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HS1 Data Assurance

2010 Data Assurance Report

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2010 Data Assurance Report

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Executive Summary

The Arup team's examination of the data management and assurance arrangements in HS1 has concluded that, overall, reasonable levels of reliability and data accuracy are being achieved. This finding is consistent with the fact that the HS1 Concession and the regulatory and data reporting regimes are all quite new. It also reflects the fact that HS1 is a relatively new railway, with its current planned maximum use of the network only being achieved with the start of domestic Southeastern services towards the end of last year. As a result, the systems and processes in use to manage the railway are still in the early stages of development by HS1 and its Operator, NR (CTRL). The relative immaturity of these arrangements is reflected in the Reliability and Accuracy ratings awarded for the various measures. In particular, the lack of clarity around definitions of certain measures, and the absence of comprehensive process documentation evidencing how measures are compiled, means that Reliability ratings of C (for Performance) and B (for Asset Management) have been awarded. Accuracy ratings consistent with these reliability ratings – generally at 2 – are awarded, reflecting the current reliance on manual processes for the production of final outputs. Arup anticipates that these ratings can be improved, both quickly and sustainably, by:

- Formalising the principal definitions in use for the compilation of the key measures, mainly, but not exclusively, in Performance;
- Documenting the processes and procedures in use; and
- Automating the remaining manual interventions in performance data collation.

Performance

The confidence ratings for the Performance KPIs are as follows:

- **Total Number of Trains Timetabled** – the audited data have a rating of C for Reliability and 2 for Accuracy. The Reliability rating reflects the lack of a formally accepted and approved definition for calculating the measure, and lack of supporting process documentation, while the Accuracy rating reflects the uncertainty surrounding the definition, as well as the general use of manual processes for the production of the final outputs. The Accuracy rating is compatible with the assessed Reliability rating.
- **Total Number of Trains Delayed** - the audited data again have a rating of C for Reliability and 2 for Accuracy. The Reliability rating reflects the inconsistency between the Concession Agreement definition and the gathered data, inconsistencies in intermediate/station recording points, and the lack of defined arrangements for the treatment of cancellations. The Accuracy rating reflects the uncertainty surrounding these issues; it is compatible with the assessed Reliability rating.
- **Number of Trains Delayed by an Incident Wholly or Mainly Attributable to HS1** - the audited data have a rating of C for Reliability and 2 for Accuracy. The Reliability rating reflects the lack of process documentation supporting collation of this measure, and its dependency upon the Total Number of Trains Delayed, whose reliability, as noted above, is suspect. The Accuracy rating is compatible with the assessed Reliability rating, and also reflects the acknowledged inaccuracies in reported train count data, which NR (CTRL)/HS1 are endeavouring to correct.
- **Number of Trains Delayed by an Unidentifiable Incident** - the audited data have a rating of C for Reliability and 2 for Accuracy. The Reliability rating reflects the lack of process documentation supporting collation of this measure, the lack of formalised definitions, and, again, this measure's dependency upon the Total Number of Trains Delayed. The Accuracy rating reflects these reliability-related concerns, and is thus compatible with the assessed Reliability rating.
- **Average Seconds Delay per Train** – the audited data have a rating of C for Reliability and 3 for Accuracy. This is not a regulated measure, but an indicative performance measure whose reporting is required by the draft Monitoring Handbook. The Reliability rating reflects the lack of

process documentation supporting collation of the measure and the definitions for the measure having still to be formulated. The Accuracy rating reflects the lack of clarity over the data included, or not included, in the calculation of the measure.

There would appear to be no reason why all these measures could not reasonably achieve A1 grading in due course, once the definitions are finalised, the processes are fully documented and greater automation of data production is achieved.

Asset Management

The confidence ratings for the Asset Management KPIs are as follows:

- **Overall Fault Levels** - the audited data have a rating of B for Reliability and 2 for Accuracy. The Reliability rating reflects the lack of a formalised and documented process for collating the measure, and the definition of the measure having still to be formulated. The Accuracy rating reflects the reliance on manual processes, and is compatible with the assessed Reliability rating.
- **Track Quality Induced Speed Restrictions** - the audited data have a rating of B for Reliability and X for Accuracy. The Reliability rating reflects the lack of a formalised process for collating the measure. The Accuracy rating reflects the lack of any material data to date (resulting from the fact that the infrastructure is new, and that track quality thus remains high), and is again compatible with the assessed Reliability rating.
- **Broken Rails** - the audited data have a rating of B for Reliability and X for Accuracy. The Reliability rating reflects the lack of a formalised process for collating the measure. The Accuracy rating reflects the lack of any material data to date, again reflecting the good condition of the infrastructure.
- **Service Affecting Defective Rails** - the audited data have a rating of B for Reliability and X for Accuracy. The Reliability rating reflects the lack of a formalised process for collating the measure. The Accuracy rating reflects the lack of any material data to date, for the reasons already cited above.

Again, there would appear to be no reason why all these measures could not reasonably achieve A1 grading, once the processes are fully developed and documented, and a data history is created.

1 Introduction

1.1 Background

Arup has been appointed by ORR on a three-year call off contract to provide assurance as to the quality, accuracy and reliability of the HS1 data and processes that are used to report on performance and asset management to ORR.

ORR became the regulator of HS1 in October 2009, under the terms of a Concession that sets out operational performance obligations. HS1 also has obligations to provide asset management strategy and statement documents to demonstrate the effective stewardship of its operational assets.

Whilst HS1 is the concessionaire and owner of operational assets on the route, day-to-day management of the route operations and asset maintenance is undertaken by Network Rail under an operation and maintenance contract (OA - Operators Agreement). NR (CTRL) is a discrete entity within Network Rail, but is part of the Midland & Continental Route organisation. In practice, therefore, HS1 is reliant upon NR (CTRL) for the provision of the data covered by this audit.

The audit has been undertaken within the context of HS1 being a relatively new railway with its current planned maximum use of the network only being achieved with the start of domestic Southeastern services towards the end of last year. As a result the systems and processes in use to manage the railway are still in the early stages of development by HS1 and NR (CTRL) and the report should be read with this context clearly in mind.

The HS1 Concession states that ORR shall have the right to audit the data and information supplied on operational performance and asset management, including any HS1 monitoring procedures. In order to effectively hold HS1 to account, it is essential for ORR to have confidence in this data, including any related systems, processes, methodologies and procedures. This report is the first to be commissioned by ORR under this contract.

1.2 Scope

This report describes a data assurance audit of the following measures:

- **Performance**
- Total number of trains timetabled
- Total number of trains delayed
- Number of trains delayed by an incident wholly or mainly attributable to HS1
- Number of trains delayed by an unidentifiable incident
- Average Seconds Delay Per Train
- **Asset Management**
- Plan attainment (maintenance backlog)
- Overall Fault Levels
- Track Quality Induced Speed Restrictions
- Broken Rails
- Service Affecting Defective Rails

A glossary of terms and abbreviations is provided in Appendix A.

2 Data Audit Methodology

The measures to be reviewed in the course of this audit are detailed in Section 1.2 above, and were agreed at a project inception meeting between Arup and representatives of ORR, HS1 and Network Rail (CTRL) on 31st March 2010. At this meeting, it was also agreed that the requirements set out in the draft *High Speed 1 Monitoring Handbook* (Version 0.1 (Draft)) would form the basis of the audit.

Meetings were arranged with the nominated 'Data Champions':

- For Performance, with the NR (CTRL) Performance Manager on 21st April
- For Asset Management, with the HS1 Director, Engineering & Assets on 22nd April

In respect of Asset Management, a subsequent meeting to review the data management systems and processes was arranged at Singlewell Infrastructure Maintenance Depot on 4th May.

For each meeting, a remit was prepared by Arup, detailing the scope of the meeting and posing a series of standard questions intended to clarify process, definitions, data collection and reporting methodologies. The remits were circulated in advance to known attendees to gain agreement on the meeting arrangements, and to allow advance preparation.

The Performance and Asset Management remits are shown in Appendix B.

Details of meeting attendees are also shown in Appendix B.

The Arup team comprised Keith Winder, Paul Newton, John Armstrong (for Performance) and William Wingate (for Asset Management). Two separate meetings were held between the NR (CTRL) Performance Manager and the Arup data analyst to review the data management systems and processes involved in performance reporting. These meetings were necessary for more detailed analysis of the relevant datasets and to test:

- The integrity of data uploads from proprietary systems
- The application of rules, protocols and definitions in the collation of data
- The extent of any discrepancies in the data
- The integrity of any manual adjustments to data, and manual download to spreadsheets

A commentary on performance data analysis is included in this report at Section 5.

A similar meeting in respect of Asset Management data was not considered to be necessary, in view of the very small amounts of data involved, and the very narrow subset of KPIs being examined.

A comprehensive note of each meeting was recorded by Arup, and circulated to the attendees for comment, as a factual record of the proceedings, and evidence from these meetings has been incorporated into this Report.

3 Findings - HS1/NR (CTRL) Processes & Procedures: Performance

3.1 Context

In reading these findings, it should be remembered that the audit has been undertaken within the context of HS1 being a relatively new railway with its current planned maximum use of the network only being achieved with the start of domestic Southeastern services towards the end of last year. As a result the systems and processes in use to manage performance are still in the early stages of development by HS1 and NR (CTRL), and our findings reflect this.

3.2 Definitions

Several definitions of key terms are found in the Concession Agreement Schedule 3 (Minimum Operational Standards). Other definitions have been adopted by HS1 and NR (CRTL) following discussions, some formally, some less so. Certain definitions have been adopted in recognition of current systems' recording and reporting capability, and may be modified as systems upgrading takes place.

3.2.1 Total Number of Trains Timetabled

The definition of "Trains Timetabled" is to be formalised. The definition used to date was stated to be based on the number of paths bid for by the Train Operators (Eurostar and Southeastern), during timetable formulation, but from December 2010 it is planned to revert to 'actual timetabled services'. There is apparently still some debate as to whether this will be the 'Applicable Timetable' - that is, the timetable uploaded to the Train Service Database (TSDB) the day prior to operation - or the published Working Timetable.

It was also noted that the definition of 'number of trains', for the purposes of calculating Average Seconds Delay per Train (section 3.2.5) is different again, from both the current 'Trains Timetabled' definition and that proposed. Neither the current definition, nor that proposed, appears to take account of extra services run ('specials') or trains cancelled on the day.

3.2.2 Total Number of Trains Delayed

According to the Concession Agreement Schedule 3 (Minimum Operational Standards), a delayed train is defined as:-

- A train which arrives at a station Recording Point on HS1 five or more minutes late ("after the due arrival time for that service")
- A train which passes the Recording Point immediately prior to its point of egress from HS1 five or more minutes late
- Any Train Service that is cancelled

However, any train which is recorded as late at a station Recording Point, but is then not late at the Recording Point for the 'final station' or agreed egress point on HS1, shall be disregarded; the first element of the definition is therefore of little use in the current circumstances.

This measure is therefore one of lateness, not delay, in the way the measure is defined. It follows that a train suffering a six-minute delay on HS1, but which exits the Concession less than five minutes late will not be recorded in the Total Number of Trains Delayed. It will however be recorded as a train "delayed by an incident" - see Sections 3.2.3 and 3.2.4 below (it should be noted that the trains included in these following two categories are subsets of the trains included in the overall 'Trains Delayed' measure, and are not wholly separate categories).

3.2.3 Trains Delayed by an Incident Wholly or Mainly Attributable to HS1

According to the Concession Agreement Schedule 3 (Minimum Operational Standards), an Incident Wholly or Mainly Attributable to HS1 is one caused wholly or mainly by an act or omission of the HS1 company. It excludes many events "for which responsibility is allocated to HS1" (paragraph 6.2.7 of Schedule 3), including theft, fatality, police action, security alert, fire outside the HS1 boundary, escaping gas or water, road vehicle incursion and exceptional weather. The data for "HS1 Attributed" and "HS1 Allocated" incidents are shown in the Performance Floor Reports (see Section 3.4.1 below for a description of these) separately, as required by the Concession Agreement, although the terminology used in the Floor Reports is unfortunately confusing.

For the purposes of this measure, normal UK domestic Delay Attribution Guide practice is adopted; delayed trains with HS1-attributed causes will include all services delayed by three or more minutes, irrespective of how this impacts on lateness. It appears, therefore, as noted above, that the 'Trains Delayed' definition is different between the measure in this section and the measure in section 3.2.2. However, this is not the case, and, to ensure that the measures are not inconsistent or incompatible, a manual adjustment is applied to remove from the data any services in this measure which would not appear in the 'Trains Delayed' measure. No process documentation exists to describe these arrangements.

There is also evidence of 'double counting' of delayed trains, notably those affected by more than one incident. This occurs as a consequence of the primary data search by incident, rather than by train headcode. NR (CTRL) and HS1 had already identified the issue, and were addressing it.

3.2.4 Number of Trains Delayed by an Unidentifiable Incident

An "unidentified" incident is one in which "the cause is unidentified, unless HS1 can reasonably demonstrate that such an incident was not caused directly or indirectly by the acts or omissions of HS1". By implication, HS1 is required to make reasonable endeavours to identify attribution, but no guidance is given as to when an incident may be declared "unidentifiable". The definition also gives scope for unidentifiable/unidentified incidents to be excluded from this measure, if HS1 can "reasonably demonstrate" no fault on its part.

The definition of "trains delayed" is as per paragraph 3.2.3, and so, again, a manual adjustment is required to remove from the data any services reported in this measure which would not appear in the 'Trains Delayed' measure.

3.2.5 Average Seconds Delay per Train

This measure is not included in Concession Agreement Schedule 3 and therefore the means by which it is calculated is not defined. Although it is not a regulated measure, it is a KPI included by ORR in the draft Monitoring Handbook as an indicative performance measure.

The elements which HS1 and NR (CTRL) have assumed for this measure are as follows:-

- 'Delay' is an aggregation of all delay minutes for which there is an HS1 *attribution* on the HS1 route only. By definition, therefore, sub-threshold delay (i.e. those delays of less than three minutes, which are not attributed in TRUST) is excluded from this calculation. Similarly, delay associated with "unidentified/unidentifiable" incidents, and those which are allocated, but not attributed to HS1, are also excluded.

The 'total number of trains' calculation, which provides the divisor for this measure, is defined differently again from the equivalent measures covered above. For this measure, the total of trains is calculated as:

- For Eurostar, actual trains reported as arriving at, and departing from St. Pancras
- For Southeastern, the number of paths paid for

Arup did observe that the measure as defined excludes sub-threshold delays (the first three minutes of any delay), excludable events under the concession agreement, and reactionary delays on the 'classic' network. After discussion, Arup, the ORR and HS1 have agreed not to take this issue further forward in the conclusions and recommendations of this report.

3.2.6 Unidentified Incidents - 50% Factor

For the purposes of calculating the Annual Performance Floor, the Concession Agreement Schedule 3 states that "only 50% of unidentified incidents in any year shall be taken into account".

3.3 Data Collection & Sources

It was confirmed that all data used for route reporting within HS1 are gathered from TRUST via PSS (Performance Systems Strategy), apart from some Eurostar-sourced data used to calculate the 'Average Seconds Delay per Train' measure. Standard UK domestic delay attribution arrangements apply, as specified in the Delay Attribution Guide, as do the routines for resolving attribution disputes with Train Operators, and for refreshing data held on the mainframe.

These general arrangements for Data Collection are standard across Network Rail Routes, and the integrity of these processes and procedures has recently been verified by the NR Part A Independent Reporter on behalf of the ORR.

3.4 Data Reporting

3.4.1 Requirements

The requirements are set out in the Concession Agreement Schedule 3 (Minimum Operational Standards) and included in the ORR draft Monitoring Handbook. These are:

- A '3 Month Performance Floor', where no more than 15% of train services in the quarter are delayed that are wholly or mainly attributable to HS1
- An 'Annual Performance Floor', where no more than 13% of train services in the year are delayed due either to wholly or mainly HS1-attributable incidents or "unidentified incidents". As stated in paragraph 3.2.6, for the purposes of this measure, only 50% of unidentified incidents in any year shall be taken into account. HS1 has interpreted this requirement as 50% of the total of trains delayed by unidentified/unidentifiable incidents in any year.

These requirements are informed by the measures set out in paragraph 1.2, and defined in section 3.2.

3.4.2 Processes

NR's standard data reporting and management platform is Business Objects, which allows users to interrogate and extract data in a variety of formats according to the queries set up in the system. These queries establish the 'rules' and parameters for the data to be drawn from the system.

Currently there are six queries set up. These queries extract data for:

- Eurostar services, up and down separately;
- Southeastern services, Ebbsfleet, up and down separately; and
- Southeastern services, Ashford, up and down separately.

Filters are applied to pick up trains delayed by five or more minutes at down direction egress points (Eurotunnel/Ebbsfleet, Ashford), and at St Pancras in the up direction.

In respect of cancellations, it was not clear whether the Business Objects query format will draw out cancellation or part cancellation data from PSS. In practice, HS1-attributable cancellations are currently very rare indeed - not a single one occurred in the period August

2009 to March 2010, but this is a potential source of inaccuracy until rectified. It is noted that the Concession Agreement Schedule 3 requires cancellations to be recorded in the same way as delayed trains (see paragraph 3.2.2).

The process of differentiating between HS1-attributable and HS1-allocated incidents is wholly manual, undertaken in the NR (CTRL) Performance section (as explained above in Section 3.2.3, some incidents allocated to HS1 are not attributed to HS1, although the terms appear to be used somewhat interchangeably). Effectively, incidents are coded for causation and attribution as per the normal domestic Delay Attribution arrangements, but the incidents are manually segregated for reporting in the Quarterly Floor Reports.

The process for reviewing incidents in which causation (and therefore attribution) is disputed or not identified involves both NR (CTRL) and the TOC(s) discussing the circumstances to form a mutual decision based on the criteria documented in the domestic Delay Attribution Guide. The declaration of "unidentifiable" delay is therefore a joint NR (CTRL)/TOC decision, and was stated to occur very rarely. In the last 12 months, only one incident has been declared unidentifiable.

The updating of historic data - "refresh", as it is known - is undertaken largely in line with routine UK domestic NR processes. The domestic processes are largely driven by Schedule 8 (TOC payment) considerations, but these timescales are useful to HS1 in ensuring that outstanding data issues - arising from disputed incidents and such like - get properly closed out. However, refreshed quarterly data are not published - refresh is only accounted for in the Annual Performance Floor measures. This fact is not obvious to the recipients and users of the HS1 Performance Reports, and should be noted in the performance commentary along with an indication of the size of the 'risk' to the reported Performance Floor measure.

The 'average seconds delay per train' measure is not, as noted in paragraph 3.2.5, a Concession Agreement performance monitoring requirement. It is a measure used internally within HS1 (and in general reports submitted to the ORR) to illustrate trends in delays that are attributable to HS1. It should be noted that the measure only considers 'Concession Agreement' delays and is not an absolute measure of train delay, as it excludes sub-threshold delays (the first three minutes of any delay), excludable events under the concession agreement and reactionary delays on the classic network. The measure would benefit from making its context more explicit, agreeing the base definitions and formalising the calculation process.

The reporting template used by NR (CTRL) requires considerable data aggregation to produce the measures and populate the template via an Excel spreadsheet. This is a predominantly manual process, which it is ultimately intended to automate where appropriate and advantageous, once the procedures are fully understood and stable. Because data volumes are relatively low, the risks of data-processing errors normally associated with manual handling are minimised. However, automation of these data handling arrangements should be expedited, building on the knowledge and experience available within the NR Performance team in Milton Keynes.

3.4.3 Formalised Procedures

It was acknowledged that little of the process currently in use for performance reporting within NR (CRTL) and HS1 is formalised in procedure documents. The technical specification for addressing the queries in Business Objects is currently the limit of formalised documentation.

Whilst there is a clear commitment to formally document the process and procedures used, some of the necessary clarification around key assumptions and issues is either still awaited, or has only recently been received, and the team is keen to avoid the re-work that might be necessary if documentation is compiled for approval prematurely. However, there seems little impediment to now pressing on with the documentation. Formalisation will bring

much greater clarity to the range of issues covered in this report, and will allow definitions to be properly established and understood by all concerned.

4 Findings - HS1/NR (CTRL) Processes & Procedures: Asset Management

4.1 Context

In reading these findings, it should be remembered that the audit has been undertaken within the context of HS1 being a relatively new railway. It has assets that are in the earlier stages of their lifecycle (with associated levels of reliability and therefore lack of data on failures) and has only just achieved the current planned maximum use of the network with the recent start-up of domestic Southeastern services. As a result the systems and processes in use to manage the railway's assets are still in the early stages of development by HS1 and NR (CTRL), and, again, our findings reflect this. We understand that HS1 has been focussing on maintenance but recognises the need to quickly develop an asset management approach. It has committed to deadlines in order to achieve this and its progress with regard to data assurance can be expected to be reviewed in future Arup reports.

4.2 KPI Reporting

The formal framework for reporting HS1 Asset Management responsibilities to ORR remains in discussion between the parties, and the detail of the measures and KPIs to be monitored has still to be formally agreed. Consequently, there is as yet no formal, agreed process for populating and reporting the menu of KPIs. The range of measures is unlikely to be particularly controversial, as those cited in section 1.2, which form the basis of this audit, are safety-critical and very closely monitored.

The debate is likely to centre on target performance levels, and, as was stated by the engineering discipline Professional Heads during the meeting at Singlewell on 4th May, the 'steady state' railway has only been in place since December 2009 (when Southeastern domestic services commenced), and has not yet generated sufficient data from which to draw conclusions about asset performance. This is reflected by the absence of formalised reporting processes.

4.3 Definitions & Current Practice

4.3.1 Overall Fault Levels

It is not clear currently whether the KPI described in the draft Monitoring Handbook is intended to cover *all* faults, or whether the intention is for the KPI to cover just service-affecting and safety-critical faults. NR (CTRL) current practice is for all faults, and not just safety-critical and service-affecting faults, to be recorded and reported in the Period Infrastructure PDR report. The definition of faults and the specification of their reporting should be clarified and agreed.

NR (CTRL) currently reports fault details in the Period Infrastructure PDR report. Faults are initially reported either to the Ashford operations control centre or a Fault Desk at Ashford, depending whether the faults are 'railway' or 'non-railway' faults. In both situations, the faults are recorded in the Electrical & Mechanical Management Information System (EMMIS) and allocated a fault number. NR (CTRL) are moving shortly to a single point of entry to EMMIS, with a Fault Desk located at Singlewell, but this will not change in any way the data capture within the fault log. Although all reported faults are recorded and processed as required, there is clearly potential for under-reporting; once this move has been completed, it would be worth reviewing the fault-reporting process in more detail. It would be helpful to consider splitting Overall Fault Levels into sub-categories to distinguish between faults affecting the operational railway (that are safety critical and / or service disruptive) and more general facility-management related faults. This would provide more

accessible and useful information on HS1's asset management stewardship. This should be accompanied by the documentation of the processes for recording and reporting faults.

4.3.2 Track Quality Induced Speed Restrictions / Broken Rails / Service Affecting Defective Rails

Faults in these categories are not specifically captured under these headings, currently (except broken rails - which would be, if there had been any). However, the meaning of these categorisations is well understood, and defining the kind of defects which fit into each category is described as very straightforward for reporting purposes. A process also needs to be documented.

4.4 Current Fault Reporting Levels

Fault reports generally average between 40 and 50 per period in all categories. At this level of reporting, a high degree of fault clearance and closure is achieved within the period. Many of the faults are minor - warning alarms, building lighting and aircon faults, for instance - and a view was expressed at Singlewell that NR (CTRL) may be guilty of over-reporting faults currently.

We understand that Professional Heads are dealing with very few safety-critical and service-affecting faults, such that period 'nil' returns in the three track categories above are the norm, which is again reflected by the absence of formalised reporting processes. The knowledge and recording of such faults is, however, reflected in a number of known issues that have arisen as a result of introduction into squadron service of the Southeastern Class 395 units, relating to points detection, lateral rail movement and ride quality, and which are being urgently addressed with the TOC and the train manufacturer.

4.5 Plan Attainment - Backlog

NR (CTRL) devotes considerable energy in the Period Infrastructure PDR report to recording maintenance slippage, and the reasons for this. Overall, the recorded backlog of Maintenance and inspections is small, and most of this arises from lost possession shifts or difficulties in securing planned access.

Currently, planned preventative maintenance periodicities are loaded into the Engineering Asset Management System (EAMS) in accord with the Professional Head's best judgement of need, whilst recognising that historic data about asset performance may now require updating in light of the Southeastern domestic high speed service introduction in December 2009. Backlog reports are generated from the EAMS database, and from Works Orders issued but not completed.

There is at present very limited enhancement and renewal work taking place, or planned, and there is no reported backlog as a result.

4.6 Data Verification Checks

Whilst there is currently no formalised audit or verification procedure for data captured within EMMIS, the small number of reports, and the level of priority given to them by the engineering discipline Professional Heads means that there is effectively a level of managerial review, which goes a long way to guaranteeing the veracity of the data.

5 Findings – Data Management Procedures & Data Accuracy

5.1 Context

In reading these findings, it should be remembered that the audit has been undertaken within the context of HS1 being a relatively new railway with its current planned maximum use of the network only being achieved with the start of domestic Southeastern services towards the end of last year. As a result the systems and processes in use to manage the railway and data are still in the early stages of development by HS1 and NR (CTRL)

The following describes our review and checks of the process currently used for producing the Performance Floor report, from data extraction and any related assumptions, through to compilation of the report.

5.2 Source Data

Data from TRUST is downloaded by PSS and stored on the system at the end of each day. Business Objects (BO) is the front end to PSS which allows a user to set up queries and extract data.

Currently there are six queries set up. Each query contains the fields as described in the 'HS1 Performance Floor Calc Process 001' document circulated at the 21st April meeting. A function exists between BO and Excel which allows the user to automatically download the latest performance data in spreadsheet format, by accessing text files saved by PSS.

The queries extract data for

- Eurostar services (up/down separately)
- South Eastern services – Ebbsfleet (up/down separately)
- South Eastern services – Ashford (up/down separately)

Filters are applied to pick up trains delayed by five minutes or more at each of the following points of egress:

- Eurostar – Eurotunnel
- South Eastern – Ebbsfleet – Springhead Junction
- South Eastern – Ashford – Ashford West Junction

We witnessed the use of these queries to extract the required data; the process is highly automated and reflects the specifications set out in the document referred to above.

NR (CTRL) has highlighted a potential issue with the filter which specifies the intermediate locations within the HS1 boundary. Previous to HS1, there were no requirements to filter delays on or off the NR classic network; hence, the BO queries did not have a link to the STANOX details. Currently, BO only allows the list of location names to be used, rather than STANOX codes, which means that, if the reference names differ from those in the database, the delays for those locations will not be picked up. This issue however is only temporary and is being resolved through current BO development, with the objective of completion by October of this year. Completion of this switch to BO and the removal of manual intervention will be checked during next year's audit.

5.3 Definitions

The key variables used in the calculations for the Performance Floor Report are as follows, and are described in further detail in section 3.1, above:

- Total Number of Trains Timetabled;

- Total Number of Trains Delayed;
- Number of Trains Delayed by an Incident Wholly or Mainly Attributable to HS1;
- Number of Trains Delayed by an Unidentifiable Incident; and
- Average Seconds Delay per Train.

5.4 Process for Declaring 'Unidentifiable' Incidents

This process involves both TOCs and NR (CTRL), to form a joint decision as part of the Delay Attribution process. If no possible causes can be identified, both TOCs and NR (CTRL) would then agree to declare it as 'unidentifiable'. The delay would usually be attributed to NR (CTRL). We were advised that during the last year there was only one incident declared as unidentifiable, and that this occurred prior to the effective date of the HS1 Concession, for which reason no data were available for inspection.

The calculation of the 'Annual Performance Floor' takes into account 50% of the total of trains affected by 'unidentified' incidents.

5.5 Process for Disputed Incidents

When the cause of an incident cannot be attributed to either a TOC or NR (CTRL), the delay is entered on the system as 'being disputed'. Depending on who logged the incident onto the system first, the delay can be attributed to either a TOC or NR (CTRL) during this process. If the incident is not resolved, it will escalate to a maximum level 4, involving senior management to resolve it.

Disputed incidents can typically have a year's worth of backlog without having been resolved. This is the main cause of discrepancies in the data reported, since the refreshment of data to reflect the resolution of disputed incidents may not take place for a considerable length of time, introducing inconsistencies between successive datasets.

5.6 Cancellations/ Part Cancellations

Cancellations or part cancellations are recorded by TRUST, and are available for extraction via PSS / BO. Lateness values are also recorded, and are set to zero for trains recorded as running on time.

There has been some uncertainty about the recording of cancellations data, partly because these are comparatively rare events (none was recorded in the data available for inspection at the time of our visit). However, we have confirmed that all cancellation data are available in the PSS data 'tank'. At our suggestion, Network Rail have agreed to 'flag' all records to distinguish between delays and cancellations, and thus improve the clarity of the process.

5.7 Data Transfer

The spreadsheet referred to above is currently used to cleanse the data extracted from BO before feeding them through to the Performance Floor Report. The data cleansing process is as described in the document 'HS1 Performance Floor Calc Process 001', and is largely manual. We conducted a detailed check of the processes employed, referring to the Process document to replicate the results produced by Network Rail.

Although the process is quite well-documented, its manual nature means that there is scope for human error. Two particular areas of concern were revealed by our checks:

- There has been some double-counting of delays, particularly where individual trains are affected by multiple incidents; this is due to the calculation of train delays on the basis of incident records rather than head codes. Having identified the issue, Network Rail have now put measures in place to avoid this double-counting.

- The inadvertent deletion of required records during the manual cleansing of raw data can affect subsequent process steps, and thus the accuracy of the outputs.

There is considerable scope for improvement of this process, particularly by means of automation, since it currently involves a considerable degree of manual intervention. NR (CTRL)/HS1 has confirmed that resources have been identified to improve the process. It has been agreed to retain the use of Excel for the final presentation of the data generated by Business Objects, and for the cleansing of those data, but to automate the cleansing and reporting process within Excel. This has the advantages of improving the reporting reliability, accuracy and speed, while also providing an audit trail within Excel that would not be available if Business Objects were used for the entire process. It also enables the presentation of the final data in a familiar, user-friendly environment and format.

5.8 Compiling the Report

There is a standard spreadsheet-based template which is updated with the numbers and tables produced in the data-cleansing spreadsheet. While this is a straightforward 'copy and paste' process, the residual scope for error could be reduced, and time saved, by means of automating the population of the template.

6 General Observations

6.1 Context

In reading these findings, it should be remembered that the audit has been undertaken within the context of HS1 being a relatively new railway with its current planned maximum use of the network only being achieved with the start of domestic Southeastern services towards the end of last year. As a result the systems and processes in use to manage the railway are still in the early stages of development by HS1 and NR (CTRL).

6.2 Performance

6.2.1 Specification of Measures & Indicators

The measurement and reporting arrangements specified originally by DfT and now by ORR are relatively new and unfamiliar, and the NR (CTRL) Performance team are still a little way off formalising the arrangements and the processes which underpin production of the required measures and indicators. The sources of the underlying performance data, and the veracity of that data, are not questioned, as NR (CTRL) is using exactly the same systems, data sources and processes for generating management information as the rest of Network Rail, and these general arrangements have been assured in the recent past by a separate data assurance audit. However, the lack of a clear 'steer' on how the various performance measures should be compiled, the confusion over key definitions, and the unhelpful guidance contained in the Concession Agreement Schedule 3 mean that reliable data may not be being consolidated in an appropriate manner, and reporting may not be as intended. The importance of the parties reaching a clear understanding quickly on the following key definitions cannot be overstated:

- Total Number of Trains Timetabled;
- Total Number of Trains Delayed;
- Train Delayed by an Incident Wholly or Mainly Attributable to HS1;
- Number of Trains Delayed by an Unidentifiable Incident; and
- Average Seconds Delay per Train.

6.2.2 Procedure Documentation

Currently the only working documentation available to the NR (CTRL) performance team is the technical specification describing the queries set up in Business Objects for drawing data from PSS. The 'Plain English' procedure documentation has not yet been compiled, and has not been a priority while the team has been finding its feet, and while knowledge, experience and understanding of the performance regime has been being gathered. The impetus which will be given to this process as a result of clarifying client requirements and definitions should be grasped, and formal procedure documentation brought forward in the near future.

6.2.3 Automation of Processes

Although most of NR's domestic performance management reporting processes are now automated, this is not the case for HS1 data. Currently a spreadsheet is being used to cleanse data extracted from Business Objects before feeding through to the Performance Floor Report.

There is scope for improvement in this process, as the current one involves deletion of raw data and a considerable amount of manual intervention. This has implications for accuracy and reliability of data. NR (CTRL)/HS1 has confirmed that resources have been identified to improve the process. Excel spreadsheets will continue to be the platform for now, but the arrangements are expected to be automated via Business Objects by later this year.

6.2.4 Verification Checks & Audit

NR (CTRL) source data are verified and samples checked by the Midland & Continental Performance Systems Manager, as part of the wider data quality check process in place in the Routes nationally. There are, however, no formalised arrangements for verification of data which populate regulated measures or are drawn through into HS1 reports, other than a high level 'sense check' by senior Managers.

6.3 Asset Management

6.3.1 Specification of Measures & Indicators

In the main, the HS1 asset management measures and key indicators are well understood and clearly specified. They are underpinned by definitions in the appropriate technical standards, and are widely used throughout Network Rail. There is some dubiety about what is intended in the term 'Overall Fault Levels' in the draft Monitoring Handbook, as to whether this requires HS1, through its NR (CTRL) contractor, to report *all* faults, only those which relate to the railway infrastructure, or only those which are safety-critical and service-affecting. It would be helpful to have a clear definition and to consider disaggregating Fault reporting to distinguish between those affecting the operational railway and those more related to facilities management. Currently, all railway infrastructure faults reported through the Ashford Control Centre, and all non-infrastructure faults reported through the Fault Desk, are reported in the period Infrastructure PDR performance report. As a number of these 'faults' relate merely to diagnostic alarms which warn of conditions which may eventually lead to a fault, there is a view amongst the NR (CTRL) Professional Heads that there is general *over-reporting* of faults currently.

6.3.2 Procedure Documentation – Fault Reporting

Whilst it is undeniably correct that the regulatory body for a high-speed passenger railway should want to monitor key safety-critical indicators such as broken rails and serious track defects, such events are so rare on this relatively new, high-specification railway that they are managed to conclusion on an individual basis. Similarly, in respect of speed restrictions, there are so few of these that there is no perceived need for a formalised procedure for categorising these, in order to extract those of the type which are required to be reported.

It is undoubtedly good practice to have procedure documentation in place, describing what is done, how, when and for what reason. Everyone who needs to have visibility of the arrangements is then able to do so; it also ensures that when there is a need to change the arrangements, this is done from a position of good knowledge of how the existing scheme of things operates. For a small-scale operation such as fault reporting on HS1, there is no need for this to be onerous or bureaucratic, and it should be relatively straightforward to put in place. The revised arrangements for a Fault Desk to be established at Singlewell in the near future can provide the catalyst for a procedure document to be produced.

6.3.3 Procedure Documentation – Plan Attainment/ Backlog

A similar observation regarding process documentation and record keeping is made in respect of plan attainment/ backlog reporting. There is a need to formalise how both deferred maintenance and enhancement/ renewal backlog records and reports are to be collated and maintained, in order to meet the requirements detailed in the draft Monitoring Handbook.

6.3.4 Verification Checks and Audit

As described in paragraph 6.2.2 above, the level of reported faults which are safety-critical or service-affecting is very small, and because each and every such fault is managed individually, there is a high level of managerial review and verification. Of course, this may not always be the case, especially as assets age and degrade, and it would appear sensible that thought should be given to a separate data verification regime within Asset Management, to ensure that the information being reported to ORR remains accurate and

reliable over time. As data levels increase, further, detailed checks should be conducted to ensure that accuracy levels are being maintained.

7 Conclusions

7.1 Context

In reading these findings, it should be remembered that the audit has been undertaken within the context of HS1 being a relatively new railway with its current planned maximum use of the network only being achieved with the start of domestic Southeastern services towards the end of last year. As a result the systems and processes in use to manage the railway are still in the early stages of development by HS1 and NR (CTRL). Thus the relative immaturity of these arrangements is reflected in our conclusions.

7.2 Performance

7.2.1 Data Accuracy

NR (CTRL), on behalf of HS1, draws the underlying performance data from the national TRUST system via the PSS data archive. These arrangements are accredited at national level, and form the basis of all NR performance reporting.

7.2.2 Data Collection & Performance Reporting

Data are collected in PSS and drawn into performance reports through NR's Business Objects software platform. Data are drawn through using a series of specific queries established in BO, but there is a need for these to be reviewed to ensure that the measures and indicators being populated from this data are reported accurately, notably for cancellations and part cancellations, and in areas where double counting is known to have occurred. The extent of manual data manipulation and intervention in the production of spreadsheets and reports is an area for review, to establish whether processes and procedures can be automated to improve reliability.

7.2.3 Definitions

There is a lack of clarity over definitions in the various performance measures. There is a risk that accurate and reliable train performance data are being inaccurately or incorrectly reported as a result, and this undoubtedly feeds through into the Performance Floor metrics and reports. The definitions which need to be resolved are:

- Total Number of Trains Timetabled;
- Total Number of Trains Delayed;
- Number of Trains Delayed by an Incident Wholly or Mainly Attributable to HS1;
- Number of Trains Delayed by an Unidentifiable Incident; and
- Average Seconds Delay per Train.

7.2.4 Data Refresh

The arrangements for refreshing performance data to improve the accuracy of that data over time, and how these arrangements affect the accuracy of information in the various period, quarterly and annual reports, is not obvious or transparent to report recipients.

7.2.5 Procedure Documentation

Procedure documentation has not yet been compiled, and should now be given a higher priority for completion.

7.2.6 Verification Checks & Audit

No structured verification checks exist for HS1 data drawn into regulated measures or into periodic Reports.

7.3 Asset Management

7.3.1 Data Accuracy

On the basis of the reports we have seen, we have no concerns regarding the accuracy of recorded fault reporting data, which are the basis of the specific asset management measures for which data assurance is required. However, the reliability and accuracy grading awarded reflect the fact that the arrangements have not yet been documented.

7.3.2 Data Collection & Reporting

Data are collected through the fault reporting arrangements in place in NR (CTRL). These are to be rationalised into a central Fault Desk shortly, and are more than adequate for the quantum of activity which currently takes place.

7.3.3 Definitions

The HS1 asset management measures are well understood and are, in respect of technical definitions, clearly defined. The ORR requirement for reporting of 'Overall Fault Levels' needs to be clarified.

7.3.4 Procedure Documentation

There is no procedure documentation in place to describe the arrangements for collecting, categorising, following up, and reporting fault data.

7.3.5 Plan Attainment – Backlog

The general arrangements for the management of deferred maintenance, and the arrangements for recovery of backlog, appear satisfactory. There is a need to formalise how both deferred maintenance and enhancement/ renewal backlog records and reports are to be collated and maintained, in order to meet the requirements detailed in the draft Monitoring Handbook.

7.3.6 Verification Checks & Audit

There are currently no arrangements in place for separate or independent verification or audit of data populating the key measures of asset management performance in HS1.

8 Assessment of Confidence Rating

8.1 Context

In reading these findings, it should be remembered that the audit has been undertaken within the context of HS1 being a relatively new railway with its current planned maximum use of the network only being achieved with the start of domestic Southeastern services towards the end of last year. As a result the systems and processes in use to manage the railway are still in the early stages of development by HS1 and NR (CTRL). Thus the relative immaturity of these arrangements is reflected in the Reliability and Accuracy ratings awarded for the various measures.

8.2 Confidence Grading System

The confidence grading system used in this report is based on the approach taken in our Independent Reporter (Part A) work for ORR and Network Rail, whereby a two-character alphanumeric rating (e.g. 'A2') is used to provide a combined assessment of reliability and accuracy, with the letter used as a reliability rating, and the number as a accuracy rating. The rating system used is summarised in Table 8.1 which again is adopted from our Independent Reporter work.

Table 8.1: Confidence Grading System

Reliability Band	**Description**	
A	Sound textual records, procedures, investigations or analysis properly documented and recognised as the best method of assessment.	
B	As A, but with minor shortcomings. Examples include old assessment, some missing documentation, some reliance on unconfirmed reports, some use of extrapolation.	
C	Extrapolation from limited sample for which Grade A or B data is available.	
D	Unconfirmed verbal reports, cursory inspections or analysis.	
Accuracy Band	**Accuracy to or within +/-**	**But outside +/-**
1	1%	-
2	5%	1%
3	10%	5%
4	25%	10%
5	50%	25%
6	100%	50%
X	accuracy outside +/- 100 %, small numbers, or otherwise incompatible; or no data yet exists(see Table 9.2)	

It has been recognised in our Independent Reporting work that this rating system has some shortcomings, particularly in respect of the Accuracy Bands. Based on our experience during 2009/10, an alternative, more qualitative-based (but similar and consistent), accuracy

banding system has therefore been developed and circulated to ORR and Network Rail for comment. Once agreed, it is intended to use the revised system in the future for both Independent Reporter and HS1 Data Assurance activities and reports.

Some reliability/accuracy combinations are considered to be incompatible, as shown as 'N/A' in Table 8.2.

Table 8.2: Confidence Grading Compatibilities

Compatible Confidence Grades				
Accuracy Band	**Reliability Band**			
	A	B	C	D
1	A1	**N/A**	**N/A**	**N/A**
2	A2	B2	C2	**N/A**
3	A3	B3	C3	D3
4	A4	B4	C4	D4
5	**N/A**	**N/A**	C5	D5
6	**N/A**	**N/A**	**N/A**	D6
X	AX	BX	CX	DX

8.3 Confidence Ratings Achieved

Our confidence ratings for the HS1 measures reviewed in this Report are as follows:

8.3.1 Performance

- Total Number of Trains Timetabled – the audited data have a rating of C for Reliability and 2 for Accuracy. The Reliability rating reflects the lack of a formally accepted and approved definition for calculating the measure, and lack of supporting process documentation, while the Accuracy rating reflects the uncertainty surrounding the definition, and also the reliance on manual processes for the production of the final outputs. As shown in Table 8.2, the Accuracy rating is compatible with the assessed Reliability rating.
- Total Number of Trains Delayed - the audited data again have a rating of C for Reliability and 2 for Accuracy. The Reliability rating reflects the inconsistency between the Concession Agreement definition and the gathered data, inconsistencies in intermediate/ station recording points, and the lack of defined arrangements for the treatment of cancellations. The Accuracy rating is based on the uncertainty surrounding these issues, and again reflects the use of manual processes for the preparation of the final results; it is compatible with the assessed Reliability rating.
- Number of Trains delayed by an Incident wholly or mainly attributable to HS1 - the audited data have a rating of C for Reliability and 2 for Accuracy. The Reliability rating reflects the lack of process documentation supporting collation of this measure, and the relationship between this measure and the Total Number of Trains Delayed. The Accuracy rating reflects the acknowledged inaccuracies in reported train count data, which NR (CTRL)/HS1 are endeavouring to correct, and, again, is compatible with the assessed Reliability rating.
- Number of Trains delayed by an Unidentifiable incident - the audited data have a rating of C for Reliability and 2 for Accuracy. The Reliability rating reflects the lack of process documentation supporting collation of this measure, the lack of formalised definitions,

and the relationship between this measure and the Total Number of Trains Delayed. The Accuracy rating again reflects the use of manual processes for the production of the measure, as well as the reliability-related concerns, and is thus compatible with the assessed Reliability rating.

- Average Seconds Delay per Train – the audited data have a rating of C for Reliability and 3 for Accuracy. This is not a regulated measure, but an indicative performance measure whose reporting is required by the draft Monitoring Handbook. The Reliability rating reflects the lack of process documentation supporting collation of the measure and the definitions for the measure having still to be formulated. The Accuracy rating reflects the use of manual calculation processes and their potential two-fold effects on both the numerator and denominator elements of the overall calculation. Again, the two ratings are compatible, as shown in Table 8.2.

There would appear to be no reason why all these measures could not reasonably achieve A1 grading in due course, once the definitions are finalised, the processes are fully documented and greater automation of data production is achieved.

8.3.2 Asset Management

- Overall Fault Levels - the audited data have a rating of B for Reliability and 2 for Accuracy. The Reliability rating reflects the lack of a formalised and documented process for collating the measure, and the definition of the measure having still to be formulated. The Accuracy rating reflects the reliance on manual processes, and is compatible with the assessed Reliability rating.
- Track Quality Induced Speed Restrictions - the audited data have a rating of B for Reliability and X for Accuracy. The Reliability rating reflects the lack of a formalised process for collating the measure. The Accuracy rating reflects the lack of any actual data to date (resulting from the fact that the infrastructure is new, and that track quality thus remains high), and is again compatible with the assessed Reliability rating.
- Broken Rails - the audited data have a rating of B for Reliability and X for Accuracy. The Reliability rating reflects the lack of a formalised process for collating the measure. The Accuracy rating reflects the lack of any actual data to date, again reflecting the good condition of the infrastructure.
- Service Affecting Defective Rails - the audited data have a rating of B for Reliability and X for Accuracy. The Reliability rating reflects the lack of a formalised process for collating the measure. The Accuracy rating reflects the lack of any actual data to date, for the reasons already cited above.

Again, there would appear to be no reason why all these measures could not reasonably achieve A1 grading, once the processes are fully developed and documented, and a data history is created.

9 Recommendations

Table 9.1 contains a set of draft recommendations for HS1 and ORR, for which HS1 is accountable for ensuring delivery of the recommended actions to ORR, and NR (CTRL) is the responsible party (unless otherwise specified). The recommendations are numbered 2010.P.1, etc., to reflect the year of issue, the KPI under consideration (i.e. P for Performance, AM for Asset Management), and the individual recommendation numbers.

Table 9.1: Recommendations

No.	Recommendation	Text Ref.	Responsible	Due Date
2010.P.1	Review the queries established in Business Objects for performance data to ensure that, when populating the key measures, data extracted is • Complete • Relevant • In the correct form according to the requirements laid down in the Concession Agreement or by ORR.	3.4.2, 3.4.3, 5.7	Commercial Development Manager, NR (CTRL)	July 2010
2010.P.2	Develop plans to automate as much of the performance data extraction and manipulation process as possible, with a view to phased implementation over the next 12 months. Where manual intervention remains a requirement, establish guidelines for and use of spreadsheet best practice.	3.4.2, 5.7, 5.8	Commercial Development Manager, NR (CTRL)	September 2010 – plan April 2011 - implement
2010.P.3	Clarify, and document, the definitions relating to all the key performance measures to improve the consistency of reported measures, notably; • Total Number of Trains Timetabled • Total Number of Trains Delayed • Trains Delayed by an Incident Wholly or Mainly Attributable to HS1 • Trains Delayed by an Unidentifiable Incident • Average Seconds Delay Per Train	3.2, 5.2	Regulatory Affairs Manager, HS1 / Matt Wikeley, ORR	July 2010
2010.P.4	Bring forward the plans to document all the primary processes and procedures relating to HS1 performance data collection and reporting	3.4.3	Commercial Development Manager, NR (CTRL)	September 2010
2010.P.5	Consider the opportunity for improving the visibility of, and understanding about, data refresh in the performance reports produced, for example by expanding the performance commentary to include an indication of the size of the 'risk' to the reported Performance Floor measure, and in the results.	3.4.2	NR (CTRL)	July 2010
2010.P.6	Resolve the current difficulty within Business Objects reporting whereby location codes (STANOX) cannot be recognised, with the potential this brings for	5.2	Commercial Development Manager, NR	October 2010

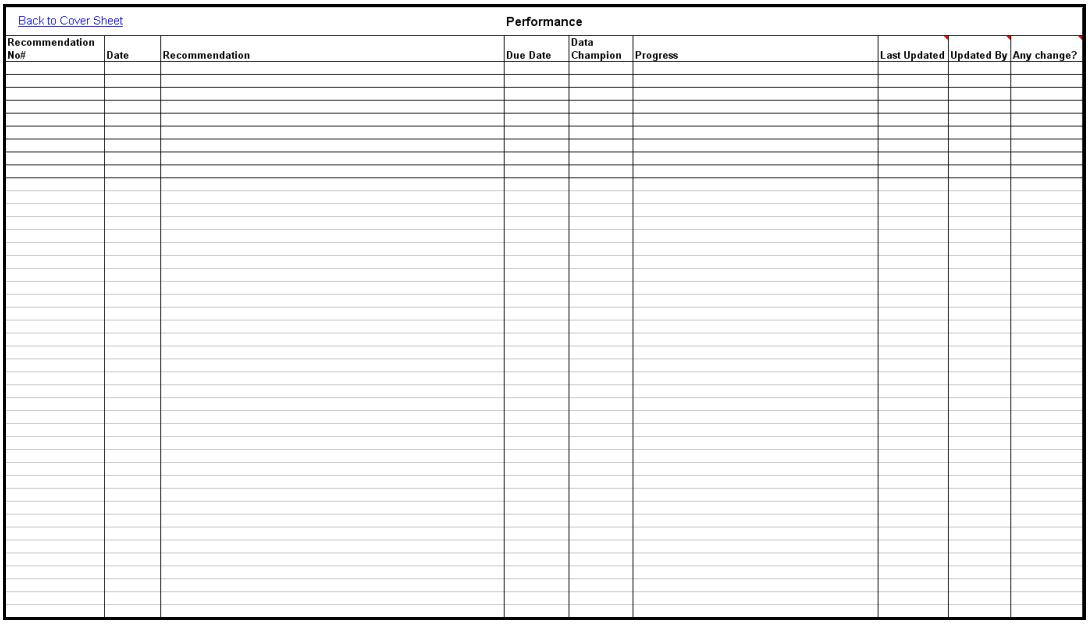
No.	Recommendation	Text Ref.	Responsible	Due Date
	inaccuracy in location reporting.		(CTRL)	
2010.P.7	Review the opportunities for instituting managerial data review or audit to improve confidence in the veracity of reported performance information	6.2.4	Commercial Development Manager, NR (CTRL)	September 2010
2010.AM.1	Agree a clear and unequivocal definition for “Overall Fault Levels” with ORR	4.3	Head of Asset Management, HS1 / Marius Sultan, ORR	July 2010
2010.AM.2	Bring forward the plans to document the primary processes and procedures relating to HS1 fault reporting, data collection, categorisation, follow up and reporting.	6.3.2	Head of Asset Management, HS1	September 2010
2010.AM.3	Review the opportunities for instituting managerial data review or audit to improve confidence in the veracity of reported asset fault and failure information	6.3.4	Head of Asset Management, HS1	September 2010

10 Recommendations Tracking

In the course of our Independent Reporter (Part A) work, we have developed a system for the quarterly tracking of Network Rail's progress with outstanding recommendations. The system comprises a spreadsheet containing multiple worksheets, with a single worksheet for each KPI area/Data Champion containing a list of all outstanding recommendations for the KPI area (e.g. Performance).

We propose the use of a similar system for HS1, although, since our HS1 reporting cycle is likely to be annual only, it is likely that the system would be implemented jointly by ORR and HS1/NR (CTRL), with ORR issuing the spreadsheet at agreed intervals, and HS1/NR (CTRL) responding with updates. A sample worksheet is shown (for illustrative purposes only) in Figure 10.1, below.

Figure 10.1: Performance Worksheet in Recommendations Tracking Spreadsheet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Performance

Recommendation No#	Date	Recommendation	Due Date	Data Champion	Progress	Last Updated	Updated By	Any change?

Appendix A

Glossary of Terms

A1 Glossary of Terms

BO	-	**Business Objects**
CA		**Concession Agreement**
CTRL		**Channel Tunnel Rail Link**
DAG		**Delay Attribution Guide**
EAMS	-	**Engineering Asset Management System**
EMMIS		**Electrical & Mechanical Management Information System**
HS1		**High Speed 1**
KPI		**Key Performance Indicator**
NR		**Network Rail**
OA		**Operator's Agreement**
ORR		**Office of Rail Regulation**
PSS		**Performance Systems Strategy**
STANOX		**Numeric location code**
TOC		**Train Operating Company**
TRUST		**NR train running monitoring system**
TSDB		**Train Service Database**
WTT		**Working Timetable**

Appendix B

Meeting Remit Documents

B1 HS1 Data Assurance Meeting Remit - Performance

The focus of each meeting is to provide assurance that the performance data reported by HS1 against the measures set out by ORR are collated correctly and accurately.

The following measures will be covered within this meeting:

- Total number of trains timetabled
- Total number of trains delayed
- Number of trains delayed by an incident wholly or mainly attributable to HS1
- Number of trains delayed by an unidentifiable incident
- Average seconds delay per train

We will review the 3 Month Performance Floor reports submitted to date, and ascertain the methodology by which they are compiled and the arrangements intended for compilation of the Annual Floor Report.

Standard Questions

1. Is there a formal procedure for the collation of the measures?
    a. Where is it contained?
    b. How is it issued?
    c. Is it up to date?
    d. How are cancellations/ part cancellations recorded?
2. Who is involved in the production of the measures?
    a. Is there a responsible manager for the measures?
    b. What is the linkage between HS1 and the relevant NR management team?
    c. What training has been given to relevant personnel?
3. What data sources are used to compile the measures?
    a. Internal?
    b. Any external sources?
    c. How is delay attribution managed?
4. How are the measures produced?
    a. Describe systems
    b. How are reports produced?
    c. Any spreadsheets used?
    d. Amalgamated from lower level data?
    e. How is data security ensured?
5. How are the measures used?
    a. What reports are produced?
    b. Who gets the reports?
    c. How does this link to action plans?
6. What verification procedures exist?
    a. Routine checks?

b. Regular internal audit?

c. Verification with TOCs?

B2 HS1 Data Assurance Meeting Remit – Asset Management

The focus of each meeting is to provide assurance that the asset management data reported by HS1 against the measures set out by ORR are collated correctly and accurately. It would be helpful for the HS1 representatives to give an overview of the progress being made towards establishing an asset management strategy & forward plan.

The following measures will be covered within this meeting:

- Overall Fault Levels
- Track Quality Induced Speed Restrictions
- Broken Rails
- Service affecting Defective Rails
- Plan Attainment (Backlog)

In respect of the Plan Attainment measure specifically, we will be seeking assurance regarding the processes, and the data used, for measuring the delivery of the agreed asset maintenance plan in each discipline.

Standard Questions

1. Is there a formal procedure for the collation of the measures?
    a. Where is it contained?
    b. Are formalised definitions for the measures included?
    c. Is a single unit of measurement of asset stewardship contained or proposed, and does/will this unit of measurement provide serviceability and condition information?
    d. How is the procedure issued?
    e. Is it up to date?
2. Who is involved in the production of the measures?
    a. Is there a responsible manager for each of the measures?
    b. What is the linkage between HS1 and the NR contract management team?
    c. What training has been given to relevant personnel?
3. What data sources are used to compile the measures?
    a. Internal?
    b. Any external sources?
4. How are the measures produced?
    a. Describe systems
    b. How are reports produced?
    c. Any spreadsheets used?
    d. Amalgamated from lower level data?
    e. How is data security ensured?
5. How are the measures used?
    a. What reports are produced?
    b. Who gets the reports?

   c. How does this link to action plans?

6. What verification procedures exist?
   a. Routine checks?
   b. Regular internal audit?