689,381	851,414	1,223,315	1,260,006	1,355,492
Sundridge Park	4	249,090	271,851	366,104	274,974	287,844
Bromley North	4	327,613	481,250	661,536	635,062	627,930
Bromley South	5	3,933,202	4,709,254	6,286,468	6,013,790	6,869,016
Bickley	5	449,593	618,412	849,281	814,474	902,624
Chislehurst	5	704,785	846,227	1,209,216	1,128,300	1,159,288
Sidcup	5	1,879,636	2,421,150	3,312,085	2,926,464	3,156,693

[1] See for example this analysis of ORR station usage errors with London and other city region data: http://www.jrc.org.uk/PDFs/StationsCountArticleJuly2012ModernRailways.pdf

Grove Park I'change as % of Bromley N + Sunbridge Pk in similar yr, 1997/98 based > 1999/00 (93%), 2002/03 based > 2001/02 (94%)						
Grove Park I'change as % of Bromley North + Sunbridge Park in 2007/08 looks wrong (max BN+SP=1.028m), as does St Johns that year						
New Cross and New X Gate LU as 40% of actual, assuming rest change to/from NR so already counted in ORR as NR entry/exit						
New Cross and New X Gate LU for 1997 proportional to 1999 LU vs SE, and 40% of actual, assuming others change to/from NR						
New Cross and New X Gate LU for 2007 valid until ELL closure December 2007, annualised numbers reduced as 350/365						
Lewisham DLR taken as 50% of actual, assuming rest change to/from NR so already counted in ORR as NR entry/exit						
ORR and DLR data is financial year, LUL is calendar year						
Data from Office of Rail Regulation (now Office for Rail and Road), Transport for London						
Table currently excludes DLR data at Lewisham station						
Grove Park entry/exit relative to neighbouring SE stations within 3km:						
Hither Green	3	1,634,382	2,137,713	2,901,002	3,004,984	3,245,130
Lee	3	971,570	1,151,104	1,505,373	1,500,244	1,574,410
Bellingham	3	351,275	452,026	644,620	656,868	730,948
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Ravensbourne	4	88,581	122,023	179,016	158,760	179,646
Beckenham Hill	4	99,387	115,422	291,351	286,772	312,312
Taken as 2013/14 = 100:						
Hither Green	3	50	66	89	93	100
Lee	3	62	73	96	95	100
Bellingham	3	48	62	88	90	100
Grove Park	**4**	**69**	**78**	**98**	**93**	**100**
Mottingham	4	67	86	105	94	100
Elmstead Woods	4	51	63	90	93	100
Sundridge Park	4	87	94	127	96	100
Bromley North	4	52	77	105	101	100
Ravensbourne	4	49	68	100	88	100
Beckenham Hill	4	32	37	93	92	100

This shows that Grove Park has somewhat lagged behind its neighbours, in growth of rail usage over the last 16 years, with a 44% increase (2.1m vs 1.46m) relative to many others increasing by about 100% (eg Hither Green, 3.25m vs 1.63m). Only Sundridge Park showed a slower rate of growth. Grove Park is still a busier station than before, but it may not be the strongest driving force for the future. Other factors are currently more relevant, as before. These include:

- Capacity and accessibility incl. service frequency to Central London.
- Capacity and accessibility incl. service frequency to other expanding jobs locations – for example Canary Wharf, Stratford (Bromley and Croydon have diminished relatively in recent years).
- Constraints on line capacity and service frequency to reach other key interchanges (especially Lewisham for DLR and New Cross for ELL).
- Alternative possible uses for the Grove Park-Bromley North branch.

It should also be noted that, under-counted or not, all the SE stations' annual volumes shown in the selection above for 2013-14 (excluding Overground-served stations) were less than the 2014 volumes at LUL's least-used station on the Morden Line, South Wimbledon, where the annual volume was 4.28 million. The average on the Morden Line between Clapham North and Morden was 79 million entry/exit passengers spread among 9 stations, so nearly 9 million per station. It could be considered that these SE stations are not achieved their maximum utility, locally or for London, with the service, standards and marketing currently on offer.

Recent decades' transport offer

The GLC's Ringway 2 scheme would have passed close by through the Downham Estate, but this was cancelled in the 1970s. The future transport investment priority within Greater London is greater emphasis on accessible and higher capacity public transport, and green modes, for a wide range of travel destinations, not just Central and Inner London.

Planned SE train service levels after completion of the London Bridge works and Thameslink in 2018 are: 28 tph in the high peak to/from Charing Cross, and 22-24 tph to/from Cannon Street. Of these, only a proportion can serve Grove Park – there are all the North Kent lines, Hayes line and the South Eastern fasts to accommodate as well. Cannon Street actually reduces from its recent 25 tph, Charing Cross from its recent 29 tph. In the May 2014 SE timetable, the last before major Thameslink works began at London Bridge, the high peak hour service volume at Grove Park was as follows, based on 08:15-09:14 arrivals or passing at London Bridge:

Grove Park high peak service pattern

	Grove Park	Hither Green	Lewisham	St Johns	New Cross	London Bridge	Cannon Street	Waterloo East	Charing X
intermediate links		Sidcup, Dfld	DLR, Hya, NKL, SLL			O'ground	JL, NL, TL	CL, DL	SW, BL, NL	CL, DL, NL
stations to Sevenoaks	07:57									
07:55 ex Bromley N	08:00									
Sevenoaks all stns to GP	08:05	-	-	-	-	08:18	08:26			
to Bromley N 08:11	08:06									
Orpington all stns to GP	08:09	-	-	-	-	-		08:24	08:30
Orpington all stns to GP	08:13	08:17	08:23	-	-	-		08:36	08:42
change for New X etc into Hayes line			ch: 08:28	08:30	08:32				
stations to Orpington	08:14									
08:15 ex Bromley N	08:20									
Sevenoaks all stns to GP	08:26	-	-	-	-	08:39	08:46			
to Bromley N 08:31	08:26									
stations to Sevenoaks	08:27									
Orpington all stns to GP	08:33	08:37	-	-	-	-		08:52	08:58
change for Lew etc into Sidcup line		ch: 08:50	08:55	08:57	08:59				
08:35 ex Bromley N	08:40									
stations to Orpington	08:42									
Sevenoaks all stns to GP	08:45	-	-	-	-	08:59	09:06			
to Bromley N 08:51	08:46									
Orpington all stns to GP	08:56	09:00	09:05	09:08	09:10	09:17	09:24			
stations to Sevenoaks	08:59									
08:55 ex Bromley N	09:00									

↑ These trains are outside the one hour band but show next sequence incl all stops

In a weekday offpeak, there is a better spread of intermediate and final stops, but at low frequency:

Grove Park weekday offpeak service pattern

	Grove Park	Hither Green	Lewisham	St Johns	New Cross	London Bridge	Cannon Street	Waterloo East	Charing X
intermediate links		Sidcup, Dtfd	DLR, Hyb, NKL, SLL		O'ground	JL, NL, TL	CL, DL	SW, BL, NL	CL, DL, NL
10:45 ex Bromley N	10:50								
to Bromley N 11:00	10:55								
stations to Sevenoaks	10:57								
Sevenoaks all stns to GP	11:03	11:07	-	-	-	11:19		11:23	11:27
11:05 ex Bromley N	11:10								
stations to Orpington	11:12								
to Bromley N 11:20	11:15								
Orpington all stns to GP	11:15	11:19	11:24	11:26	11:28	11:34	11:38		
stations to Sevenoaks	11:27								
11:25 ex Bromley N	11:30								
Sevenoaks all stns to GP	11:33	11:37	-	-	-	11:49		11:53	11:57
to Bromley N 11:40	11:35								
stations to Orpington	11:42								
Orpington all stns to GP	11:45	11:49	11:54	11:56	11:58	12:04	12:08		

There is a basic 12 then 18 minute headway (so an irregular 4 trains per hour) inbound to Central London, alternating between half hourly to Hither Green then non-stop to London Bridge (then to Charing Cross for the West End) and half hourly to the City (Cannon Street) via all intermediate stations. It is a regular 15 minute service in the return direction, by the time each half hourly train reaches Grove Park. In the evenings and Sundays the basic frequency drops to half hourly, which is not appropriate for this Zone 4 catchment, while on Sundays New Cross interchange is not served and the Bromley North branch is shut.

JRC analysis of issues arising from the present rail service offer

Analysing these tables shows many deficiencies, with a SE timetable focused almost entirely on the traditional commuting flows between Grove Park and Central London, not on the new travel destinations in a more diverse London. There is only one direct train to Lewisham, for DLR and Canary Wharf in the high peak hour, and none to New Cross for the Overground, in that hour – you are quicker to go into Central London and carry on from there. Connectivity into and out of the Bromley North branch is very weak, with long waits at Grove Park within a nominal 20 minute cycle of services, unless you want to go to Central London. Connections to outer SE London on the North Kent Lines, and towards inner South and SE London via Lewisham towards Peckham and Victoria are also very hard, because of the shortfall in direct services to Lewisham. Even the West End via Charing Cross lacks a 20 minute frequency in the high peak – three trains go through, but so lumpy a service that is it really two.

A peak service pattern which offers a guaranteed 20 minute frequency all stations service towards Lewisham and New Cross doesn't even exist, although that would be less than a serious level of Overground service, which is a minimum frequency of every 15 minutes.

In the offpeak, a 30 minute local connectivity to Lewisham and New Cross interchanges (the latter not on Sundays) is highly unattractive, even if it is better than the peak time offer! The evening basic half hour frequency, not 4 tph here, is lamentable. Bromley North connections are unsatisfactory as that service keeps to a 20 minute daytime headway (30 evenings), with variable waiting times against a 12-18 or 15 minute headway, once an hour it is good, once an hour average, once an hour non-existent. It has no Sunday service.

Calls for radical changes in service offer, and for a new railway of one sort of another, are therefore quite understandable. What appears to be an integrated SE network on a simplistic map is in fact far from it, indeed almost obsessive about Central London and 'damn the rest'. This poor sub-regional connectivity may not help Grove Park's passenger volumes, which are inhibited by poor access to key interchanges.

However, the fundamental question is, can a better service offer be structured without a new railway? I don't think this question has either been posed or answered adequately. This important point is also separate from the overall capacity shortfall on the SE lines that may arise in the next decades, where some sort of new railway will be required in one form or another. In future, from 2018 there will also be slightly fewer SE high peak trains in total.

It is fair to state the case that better sub-regional connectivity avoiding Central London is becoming increasingly important, and that Grove Park merits better than it is getting. Much of this in peaks is down to the South Eastern's flat junctions and the difficulties in scheduling trains with adequate consistency over multiple junctions in close succession. Grove Park isn't the only station facing this problem, many do, particularly those on the SE main line and Dartford-Sidcup loop where access is desired to the DLR and Overground but junction arrangements hinder the provision of a sufficiently regular service to Lewisham and New Cross. However the offpeak and weekend service offer is not to do with line capacity, but is caused by the lack of suburban priority in the franchising agreement, so is a failure by DfT and the SE train operator.

In total this makes a strong case for TfL to be authorised to take over the SE suburban services and instal London Overground standards of service frequency and suburban connectivity, throughout the week. How difficult that might prove in the weekday peaks is something that would need to be explored. It might require much additional investment, particularly at junctions, but the strategy should head in that direction. [2]

[2] The London Assembly Transport Committee has held 3 sessions on rail devolution in London, in 2015:
http://www.london.gov.uk/moderngov/documents/s47932/Minutes%20-%20Appendix%201%20-%20Transcript%20First%20Panel.pdf
http://www.london.gov.uk/moderngov/documents/s47933/Minutes%20-%20Appendix%202%20-%20Transcript%20Second%20Panel.pdf
http://www.london.gov.uk/moderngov/documents/s48910/Minutes%20-%20Appendix%202%20-%20Transcript%20National%20Rail%20Services.pdf

JRC recommendation: **Grove Park Neighbourhood Forum should argue for Overgroundisation of the SE suburban lines, and for much stronger SE connectivity.** Before we proceed further down this line of argument, we need to understand what London 2050 is all about. Essentially, it is about unevenly distributed but large population and jobs growth across Greater London, which are foreseen for the next decades.

London 2050 impact

London 2050 demand and infrastructure planning is a new fundamental to be addressed:

- London 2050 is pointing to high growth, 40%+, in the population of Outer London suburbs, though modelling for Bromley Borough is a little lower, over the same period.
- The overall London population is expected to grow from 8.2m in 2011 to 10m in 2031, and to a central value of 11.3m in 2050 (it could be higher or lower than this).
- Jobs are expected to increase from 4.9m in 2011 to 6.3-6.4m in 2050, but with the largest growth in a much more restricted catchment, largely Central London and three preferred Satellite Activity Zones all within Inner West and East London, described below.
- This points the finger at railways, to shoulder the large burden of extra commuters from Outer London homes to Central and Inner London jobs, most of which will be north of the River.
- The main jobs zones are an expanded Central London, all of it north of the river except for South Bank, Elephant, London Bridge, and Vauxhall Battersea Nine Elms, plus three defined Satellite Activity Zones (SAZ) all north of the river at Stratford City, an expanded Canary Wharf, and Old Oak Common in inner NW London.
- Large scale Opportunity Areas may also see jobs growth – the major OAs south of the river are along the river zone, and at Bromley, Croydon and New Cross/Lewisham/ Catford. The map and index which follow [after several pages] set these out.
- Better cross-river connectivity downstream from London Bridge is looking very important, as well as access to Bromley (already achieved from Grove Park, though not directly from Lewisham etc), to Croydon, and to the New Cross/Lewisham/Catford area, locations which are largely excluded from the SE direct services from Grove Park in the high peak period.

Overall this points to a serious and growing deficiency in connectivity from Grove Park in the coming decades. Commentary on transport issues arising with London 2050, with document links, is provided in JRC's website: http://www.jrc.org.uk/articles.html. Specific articles on forecast demand and impacts on rail services are set out. Here is an extract from JRC's 6 April 2014 article: 'Suburban Commandos – Transport and London 2050':

"TfL estimate though that public transport trips could increase by 50-60%, "based on projected population growth *with a continuing trend in mode shift from car use given increasingly dense patterns of development*" (italics ours).

"***Improving suburbia***
"The phrase highlighted above is potentially critical. It is the suburbs where car use is highest, therefore it is the suburbs where public transport will above all have to improve the quality and convenience of its offer.
"Whilst the March 2014 report doesn't go into detail, the implications are there. Quite apart from basic capacity issues on main corridors, combine that greater car usage with greater housing density – also a challenge if applied to 'semi-detached' land – and the scene is set for possible radical changes in public transport supply beyond the traditional Central London core and, as evidenced successfully by the Overground, the inner suburban area."

London 2050 JRC article Part 3 ' Tracks to the Future' and Part 4 'Towards Maximum Rail Capacity', both highlight that there are large-scale pressures building up on London's main line network, where the Deputy Mayor for Transport. Isabel Dedring, is looking to an 80% increase in National Rail capacity into and within London over the same period. The works underway at London Bridge take us to the 2030s in demand terms, NOT to the 2050s. JRC's Part 5 article, 'Peak Tube', is also relevant. [3]

JRC's commentary in Part 3 (links in footnotes) notes that as a general position: [4] [5] [6]
" What this all means for London 2050 planning, is that Network Rail's existing 2043 maximum demand forecasts (which exclude the effects of HS2) are broadly the equivalent of London 2050's rail requirements projected to 2047-48 (PII) or 2054 (PGS). So we already have some London 2050 route-by-route estimates, for London's main lines. We shall assume in this discussion that PGS applies, as these are the maximum capacity demand figures already published for 2043 and we are looking at known data.
"The distribution of additional jobs is foreseen in London 2050 as follows: If trends continue, the professional, real estate, scientific and technical activities sectors are expected to see the largest increase in employment over this period (nearly doubling to 1.4 million). Two thirds of the total increase in jobs are expected to occur in the Inner London boroughs.
"This points once again to increased, heavy reliance on rail travel to and within Inner and Central London, including radial and orbital flows and large-scale passenger distribution from termini."

For the SE lines, JRC's commentary on reasonable expectations, adding together the SE lines' forecasts for 2031 and 2043 compared to 2011, including to/from Victoria as SE lines also run there, plus taking account of existing investment plans, was that:
"**2031:** Main capacity gain with Thameslink services (Kent now excluded), & all SE 12-car. [With no Thameslink Kent, will 2031 capacity be achieved?] Lengthening on Uckfield and

[3] http://www.londonreconnections.com/2015/london-2050-part-5-peak-tube/
[4] http://www.londonreconnections.com/2014/london-2050-tracks-future/ part 3
[5] http://www.londonreconnections.com/2014/london-2050-part-4-towards-maximum-rail-capacity/
[6] http://www.networkrail.co.uk/improvements/planning-policies-and-plans/long-term-planning-process/market-studies/london-and-south-east/

Vic-Kent, and 12-car on Southern suburban. Clapham stops on Gatwick Express are also considered.

"**2050+:** Forecast gap 27,300 extra [for the high peak hour alone]. This is 30-34 tph, at 800/900 pax per train. Fewer tph if some 12-car inners and standees. Large-scale capacity shortfall from Kent and Sussex corridors, incl outer commuting. Overloads possible on SAZ links to Canary Wharf, Stratford, Old Oak Common. [Doesn't help that Croydon isn't included as a SAZ, to reduce inbound rail demand within London.] Can HS1 greater use and ATO etc on SE main lines solve this scale of problem? Might require at least one new line from outer London, possibly towards London Bridge and Canary or Stratford, plus potential for through 12-car services BML to Old Oak Common to connect with HS2, with re-organisation of Clapham Junction and East Croydon junctions."

Opportunity Areas

1 Bexley Riverside
2 Bromley
3 Canada Water
4 Charlton Riverside
5 City Fringe/Tech City
6 Colindale/Burnt Oak
7 Cricklewood/Brent Cross
8 Croydon
9 Deptford Creek/Greenwich Riverside
10 Earls Court & West Kensington
11 Elephant & Castle
12 Euston
13 Greenwich Peninsula
14 Harrow & Wealdstone
15 Heathrow
16 Ilford
17 Isle of Dogs
18 Kensal Canalside
19 King's Cross - St Pancras
20 Lewisham, Catford & New Cross
21 London Bridge, Borough & Bankside
22 London Riverside
23 Lower Lee Valley (including Stratford)
24 Old Kent Road
25 Paddington
26 Park Royal
27 Old Oak Common
28 Royal Docks and Beckton Waterfront
29 Southall
30 Thamesmead & Abbey Wood
31 Tottenham Court Road
32 Upper Lee Valley
33 Vauxhall, Nine Elms & Battersea
34 Victoria
35 Waterloo
36 Wembley
37 White City
38 Woolwich

Areas for Intensification

39 Farringdon/Smithfield
40 Haringey Heartlands/Wood Green
41 Holborn
42 Kidbrooke
43 Mill Hill East
44 South Wimbledon/Colliers Wood
45 West Hampstead Interchange

London 2050 modelling consequences for new SE London rail schemes

The London 2050 numbers are nothing minor. They are broadly the forecast Central London plus SAZ travel flows, for 2043/2050. They do not include the sub-regional/local flows, which don't reach the densest train load points within these South East suburbs.

The possible requirement for another main line to access large-scale jobs zones has totally changed planning thinking for the SE corridor within the last year. TfL Board member Charles Belcher and Acting Transport Commissioner Mike Brown responded to London Assembly questions on 8th July 2015 that TfL is now considering a Crossrail 3 scheme for SE London. [7] It is axiomatic that such a scheme would have to serve Lewisham, and maybe New Cross, and inject new capacity and stopping patterns into a number of suburban lines either directly or indirectly via interchange. The existing lines would be relieved of many suburban trains heading into Crossrail 3, so freeing up capacity in the Lewisham junction bottlenecks.

However, no dates have been stated, and if Crossrail 2 can't be ready much before 2030, then Crossrail 3 sounds like a 2030s-40s scheme. Therefore Grove Park and other areas experiencing a shortfall in sub-regional connectivity need a shorter term solution, and maybe a longer term one if Crossrail 3 can't be guaranteed. It is after all only a glint in someone's eye at present. A direct line to Canary Wharf was also referenced on 8th July, though it was unclear whether that would be from Central London (such as a revised Bakerloo extension) or from SE London via Canary to Central London.

JRC recommendation: **Grove Park Neighbourhood Forum should work to achieve short term improvements in the regularity and frequency of suburban connections from Grove Park and Bromley North, particularly via Hither Green (Sidcup and Dartford Line), Lewisham (DLR, North Kent and Victoria via Peckham lines), and New Cross (cross-river Overground).**

A Bakerloo Line into Outer SE London?

There has been a long history of arguments in favour of extending the Bakerloo Line beyond its historic 1906 terminus at Elephant & Castle. Generally ideas have favoured Camberwell / Peckham / SE London as options, sometimes all three in one scheme. The 2011 Network Rail London & South East Route Utilisation Strategy [8] supported a Bakerloo extension to Lewisham then taking over the Hayes branch in its entirety. This and intermediate routeing options – via Camberwell or via Old Kent Road – were

[7] http://www.london.gov.uk/moderngov/documents/s48910/Minutes%20-%20Appendix%202%20-%20Transcript%20National%20Rail%20Services.pdf (see last page of minutes)

[8] http://www.networkrail.co.uk/browse%20documents/rus%20documents/route%20utilisation%20strategies/rus%20generation%202/london%20and%20south%20east/london%20and%20south%20east%20route%20utilisation%20strategy.pdf?cd=2

consulted on by TfL during September-December 2014. [9] Options included possible services to Beckenham Junction and Bromley as well as to Hayes. A report on the consultation responses was published by TfL in March 2015 (see links in reference 9). Over 90% of the 15,000 respondents supported a Bakerloo extension, with the bulk favouring an extension beyond Lewisham. There was much comment about the lack of connectivity in SE London, and between South and SE London. TfL is due to report on its conclusions about next steps, later in 2015. Isabel Dedring's comments on SE and E London rail planning (see reference 7) may be pertinent here.

JRC's judgment is that any extended Bakerloo, even to Lewisham, is not achievable until the 2030s because of delays in the overall tube modernisation and upgrading programme (see 'Peak Tube' article, reference 3). A modernised Bakerloo is essential to accommodate more trains and passengers from a SE extension. Private sector funding allied to Old Kent Road high density housing might extend the Bakerloo to OKR sooner, on similar lines to the approved Northern Line extension from Kennington to Battersea which opens by 2020.

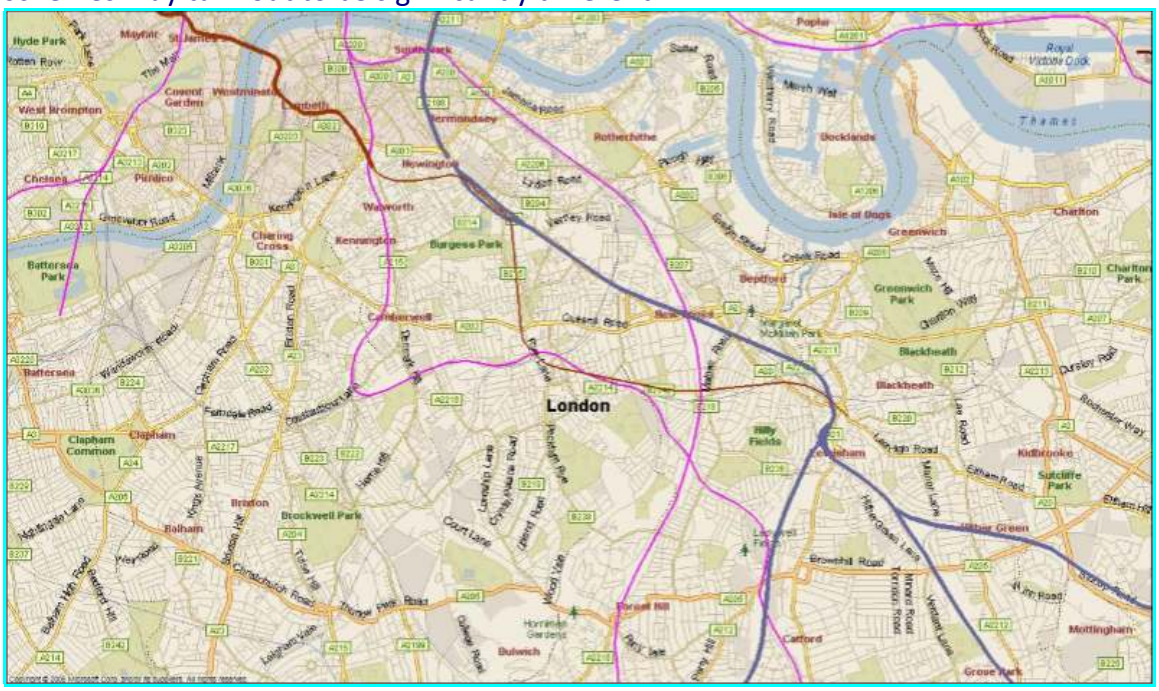
An important part of any Bakerloo scheme is the relief of SE main line track capacity. A Bakerloo Line to Lewisham and Hayes would only take out 6 train paths per hour through Lewisham/New Cross, not the high 20 tph/low 30 tph that is likely to be required for access via London Bridge and via Victoria, according to London 2050 data. There are also some political issues about the lack of destinations available to Hayes line residents with a single tube service, compared to direct City and West End main line services, which was a source of concern in the consultation especially south of Beckenham.

There has been an extensive and well informed debate running in *London Reconnections* about a Bakerloo extension and various other transport options for the SE catchment. [10] A short summary of that collective wisdom is that a Bakerloo extension to Lewisham might still be viable, particularly to serve the desired high density housing schemes in the Old Kent Road Opportunity Area. It might get to Catford, but capacity looks like running out there if not closer in to London, in terms of a high frequency tube service faced with 2050 demand levels, and with high density housing along the Old Kent Road and New Cross/Lewisham/Catford Opportunity Area. There is no way that an extended Bakerloo will reach Grove Park – it fits neither the future passenger demand geography nor a scheme with justifiable costs relative to benefits.

While it would be nice to think that a Bakerloo extension to Lewisham/Catford could meet up in the same decade with a Crossrail 3 coming the other way on its route into Central London, it is difficult that think that Treasury would approve two such schemes simultaneously and moreover in the same part of London let alone the UK. A Crossrail 3 type of scheme could be of more benefit for Grove Park.

[9] https://consultations.tfl.gov.uk/tube/bakerloo-extension?intcmp=21818
[10] http://www.londonreconnections.com/2014/haykerloo-bakerlewisham/

The biggest potential is for a Crossrail 3 to collect various SE London suburban lines via Lewisham (rather than just the Hayes line being relieved), and then meet a Bakerloo funded by the private sector, underground at Old Kent Road. This enables higher frequency direct trains to the City, and – with the right railway geography – a cross-platform interchange Mile-End style to the Bakerloo to the West End. A Bakerloo extension to Lewisham/Catford – possibly via Peckham – would then be a good fit in planning geography. A simplified map shows the possible arrangement. The map below however ignores the future capacity needs of Canary Wharf, so a combination of rail schemes may turn out to be significantly different.



JRC recommendation: **Grove Park Neighbourood Forum has the opportunity to press for:**

- **A general upgrade in SE main line capacity as a priority by the 2030s, including the SE suburban train network as a main beneficiary.**
- **Bakerloo extension at least as far as Lewisham, possibly further.**
- **Studies to be initiated on whether a Crossrail 3 would be the right long term solution for outer SE London suburbs access to major London 2050 jobs locations, including Canary Wharf.**

Other national railway planning

Transport for London was rebuffed in its 2013-14 bid to take over SE suburban train services from 2015, as part of the Overground. The main reason for rejection, reading between the lines, was Boris parking his preferred new London airport within Kent's territory. That issue has hopefully flown. A new TfL SE London bid is being prepared for the period of the refranchising of SE train services, due in 2017-18.

Network Rail's Kent Route Study began this Spring, and is due to be completed in Autumn 2016. It will look forwards to 2043 at least. It can be expected to recommend completion of the 12-car suburban train programme for the main SE commuter lines, but much more than this will be required, as discussed above. This is because of the London 2050 growth plans, and because already the increases in rail passenger demand overall are rising faster than foreseen. TfL as a statutory consultee will also be seeking Network Rail support for potential improvements in infrastructure, to facilitate the Overground level of services which it is seeking to establish in SE London.

JRC recommendation: **Grove Park Neighbourhood Forum should submit its policy position on stakeholder preferences and preferred outcomes, for the SE main line network investment analysis in the Kent Route Study.**

Alternative sub-regional transport connectivity in SE London

1. Making the SE main line work harder for its SE suburbs

The biggest shortcoming in the short and medium term, ie before any Bakerloo extension and/or Crossrail 3, remains the SE suburban services. The core failure is the inability or unwillingness to offer regular interval services, not just to central London (which it doesn't even do for the West End via Charing Cross), but also to vital sub-regional interchanges such as Hither Green, Lewisham and New Cross with their onwards links to major jobs locations such as Canary Wharf and Stratford. In the offpeak, it is a failure of service frequency as much as anything else.

The complexity of timetabling is largely down to the conflict of multiple lines and disparate train destinations through the Lewisham area. The 1868 London-Kent new main line avoided Lewisham. From our perspective in the 21st Century, if only it hadn't avoided the town… there would be other solutions available by now! There have been various thoughts about trying to get more trains round the multiple junctions via the existing Lewisham platforms, but any stab at the problem ends up with a lot more costs and a marginally improved solution since most trains just conflict with the others at a marginally different location – and it is still sub-optimal.

JRC therefore proposes a different, lateral thinking approach. Since SE London travellers may well desire to access Lewisham for DLR (eg Canary Wharf) – but can't do that reliably or frequently – let's create new Lewisham platforms on the SE main line bypass, with a **travelator** link back to Lewisham Interchange. This also works with an ELL direct line to Lewisham, discussed below. More suburban trains can then call at 'Lewisham' platforms without junction and capacity complexity around the Courthill/Hayes line loop.
Having reviewed several sites along the SE main line in the Lewisham area, a northern site north of Loampit Vale was ruled out because of new high density premises very close to the main line (this would have been only 270 metres from Lewisham Interchange).

However a southern location closer to Lewisham High Street, placed over the Hayes branch line, in low value or empty land on the slow lines alongside Parks Bridge Junction and north of the Courthill loop, would permit a 12-car island platform connected into the Lewisham Interchange and making that much more of a hub station. A direct entrance to the southern part of Lewisham High Street could also be opened up. A travelator alongside the Hayes line, in several segments, would link to the interchange in 540 metres and also provide fast access to Lewisham shopping centre at an intermediate point.

In a later stage of development, platforms could be created also on the fast lines, to turn Lewisham Hub into a Stratford-style total connectivity location (when a three platform fast line option would be preferred to maintain peak with-flow fast line capacities; Parks Bridge spur to/from the Hayes Line would then have to shut, with all Hayes trains via Lewisham). However that's for the future. A Google display shows the initial possibility:

A suburban station on the Lewisham 'bypass' lines would achieve good connectivity between all suburban routes at this Interchange, and DLR, and potentially also with ELL and Bakerloo extensions/Crossrail 3. It would require a substantial 12-car length island platform station – this looks feasible with environmental safeguarding for adjoining properties. It appears that platform curvature would be quite gentle, nothing like the Hayes branch platforms. The requirement for derogation for railway standards of curvature and gradient, for locations with a platform, would need to be ascertained and approval secured.

There would then be no need to shift Lewisham tracks, junctions, reformat service patterns with a new *greater* level of complexity, etc, on a large scale and maybe impossibly, but just to call at a new pair of Lewisham (South) platforms. While the primary objective would be to improve greatly SE and South London connectivity, the platforms might also enable considerable *simplification* of SE suburban train service patterns, if the need to serve Lewisham from operationally difficult suburban locations were resolved by a straightforward stop on the main line. This may also help to increase the overall SE main line train slot capacity.

From a London 2050 perspective, that might also create a transport basis for more jobs being assigned to Lewisham within the New Cross/Lewisham/Catford Opportunity Area, so possibly being the start of a virtuous circle leading to New Cross/Lewisham becoming eligible for a near-SAZ status – the first south of the river.

There is a further variant to this Lewisham (South) option which should be reviewed: a DLR extension on a similar alignment, replacing the travelator proposal. DLR would provide a high frequency link between Lewisham (South) and Lewisham (Junction). There would be direct interchange from the SE main line services into a cross-river DLR service to Canary Wharf and Stratford. Comparative analysis should be undertaken, between the different merits of a travelator and a DLR extension (assuming a DLR extension were feasible).

There are parallels to be drawn between this proposition at Lewisham, and the similar situation at Stratford, where a link between Stratford (International) and Stratford (Regional) stations is provided by both a circuitous DLR service and by a rather congested and poorly signed 500m walking route – not a travelator – through the heart of the Stratford Westfield development. Lewisham can aim to do better than this.

TfL is also having to develop lengthy access links for the new large scale Opportunity Area/Satellite Activity Zone at Old Oak Common, between (1) Old Oak WLL station at Hythe Road, (2) Old Oak Crossrail/GW/HS2 main line Interchange, (3) Old Oak NLL station on Old oak Common lane, and (4) North Acton Central Line station. In total the distance is about 500-600m between the WLL station and various HS2/Crossrail platforms, 600-700m between the NLL station and those platforms, and about 500m on to North Acton station. So TfL is familiar with planning facilities for such interchange distances.

JRC recommendation: **If a direct link to Lewisham Interchange and DLR is a key requirement, then Grove Park Neighbourhood Forum should press for shorter term options locating a new main line suburban platform on the existing SE bypass lines, with a travelator link (or possibly a DLR extension) between that platform and the main Lewisham Interchange.** This will enable suburban routes otherwise missing Lewisham to achieve interchange with DLR and other routes, without large-scale dislocation to the existing railway network.

2. Making better use of the Grove Park-Bromley North line

2A – General issues with Bromley North branch

Because the SE main line into central London is at full capacity, and because the Bromley North line joins into the fast lines not the suburban lines, Southeastern has claimed that it is not now possible to reinstate direct services from Bromley North into central London, and that consequently the shuttle service must terminate at Grove Park for the foreseeable future.

JRC's judgment is that the Southeastern operator's position is backed up by the emerging reality of London 2050, that the fast line capacities will be oversubscribed within several decades, if not sooner. However a 'do-nothing' view about Bromley North pre-supposes that there is an insufficient case to create some sort of flying junction with the suburban lines, and that there is no adequate capacity for more trains, going sufficiently far as main suburban interchanges such as Lewisham or New Cross, to justify such investment.

It is wise to be dubious about desires to make an apparently neglected railway be better joined up. It may not be an answer at all, and that all the Bromley North branch needs to do in its own right is to run at a higher frequency to maximise connections at Grove Park (ie, have two trains running every 8-10 minutes, not every 20). There are dangers in trying to force a transport corridor to answer transport and connectivity questions which it isn't currently geared for.

Nevertheless, given that there are major identified shortcomings in SE connectivity, it is worth seeing if Grove Park-Bromley North can be a genuine partial answer to those gaps (and benefit Grove Park along an economic corridor towards a bigger population and jobs centre such as Bromley) rather than be just a nominal line-on-a-map type of solution.

2B – Involving Croydon Tramlink

There have been various propositions to suggest that if Croydon Tramlink could somehow be extended from Beckenham Junction to central Bromley, then it would be handy for it to take over the Grove Park branch as well. That may indeed be a relevant solution, as a lower cost higher frequency operation would then be available – and Grove Park would then be linked to Croydon – while an additional intermediate tram stop at, say, New Street Hill/Burnt Ash Lane, between Sundridge Park and Grove Park, might be worthwhile.

However no business case or political approval has yet been forthcoming to extend Tramlink to central Bromley. Until there is agreement on this, JRC recommends that ideas for Grove Park-Bromley North should not be focused on Croydon Tramlink.

JRC recommendation: **Grove Park Neighbourhood Forum should not expect Croydon Tramlink to feature in local transport solutions in the next transport planning periods, northwards from Bromley.**

2C – Involving the Bakerloo

Among rail options, a tube extension is at the extreme opposite end of the cost spectrum from a tram extension. This is a quiet suburban branch, and even if demand were increased, it would not offer any business case for a high cost tube extension, except for diverse reasons, eg space for a large tube train depot along the line (not realistic) or if Bromley Borough were to offer £xxxm funding towards an extension.

Approaching Grove Park via Bromley would be a very roundabout route from London, and not offer net time benefits (this is normally a significant part of any TfL investment proposal). So the current TfL thoughts of a Bakerloo extension to Bromley via Beckenham do not align with an extension towards Grove Park (partly tunnelled, of necessity).

Any Bakerloo involvement would therefore depend on a business case for a mixed tunnel and surface extension from Lewisham to Bromley direct via Hither Green and Grove Park. Its main validity would however be, in outer SE London, as connections to Lewisham DLR and to New Cross/Gate Overground, not as a direct London tube where Bromley South and local main line services would in most cases be faster even if less frequent.

A Bakerloo-Bromley direct would offer no main line track capacity relief, compared to takeover of the Hayes line which does that to a limited extent. It would have to be totally segregated from main line tracks, and would be a higher cost solution for sub-regional connectivity than other options such as ELL to Grove Park and Bromley. A Bakerloo extension this way would not serve the Opportunity Area developments which are feasible between Lewisham and Catford.

JRC recommendation: **Grove Park Neighbourhood Forum should give higher priority to rail schemes other than a Bakerloo extension to Bromley North.**

3. Better connected rail schemes, supporting access to Lewisham and Bromley North

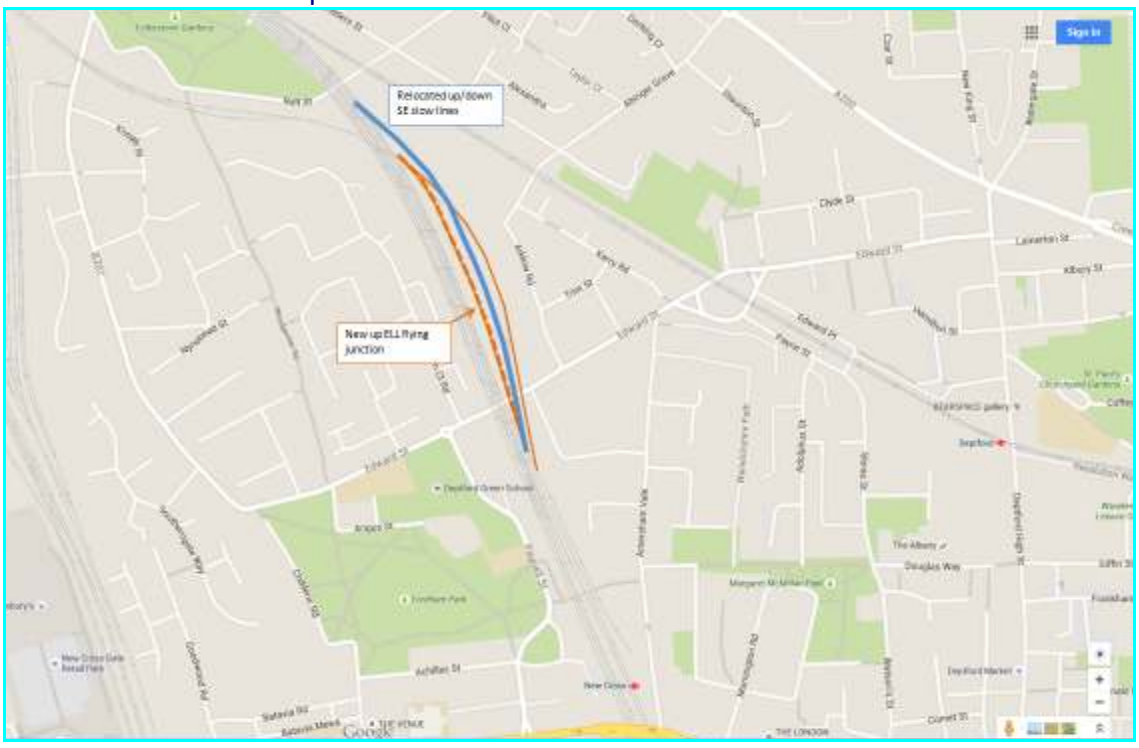
3A – Extending the East London Line

The aim with this project is to get direct access into cross-river services, for connectivity. The assumptions are that ELL could somehow link at New Cross onto SE main line tracks, then via Lewisham junctions, and if timetables worked, onto Hither Green and SE-wards to Grove Park, then (with a new flyover/flyunder) onto the Bromley North branch.

This is a large set of assumptions, given that the SE suburban lines are very tight on capacity both on the main running lines and at junctions in the Lewisham area. An equally big obstacle is that ELL itself is already becoming too successful, and has highly restricted capacity for additional passenger volume from the existing Forest Hill corridor, let alone SE London, and is also restricted to 5-car trains without (unfunded) large scale station tunnel enlargements on the core ELL section - rather than 8-cars or longer.

TfL is considering Automatic Train Operation through the ELL tunnel section to achieve 24 tph not the current design limit of 18 tph. In theory that would permit a further 6 tph in the tunnel section. However JRC expects that if those trains came from the SE lines, the acceptable limit would be fewer, to allow for the risk of perturbations on the SE affecting ELL reliability, and v.v. – for example a maximum of 4 tph not 6. [There also isn't reliable extra capacity on SE in peaks, following the route and junctions via Lewisham Junction – a direct extension via the SE main line bypass might just be possible.] TfL is also developing a view in relation to future use of such extra 6 tph, that this may be better used to beef up services on the existing Forest Hill/Croydon corridor via New Cross Gate.

Furthermore, there is operational complexity if having to build a new flat crossover junction at New Cross from the up SE slow line across the down SE slow (and conflicting with those trains) in order to reach the ELL track which is on the far east side of New Cross station. It might just be possible to build a flying junction to allow northbound ELL trains from a through Lewisham via New Cross service to ramp down to the ELL north of New Cross. A diagram shows what would be required, with slewing of the up/down slow tracks over the site of the former ELL depot:



If instead parallel track(s) and a new tunnel were needed for the bulk of the way between New Cross, St Johns and Lewisham, then a 4 tph service level, possibly still with 5-car trains, is unlikely to justify a business case.

Overall the aspiration for an ELL extension joining into Lewisham, and beyond, is understood but is not something that is either easy, or likely to be justified at low frequency and capacity. Onwards routeing for any ELL extension might be towards Blackheath to reverse if serving the existing Lewisham station platforms, to avoid addition junction conflict at Lewisham, or via JRC's suggested Lewisham (South) platforms towards Hither Green and maybe Grove Park. Bromley North in such circumstances might become an option, though requiring further infrastructure works to get connecting tracks over the fast lines.

Before any significant policy commitments were made, a detailed timetable and capacity exercise should be undertaken to see whether, and at what point, an ELL link is (a) operable and (b) value for money, using TfL yardsticks, compared to relying on better SE suburban trains calling more often at New Cross (where a timetabling exercise would be required).

If separate tracks are in practice needed from the New Cross area to Lewisham, if not further, then another option might be to take a Lewisham and SE branch off south of New Cross Gate (and close the New Cross ELL spur), and run that (likely in tunnel) to a new station at Lewisham. Any tunnel option might be in conflict financially and/or location with any Bakerloo extension / Crossrail 3 project, so in those circumstances an ELL extension might not be a realistic option until, for example, a Crossrail 3 took main line suburban trains off the surface tracks between Lewisham and New Cross, when an ELL extension would appear practicable.

JRC recommendation: **An ELL extension to Lewisham is desirable, but may be difficult to justify in operations or value for money, until several decades later. A detailed timetabling exercise will be required to understand if there are any practical short term options available. Grove Park Neighbourhood Forum might need to rely on other improved Grove Park-Lewisham links.**

3B – Extending DLR

This is primarily about providing a direct service between outer SE London and inner East London, especially the Canary Wharf development. If Option 3A took place – ELL to Lewisham – then a direct interchange with ELL would also be achieved at Lewisham. At present the shortcomings of the main line rail services mean that it is an unattractive journey between Grove Park, Bromley North and Canary Wharf, even though it isn't a long distance. It is under 7 miles in a straight line between Bromley and Canary, so should be do-able easily in under 30 minutes. Sadly, it is a very difficult journey, as shown above.

There are also desires, some conflicting with other schemes such as the Bakerloo extension, for DLR to serve Catford or Hither Green. Stakeholders will need to be clear which scheme is worth supporting, for which combination of direct and connected journeys. It is most unlikely that multiple overlapping investment will be supported by London government or central government. How many lines will Lewisham justify? How many will Treasury fund even in part?

In the case of DLR, if Bakerloo were to head for Catford, then an independent track scheme direct from Lewisham to Hither Green, Grove Park and Bromley would be feasible, although there are some difficult design options in the central Lewisham area and out past Hither Green. The need for separate tracks all the way rather than sharing main line capacity which exists SE of Hither Green would however be a significant additional expense. To try to make DLR serve Catford as well as a Bakerloo extension is financial nonsense.

JRC's position is that a hard choice has to be made whether any tube or DLR scheme is justified to Catford, and then the add-on value of extending beyond has to be considered. It could be simplest to assign Bakerloo to Catford, and DLR to Hither Green and beyond (maybe Bromley North as an ultimate destination), to be contrasted with an ELL extension if this is feasible (see above), and with the option of a better SE main line suburban service to a Lewisham (South) station and travelator to the DLR platforms.

A DLR extension would need its own track but could be flexible as light rail about where it puts its track, including a viaduct or partial at-grade alignment along a railway corridor with multiple junctions and pointwork as far as Grove Park. A direct Bromley-Canary DLR service would be feasible in terms of DLR line capacity, as its ridership would diminish north of Canary Wharf (and indeed it might become the Stratford service so linking Bromley and Grove Park to Stratford SAZ as well as Canary).

At this stage, the Mayor of London has shown interest in a DLR Bromley extension via Catford, which JRC considers is not a financially realistic proposal nor does it sit affordably alongside a Bakerloo extension as well in that direction. A more direct route via Hither Green might stand a chance. Proposals for the next round of TfL major investment projects will be set out in the TfL Business Plan in Autumn 2015, when a Bakerloo extension position might also be published. In general, Bromley Council has supported a DLR extension, because of the potential benefits in linking to Canary Wharf, but the Council has not so far offered any large-scale funding support for a DLR scheme, though this could help to tip any policy decision in its favour.

Big project funding decisions can strongly favour of schemes which are seen to secure a share of local funding support. For example the Lea Valley Third Track scheme to open up 5,000 homes and 3,000 jobs north of Tottenham Hale, at Meridian Water, has nearly half of its £120m+ finances coming from the GLA Local Growth Fund and local authorities.

JRC recommendation: **Grove Park Neighbourhood Forum (GPNF) to consider which sub-regional connectivity gaps are most important to resolve, and which scheme version out of many might be worth supporting on a realistic basis, seeking delivery of a genuine link rather than an aspiration which fails to be delivered. GPNF may wish to lobby Bromley Council to offer serious funding support towards a rapid transit extension, or on a lesser scale an improved Grove Park-Bromley North shuttle, which directly benefits the Borough.**

3C – An Outer Orbital railway

TfL reviewed outline alignments and a business case for a railway Outer Orbital in its researches for the London 2050 initial planning. A draft set of connections were set out in the London 2050 report (see below). It was however not possible at this stage to secure a strong business case, as most jobs growth was in inner London, not on the line of route, while London 2050 was also undecided about which form of population density model to adopt. Grove Park-Bromley North was included in the alignment, but with extensive tunnelling required at each end, to reach the Sidcup line northwards (towards Bexley and the river), and SW-wards towards Beckenham and Croydon.

Outer Orbital diagram in London 2050 report

The same diagram on a scaled map of London

There is an emerging potential for a cross-river urban railway (eg possibly Barking Riverside-Thamesmead-Abbey Wood) in the growing Thames Gateway area, and this might in the long term be a lever to secure further orbital links through SE London. However it is unclear that use of Grove Park-Bromley North would be the optimum alignment – it might be more cost-effective to use more of the Chatham main line corridor through Bromley South, as less tunnelling would be required.

JRC recommendation: **Grove Park Neighbourhood Forum (GPNF) to consider which sub-regional connectivity gaps are most critical in outer SE London, and, if it desires, to make an input into the Thames Gateway river crossing options which are being considered by the GLA transport and planning teams.**