

TRANSPORT FOR LONDON

BRIEFING NOTE

SUBJECT: Overnight weekend rail services

MEETING DATE: 18 July 2014

1 BACKGROUND AND SUMMARY

- 1.1 The purpose of this note is to describe options for all rail services overnight on Friday and Saturday that could complement Night Tube. This to include:
- (a) London Overground (all routes including West Anglia)
 - (b) Crossrail
 - (c) DLR
 - (d) Selected routes out of the major National Rail radial routes
- 1.2 Night Tube will operate an overnight service on Friday and Saturday nights, on the following lines:
- (a) Central, between Hainault and Ealing Broadway;
 - (b) Jubilee, between Stanmore and Stratford;
 - (c) Northern, between High Barnet/Edgware and Morden, both via Charing Cross branch
 - (d) Piccadilly, between Cockfosters and Heathrow Terminal 5; and
 - (e) Victoria, between Walthamstow and Brixton.
- 1.3 This represents 67 hours' continuous operation on these lines. No service is proposed on other parts of the lines. The service will operate at four trains per hour. TfL has decided that now is the right time to introduce an overnight service for the following reasons:
- Supporting London's growing night time economy;
 - Night bus passenger numbers grown nearly 300% since 2000;
 - Line upgrades being completed, with new infrastructure reducing maintenance requirements;
 - Travel on the Underground after 22:00 is growing faster than all-day demand;
 - London's business leaders, such as West End Commission, recommend it; and
 - Access Transformation Plan improve access at other times

- 1.4 Night Tube has a positive business case and is likely to cover its operating costs from additional revenue generated within a year of starting operations. Night Tube services will begin on Friday 18 September 2015.

2 LONDON OVERGROUND

- 2.1 Analysis shows the following is feasible

- Highbury & Islington - New Cross Gate, with eight trains in service, very largely though not completely along TfL infrastructure
- LOROL's additional costs take the form of train crew and maintenance and operational staff. Station staff are provided by agency at a flat all-day rate
- The new operating concession starting in November 2016 is an opportunity that fits with commercial timelines

- 2.2 The combination of the London Overground services between Dalston Junction and Clapham Junction via the East London line and North London / West London line services are obvious candidates for additional over-night services. Assessing demand is difficult on both as there are relatively few parallel night buses from which to assess current demand.

- 2.3 Extensions to access would need to be negotiated with Network Rail to make available its track and signalling. The main challenge is to re-time the many extended engineering hours or weekend closures given continuous renewals on most of the routes. In contrast to LU, Saturday night is the preferred night for intrusive maintenance as the railway is open 24 hours per day the rest of the week for rail freight. In contrast, the North London line for example is currently shut on Saturday nights as there is least rail freight originating then compared to the rest of the week. Appendix 1 has more detail on this.

- 2.4 Extension of East London line services to Clapham Junction also requires access to a number of important TOC operated stations, opening of which overnight requires not only TOC willingness but also the need to meet their costs. Clapham Jn (SWT) has a number of specific challenges, reflecting its large area and 17 platforms, though a close traffic objective is Clapham High Street. An extension around the South London line may be achievable in medium term c.2019.

3 CROSSRAIL

- 3.1 The Crossrail concession contract does not contain over-night running currently over its eight year duration between 2015 and 2023.
- 3.2 The line's corridor is similar to that of the Central line which will be operating between Hainault and Ealing Broadway. Hence there is considerable commonality in Central London, and it also covers some major centres such as Stratford and Ealing Broadway itself. The Central line is also fairly close to another Metropolitan town centre, Ilford. The Piccadilly line will serve Heathrow, and the Jubilee Canary Wharf.
- 3.3 This leaves Romford as an unserved town centre. It also leaves some gaps in south-east London such as Woolwich and Abbey Wood (see section on

National Rail), and in west London between Southall and West Drayton. Paddington and Old Oak Common, if developed, will also be without an over-night service.

- 3.4 The initial challenge is of course to bring the line's new infrastructure into use in the period to December 2019, so introduction before that seems infeasible. Thereafter, it is like elsewhere for it to be regularly maintained.
- 3.5 At some stage in the 2020s, however, this line could be a good candidate for all-night running.
- 3.6 Current access arrangements would need to be altered to enable all-night weekend running
- 3.7 Liverpool Street – Shenfield: There are always two of the four lines available on Friday nights so it is possible to operate the whole Crossrail route on Friday nights. However, all lines are shut on Saturday nights, unless this changes post-Crossrail. So a Friday night service is viable here. There is a lot of overnight freight so closing all lines on a weeknight is unlikely to be feasible. This route already operates as a two-track railway overnight on weeknights to allow maintenance on the other tracks.
- 3.8 Paddington – Reading: There are always two of the four lines available on Friday nights so we could run along the whole Crossrail route on Friday nights. However, all lines are shut on Saturday nights. The route is shut for quite prolonged periods on Saturday nights in some areas so this might have been extended for the upgrade works. A Friday night service is definitely viable though it would have to change to a weeknight for a Saturday at the expense of the current rather limited all night weekday services. As in 3.7, overnight freight is quite frequent so closing all lines on a weeknight is not practical and it operates as a two-track railway overnight to allow maintenance on the other tracks.

4 NATIONAL RAIL

Current services

- 4.1 First Capital Connect operate an hourly night time service between Bedford and Three Bridges calling at stations in the TfL Travelcard zones. These are: Mill Hill Broadway, Hendon, Cricklewood, West Hampstead Thameslink, Kentish Town, St Pancras, Blackfriars and East Croydon
- 4.2 Oyster entries and exits at these stations were analysed for the period 19th May – 24th July 2013 to understand the possible distribution of demand across a full 24 hours of service. Numbers include allowance for ticketless travel based on previous research for Greater Anglia services. "Out of hours" services (between 00:00 & 04:59) accounted for 0.6 and 1.4% of total daily demand on Friday and Saturday nights respectively. In comparison, demand for the last hour of service on the ELL accounted for 0.6 and 1.6% of demand on the same days. The one FCC station that is noticeably busy late at night is East Croydon with in excess of 250 paying passengers on Friday & Saturday nights.

- 4.3 There is also a half hourly Southern service between London Victoria and Gatwick Airport calling at Clapham Junction, East Croydon and Purley.
- 4.4 Services leave Paddington calling at Ealing Broadway, Southall, Hayes, West Drayton and selected stations to Reading also operate every two hours.

Possible other services

- 4.5 This section examines some potentially desirable all-night routes around London. This takes account of current and future London Underground, DLR Crossrail and London Overground plans.
- 4.6 It also takes account of the substantial programme of upgrade works, notably the Thameslink programme which has a particular impact at London Bridge in the period through to 2019. HS2 will have a similar impact in future years.
- 4.7 The table below shows some of the potential routes where there is a plausible case for over-night running at weekends. TfL's devolved services are shown in bold whereas other national rail services are operated as DfT franchises. There is also an estimated of patronage per night of 4 tph service based on an analogous methodology as used for Night Tube. Across all the routes, this totals just over 2 million journeys per annum.

From	To	Via	Est. Pax pn	Night bus	Earliest start date
Charing Cross	Dartford	Greenwich, Woolwich	2,500	N1	After TLP in 2019
Charing Cross	Dartford	Eltham, Lewisham	2,600	N21, N89	After TLP in 2019
Victoria	Orpington	Bromley	2,500	N3, N47	Subject to access
Victoria	Sutton	Balham, Norbury, West Croydon	4,100	N44, N109, 159, 250	Subject to access
Waterloo	Kingston	Wimbledon	4,300	N87	Subject to access
Waterloo	Kingston	Richmond	500	N22	Subject to access
Liverpool Street	Enfield Town	Seven Sisters, Hackney Downs	1,300	149, N26, N29	Subject to access

- 4.8 Such a set of routes would give a good coverage across the whole of London, including the Metropolitan town centres. Crossrail services are required to get a much better coverage (see above).
- 4.9 Current access arrangements would in many cases need to be changed.
- 4.10 Victoria – Orpington via Bromley South: A route is always available but it will be one of three either via Herne Hill or Denmark Hill, and if via Denmark Hill either via the Catford Loop or Atlantic Lines. So trains would be timetabled at different times serving different stations from one weekend to the other, and not necessarily consistently between Friday and Saturday nights either. I therefore don't think this is viable.

- 4.11 Victoria – Sutton via Balham, Norwood Junction and West Croydon: It's not possible to get to Sutton (or West Croydon) on either Friday or Saturday night, via either Wallington or Mitcham Junction. But Croydon is presumably a good place to run to, and the routes via both Norbury and Crystal Palace to East Croydon are available on both nights. This is therefore a viable option.
- 4.12 Waterloo – Kingston via Wimbledon: The route between New Malden and Kingston is not available on either Friday or Saturday nights. However, on Friday night, it would be possible to run overnight on the main line to New Malden (and on to Surbiton), but not on Saturday night. So a Friday night service is viable here unless we're concerned about the inconsistency of not running on both weekend nights.
- 4.13 Waterloo – Kingston via Richmond: The Windsor Lines are unavailable west of Clapham Junction on either weekend night, neither is the route between Twickenham and Kingston. This is therefore not viable.
- 4.14 Liverpool Street – Enfield Town via Hackney Downs and Seven Sisters: It is possible to get as far as Hackney Downs most weekends. But the Southbury loop north of Hackney Downs is not available on either Friday or Saturday nights. This is therefore not viable.
- 4.15 There are opportunities to change current access arrangements. In virtually all cases, the possessions on Friday nights are the same as, or very similar to, the closures on Monday to Thursday nights. That means that the routes which are open Friday night but shut Saturday night are the main opportunities for swapping Saturday night maintenance to another night of the week. The disadvantage is that significantly less time is available for maintenance on a weeknight as the railway needs to be operational again much earlier than on a Sunday morning. This could mean that it takes two weeknights to do the same amount of maintenance as on a Saturday night, obviously a less efficient way of working.
- 4.16 The South West Main Line may be the main opportunity where a service could be provided to Surbiton on a Saturday night if maintenance was switched to a weeknight(s). There's not much freight on the SWML so this would not be a huge problem although there might still be concern from freight operators.
- 4.17 There are other routes which seem a lesser priority. These are set out below.

From	To	Via	Rationale
Marylebone	Amersham	Harrow-on-the-Hill	Too few stations. Await future Met service
Marylebone	West Ruislip	Wembley Stadium	Too few stations. Relatively low demand
Euston	Watford	Queens Park	DC line may be removed as a result of HS2 works. Met line provides substitute when

From	To	Via	Rationale
			upgraded
Kings Cross	Hertford North	Finsbury Park	Piccadilly line close to route
Liverpool Street	Chingford	Hackney Downs	Victoria line close to route
Fenchurch Street	Upminster	Barking	Too few stations. Await future District service
Charing Cross	Dartford	Bexleyheath	Other nearby lines
London Bridge	Sutton / Epsom	Tulse Hill	Relatively low demand
Victoria	Croydon	Crystal Palace	Other nearby busier lines
Waterloo	Epsom	Wimbledon	Branch from Raynes Park is relatively low demand
Waterloo	Chessington South	Wimbledon	Branch from Raynes Park is relatively low demand
Waterloo	Hounslow	Brentford	Relatively low demand

5 DLR

- 5.1 Docklands Light Railway considered the potential for weekend 24 –hour operation to complement the Underground as part of Transport Planning’s Input in to the Access Transformation Programme. Weekend late evening demand is not as markedly different as it is on LU, but a small number of stations were significant traffic generators, such as Bank, Shadwell, Limehouse, Westferry, Canary Wharf, Lewisham, Stratford, Canning Town and Woolwich Arsenal. The opportunities for modal shift from bus were considered, largely in the east-west axis and from central London towards Lewisham.
- 5.2 It was concluded that service, initially at least, should focus on Bank to Canning Town and Bank to Lewisham via Canary Wharf, which serves the greatest number of high traffic generators with relatively few route miles. Woolwich Arsenal is considered a potential next phase. It is noted that DLR operating hours do not currently match those of LU, therefore ‘night service’ would operate for longer on a Saturday morning. The service, at 20 minute headways, could be operated with 6 trains. Forecast annual operating cost is £842,000 per annum, with revenues of £533,000. Significant non-financial benefits in the form of journey time savings results in a benefit: cost ratio of 2.11:1, which suggests that if subsidy were available for operation, this would be a beneficial project for London.
- 5.3 The main challenges are:

- The Lewisham extension was built as separate PFI, and this has to agree to such a change to access
- Access at Bank with Bank capacity work works above/adjacent and between DLR running lines
- Possible need for single platform face working at Bank (to enable fan maintenance) = max 6tph
- The new DLR franchise does not include over-night services which would need to be the subject of a variation

Appendix A: Gaining Access to the Railway for Maintenance

The London Overground Virtual Alliance Board on 18 November discussed some of the challenges associated with 'all night running' in the context of the *Night Tube* initiative. Given the need to maintain engineering access, this note describes the main differences between London Overground and London Underground in the way the two areas operate and the manner in which possessions are taken.

One of the key differences between the two areas is that London Overground substantially runs on Network Rail infrastructure. Rail freight traffic is a regular user of the Network Rail system, not least at night. For example, there are over 500 freight trains scheduled to pass through Dalston Kingsland station in a week, of which around 40% is between midnight and 06:00. Of that though, very little is during the weekend. This is because all North London lines are blocked 00:10 Sunday to 09:10 Sunday, and there are just eight trains scheduled for Monday night as the railway is blocked between midnight 04:40.

This reflects the fact that for Network Rail the 'least impact' option is to carry out maintenance during their quieter periods, that is generally weekends, when there is little freight traffic at any time of day. In contrast, for LU, weekends are becoming increasingly busy, especially Friday and Saturday nights.

The sections below outline the possessions process for London Overground and London Underground.

London Overground (NR)

The network over which London Overground operates (the North, West, East and South London Lines, together with Watford DC and Gospel Oak-Barking lines) is generally considered to be a 24 hour operating railway, though not specifically a 24 hour passenger carrying railway. The track and assets are owned and managed by Network Rail, with the exception of the East London Line from Dalston to New Cross/New Cross Gate/Old Kent Road.

For access to London Overground track and assets, the Network Rail *Engineering Access Statement* and the *Timetable Planning Rules* (also referred to the Operational Rules or the Rules of the Route) apply. Together, they are the rules by which the *Network Rail Possession Planning System* works. Sections 1 to 3 of the EAS set out the national process for the negotiating and securing engineering access to the rail network. Sections 4 to 7, the bulk of the EAS document, contain route-specific details of engineering access opportunities and requirements. The National TPR contains a plain English description of the timetable planning process together with details of the planning schedule and requirements to be met in train operators' bids for train paths. It also contains a procedure for the agreement of short term changes to EAS and TPR.

As most rail freight tends to be diesel hauled, possessions are generally taken in a different manner to the LU network:

- Possessions are controlled by the local Signalling Control Centre with competent staff applying protection arrangements (including possession limit boards and detonators) and signallers maintaining signals at danger to prevent unauthorised train movements into possession areas.

- To isolate the power from a working area, NR have different Electrical Control Room staff controlling different areas, rather than one particular 'power control centre' as such. Competent persons (electrical or otherwise) operate certain devices, such as hook switches or circuit breakers. Hook switches are operated manually to connect or disconnect feeds from the local substation, or to link sections of conductor rails to feeds from adjacent substations when a local one, or one of its circuits, is undergoing repair or maintenance.
- Protection from electrocution is achieved by separate isolation arrangements and applying the requirements of either the AC isolation procedures for Overhead Line equipment or DC isolation procedures for third rail electrified areas. Isolating the power is achieved by Electrical Control Room staff opening specified breakers and on site competent staff 'strapping out' – i.e. the earthing of an electrical section to stop power being applied, On the TfL owned section of the East London Line, earthing is undertaken remotely without the need for site staff.
- Generally, South of the river, areas of NR assets are third rail and North of the river, assets are overhead lines, although there are areas where this is not necessarily the case.
- The National Rail network varies though as there are areas where both LU and NR take possessions in the same area over a weekend, for example Wimbledon. Here, taking an NR possession (evening or weekend closure) need only take about 20 minutes to achieve. An LU possession can take time, due to getting trains into Parsons Sidings.
- The use of contractors to take isolations and possessions further complicates this, whereas within LU it is dealt with by 'in house' staff within the Access, Logistics and Operations team of CPD. LU is currently working with NR to reduce the impact of isolations and closures and are already taking some of these elements 'in house'.

London Underground

The manner by which LU are able to plan/take/protect possessions is dictated by various Rule Books and the types of work being carried out. 'Protection' on the LU network can be via the use of switching off traction current sections via the Track Access Controller to create buffer zones or a current gap, maintaining signals at danger, securing points, and the use of a train or a physical barrier can be used in conjunction as well as at Depots and sidings.

- On the main line London Underground (LU) 'running lines' generally have traction current switched on when the train service is running and switched off during the time there is no train service. This means that the running lines have two Conditions:
 - Traffic Hours – when traction current is switched on and trains are running.
 - Engineering Hours – when traction current is switched off and trains are not running.
- Access to the track during Engineering Hours is controlled by the following methods:

- Line Clear procedure, for tube and sub-surface tunnel sections, and some open sections where access is restricted or limited.
- Line Safe procedure for all other sections, except depots.
 1. Both the Line Clear and Line Safe procedures are managed by a Track Access Controller (TAC) who is responsible for booking protection masters on to and off of traction current sections during Engineering Hours. Protection is maintained by the TAC not passing a Line Clear or Line Safe message to the power control room operator, allowing them to 'switch power on' until all personnel are clear of the traction current sections concerned, or are protected.
- This means there is a general principle that when traction current is switched off, trains do not run (except where they are 'locked' into a specified area or a worksite in a possession).
- These methods are supported by the use of additional staff (protection/possession masters), signs, lamps and detonators. The use of additional staff and the placing of various blocks/markers/lamps and detonators delays the amount of time available to work on the asset and there is currently a programme of work within the Capital Projects Directorate of LU (Access Transformation Programme), which is reviewing how to reduce the impacts of costs and time whilst maintaining or improving safety.