

Rob Plaskitt
Head of Access and Licensing
Office of Rail and Road (ORR)
One Kemble Street
London
WC2B 4AN

Fiona Dolman
Capacity Planning Director
Network Rail
The Quadrant
Elder Gate
Milton Keynes
MK9 1EN

15 May 2015

Dear Rob

1.0 Purpose of this Letter

This letter sets out the formal Network Rail response to your email dated 3 February 2015. It incorporates the ORR feedback received at our meeting on 3 March 2015 and our follow up conference call on 24 March 2015.

This letter:

- Considers three key sections of the East Coast Main Line (ECML) and provides a summary of the capacity versus aspirations equation
- Provides a narrative of the choices available against the detailed aspirations of each known potential operator
- Gives Network Rail's position on the sale of rights, performance and how we intend to build the plan in more detail once rights are sold

Specifically, Network Rail has sought to address the following questions raised by the ORR on the 24 March 2015:

- 1.1) What fast line service levels currently run on the ECML under the May 2015 timetable? (See Figure 1, Section 2)
- 1.2) What are the main capacity choices to be made around additional services beyond the existing quantum? (See Section 3)
- 1.3) Taking 1.2 above as a baseline with suitable adjustments for committed new rolling stock and infrastructure, please comment (as System Operator) on the various possible combinations of proposed additional services that could work together from your perspective and any issues they raise for you, e.g.

- a) On Newcastle to Edinburgh, which proposals could work together and what would those combinations entail for non-London Long Distance High Speed (LDHS) services (if anything)? (See Section 3.3)
- b) Could the additional Virgin Trains East Coast (VTEC) services run alongside the First Edinburgh or Alliance proposal? If so, would sufficient capacity remain for either or both of the Alliance West Yorkshire and Alliance Cleethorpes proposals? (See Section 4.1)
- c) In each case where proposals would not, in your view, work well together could the position be improved by adjustments to the proposals (whether in terms of quantum, peak / off-peak, journey times, etc)? (See Section 4.1 and 4.2)
- d) What further work will need to be done to enable detailed timetable development, including on performance, power supply and other issues. When and through what industry processes do you expect this work to be done? (See Sections 4, 5 and 6)

2.0 Capacity Issues on the ECML

2.1 Background

Network Rail has produced detailed capacity reports for ECML services in 2020 (September 2014 and December 2014). These reports have been published on the ORR website: http://orr.gov.uk/what-and-how-we-regulate/track-access/current-work/east-coast-main-line

The basis for this work was the ECML 2020 Indicative Train Service Specification (ITSS):

- Which did not include infrastructure or network trains on the route
- Where the geographical scope for the analysis included the ECML between London Kings Cross - Edinburgh and Doncaster - Leeds - Colton Junction
- · Which did not cover all the routes off the ECML
- Where the infrastructure assumptions factored-in the EC Connectivity Programme

In this letter we have drawn on the work completed in the aforementioned capacity studies and updated the position based on emerging information made available following the Inter City East Coast franchise award.

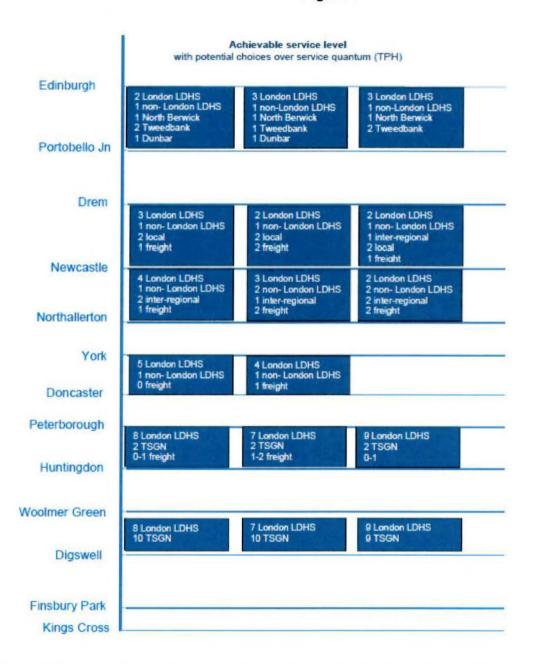
As stated in our previous communications the following issues should be considered in any decision about the sale of access rights to operators on the ECML:

- Through our industry work consensus was reached that 8 LDHS paths can be accommodated out of and into Kings Cross, alongside the TSGN off-peak suburban service, and potentially alongside the peak service but not without choices to suburban stopping patterns
- The quantum of operator aspirations exceeds the available capacity Network Rail can guarantee at the time of writing
- A quantum of freight paths was tested based on the levels specified in the ECML Industry Planning Group ITSS. On most sections of the route, there are detailed choices to be made around the balance of passenger and freight capacity

Before proceeding to any sale of rights Network Rail asks the ORR to outline which
rights it is minded to direct Network Rail to sell and instruct the potential rights
holders to work with Network Rail for a prescribed period of time to prove the
combinations work when trains are timed in working detail

Figure 1 demonstrates the maximum fast line capacity in a typical hour through each route section on ECML and is based on a similar table from the ECML 2020 report published in September 2014.

Figure 1



For additional context we have included in **Appendix B** a breakdown of the current working timetable capacity utilisation on the sections of the ECML at 1700-1759 on the fast lines taken from the December 2014 timetable base.

3.0 Summary of capacity choices on the ECML based on known rights/aspirations

3.1 Capacity South of Doncaster

Previous analysis has shown (ECML 2020 report, September 2014) that 8 LDHS paths can be accommodated alongside the level of service enabled/required by the Thameslink Programme and freight (with ECML Connectivity enhancements).

In terms of total service levels south of Doncaster, the following LDHS rights and aspirations exist in each hour:

- VTEC 6.5 paths
- Alliance (Edinburgh) 1 path
- Alliance (other aspirations) 1 path
- First Group 0.5 paths
- Hull Trains 0.5 paths
- Grand Central 0.5 paths

The above aspirations total 10 LDHS per hour which is greater than the industry agreed 8 trains per hour (tph) optimum.

Govia Thameslink Railway (GTR) has aspirations for 10tph fast line between Kings Cross and Welwyn Viaduct.

In line with our previous reports we are assuming that LDHS maximum capacity is 8 tph and the journey times will be dictated by the stopping patterns required south of Doncaster.

There remains an unresolved issue (that will be picked up in the work outlined in Section 5) in that GTR's aspirations have a total of 10tph on the slow line (SL) in the peaks between Finsbury Park and Welwyn Garden City (4tph to/from King's Cross, 4tph to/from Moorgate, 2tph to/from Caterham via Thameslink).

To deliver the GTR aspiration for 2tph Tattenham Corner – Cambridge fast line (FL) capacity is required at Welwyn Garden City for a call at Welwyn North followed by a weave onto the SLs. This was highlighted in the previous capacity reports as a potential choice. Section 5 highlights potential remedies to minimise the impact on the GTR aspirations whilst achieving the required 8 LDHS FL services per hour. It should be noted that GTR's aspirations for SL service (10tph) have increased when compared to the maximum of 8tph assumed in the ECML 2020 reports.

The ECML Industry Plan Groups (IPG) train service specification has 1 Class 4 freight path per hour between London and Peterborough (and return) plus an option for another Class 6 path in both directions. The work we have done as part of Connectivity has shown that there is capacity for 7 LDHS with 1 Class 4 Freight services per the ECML IPG ITSS. The ECML Connectivity enhancements would enable the operation of 8 LDHS paths alongside ITSS freight requirements.

South of Peterborough, in considering the choices on this section, the Huntingdon – Woodwalton 4-tracking scheme (part of the ECML Connectivity Programme) has been assumed and is required to deliver the service levels proposed in this section. North of Peterborough, the key freight choices on this section are around the routeing of trains. A choice exists for the routeing of freight via the ECML (via Grantham), where the freight specification cannot be achieved without the removal of passenger services, or via the GN/GE Joint Line.

3.2 Capacity York - Newcastle

Previous analysis highlighted this section as being significantly constrained (ECML 2020 reports September 2014 and December 2014). The aspired level of service exceeds available capacity as a result of the speed mix of services on the route (i.e. between non-stop passenger, stopping passenger and freight paths):

- VTEC 3 paths
- · Alliance 1 path
- First Group 0.5 paths
- Cross-country 2 paths
- · Trans-Pennine 2 paths
- Freight 2 paths

There are a number of ways capacity can be allocated through this section providing for choices between the levels of London-based LDHS services, cross-country services (via Leeds) and freight (ECML 2020 report December 2014). Today's timetable is constrained in terms of the flighting and service structure of passenger services. To achieve a reasonable spread of passenger services, the options developed suggest a maximum achievable service level of 8tph over this section compared to a total aspiration of 10.5tph, based on the enhancements programmed to be delivered as part of the ECML Connectivity scheme.

The freight requirements over this section in both Up and Down directions cannot be achieved without choices being made. All require the connectivity infrastructure (e.g. freight loops) and choices around passenger service levels, flighting and service intervals for passenger trains and routeing of freight trains.

Therefore, it is not possible to run the full aspirational service level over this section and it is necessary to remove services. Exactly which services would need to be removed depends on choices on other sections of the ECML (including Newcastle – Edinburgh) with a direct link to the London LDHS choices.

3.3 Capacity Newcastle - Edinburgh

Capacity on this section is constrained due to the speed mix of services between fast passenger, stopping services and freight. South of Drem the aspirations are as follows:

- VTEC 2 paths
- Alliance 1 path
- First Group 0.5 paths
- Cross-country 1 path
- Trans-Pennine 1 path
- Abellio ScotRail 1 path
- Freight 1 path

The level of service aspired exceeds capacity albeit to a lesser extent than York - Newcastle.

The key choices on this section are driven predominantly by how many LDHS services should be accommodated. In all of our previous work, Network Rail have assumed that 1 non-London long distance service is allowed for per hour and given the importance of maintaining long distance connectivity to Scotland from non-London locations, we maintain this view to be the correct capacity choice.

The key choices on this section involve a trade-off between growing the existing London to Edinburgh LDHS market as opposed to providing for more connectivity between Edinburgh and the North East of England with the addition of an hourly Dunbar service (currently two hourly).

It is has been our consistent view that an absolute maximum of 6 London LDHS services can serve Edinburgh in any two hour period. In making this decision, Network Rail highlights the following:

- A thorough timed performance assessment of the impact of 3 LDHS paths per hour is required
- Which of the known aspirant operators is sold rights for some or all of this capacity does not impact on the capacity of this section (running Intercity Express Programme (IEP) Class 800/801 trains or Class 390 trains has no material impact)
- The different calling patterns of the various aspirant operators with many more stations along the ECML being serviced by the franchise proposition in comparison to the two open access aspirations
- The proposal by Alliance Rail holdings to run to London in just over 3 hours 40 minutes has a greater impact on modal shift when compared to the proposed introduction of a 3rd LDHS from First East Coast in every hour which is similar in speed and connectivity to the franchise proposition. The challenge with the Alliance aspiration is finding the right path given its requirement to travel at much greater speeds on key sections of the route compared to existing and new Class 800/801 rolling stock. These issues have been well highlighted throughout our previous reports
- The priced Abellio franchise option to service 2 new stations (East Linton & Reston)
 proposed by Transport Scotland. These stations have not been factored into any of
 our analysis but should the choice to service these stations be made it will have a
 further impact on the Newcastle Edinburgh section
- The limiting implication on Scottish North East of England connectivity (as supported by Transport Scotland), and the possible impact on the outputs of the Borders rail scheme with the services to Tweedbank due for introduction into service in 2015. It should be noted that a 2tph Tweedbank specification is underpinned by the assumption of rights being sold to ScotRail and that the business case which secured funding for Borders rail assumed 2tph to Tweedbank
- Dunbar can be serviced once an hour in combination with 2tph LDHS to London and 2tph Tweedbank services, but an increase to 3tph LDHS to London would require the Tweedbank services to reduce to 1tph

Given the complexities of the trade-offs listed above, it is important to understand the capacity constraints which limit the ability to run additional LDHS services on this section of the ECML which are:

- Portobello Junction: The slow speed layout currently has 4tph leaving/joining the ECML from Tweedbank
- Craigentinny Depot/Junction and Edinburgh Waverley platform capacity: the slow speed junction layout for trains leaving/joining the ECML has an impact on ECML capacity and platform capacity at Edinburgh Waverley. To enable an empty coaching stock move to enter/exit Craigentinny Depot, there must be both capacity on the ECML and at Edinburgh Waverley station, leading to unnecessarily long stock layovers in long platforms especially at the start of traffic and towards the end of traffic.
- Abbeyhill Junction/Edinburgh Waverley East End
- The power supply capacity between Newcastle and Edinburgh

Investment will be required to ease the above capacity constraints.

We also should consider future potential constraints, such as the future Electric Multiple Unit (EMU) depot proposed at Millerhill.

3.4 Off-route capacity

The VTEC and Alliance aspirations include a number of destinations off the core ECML route receiving a new (or enhanced) direct London service. Whilst this provides additional connectivity, further development work is required at some locations to understand the impact on the other Operator services, such as:

- Middlesbrough (via Thornaby)
- Sunderland (via Newcastle)
- Lincoln
- Harrogate (via Leeds)
- Leeds (via Wakefield and via Micklefield)

These are considered in more detail in Section 4.

4.0 Overall route capacity considerations

In this Section we will address the questions raised by the ORR as outlined in 1.3) of section 1 of this letter.

4.1 Could the additional VTEC services run alongside the First Edinburgh and / or Alliance proposal? If so, would sufficient capacity remain for either or both of the Alliance West Yorkshire and Alliance Cleethorpes proposals?

For the purpose of answering this question the base assumption is that the VTEC proposals for 2020 would be supported with quantum rights spread as 6.5tph or 13tph over every two hours against a 16 train London originator LDHS capacity.

In practice this base assumption means over a repeating two hourly pattern VTEC would operate 6 trains in one hour and 7 trains in the following hour out of Kings Cross. This leaves capacity for:

· 2tph in one hour

and

1tph in the other hour (when VTEC proposes to run to Middlesbrough with a 2nd hourly call at Stevenage).

The additional proposed VTEC services (compared to the May 2015 timetable) are:

- London Edinburgh 1tph all day (currently only 2tph in the peaks)
- Newark Northgate service goes to Lincoln / Harrogate (via Leeds) in alternate hours all day
- Middlesbrough alternate hours all day (2nd hourly Stevenage stop)

In addition to the VTEC base timetable, the December 2014 timetable has a Grand Central (GC) service in every other hour between London and Doncaster ¹ and a First Hull Trains (FHT) service every other hour also using capacity between London and Doncaster.

In the simplest of terms this leaves one path every other hour for any other aspirant operator if we assume existing rights are extended.

So to answer the first part of the question: Could the additional VTEC services run alongside the First Edinburgh and / or Alliance proposal?

Against the VTEC base timetable with existing GC and FHT rights:

- The First East Coast proposal to run a two hourly London Edinburgh service can be accommodated (0.5 LDHS per hour / 5 per day) and in doing so it would take the London LDHS quantum to 16 over two hours. However, this solution does mean that in every second hour the Newcastle Edinburgh section needs capacity for 3 (5 over two hours) LDHS services from London and a trade off with local services would need to be made
- The Alliance Anglo Scot proposal could not be accommodated throughout the day in every hour without removing the capacity for existing open access service either from Hull or West Yorkshire. If the Alliance proposal was to be reduced to one train per two hours a choice would need to be made between either VTEC Anglo - Scot or Scottish local services, in the same way that this choice exists for the First East Coast aspiration
- Further south, choosing the VTEC aspirations with one of the First East Coast or Alliance Anglo Scot open access aspirations provides 4tph all day for Newcastle. Network Rail would welcome further discussion on whether the operating of 4tph for

¹ This includes both the Bradford and the Sunderland services (capacity beyond Doncaster is adequate).

Newcastle (albeit this would not be in every hour if the First East Coast option is pursued) because it is our view that the market size and growth potential does not warrant 4tph over other choices

To answer the second part of the question: If so, would sufficient capacity remain for either or both of the Alliance West Yorkshire and Alliance Cleethorpes proposals?

- The Alliance proposal to run from West Yorkshire / Cleethorpes would create a 3rd London service to / from Leeds every other hour and would require 0.5tph capacity south of Doncaster. This aspiration could be accommodated in the hour when VTEC run 7tph with Grand Central and First Hull having to operate in the alternate hour and no capacity for an open access Anglo Scot train.
- The Alliance proposal to run to Cleethorpes would require further planning to understand capacity in the South Humber corridor with a particular focus on the Wrawby area which is heavily utilised with freight traffic both in the permanent and short term plan.

On the southern section of the route further work is required at a detailed level to VTEC/LDHS and GTR timetable aspirations.

4.2 What different combinations might work if further detail was available?

Throughout this work Network Rail has remained agnostic to the aspirations of owning companies, and has focused on outlining capacity choices.

However in our role as System Operator we make the following observations:

- The number of combinations of services proposed by the aspirant operators means that certain choices do give wide reaching connectivity across the London North East and East of Scotland areas. We have, throughout this process, made assumptions supported by the Industry and we continue to use these assumptions. Consequently, whilst we could have looked at options that provided for no non London LDHS and no VTEC franchise paths north of York we have avoided doing so as the outcomes do not align with our requirement to utilise the available infrastructure to the best overall benefit of the industry and its customers
- It is the view of Network Rail that the timetable on the ECML in 2020 needs to be based on a two hourly repeating pattern to maximise the current available capacity. The principle driver for this view comes from the variety of aspirations that do not run every hour (unlike the West Coast Main Line for example)
- Where choices exist around train service options, the scope also exists to vary the
 offering between peak and off peak. For example, for London and Scotland starters
 options could be generated in order to move people on a mixture of both local and
 LDHS in the peaks hours, (to accommodate peak demand as needed), with a drop
 off in local services in the day and instead focus on moving long-distance passengers
 in the day
- In relation to services North of York, there is not enough capacity to accommodate all future aspirations alongside freight services and ScotRail passenger services.

However, in a two hour pattern there is the option to allocate 5 LDHS paths therefore allowing some growth in the local services, albeit not across every hour

5.0 Performance considerations

Aside from the capacity issues that need to be resolved performance remains a risk for Network Rail.

Detailed performance assessments have not been carried out at this stage and the most recent capacity report highlighted that a worsening of 1.8% - 2.0% Pubic Performance Measure (PPM) is expected with 8tph LDHS, depending on mitigations implemented. With the Industry expressing a desire for a PPM 'floor' of 90% for individual operators, it would be unrealistic for Network Rail to commit to a PPM output in Control Period 6 for the VTEC operation in excess of 86% and GTR operation in excess of 89% until mitigations are understood and plans are put in place to implement them following detailed assessments.

Further timetable analysis and detailed performance assessments would be required as more detail becomes available and during further iterations of the timetable as it develops through normal industry process. Any such assessments would also require detailed work on service recovery principles and performance targets, in order to incentivise operators to maintain an appropriate resource base and develop robust train plans and diagrams that support right time from origin. Network Rail would wish to work towards a point where the operator was responsible for late start delays due to late inward stock or crew, irrespective of prime cause, this would help protect Network Rail's Regulatory commitments.

In general terms, Network Rail would anticipate this performance assessment work to include the following:

- A modelled assessment of PPM impact
- An assessment of Right Time performance
- An assessment of interactions between services at key locations
- Initial updates to the regulating policy to take account of a revised service structure
- The development of a service recovery strategy for use by Network Rail and Operator Controls
- The development of contingency plans for severe disruption and severe weather

Before any of this performance assessment work can happen, Network Rail:

- Would need to develop a detailed timetable for all ECML and off route services and operators would need to supply the resource plan (crew and rolling stock) and diagrams that supported the timetable
- In formally developing the timetable for 2020 with the Industry, the Timetable Planning Rules (TPR) and Sectional Running Times will need to be refreshed to ensure these reflect planned changes to service levels, rolling stock, infrastructure layout and operational rules / procedures. This is another important consideration for the future performance of the timetable
- Would undertake a Programme Management approach towards the introduction of the timetable and Network Rail would lead that process. This is building upon the learning we have gained following the implementation of the First TransPennine Express 5th path, which has been shared with the Industry

The above performance assessment mechanism will become an absolute requirement for any future large scale timetable change.

6.0 Other Considerations

The capacity modelling for 2020 has used the latest understanding of the enhancements that will be funded through the East Coast Connectivity Fund. This is based on the schemes for which draw down funding has been agreed through the rail industry programme board. It should be noted that the Anticipated Final Cost currently exceeds the fund value. If this remains the case, further prioritisation will be a matter for the Programme Board later this year.

The power supply capacity constraints not covered by the Connectivity Fund scheme, such as between Newcastle and Edinburgh (see Section 3.3), will need to be addressed. This work is seen within the Control Period 5 Enhancement Delivery Plan as a development scheme under the title *LNE Power Supply Upgrade*. Any further enhancement costs relating to the power supply upgrade would need to be underwritten by the ORR or a 3rd party.

Network Rail currently plans to commence the ECML Route Study in summer 2015, which will develop the strategy for 2043 and the choices for Funders in Control Period 6. We would expect the Route Study to include the following:

- Opportunities for IEP trains to run at higher line speeds
- · Works to facilitate the operation of services for High Speed 2 north of Church Fenton
- Choices as a result of the TransNorth work with Transport for the North

The ECML Route Study should be linked into the Scotland Route Study to look at the investment required to ease the constraints for Newcastle – Edinburgh capacity (see Section 3.3).

Safety (including operability) impacts are normally assessed in line with Network Rail's existing timetable risk assessment processes. Examples of areas covered include Level Crossing risk, Signal Passed at Danger risk and Signaller workload. As before a detailed and fully developed timetable would be needed to carry out these assessments. Additional Level Crossing risk mitigations that may be required by the detailed ECML timetable are not currently funded. In terms of maintainability, Network Rail will need to consider any proposals to reduce the current level of access that is available to maintain the network. Please note that the impact of an increased service level on the maintenance regime has not been assessed at this time.

7.0 Summary

The detail provided demonstrates that there are capacity choices available on the ECML. Network Rail will work with the ORR and the Industry to work towards and achieve a fit for purpose timetable. We would reiterate that there is a requirement to undertake detailed timetable and performance assessments, along with considering impacts on safety, maintainability and power supply. We would expect these additional requirements to follow normal Industry processes. Any rights sold prior to any such assessments will require the maximum amount of flexibility, allowing for optimum timetable development opportunities.

8.0 Next Steps

Network Rail asks that the ORR confirm the following:

- That the ORR has all the capacity information required from Network Rail to reach a view on what rights should be sold on the ECML
- Support the performance assessment approach and other considerations suggested by Network Rail in Section 5 and 6

Yours sincerely

Fiona Dolman

Capacity Planning Director

Appendix A. Summary of ECML 2020 capacity by section & operator aspiration

Section	Report capacity Fast lines (2 hourly)	LDHS aspirations	LDHS Max	Total aspirations	Alliance	ASR	FEC	FHT	GC	GTR	Freight	TPE	VTEC	xc
LKX - FIN Park	36	10	8	40	4	0	1	1	1	20	0	0	13	0
Fin Park - Digswell	36	10	8	40	4	0	1	1	1	20	0	0	13	0
Digswell - wolmer Green	36	10	8	40	4	0	1	1	1	20	0	0	13	0
Woolmer Green - Huntingdon	24	10	8	28	4	0	1	1	1	8	0	0	13	0
Huntingdon - Peterborough	24	10	8	28	4	0	1	1	1	8	0	0	13	0
Perterborough - Doncaster	16	10	8	20	4	0	1	1	1	0	0	0	13	0
Doncaster - York	12	6.5	5	17	2	0	1	0	1	0	2	0	9	2
York -Northalleton	16	5.5	5	17	2	0	1	0	1	0	0	2	7	4
Northallerton - Newcastle	16	4.5	4	21	2	0	1	0	0	0	4	4	6	4
Newcastle - Drem	14	3.5	3	15	2	2	1	0	0	0	2	2	4	2
Drem- Portobello jnc	14	3.5	3	17	2	4	1	0	0	0	2	2	4	2
Portobello Jnc - Edi Wav	14	3.5	3	15	2	4	1	0	0	0	0	2	4	2

Appendix B - Current capacity allocation Trains between 17:00 and 17:59

Location	Up Direction	Down Direction
Edinburgh	2 London LDHS 1 non-London LDHS 4 Local	1 London LDHS 1 non-London LDHS 4 Local 1 Empty
Portobello Jn	2 London LDHS 1 non-London LDHS 4 Local	1 London LDHS 1 non-London LDHS 4 Local 1 Empty
Drem	2 London LDHS 1 non-London LDHS 2 Local 1 Freight (MWFO)	1 London LDHS 1 non-London LDHS 2 Local
Newcastle	2 non-London LDHS 1 inter-regional (Fast Line) 3 inter- regional (Slow Line) 1 Freight	2 non-London LDHS 1 inter-regional (Fast Line) 3 inter-regional (Slow Line)
Northallerton	2 London LDHS 2 non-London LDHS 2 inter-regional 3 Freight	2 London LDHS 2 non-London LDHS 2 inter-regional 2 Freight
York	3 London LDHS 2 non-London LDHS 5 inter-regional 1 Freight	3 London LDHS 2 non-London LDHS 6 inter-regional 3 Freight
Doncaster	3 London LDHS 1 non-London LDHS 1 inter-regional 1 Freight	7 London LDHS 1 non-London LDHS 3 inter-regional 3 Freight
Peterborough	6 London LDHS 2 GTR 1 Freight	6 London LDHS 2 GTR
Huntingdon	7 London LDHS 3 GTR	6 London LDHS 3 GTR 1 Freight
Digswell	7 London LDHS 7 GTR	6 London LDHS 7 GTR
Woolmer Green	7 London LDHS 9 GTR	7 London LDHS 7 GTR
Finsbury Park	5 London LDHS 8 GTR	6 London LDHS 5 GTR
Kings Cross		

