EAST COAST MAINLINE TIMETABLE DEVELOPMENT

DECEMBER 2006 TIMETABLE

CONTENTS

1 EXECUTIVE SUMMARY

1.1 Since the Office of Rail Regulation's (ORR) decision on 23rd March 2006, Network Rail has, as requested, undertaken a further study of capacity on the East Coast Main Line with the aim of establishing whether there is sufficient capacity for additional services to be operated by Grand Central, Hull Trains and GNER.

1.2 In completing this task Network Rail has:

- undertaken a detailed planning exercise, during which it has consulted closely with all affected operators on the Route;
- checked the impact on access rights of consequential alterations to other operators' services;
- undertaken a simulation of train performance on a representative day to understand the likely impact of introducing the additional services; and
- held a number of meetings and workshops with people who operate the route on a daily basis to understand the wider operational and safety impact.

1.3 The outcome of this work is that through significant flexing of services on the Route and changes to the specifications of the three operators it has been possible to find paths that will operate at acceptable performance levels on days when disruption is within 'normal' levels.

1.4 Network Rail therefore anticipates that on 7th July it will be in a position to offer the following:

- Grand Central - 3 x Sunderland – Kings Cross and return paths.
- Hull Trains - 1 x additional Hull – Kings Cross and return path (the 'sixth' path)
- GNER - 6 x additional Leeds – Kings Cross and return paths (i.e. a half-hourly service between Kings Cross and Leeds throughout the day).

1.5 Network Rail still has reservations about the potential performance impact of certain aspects of the plan and intends to undertake further evaluation between now and 7th July. The reservations relate to:

- the impact of increasing the frequency of service in the 'shoulder peak' hours and thus reducing the timetable's ability to recover from disruption; and
- the impact the additional services will have on overall performance on days when performance is outside' normal' performance levels.

1.6 Network Rail will make its timetable offer on 7th July subject to:

- satisfactory resolution of safety issues in respect of level crossings;

- satisfactory resolution of safety issues in respect of signals where there is an above average SPAD risk rating;
- agreement by all operators of workable contingency plans; and
- in particular respect to Grand Central, the provision of acceptable proposals for the stabling and movements of empty stock to resource its passenger services.

2 INTRODUCTION

2.1 On 23rd March 2006 The Office of Rail Regulation (ORR) issued its decision in respect of applications for the track access rights necessary to operate additional services on the East Coast Mainline. The following summarises the decision.

2.2 Grand Central

The approval of three firm rights each way (Monday to Sunday) for Grand Central to operate services between King's Cross and Sunderland calling at York, Thirsk, Northallerton, Eaglescliffe and Hartlepool.

2.3 Hull Trains

The approval of one additional contingent right each way (Monday to Sunday) for Hull Trains to operate services between King's Cross and Hull.

2.4 GNER

A requirement for Network Rail to work with relevant operators (including Grand Central, Hull Trains, GNER and existing freight operators) to complete a timetabling exercise, as soon as possible and no later than 30 June 2006. The exercise will:

- address, in particular, the section between Peterborough and Doncaster (in both directions); and
- establish whether it is possible to path four GNER services per hour (that is, including a half-hourly Leeds service) in a way which is consistent with the planned three Grand Central services and the one additional Hull Trains service, without conflicting with other existing passenger and freight rights and services on the route and any other firm plans for services before December 2009; and
- aim to produce an interim set of adjustments to the timetable, pending the outcome of the Route Utilisation Strategy exercise which should address longer term passenger and freight demands.

2.5 The ORR stated that Network Rail will:

- carry out the necessary timetabling work to accommodate Grand Central's and Hull Trains' new access rights from December 2006;
- discuss any necessary modifications to existing access rights with those operators whose contracts contain modification provisions, and then notify ORR by 30 June 2006 of the changes which need to be made
- complete the timetabling exercise described above, and submit it to ORR as soon as possible and no later than 30 June 2006.

3 BACKGROUND

3.1 Prior to the ORR making its decision Network Rail produced a draft capacity report on the ECML (dated 23rd December 2005). In undertaking the work for the capacity report a number of planning assumptions were applied. They were:

- that Network Rail should seek to find capacity for fifteen additional services (8 x Grand Central services, 6 x GNER services and 1 x Hull Trains service) in each direction;
- that there would be no change to the West Anglia Great Northern (latterly First Capital Connect) quantum or calling patterns;
- that the December 2005 timetable be used as a base;
- that the analysis would not consider alternative destinations in order to increase capacity;
- that the analysis would not consider platform Y at Kings Cross; and
- that the analysis focus on the ability to accommodate the actual requirements made in each of the track access applications.

3.2 The initial capacity report concluded that, given the planning assumptions above, there is insufficient capacity on the East Coast Mainline to satisfy all the applicants' requirements. The draft capacity report was an attempt to determine whether the specification of each operator would work and if not, say why not. As Network Rail did not have a direction on which operators' requirements had priority, a limit was applied to the number of consequential alterations made before a service was declared unviable. This was to enable each of the competing applications to be evaluated on a consistent basis.

3.3 Following the ORR decision of 23rd March, the number of additional services Network Rail were required to identify was reduced to ten in each direction. In its decision ORR also indicated the priority of each operator's applications and thus the sequence in which the services were to be incorporated into the plan.

3.4 Once the ORR decision was made, all of the variables that each TOC included as part of their specification were subordinated to capacity. This allowed far greater flexibility to make alterations in order to find a conflict free path.

4 METHOD

4.1 Network Rail's evaluation of East Coast Main Line capacity has taken five separate, and largely sequential, steps. They are:

(i) Use of the Theory of Constraints to test and refine requests for capacity from train operators;

(ii) Refinement of the Theory of Constraints 'traffic light' analysis in preparation for the ORR hearing of 6th March 2006;

(iii) Detailed pathing exercise using traditional timetabling techniques, the results of this were then used to check the impact on operators' existing access rights;

(iv) Quantified performance analysis and simulation using the Railsys model;

(v) Assessment of operational and performance impact using the professional skill and judgement of people who operate the ECML on a day to day basis.

4.2 Step (i) was described in our draft report published on 23rd December 2005. It identified issues where operators' specifications were in excess of capacity at key constraints. At the time of the draft report and indeed the hearing there existed a significant number of conflicts with existing services and RotP non compliances in the specifications.

4.3 Step (ii) was to identify potential solutions which relied on amendments to the specifications. It is important to note that at that stage (which is the starting point for this work) there remained a large number of conflicts to be resolved. These steps have been described elsewhere (Step (i) in our Draft ECML Capacity Report of 23rd December 2005 and Step (ii) at the Regulatory hearing of 6th March 2006). This section will therefore concentrate on the methods employed in undertaking Steps (iii), (iv) and (v).

Unconstrained Detailed Pathing Exercise

4.4 The decision to grant firm and contingent rights to Grand Central and Hull Trains respectively established a change in framework for carrying out the timetabling work. This change was to move from a position of evaluating whether operators' specifications would work, to a position of seeking solutions using the original specifications submitted by the operators as the starting point, in contractual rights order, and amending as much as necessary to make the paths work.

4.5 The detailed pathing exercise was undertaken by Steve Hall from the Leeds train planning centre. Steve has worked for Network Rail and its predecessors for 30+ years and has been involved with timetable planning of the East Coast Main Line for 15 years.

4.6 A development database was set up within Trainplan to allow the planning of different permutations in a controlled and 'safe' environment. This database contained the June 2006 (i.e. most up to date) timetable.

4.7 The ten additional services in each direction, as specified by the operators, were introduced into the June 06 development database. The Priority Date specifications of all operators on the ECML were scrutinised to identify other changes requested that could materially affect the planning of the additional services. The database was altered to reflect any such changes. These were:

- Alteration of point to point timings north of York for TPE class 185 introduction;
- Other alterations to paths of TPE services;
- Alteration of GNER Kings Cross departure times for Leeds' services to xx10 and xx40.

4.8 Grand Central's paths were worked upon first. These were planned alongside existing services within the database (as altered). In order to find space in the timetable for the six Grand Central services, other operators' services were flexed. This involved extensive dialogue with those operators' representatives. Multi-lateral meetings involving all affected operators on the East Coast Mainline were held every two weeks. There were four in total.

4.9 This process was then replicated for the Hull Trains and GNER additional services. In total around **200** alterations to services on the East Coast were required in order to fit the additional services into the plan.

4.10 In order to find 'best-fit' paths for the additional services a number of changes to specified departure times and calling patterns were requested by the operators.

4.11 Where Network Rail believed a performance risk was being introduced, a number of sub-options were examined. Each sub-option required a different set of subsequential alterations to other operators' services.

4.12 This process was followed first for SX services and then for SO and Sunday services.

4.13 The method adopted was that validation of the paths on the running lines was completed first, followed by validation of platform workings. This is the most logical approach as the platforming at terminating points requires a good understanding of how the operator intends to resource and stable it services. Where problems occur, quite often the solution is achieved through diagramming rather than pathing. It should be noted that we do not yet have a definitive statement as to Grand Central's intentions with respect to resourcing and stabling and therefore we must caveat this aspect of the plan.

4.14 On completion of the detailed pathing analysis a check was made of the flexing of other services to establish whether this was within existing track access agreement limits. This has been undertaken for SX services for the timetable development work undertaken up to 14th June. The check of SO and Sunday services will follow within the next seven days.

Performance Evaluation

4.15 The geographical scope of the RailSys model was:

- *Kings Cross to Berwick*
- *Northallerton to Newcastle via Sunderland*
- *Bishop Auckland to Eaglescliffe*
- *York to Malton*
- *York to Poppleton*
- *Colton Jn to Leeds*
- *Leeds to Brough*
- *Doncaster to Leeds*
- *Doncaster to Gilberdyke*
- *Doncaster to Crowle*
- *Doncaster avoiding lines*
- *Doncaster to Gainsborough Trent Jn*
- *Shaftholme Jn to Knottingley*
- *Newark Flat Crossing*
- *Allington Chord*
- *Werrington to Spalding*
- *Helpston to Manton Jn*
- *Peterborough to March*
- *Hitchin to Cambridge*
- *Hertford Loop*
- *Harringay Park Jn*
- *Moorgate to Finsbury*
- *Cannonbury West Jn to Finsbury Park*

4.16 The model was set up to:

- include all operational factors capable of being input into RailSys
- include the delay distributions derived from the TRUST data ensuring that the distributions are representative of the actual delays experienced on the network during a ‘normal’ operational day.

4.17 Network Rail’s Strategic Access Planning Unit (“SAP”) used the base infrastructure constructed for the ECML RUS by extracting the data from Network Rail signalling diagrams. To enable an assessment of the timetable changes two RailSys models were produced: a base model using the 2006 Principal timetable and an option timetable which was the Principal 2006 timetable plus the additional services and consequential alterations. The

analysis was based on a comparison of these options against each other, not against actual running.

4.18 Base Model

The 2006 Principal Timetable was imported onto the current infrastructure, routed through the model and turnback connections added. The timetable and infrastructure were then validated through a process of identifying any technical conflicts which may indicate planning or input errors. It should be noted that RailSys does not check for Rules of the Plan (ROTP) infringements with regard to minimum headway values. RailSys will consider a timetable valid, and conflict free, if the trains can run as timetabled without the driver seeing a restrictive aspect signal. A conflict in RailSys is not defined as simply physical contact between trains, but any incidence where a train driver will see and react to a restrictive aspect signal displayed. Minimum and desired Rules of the Plan dwell times were adhered to throughout the simulation process.

4.19 The ability to simulate perturbed train running (performance modelling) was achieved through the extraction of train delays from the TRUST system. This data was then used to create delay distributions that were representative of the actual delays experienced on the network during a 'normal' operational day. The TRUST data was then manipulated by eliminating the secondary delays (reactionary delays), so that only primary delays remained and unrepresentative extreme delays excluded. The train interaction within RailSys was used to replicate the secondary delays. The model was then assessed against TRUST performance data to ensure that the delays were appropriate for the model. The users then made adjustments to the delay distributions within the RailSys software.

4.20 The delay distributions were then input into the system and the model run in perturbed form. Initial delay statistics were extracted from the RailSys software in the form of arrival percentage graphs. The performance data was extracted for all service groups at key locations. The extracted results from RailSys were then compared with the provided performance data and a comparison of right time arrival (TT3, 5, 10) was made between the TRUST and simulated lateness.

4.21 Option Model

The option model took an extract timetable of the additional services and consequential alterations, imported it into RailSys, routed it and began an initial validation of this extract. When the base model had been validated, a copy was taken, the trains which were duplicated in the extract timetable were removed and this was merged with the extract timetable in RailSys. The resultant timetable was then validated. Input errors were then resolved and any potential planning errors were highlighted to the TPC for guidance on resolution. The option model was consistent with the timetable development work taking place up to 14th June 2006. Changes that took place since that date are not reflected in the option.

4.22 Outputs

The model was run on a 23 hour basis for 250 cycles and the results were extracted for the period 0630-2231 (to cover the movements of all of the additional services). The analysis was expressed by direction for each of the key service groups in the analysis: Grand Central, GNER to Leeds, GNER (non-Leeds bound), Hull Trains, Transpennine via NE Coast, Virgin XC and each freight operator, with supporting data of the all of the affected services groups in the model area provided as an appendix. The analysis consisted of a graph for each of the key services groups of average lateness for both of the models at key locations along the route and graphs for each of the key service groups of punctuality at Kings Cross, Sunderland, York, Doncaster, Peterborough and Newcastle. It should be noted that Railsys does not produce Public Performance Minutes (PPM) data; it reports 'time to x' minutes. This is due to the fact that Railsys offers no solution for modelling train cancellations.

Operational Assessment

4.23 Throughout this process regular briefings of local area teams took place. This involved detailed analysis of trains prints and graphs and identification of risk areas – including any potential non compliance with Rules of the Plan.

4.24 In addition a workshop was held with interested members of the LNE Route team to identify all potential operational issues that would need to be considered. From this workshop a number of operational issues were identified relating to:

- access for Network Rail's engineering trains;
- reduction in maintenance access opportunities, including for track patrolling, as a result of operation of additional services, against a background of potential additional maintenance required because of the additional services;
- requirement for the route contingency plans to be reviewed as a result of the additional services; and
- potential modifications required to the fire detection system at Sunderland as an HST sets off the detection system.

4.25 A Timetable Change Risk Assessment Group also took place to assess the potential safety impact of the additional paths. This reviewed:

- Junction and SPAD risk
- Level crossing risk
- Impact on signaller workload
- Train Regulation
- Permissive Working
- Platform / Train interface

5 FINDINGS

Pathing Exercise

5.1 Grand Central paths.

The following SX paths have been identified:

Sunderland	0653	1230	1730
Kings Cross	1042	1605	2108

Kings Cross	0804	1127	1650
Sunderland	1150	1450	2035

5.2 The set diagram workings are as follows:

Set 1

Sunderland	0653 dep		
Kings Cross	1042 arr *forms*	1127 dep	
Sunderland		1450 arr *forms*	1730 dep
Kings Cross			2108 arr

Set 2

Kings Cross	0804 dep		
Sunderland	1150 arr *forms*	1230 dep	
Kings Cross		1605 arr *forms*	1650 dep
Sunderland			2035 arr

5.3 Two significant pathing issues have been identified from the work.

5.4 Turn around at Sunderland 1150 to 1230. The plan provides for a Grand Central service to arrive into platform 4 at Sunderland. It has a dwell of 5 minutes for passengers to disembark before proceeding to Pelaw Up Goods Loop where the driver will change ends and immediately return to Sunderland platform 2. There it has a dwell of 5 minutes to pick up passengers. This is fully compliant with relevant rules and operating practices, however is fragile as any delay to the inbound service will result in a late departure south from Sunderland.

5.5 There is no timetabling solution to this issue and it will therefore require a carefully thought through and rigorously applied contingency plan to be brought into effect in the event of late running on Grand Central north-bound services.

5.6 During the development of the plan two turn arounds at Kings Cross have been the subject of much discussion. These were Grand Central turn arounds of 1046 to 1127 and 1620 to 1650. There is no laid down Rule of the Plan value for arrivals at Kings Cross from Sunderland. The most appropriate proxy is for arrivals from Newcastle. The value for Newcastle arrivals at Kings Cross is 45 minutes. Network Rail requires this value to be applied to Sunderland services. This renders both these turn arounds non-compliant.

5.7 Network Rail consider this risk to be significant enough to require further amendments to the Grand Central paths to extend these turn arounds to forty five minutes. This will be achieved by making the following changes to other operators' services:

(i) In the case of the 1046 arrival at Kings Cross, it is possible to accelerate the path of the inbound Grand Central service so that it arrives at Kings Cross at 1042. This is achieved by increasing the dwell time of GNER 1E02 0600 Edinburgh – Kings Cross at Peterborough which as a consequence arrives 4.5 minutes later into Kings Cross.

(ii) In the case of the 1620 arrival at Kings Cross, it is possible to accelerate the path of the inbound Grand Central service so that it arrives at 1605. This is achieved by pathing the Grand Central train ahead of two GNER Leeds – Kings Cross services. This requires an increase of dwell time for GNER 1A30 13.40 Leeds to Kings Cross at Peterborough, which as a consequence arrives 6 minutes later into Kings Cross and pathing time to be inserted into 1A31 14.05 Leeds to Kings Cross, which as a consequence arrives 7 minutes later into Kings Cross..

5.8 Hull Trains path.

A compliant path was found without any significant planning issue or RotP non-compliance.

5.9 GNER paths.

The following paths have been identified:

Leeds	08.40	09.40	14.40	15.40	16.40	18.40
Kings Cross	11.08	12.01	17.08	17.47	18.52	20.55

Kings Cross	06.35	11.35	12.35	13.35	19.03	20.03
Leeds	08.50	13.53	14.56	16.08	21.32	22.31

5.10 In addition to the six additional paths in each direction, GNER Kings Cross departure times for Leeds' services were amended to xx10 and xx40. The XX10 paths were achievable but required First Capital Connect's XX.06 Kings Cross – Cambridge services to run Slow Line Finsbury Park to Potters Bar every hour and all Stevenage calls had to be removed from XX:10 GNER departures as this would have delayed FCC XX.15 Kings Cross – Cambridge fast services. The XX:40 GNER departures were not viable as FCC XX.36 Kings X – Peterborough services run Fast Line Finsbury Park to Potters Bar and cannot be diverted to the Slow Line due to Moorgate – Welwyn Garden City service. The XX.40 departures were therefore reverted back to their XX.35 paths.

5.11 A number of other changes were made to the existing GNER calling pattern in order to accommodate all services.

5.12 Impact on contractual rights of other operators

The results of the review are:

- Central Trains – No changes to contract required.
- Virgin Cross Country – No changes to contract required
- GNER – Issues identified, see below
- FCC – Issues identified, see below
- MML – No changes to contract required
- TPE – No changes to contract required
- Northern Rail – No changes to contract required

5.13 First Capital Connect Issues

FCC Train ID	Change	As a Result of	Mitigation
2P53	Commence at Huntingdon rather than Peterborough	1N25 08:04 Kings Cross to Sunderland	The FCC access contract would need to be amended though use of the Modification provision that the ORR would need to approve.
2P59	Revised arrival into Kings Cross from Peterborough, means that the journey time is now at the limit of the Maximum Journey Time.	1A62 12:30 Sunderland to Kings Cross	Could leave as strictly compliant but good practice would suggest the MJT should be amended. Any amendment would require use of Modification provision.

5.14 GNER Issues

GNER Train ID	Change	As a Result of	Mitigation
1A46	Seven minutes later arrival into London Kings Cross	1A63 17:30 Sunderland to Kings Cross	The extended journey time means that the contractual Maximum Journey Time is breached, requiring the access contract to be changes through use of Modification provision that the ORR would need to approve.
1A30	Additional six minutes of pathing time inserted.	1A62 12:30 Sunderland to Kings Cross	The extended journey time means that the contractual Maximum Journey Time is breached, requiring the access contract to be changes through use of Modification provision that the ORR would need to approve.
1A31	Additional seven minutes of pathing time inserted.	1A62 12:30 Sunderland to Kings Cross	The extended journey time means that the contractual Maximum Journey Time is breached, requiring the access contract to be changes through use of Modification provision that the ORR would need to approve.

5.15 In addition to identifying contractual non-compliances the review also noted some instances that where additional pathing time has been inserted in some services, the effect was to bring the overall journey time close to the contractual maximum journey times in access contracts. As an example, the journey time for a First Capital Connect fast Cambridge service is now very close to the contractual Maximum Key Journey Time, as a result of the introduction of the additional 09:40 GNER Leeds to London service.

5.16 There is no impact on freight access rights. However by adding ten additional passenger services in each direction on the route, this will have an impact on opportunities for strategic freight growth and on day to day flexibility to operate short notice freight trains.

5.17 An analysis of the increase in frequency of service at key locations on the route for each hour of the day and is summarised in the following table. It can be seen that the additional service does increase the intensity of service on

the busiest sections in the busiest hours. There is a particular risk that by increasing the frequency of service in the 'shoulder-peak' hours, the timetable's ability to recover from disruption is compromised.

Numbers of trains at key points throughout day (SX)

Time/Loc	Kings Cross		Woolmer Green Jn		Doncaster		Leeds		York		Sunderland	
0600 - 0659	20	1	16	1	N/A		N/A		N/A		11	1
0700 - 0759	29	0	28	0	N/A		N/A		N/A		N/A	
0800 - 0859	38	1	28	1	43	1	65	2	29	1	N/A	
0900 - 0959	33	0	23	0	41	3	64	1	N/A		N/A	
1000 - 1059	29	1	26	2	39	1	N/A		32	1	N/A	
1100 - 1159	24	3	22	3	31	0	N/A		N/A		13	1
1200 - 1259	23	2	23	1	32	1	N/A		N/A		13	1
1300 - 1359	21	1	23	1	36	1	55	1	24	1	N/A	
1400 - 1459	22	0	21	0	37	2	56	2	25	1	14	1
1500 - 1559	23	0	23	1	32	2	53	1	N/A		N/A	
1600 - 1659	32	2	25	1	38	1	61	2	N/A		N/A	
1700 - 1759	35	2	29	2	33	1	N/A		N/A		14	1
1800 - 1859	31	1	30	1	35	1	57	1	26	1	N/A	
1900 - 1959	24	1	24	1	42	2	N/A		29	1	N/A	
2000 - 2059	25	2	25	3	38	1	N/A		N/A		11	1
2100 - 2159	20	1	19	0	26	1	49	1	N/A		N/A	
2200 - 2259	N/A		N/A		19	0	45	1	N/A		N/A	

Note: figures in shaded columns represent the number of additional trains in the given time period.

Performance Evaluation

5.17 The current Annual Moving average PPM per operator (i.e. those operators who operate into Kings Cross) of the Route up to and including period 2, 2006/07 is as follows:

- GNER 83.6%
- Hull Trains 91.2%
- First Capital Connect 89.6%

5.18 The RailSys model predicts the following movement in Time to 5 and Time to 10 for the passenger operators on the route and a Time to 15 figure for all freight services on the route. It should be noted that this represents an assessment of the likely change based on a normal day's operation. It does not take account of the impact of additional services on days when performance is outside 'normal' parameters.

Operator	T-5	T-10
GNER	-0.1%	-0.1%
First Transpennine	-0.1%	-0.2%
Hull Trains	-1.1%	-0.2%
FCC	0.5%	0.8%
Virgin XC	-0.9%	-0.2%
	T-15	
Freight Operators	-0.2%	

5.19 The RailSys simulation predicts the following movements in Time to 5 and Time to 10 at key ECML locations for each service group as follows:

TOC	Location	T-5	T-10	TOC	Location	T-5	T-10
GNER NORTH	Peterborough	-0.09%	-0.08%	**Virgin South**	York	0.25%	0.14%
	Doncaster	-1.53%	0.10%	**TPE North**	York	-0.25%	-0.19%
	York	-3.16%	-0.39%		Newcastle	-0.15%	-0.11%
	Newcastle	-0.42%	-1.06%	**TPE South**	York	-0.55%	-0.36%
GNER SOUTH	York	0.71%	-0.08%	**FCC North**	Peterborough	0.34%	0.08%
	Doncaster	0.22%	0.20%	**FCC South**	Kings Cross	0.07%	0.05%
	Peterborough	0.19%	-0.04%	**Hull Trains Down**	Peterborough	-2.51%	-1.33%
	Kings Cross	-0.33%	-0.31%		Doncaster	-14.08%	-0.65%
Virgin North	York	-1.73%	-0.84%	**Hull Trains Up**	Doncaster	-0.94%	-0.57%
	Newcastle	-3.51%	-1.19%		Kings Cross	0.37%	1.00%

Operational Assessment

5.20 Junction Risks and SPAD Risks

There are approximately 70 signals protecting junctions on the route proposed where the SAT score, after taking current TPWS provision into consideration is in excess of the National average (SAT score 150). There are also some signals awaiting assessment protecting plain line risks where this level of risk is anticipated to be exceeded. The objective of the Category A SPAD policy is to reduce SPAD risk so far as reasonably practical, and the addition of extra trains at these junction runs contrary to this objective.

5.21 Level Crossings

The “user-worked” level crossings at: East Road (39m 34ch) and Holme Green (40m 06ch) are of concern. Under the current Network Rail risk assessment process, the risks at these two level crossings remain acceptable with the additional services planned. However a new level crossing risk model is expected to be introduced from September 2006. These two crossings will be re-assessed using this risk model by 31st October 2006 to ascertain that the future risk is acceptable.

5.22 Signaller workload (York IECC)

The additional traffic may result in an increase in Signaller workload resulting in a greater risk of wrong routings, red signals (SPADs) or train delays.

5.23 Signaller workload (Kings Cross)

Currently there is a special instruction in place between Sandy and Hitchin which restricts trains able to run at 100 mph or above from approaching K712 signal unless it is showing a green aspect in which case trains must be stopped at the next signal in rear K708. GNER trains have difficulty regaining line speed resulting in late arrivals and impacting on departures. A greater frequency of service would exacerbate this affect.

5.24 Platform dwell time / turn round at Sunderland

1N25 is booked to arrive in Sunderland at 11:50 then run to Pelaw Up Goods Loop to stable and return in time to form 1A62 the 12:30 to Kings Cross. These timings give only 7 minutes dwell time at Pelaw. Grand Central services will only be permitted to dwell at Sunderland for a maximum of 5 minutes because of the impact on Nexus Metro services. If the inward working is running late there is insufficient time to run to Pelaw which could affect Signallers' workload, the number of red signals trains approach and impact on Metro services.

5.25 Fire detectors at Sunderland

Currently locomotive hauled freight services are prohibited from standing in the station. This will impact on Grand Central HSTs when standing at the station.

5.26 Train Failures

The issue of recovery in event of train failure is an issues for HSTs (and Class 222s) on the Tyne and Wear metro areas due to incompatibility of couplings.

5.27 Impact on Maintenance

An increase in frequency will reduce opportunities for Green Zone working having an impact on planned T2s for trackbed cleaning at Leeds and York. It will also have an impact on track patrolling at Kings Cross. This is currently undertaken in the gaps between GNER Leeds services.

6 DECISION

6.1 From the work that has been undertaken, Network Rail has concluded that, given the significant changes to operator specifications and the flexing of other services on the route, it has been possible to find paths that will perform on a 'normal' day to acceptable levels.

6.2 Network Rail therefore anticipates that on 7th July it will offer the operators the ten paths in each direction as attached at Appendix A.

6.3 Network Rail wishes to undertake further work before making the timetable offer as reservations remain about the following issues:

- Network Rail will undertake further assessment of the impact within the next seven days to seek to establish whether the introduction of additional services on the route will materially worsen levels of delay and PPM performance on days where disruption is outside 'normal' levels.

- Network Rail will make further assessments in the next seven days to understand the likely impact of reducing the timetable's ability to recover from disruption as a result of increasing frequencies in the shoulder peak hours.

6.4 Network Rail will make the offers subject to a satisfactory outcome following the risk assessment of East Road and Holme Green level crossings in accordance with Network Rail's new level crossing risk model.

6.5 Network Rail will make the offers subject to satisfactory mitigation of any unacceptable safety risk as a result of increasing the frequency of service past signals where a higher than average SPAD risk currently exists.

6.6 Network Rail will make the offer to Grand Central subject to the provision of satisfactory plans for stabling its services and the identification of compliant paths for its empty stock movements.

6.7 Network Rail will make its offer to all three operators subject to the satisfactory agreement of contingency plans – particularly, but not exclusively in the North East where turn arounds at Sunderland are tight and there is non-compatibility of couplings in the event of a train failure.

6.8 The offer is subject to agreement from the Office of Rail Regulation that it will apply its powers in using the 'modification provisions' in respect of GNER's and FCC's track access agreements in order to allow the flexing of certain of their services beyond their existing contractual limit.

6.9 Where the flexing of services has resulted in an increase in journey times, Network Rail is prepared to accept the erosion of the margin of flexibility within its access agreements. However, given the ORR's guidance that contractual journey times should provide for some flexibility in the construction of future timetables Network Rail will, expect to amend the contractual journey time limits to reflect the introduction of additional services in future negotiations as the opportunity arises.