Network Rail and Office of Rail Regulation

Independent Reporter (Part A)

Q2 2010-11 Data Assurance Report: Network Availability

Issue | November 2010

This report takes into account the particular instructions and requirements of our client.

Job number   209830-80

ARUP

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Executive Summary

The Part A Independent Reporter Team carried out the annual review of Network Rail's data management arrangements to verify that their Network Availability KPIs are calculated reliably and accurately. The findings for the individual KPIs are summarised in the following paragraphs.

4(a): Possession Disruption Index – Passenger (PDI-P)

The PDI-P measure has been rated at B for reliability and 3 for accuracy, and is unchanged since 2009/10. While there have been improvements in the data collation processes since 2009/10, the Schedule 4 process still requires more formal documentation (including better audit arrangements). The accuracy score reflects the negative impact of the implementation of the Integrated Train Planning System (ITPS) on data quality (this should only be a temporary issue), and the potential for missing Schedule 4 data, as well as the fact that the PDI-P computation process is essentially unchanged from 2009/10. A rating of B2 is likely to be the highest that can be achieved.

4(b): Possession Disruption Index – Freight (PDI-F)

The PDI-F measure has been rated at B for reliability and 3 for accuracy, an improvement on the 2009/10 rating of C3. The improved reliability score reflects the provision of improved documentation since 2009/10; improved documentation of the underlying algorithm and processes would nonetheless be helpful, and this issue should be addressed when NARS is introduced. The accuracy score reflects the fact that the PDI-P computation process is essentially unchanged from 2009/10, and continues to rely on considerable manual intervention, particularly in the copying and pasting of data between spreadsheets, with significant scope for straightforward user error. As in the case of PDI-P, our view is that the highest achievable confidence rating for this measure is B2.

WTT Weekend Compliance

The KPI has an assessed rating of B for reliability and 3 for accuracy, and is unchanged since 2009/10. This reflects the fact that, whilst there have been process improvements, the impact on the measure of the (again, presumably temporary) problems associated with ITPS implementation have cancelled out the impact of these. Given the calculation methodology used, A2 is the highest grading which could be reasonably expected.

Rail Replacement Bus Hours (Weekend)

The KPI is rated B for reliability and 3 for accuracy, an improvement on the 2009/10 rating of C4. This reflects a sound documented process using consistent data extraction arrangements but the fact that the defined measure, as agreed between ORR and Network Rail, is not an absolute measure of bus hours but a trend indicator, is reflected in the accuracy score. This is likely to be the highest achievable level based on the current methodology.

Possession Planning - Possession Notification Discount factor

The KPI is rated B for reliability and 2 for accuracy, unchanged since 2009/10. The lack of formal written procedures means the reliability score remains at B,

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which in turn means that 2 is the highest accuracy rating available. Formalising the procedures should move this KPI to an A1 rating.

Late and Very Late Possession Changes

The KPI is rated as D for reliability and 4 for accuracy, a deterioration relative to the 2009/10 rating of C3. This reflects the additional investigations conducted in 2010/11 into the underlying data and processes, and the lack of any standardised process and the fact that it is difficult to verify the accuracy of the records, which, given the low numbers involved, should be easily resolvable. The highly manual nature of this data capture at present means the highest achievable level is B2, but this still gives significant scope for improvement.

Possessions Involving Single Line Working

The KPI is rated B for reliability and 3 for accuracy. This improved score from last year's rating of C4 reflects the improved documentation of the process and better identification of all instances through better input consistency into the Weekly Operating Notices traffic remarks. Improvements in this score will probably require the implementation of automated data collection, which should enable the attainment of an A1 rating.

Possession Incidents - Delay Minutes due to Possession Overrun

The KPI is ranked A for reliability and 1 for accuracy, unchanged from the 2009/10 rating, and in line with this year's Q1 audit.

Possession Incidents - Cancellations (deemed minutes) due to Possession Overrun

The KPI is ranked A for reliability and 1 for accuracy, again unchanged from the 2009/10 rating, and in line with this year's Q1 audit.

Possession Incidents - Temporary Speed Restrictions

The KPI is rated as A for reliability and 1 for accuracy, an improvement on the 2009/10 rating of B2. This reflects the well documented arrangements and the robust checking of a controllable set of records. This KPI has changed from the last audit of Network Availability KPIs, and is now based on the number of unplanned Temporary Speed Restrictions (TSRs) relative to target, whereas it previously reflected the delay minutes caused by such TSRs.

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1   Introduction

Arup is the appointed Part A Independent Reporter, with responsibility for providing assurance as to the quality, accuracy and reliability of the data and processes used by Network Rail to report its performance to ORR, the DfT and the wider industry.

This report forms part of a rolling annual programme of audits carried out quarterly across a range of Key Performance Indicators (KPIs) used to measure Network Rail's delivery against its key obligations. These checks focus on the reliability, quality, consistency, completeness and accuracy of the reported data, and not on any trends highlighted by the data.

This 2010/11 Quarter 2 (Q2) report covers Network Availability data that were last reviewed in 2009/10 Q3. The KPIs covered are:

- 4(a): Possession Disruption Index - Passenger (PDI-P)

- 4(b): Possession Disruption Index - Freight (PDI-F)

- WTT Weekend Compliance

- Rail Replacement Bus Hours

- Possession Planning - Possession Notification Discount factor

- Late and Very Late Possession Changes

- Possessions Involving Single Line Working

- Possession Incidents - Delay Minutes due to Possession Overrun

- Possession Incidents - Cancellations (deemed minutes) due to Possession Overrun

- Possession Incidents - Temporary Speed Restrictions

Of these, KPIs 4(a) and (b) are produced to assess progress relative to the formal regulatory targets set by ORR for CP4, namely a 37% reduction in PDI-P, and no deterioration in PDI-F relative to the start of CP4. The rest of the KPIs have been developed as supporting measures to assist Network Rail in the management of Network Availability, using a series of more transparent measures. They are not constituent elements of PDI-P or PDI-F.

Following this introduction, Section 2 provides an overview of the review process employed. Section 3 presents the findings of a review of progress made in the implementation of the recommendations made by the Independent Reporter team during the course of the 2009/10 review of the KPIs. Section 4 provides an account of system changes introduced since the previous review. Section 5 then presents the findings of our 2009/10 review of the Network Availability KPIs, first describing the overall methodology employed, and then presenting, for each KPI covered, a brief description of the KPI, our findings in respect of its reliability and accuracy, any general observations made, our conclusions, and, finally, our assessment of the confidence rating for the KPI. The confidence ratings for all the KPIs are combined and summarised in Section 6. Section 7

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contains a list of recommendations made on the basis of the foregoing assessment, and also any recommendations outstanding from our 2009/10 report that have yet to be implemented in full. Appendix A contains a glossary of the terms used in the report.

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2   Review Process

The Network Availability KPIs were last reviewed during 2009/10 Q3 by means of a two-stage audit. The first stage reviewed the computational arrangements used in the collation of both PDI-P and PDI-F. A separate audit looked at the data collation processes being used by Network Rail in the compilation of all the KPIs within the Possession Indicator Report (PIR). Neither of these reviews included any detailed checks of the underlying base data, with the result that it could not then be confirmed that the data and processes associated with Network Rail's planning of disruptive possessions follow through consistently and accurately from their procedures at the local level to the reported KPIs.

In consequence, the report focus for Network Availability for 2010/2011 is as follows:

- Assessment of changes to the procedures/processes and supporting systems since last year, and identification of any impact on the confidence ratings published previously.

- Checking on progress against the report recommendations published in last year's report.

- Conduct of detailed sampling of possession data by 'drilling down' from the base possession data in S4CS/PPS through to the actual possessions planned by local area staff.

To carry out the reviews, a series of meetings were held with Network Rail at both national and local levels, involving key personnel responsible for the production of the KPIs. The meetings are summarised in Table 2.1 below:

Date	Network Rail Attendees	Location
15th July	Network Availability Data Champion	40 Melton Street, London
10th August	Network Availability Data Champion, Network Availability Programme Project Manager (Change)	Milton Keynes
10th August	Performance Analysis Manager (NDS)	Milton Keynes
10th August	Systems Support Manager	Milton Keynes
10th August	Senior Performance Analyst	Milton Keynes
24th August	Business Manager Compensation	Milton Keynes
24th August	Head of Publications	Milton Keynes
15th September	Lead Planner, Delivery, West Midlands and Chilterns	Birmingham
17th September	Lead Planner Delivery, Great Northern	York
21st September	Lead Planner Delivery, Lancs & Cumbria	Manchester
24th September	Project Manager, National TSR Avoidance	Swindon

Table 2.1: Network Rail Meeting Attendees

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All the audit meetings were led by Phil Dargue and John Armstrong, of the Independent Reporter team. Chris Fieldsend of ORR attended all of the Milton Keynes meetings, and the Lancs & Cumbria meeting, as an observer.

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3   Progress on 2009/10 Recommendations

Following the audits carried out in 2009, a series of recommendations were made by the Reporter team and subsequently agreed with both Network Rail and ORR. Whilst these are subject to ongoing routine monitoring as part of the Quarterly reporting cycle, the Reporter team reviewed progress in detail with Network Rail as part of this audit. For completeness, the recommendations are set out in full in Table 3.1 below, along with the progress made since they were agreed.

No.	Recommendation to NR	NR Data Champions	Due Date	Progress
2010.4.1	Put in place a procedure for each KPI detailing what data is to be collected and where it should be sourced from. At a minimum each should contain: • Definitions • Data source • Verification and check arrangements	Tony Roberts	March 2010	The requirements are set out in a new document titled "CP4 Delivery Plan, Network Availability KPIs – Data Requirement". The latest version available at the start of the review was v1.2, dated March 2010. The definitions and data sources are fully set out for each of the KPIs. Whilst the high-level verification checks are described within the document, there was little evidence that these were being undertaken and therefore this element should be reviewed to ensure full compliance. **Partially complete – outstanding actions covered by new recommendation.**
2010.4.2	Review each of the supporting KPIs and specify if they are for measuring high-level trends or used to provide accurate assessments. This should be done with data providers to confirm that the data represents: • The most appropriate	Tony Roberts	March 2010	This Requirement is in the main covered within the new procedure referenced above. However, whilst the accuracy level of the base data is specified the accuracy levels of the actual measures are not specified on the reports. **Partially complete.**

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	measurement • Best source of base data • What the target accuracy level is for each KPI			
2010.4.3	Review transitional risks posed to the KPI production process and develop mitigation plans: • Managing staffing changes both in teams supplying data and in the Network Availability Team • Addressing system changes, such as to ITPS from Trainplan. A new data source for measuring WTT Weekend Compliance based on ITPS data will need to be implemented	Neil Henry	January 2010	No single mitigation plan appears to have been produced, although events have now moved on since this recommendation was written. The Reporter Team cannot therefore definitively state this was due to appropriate risk management. The changes in team structure were managed as part of the overall centralisation change programme. No significant problems in KPI production were apparent to the Reporter team. ITPS however has caused issues as set out elsewhere in the report. **Incomplete, but overtaken by events – outstanding actions covered by new recommendation.**
2010.4.4	Implement system for monitoring WTT Weekend Compliance from ITPS	Neil Henry	May 2010	The monitoring of weekend compliance is now done through ITPS, although the implementation of ITPS caused some problems. **Complete**
2010.4.5	Put in place a plan to automate data collection. This should identify opportunities and set out a path to achievement.	Neil Henry	March 2010	The Reporter team understands that the implementation of NARS and EARS will provide an increased degree of automation in the processing of the PDI production process. Network Rail does not have any current plans to further automate the S4CS process as described in this report. This is because no methodology is viewed as feasible at present. The proposed

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				development of EARS which will aid this process is currently not yet beyond feasibility stage and may not happen during CP4. **Incomplete, but the implementation of NARS will complete the planned phases of this work**.

Table 3.1: Recommendations Progress Review

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4 Organisational, System and Process Changes

4.1 Organisation

Since the last audit there have been significant changes to the organisational arrangements of key personnel involved in the collation of the Network Availability KPIs. Those that affect the KPIs are set out in the relevant sections of this report, but the main driver has been the ongoing centralisation of key functions around the new Network Rail offices in Milton Keynes. This means, in many cases, that the individuals collating the data are now different to those interviewed during the 2009/10 audit. While the Network Availability Team are still collating the data, this is now being done from Milton Keynes rather than Melton Street, and there have been personnel changes as a result of the move. At the previous audit this was flagged as a potential risk to the ongoing production of the network availability KPIs. The changes were managed as part of an overall centralisation project.

4.2 Process

In terms of processes, the Network Availability Team has produced a document which sets out the data requirements for each of the KPIs covered within the Possession Indicator Report. The document is titled 'CP4 Delivery Plan – Network Availability KPIs – Data Requirement'. The copy supplied to the Reporter team was version 1.2, dated March 2010 (although an updated version, 1.3, was supplied later in the course of the review, the review process and findings are based on version 1.2). This was created partly in response to the recommendations arising from the last audit. The individual elements are reviewed in each of the detailed KPI sub-sections in Section 5 of this report.

4.3 Systems

There have also been changes to some of the key systems used to supply data since last year, with other significant changes underway during the course of this audit. The implementation of the Integrated Train Planning System (ITPS) has had major implications for several of the KPIs. Data from the previous timetable planning system, Trainplan, were used directly to create the WTT Compliance and Rail Replacement Bus Hours KPIs, They were also used as a base data source by the S4CS team, to identify possessions that require Schedule 4 compensation payments, and were therefore important for the calculation of PDI-P. The move to ITPS from the May 2010 timetable meant that the data processes had to change to reflect this. However, problems with the implementation of ITPS caused difficulties for all of these processes. In particular, difficulties with apparently duplicate records leading to inflated train schedule counts caused real problems for the first period following implementation. The specific issues are dealt with in the individual KPI commentaries, but this led to a need to overwrite some of the records with manually-adjusted data, sometimes based on historical trends with obvious consequences for data accuracy. The majority of the problems are now resolved, although the final issue (problems with the service codes) is not likely to be removed until the December timetable, but it will require a period of stability

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before it can confidently be stated that any impact has been removed. Confirming that this has been achieved will be a key focus for the 2011/12 audit.

The other significant change which is underway is the introduction of a new system called Network Availability Reporting System (NARS). This is intended to automate the production of the KPI data, including the PDI measures, removing the need for manual calculations wherever possible. At the time of the audit the system had just entered user acceptance testing, and therefore was not in active use. It has been under trial, with consistency checks being carried out between the data it produces and those calculated by the existing, manual process. As a result, this audit has not considered the impact of NARS on the production of the Network Availability KPIs. It is recommended that this should form a separate review by the Independent Reporter in advance of next year's audit, to verify that it does not affect the KPI confidence ratings once the system is rolled out.

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5 Network Availability KPIs

5.1 Introduction

The KPIs covered by this report are of two types: PDI-P and PDI-F are regulated measures against which Network Rail is monitored by ORR, and for which regulatory targets have been set for CP4; the remainder of the audited KPIs are supporting measures developed by Network Rail to help them manage the delivery of their targets, given the quite technical nature of the PDI measures. All of the measures are reported periodically in the Possession Indicator Report produced by the Network Availability Team.

The methodology for the overall review process is described in the next sub-section, and is followed by coverage of each Network Availability KPI, including a description of the KPI and its preparation (these definitions are taken directly from the Network Rail process document, Network Availability KPIs – Data Requirement (v1.2, March 2010)), our findings in respect of its reliability and accuracy, general observations, conclusions, and the Confidence Rating awarded to the KPI.

5.2 Methodology

As described in Section 2, initial meetings were held with Network Rail's Network Availability Data Champion and with the individual data providers for the various KPIs, followed by meetings with staff at a sample of Area Possession Planning offices. Process documentation and data were obtained in the course of these meetings, or provided subsequently, and were used in conjunction with the information obtained from the meetings to assess the reliability and accuracy of the individual KPIs.

Data for 2010/11 Period 04 were used to conduct the checks, including PPS and S4CS records and the various datasets provided to the Network Availability Team by individual data providers, together with the intermediate and KPI output datasets produced by the Network Availability Team.

The processes and documentation were reviewed to assess their reliability, and the various datasets and computation processes were checked for consistency and for compliance with the documented processes, to assess their accuracy. Our findings for the individual KPIs are presented in the following sub-sections.

5.3 Possession Disruption Index – Passenger (PDI-P)

5.3.1 The Measure

The Possession Disruption Index for Passengers is the economic value of the impact of possessions on excess journey time as experienced by passengers as a result of disruptive possessions in a Period.

The measure aims to reduce the disruption experienced by the customer and is expressed as an indexed value (PDI values divided by the PDI at the end of 2007/2008). Its definition and calculation are summarised in Table 5.1.

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Measure	Definition	Calculation
Possession Disruption Index - Passenger	Possession Disruption Index for Passengers measures the value of the impact of possessions on excess journey time as experienced by passengers	(Excess Journey Time x Busyness Factor) x (# Passengers x Time of Day Weighting x Economic Value of Time) divided by (Total Scheduled Passenger Km)

Table 5.1: PDI-P Definition and Calculation

The main variable data source used in the calculation of PDI-P is sourced from S4CS. Alongside this, passenger train km data are supplied from PALADIN on a Periodic basis. The other factors in the calculation are based on constant datasets that can be updated as necessary, as summarised in Table 5.2, taken from Network Rail's Data Requirements (v1.2) document.

Data	Description	Source	Frequency
• NREJT • WACM • BF • Possessions	The values for NREJT, WACM BF and details of disruptive possession are sourced from the S4CS data used in the payment of compensation to operators	S4CS system	Emailed every 4 weeks
• Passenger train-km	• The scheduled passenger train km per service group is sourced from Paladin	• PALADIN	Data is available Periodically
• PASS	• Predefined constant of the daily average of annual passengers per Service Group derived from LENNON.	• LENNON	Constant but can be updated
• ToDW	• Predefined input determined by distribution profiles of passenger journeys for each Service Group derived from MOIRA.	• MOIRA.	Constant but can be updated
• VoT	• Predefined input calculated as defined in WebTAG	• WebTAG • NPS • LENNON	Constant but can be updated

Table 5.2: PDI-P Data Sources

(Note: the updating of the constant data sources requires consideration; it is not anticipated that these data will be updated in CP4, since an interim review is required before an update can be performed.)

The PDI-P calculation process is summarised in Figure 5.1.

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Simplified PDI-P Process Flow
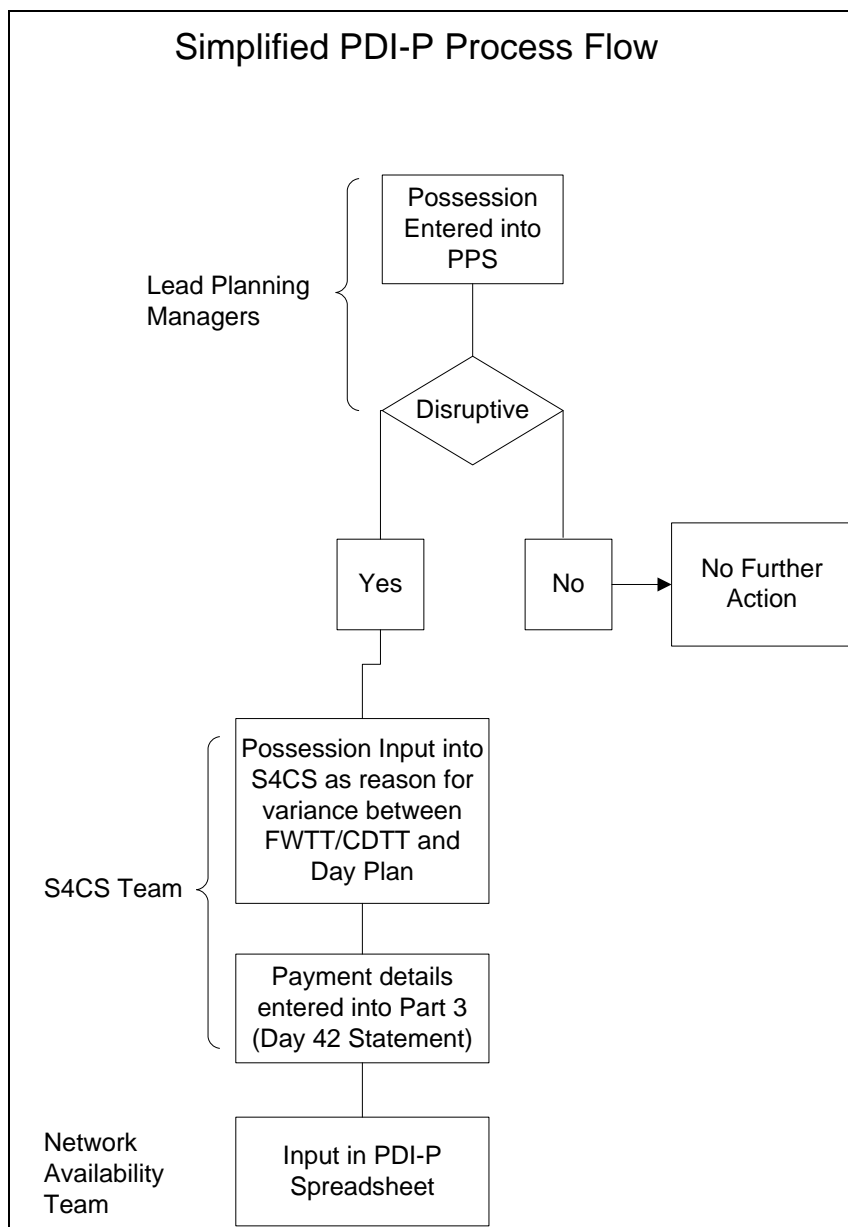
Figure 5.1: PDI-P Process Flowchart

Since the S4CS data is the most important variable, this was a main focus of the audit. PPS and S4CS datasets were obtained from Network Rail for 2010/11 Period 04. The data were filtered to obtain the records corresponding to the three Area Planning offices visited (West Midlands, Great Northern and Lancs & Cumbria), and the two datasets were matched by Possession ID to check that each disruptive PPS record had a corresponding S4CS record, and vice-versa. Any identified mismatches were then reviewed with the Area Planners to ascertain the underlying causes. This process is described in more detail below.

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5.3.2   Findings: Reliability – Process and Procedures

5.3.2.1   The Schedule 4 Process

The S4CS process is managed by the Business Manager, Compensation based in Milton Keynes. The team is now fully centralised, a process which was managed gradually from September 2009. The transition was completed in 2010/11 Period 01, at which point all Schedule 4 Compensation transactions were dealt with at Milton Keynes.

The team is now fully staffed, with team members being brought in on a staggered basis to facilitate training. The new team has some individuals experienced in Schedule 4 but the vast majority of the team (18 posts in total) are new to the discipline.

During the transition, training was arranged for all the new team members, using the two most experienced team members on a one-to-one basis, which in some cases, was augmented by support from the outgoing Route-based team. The team is split into five sections, each with a Band 4 staff member, and with the Band 5 members each having allocated TOCs (these Bands are Network Rail staff gradings, with lower numbers indicating greater seniority).

The new team have all now visited their allocated TOCs to build up their relationships following this major change.

At present, there is no formal manual or documentation in place for the team, setting out the Schedule 4 process, although work has commenced on producing one.

The actual S4CS process remains largely undocumented and unchanged from the last audit, with the system still requiring a largely manual check to identify when a possession has led to changes in train mileage or missed Reporting Points. Potential instances are identified by S4CS by means of a comparison between the day plan, the First Working Timetable (FWTT) and the "ideal" timetable.

Since the 2009/10 audit, a checklist of 11 items has been developed by the S4CS team to be included in the new process manual. These basically require checks to be made if factors sit outside expected parameters. Checks would also be carried out if the actual compensation figures vary significantly from the forecast taken from PPS. No records are kept of these checks.

No checks are routinely undertaken to verify that all disruptive possessions are captured within S4CS and therefore fed through to PDI-P; this should be rectified.

5.3.2.2   ITPS Implementation Problems

The implementation of ITPS from the start of the summer 2010 timetable has caused significant problems with the PDI-P calculation process described above. These have been of two types:

- Data Quality - problems with missing or duplicate data have triggered a lot of additional checks. This caused a major workload problem although it has largely been resolved.

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- Service Codes - there have been major difficulties with part of the service code which has required a manual fix. Whilst this was a problem previously, the implementation of ITPS appears to have exacerbated the problem considerably. Again, this has generated considerable manual effort.

These problems have led to the need to exclude timetable differences which have been caused by either issue, so as not to generate a Schedule 4 payment when not required. No records have been kept of these exclusions. While the ITPS-related difficulties should only be a short-term issue, the S4CS Process Manual and data management and verification system should include provision for the handling and recording of such exceptions.

5.3.2.3 Possession Planning Process

This section does not explore the full possession planning process, just that element that affects Schedule 4. The base data source for possessions used in S4CS is PPS. Input to PPS is done in two main departments. Engineering Access Planning (EAP - formerly the Network Access Unit (NAU)) has overall responsibility for the system; however, detailed management of the entries in PPS rests with the Area-based Lead Planning Managers within NDS (National Delivery Service). Each Area team has two Lead Planners: firstly, the Development Manager deals with the plan up until the Confirmed Period Possession Plan (CPPP), when it is handed over to the Delivery Manager, who is responsible through until the actual possession takes place. Possessions are marked as disruptive or non-disruptive in one of the PPS data entry fields, allowing the S4CS team to identify possessions which cause changes to passenger services.

The NDS planners work to a suite of procedures, the most significant in this area being a Level 2 procedure NR/L2/NDS/202 - Engineering Access & NDS Supplied Resource Planning.

If a possession is disruptive to passenger services, it should be reported through the system and be picked up by S4CS. It therefore follows that if any disruptive possessions are not entered into S4CS these will not be counted in PDI-P. No checks are currently carried out to ensure that this is being done.

The Reporter Team undertook a series of checks on three Areas to confirm that all the disruptive possessions are tracked through from PPS to S4CS. The data were checked for 2010/11 Period 04. Since the Possession IDs do not appear to have an explicit association with the Areas in which they are undertaken, the data had to be filtered semi-manually to obtain approximate sets for each Area, as noted above. Appropriate database queries were then used to identify disruptive PPS records without matching S4CS records, and S4CS records without corresponding disruptive PPS records.

Once the initial comparison had been done, a list of disruptive possessions without a corresponding S4CS reference was produced. These were checked against the Weekly Operating Notice (WON) for the corresponding week to ascertain whether they were in fact disruptive. The majority of those checked were not actually disruptive at all. This suggests that the use of the disruptive/non-disruptive data field within PPS is not as rigorous as it might be. This has probably not caused any issues for Network Rail in the past, but it does make any verification checks very time-consuming.

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Those possessions that were identified as being likely to be disruptive, but without an S4CS reference, were checked with the Lead Planner, Delivery during the Area visits. These checks also included those cases where the Reporter team could not verify an entry because it was not included in the WON. These required checks of the Supplementary notices. Following these checks, details of those possessions that were in fact disruptive, but excluded from S4CS, were passed to the S4CS team in Milton Keynes to investigate.

The first issue that these checks highlighted was possessions planned by Chiltern Railways for Project Evergreen. Because this is a TOC-sponsored project, Schedule 4 does not apply, despite the fact that the project affects other Operators. Any compensation paid to London Midland, for example, is paid directly to them by Chiltern, not by Network Rail. This means that all the disruption from this project is excluded from PDI-P. It appears that the exclusion of TOC-sponsored schemes from the measure was deliberate, since Network Rail is not the instigator of the work and it therefore should not be part of its regulated output. However, this is not explicitly stated, and it should therefore be explicitly set out in the KPI definitions, for the avoidance of future doubt.

Specific issues around individual possessions are set out below.

Two possessions in the West Midlands (PPS references 2010/1274265 & 2010/ 1274721) did not have any S4CS references, despite being disruptive in the Tamworth area. On investigation it was confirmed that both Network Rail and the Operator had missed these possessions, so no Schedule 4 compensation was made and hence they were excluded from PDI-P.

An overnight possession in the Aston area (PPS reference 2010/1281169) did not have an S4CS reference, although the same possession the previous day did. On investigation it emerged that it is common practice to roll such possessions together, and cover them with a single notification. This doesn't affect the PDI-P measure but does make audit more difficult.

An overnight possession in the Preston area (PPS Reference 2010/1285931) was shown to have diversions and bus replacements, but had no S4CS reference. However, on investigation, the S4CS reference had been associated with another nearby possession (PPS reference 2010/1287367). No cross-referencing was made within the systems. This practice is fairly common: when a route is blocked, Network Rail quite correctly will seek to insert additional possessions, to maximise the amount of work done when services are suspended on any given route.

5.3.3   Findings: Data Accuracy

Although additional process documentation has been introduced, the calculation process and detailed documentation for PDI-P are essentially unchanged from those observed and reviewed in 2009/10. It was found then that the calculation processes were complex and opaque, and that the algorithms and processes used were not documented, although there is a User Guide which explains the steps a user should take to produce the KPI. This document has been updated since 2009/10, although there are no apparent significant changes to the section covering PDI-P.

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The data and spreadsheets used for the preparation of the PDI-P value for 2010/11 Period 04 were reviewed, and the specified process was, with one exception, found to have been followed correctly and accurately. One instance was found of records not having been pasted into a spreadsheet as specified: this occurred in step 2); z); cc) of the specified process, where the data do not appear to feed into any calculation but are merely used to flag up the RTP possessions which have required additional processing. While this did not materially affect the production of the PDI-P value, it illustrates the potential pitfalls and vulnerability to straightforward human error of such a manual process.

As noted above, any potential accuracy improvements arising from the introduction and revision of documentation over the past year have been offset by the problems arising from the introduction of ITPS and by the revealed shortcomings of the current S4CS system.

5.3.4   General Observations

The transition to a single team in Milton Keynes managing Schedule 4 appears to have gone well. This is evidenced by the increased levels of possessions which are notified to TOCs within the timescales required to get the maximum discount on Schedule 4.

The lack of a detailed Schedule 4 process manual should be corrected. This was noted at last year's audit and a deadline should be set to get one in place.

The problems caused by ITPS are a concern, particularly since this led to manually adjusted figures being included in the two periods after the May 2010 timetable change. This does inevitably affect the overall confidence ratings, since a proportion of the data was manually adjusted.

The implementation of some internal checks is a positive development, but it is important that records are kept. There are also no checks carried out on the correlation between PPS and S4CS data. Checks similar to those set out in the Performance Manual for verifying TRUST data would be appropriate, and the Performance Manual provides a good model for the introduction of equivalent checks.

The Reporter Team's checks revealed that possessions for Project Evergreen for Chiltern Railways were excluded from PDI-P. The checks also found, on the three Areas audited out of 15, two possessions that were not compensated correctly and were therefore excluded from the PDI-P measure. It is difficult to extrapolate this to a national error level, but it demonstrates that the S4CS process relies heavily on manual interpretation. It also highlights the lack of any detailed verification checks such as those undertaken by the Reporter team. This is doubtless partly because any such audit is currently difficult and time-consuming. This is exacerbated by some of the practices seen during the audit. These include incorrect description of possessions as disruptive in PPS, rolling possessions up into single S4CS references, and not cross-referencing possessions to S4CS entries in situations where two possessions are adjacent to each other.

The main checks appear to rely on TOC challenge if payments are not made, but, if this does not happen, then possessions can be missed, as was found during the course of this review. From discussions with the S4CS team, is was clear that some TOCs are much more challenging than others over Schedule 4, so relying on

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TOC challenge is not a dependable approach. It is recommended that Network Rail should devise an ongoing verification process and review how data are managed to make this process much smoother. This will inevitably improve data quality and make the whole process more transparent.

As noted in the course of our 2009/10 review of PDI-P, and again above, the KPI calculation process is complex, and requires a considerable degree of manual intervention, and the algorithms and processes used are contained in a dispersed set of documents, rather than a single coherent set of procedures, adversely affecting the level of confidence in the accuracy of the process. The introduction of NARS should, however, help to resolve these issues.

5.3.5 Conclusions

The PDI-P measure has been adversely affected by the implementation of ITPS and its effects on the S4CS processes, which have resulted in the temporary necessity of manually overwriting some data. The Reporter team checks have also shown that disruptive possessions can be missed, and the ongoing lack of a Schedule 4 process document is a concern. The concerns expressed in 2009/10 about the potential impacts of a largely manual process, and of a limited understanding of the underlying processes and algorithms, resulting from the absence of documentation apart from the User Guide, have not yet been addressed, although, as already noted, the implementation of NARS is designed to address these.

5.3.6 Confidence Ratings

The PDI-P measure has been rated at B for reliability and 3 for accuracy, unchanged since the equivalent 2009/10 review. This reflects improvements in the data collation processes since 2009/10, but also the fact that the Schedule 4 process still requires more formalisation (including better audit arrangements). The accuracy score reflects the impact of ITPS and the potential for missing Schedule 4 data, as well as the fact that the PDI-P computation process is essentially unchanged from 2009/10. Our view is that the highest achievable confidence rating for this measure is B2, since this is an indicator, not an absolute measure.

5.4 Possession Disruption Index – Freight (PDI-F)

5.4.1 The Measure

The Possession Disruption Index for Freight measures the 'unavailability' of track for freight use, weighted by the level of freight traffic operated over each section of track.

The measure aims to ensure that freight services experience no increase from 2007/8 levels of disruption resulting from engineering works. The measure is expressed as an indexed value, normalised by the MAA for 2007/8. Its definition and calculation are summarised in Table 5.3.

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Measure	Definition	Calculation
Possession Disruption Index – Freight	Possession Disruption Index for Freight measures Track Kilometre availability weighted by relative levels of freight traffic operated over each ELR	Possession Disruption Index for Freight = (Average freight tonne km per SRS divided by Average freight tonne km for network) x (Track km Available divided by Total Track km)

Table 5.3: PDI-F Definition and Calculation

The main variable data source used in the preparation of the PDI-F KPI is PPS, data from which are supplied to the Network Availability Team on a Periodic basis. This and the other data sources are summarised in Table 5.4, below, again taken from Network Rail's Data Requirements (v1.2) document.

Data	Description	Source	Frequency
• Average Freight Traffic weighting	• Average freight train movements per day attributed to a relevant ELR	• ACTRAFF	• Fixed input but can be updated
• PPS	• Location of possession – • Lines affected • Duration of possession • Possession disruptive or not	• PPS	• Email file periodically
• PPS Work Category type	• Data on each possession by work type	• PPS	• Email file periodically
• SLW factor	• SLW weighting	• ORR	• Fixed input but can be updated

Table 5.4: PDI-F Data Sources

5.4.2   Findings: Reliability – Process and Procedures

In contrast to PDI-P, PDI-F makes no use of S4CS data, thus removing a significant potential source of unreliability. The process documentation has been improved since 2009/10, although it still does not include a self-contained, detailed account of the algorithms and calculation processes underlying the preparation of the KPI (while this is not essential for the compilation of the measure, its absence hinders understanding of the processes involved; the implementation of NARS provides an opportunity to address this issue). The calculation process, and the associated User Guide, are essentially unchanged. As noted during the 2009/10 review, the exclusive use of PPS means that any very late possessions (i.e. any arranged after the issue of the WON) are excluded from the measure, in contrast to PDI-P. While this results in some understatement of track unavailability, the use of indexed values to illustrate the PDI-F trend means that this is not a significant issue. This is a known issue within the PDI-F measure.

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As recorded in 2009/10, issues remain in relation to (i) the accurate and consistent recording of single-line working on multiple-track sections, which may lead to the over- or understatement of track unavailability, and (ii) a lack of precision in recorded ELR location data at junctions, which may result in the model indicating the unavailability of routes that are in fact unaffected by possessions. This is again a known issue within the calculation process.

5.4.3 Findings: Data Accuracy

As noted above, although additional process documentation has been introduced, the calculation process for PDI-F is essentially the same as that observed in the 2009/10 review, when it was found that the calculation processes, though simpler than those for PDI-P, are nonetheless quite complex, and, again, that the algorithms and processes used are not documented, although a User Guide is available, explaining the process to be followed by a user for the production of the KPI. Again, this document has been updated since 2009/10, and there are no apparent significant changes to the section covering PDI-F.

The data and spreadsheets used for the preparation of the PDI-F value for 2010/11 Period 04 were reviewed, and were found to follow the specified process correctly and to produce accurate results.

5.4.4 General Observations

Apart from the welcome provision of additional documentation, the PDI-F calculation process is largely unchanged since the 2009/10 review, and, while less complex than that for PDI-P, is reliant on manual intervention and thus prone to error. Again, the planned transition to NARS provides an opportunity to rectify these issues, and to document the underlying processes.

5.4.5 Conclusions

As for PDI-P, the concerns raised in 2009/10 about PDI-F, and its calculation and process documentation, have not yet been fully addressed, but the implementation of NARS should assist in rectifying the situation, both in terms of automation and process documentation; improved documentation of the underlying algorithm and processes would be particularly helpful.

5.4.6 Confidence Ratings

The PDI-F measure has been rated at B for reliability and 3 for accuracy, compared with the C3 rating awarded in 2009/10. The improved reliability score reflects the provision of improved documentation since then. The accuracy score reflects the fact that the PDI-F computation process is essentially unchanged from 2009/10, and continues to rely on considerable manual intervention, particularly in the copying and pasting of data between spreadsheets, with significant scope for straightforward user error, and also the issues of the recording of single-line working and the lack of precision in recorded ELR location data at junctions. For these reasons, and as in the case of PDI-P, our view is that the highest achievable confidence rating for this measure is B2.

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5.5 WTT Compliance

5.5.1 The Measure

Working Time Table Compliance measures the percentage of train schedules run and disrupted (cancelled or replaced by buses vs. the permanent timetable) per weekend, per TOC. The WTT compliance measure provides visibility of the extent of bus substitution at weekends with a view to reducing the use at weekends. The KPI definition and calculation, as shown in the reporting pack, are summarised in Table 5.5.

Measure	Definition	Calculation
WTT weekend compliance	Working Time Table Compliance measures the % of train schedules ran and disrupted (cancelled or replaced by buses vs. the permanent timetable) per weekend, per TOC.	WTT compliance = (total no of schedules planned and run as trains / (total no of schedules planned and run as trains + bus schedules vs. permanent timetable + cancellations vs. the permanent timetable))*100%

Table 5.5: WTT Compliance Definition and Calculation

5.5.2 Findings: Reliability – Process and Procedures

The main data source for this measure has changed since the last audit. Data are now obtained from ITPS rather than Trainplan. The revised requirements are set out in the Data Requirements document (v1.2).

This KPI data were previously produced by the Operational Planning Support Unit in Leeds. However, as part of the ongoing centralisation project, the work has now transferred to Milton Keynes, where the data are now extracted by the Publications Team (part of the Systems teams within O&CS). The team have been issued with the Data Requirements (v1.2) document. The new team took over data production on 28 June 2010.

In addition to the Data Requirements document (v1.2), two additional procedural documents have been produced setting out the detailed procedures for extracting the data from ITPS. These both form part of the Publications Standard Operating Procedures which set out the overall responsibilities of the Publications Team. The first is in Section 2.1 of the procedures, which covers WTT Compliance and Rail Replacement Bus Hours and sets out the overall requirements. The second forms part of the KPI Process Guide which sets out in detail the exact process, including screenshots. The latter document is dated 20 August 2010 whilst the former is undated. The process used is clearly documented, and the process is controlled by a series of windows and dialog boxes, reducing the scope for error. (It should, however, be noted that the documentation for this KPI contained in the document 'Producing the Network Availability Measures', Version 2.0, September 2010, is out of date, and refers to Trainplan instead of ITPS, and to the incorrect data provider). It would be helpful if the Data Requirements document

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made reference to the supporting documents within the relevant section (this should also apply to other supporting procedures).

During the transition from Trainplan to ITPS, four weeks (9-12) of parallel running took place. A new series of macros were developed to extract the data from ITPS (see sub-section 5.5.3).

5.5.3   Findings: Data Accuracy

ITPS data extraction macros

The initial source data for this measure are extracted from ITPS in the form of weekly text files for each Operator, listing the services. These data are then filtered and processed, using three Excel macros, in order to produce the data required by the Network Availability Team. Although the KPI Process Guide is quite clear, the underlying processing activities and associated algorithms are not described, and the process remains something of a 'Black Box', which hinders the checking of the data produced; the underlying process should therefore be documented. Some checks were nonetheless conducted, as described in the following paragraphs.

The files received for the WTT Compliance and Rail Replacement Bus Hours (see following sub-section) data extraction process are listed below:

Macros:

1. PART1T~1.XLS - This is used to copy the text files for individual TOCs into one spreadsheet, with a separate worksheet for each TOC. For each text file, the macro also removes any data from a different TOC which may have been included during the ITPS extraction process.

2. Part 2 Date Filter 3,9.xls – This macro is used to filter trains which operate during weekends only.

3. PART3W~1.XLS – This macro is used to summarize cancellations, number of trains, STP bus and LTP bus from the spreadsheet in (2) above.

Output files consisting of:

4. ODT text files – Operating Day Template text files for each TOC containing days of operation and applicable period.

5. WTT text files – Text files for each TOC extracted from TPS. The key data includes train class, origin, destination, departure time, arrival time, operating days, LTP bus (OF), STP bus (OV), cancellation (CA) and TOC code.

6. A weekly data summary– This is a summary produced from the macros containing cancellations, STP and LTP Bus, total STP bus journey times and total number of trains for all the TOCs.

7. Date Filtered.xls – This file is the processed output from Macro 2 above.

Checks:

*   Macro 1 – The macro was run using the supplied text files above (4 & 5) to produce a spreadsheet which combines all the text files. Spot checks

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were undertaken for the macro process by manually copying and pasting a WTT and ODT text file into a spreadsheet and comparing with that produced by the macro. The checks showed that the macro has been accurately coded.

- Macro 2 – A manual process of filtering trains which operate at weekends only was undertaken by using the unfiltered data for a TOC. The ODT id and the description were allocated to each of the unfiltered trains. Using the filtering facility in Excel these were then compared to the filtered trains produced by the macro. The results produced by the independent check tallied exactly with those produced by the macro.

- Macro 3 – a spot check for this macro was carried out by manually filtering the train ID and the (B/OS) column containing the weekend compliance information. ECS trains are then excluded from the count and any train IDs with a 'B' prefix were counted for the STP/LTP bus numbers. The checks showed that the macro produces accurate outputs.

In general terms, the macros appear to be well-written and laid out, with appropriate commenting of the VBA code and adherence to good coding practice.

Subsequent data processing

The source data provided by the Publications team to the Network Availability Team for 2010/11 Period 04 are input to the spreadsheet 'WTT_Compliance_Bus_Hours_121.xls'. The two sets of data for Period 04 were compared and found to be identical. The National WTT Compliance chart contained in the Period 04 PIR also exactly replicates the equivalent chart generated by this spreadsheet. However, it is noted that average cancellation values have been manually input to the spreadsheet for some TOCs (South Eastern, Southern, SWT, London Overground, London Midland, National Express East Anglia, and Cross Country; these values are highlighted in the spreadsheet. We understand that this was done by the Network Availability Data Champion in order to address the ITPS-related issues referred to above.

5.5.4   General Observations

The transition to ITPS did create short-term problems with the calculation of this KPI. The issue with duplicate schedules had caused problems, and, at the time of the audit, continued to do so for Southeastern services, although this has since been resolved.

The move to Milton Keynes along with the implementation of ITPS has clearly created challenges; however, the creation of detailed procedures should lead to greater long term stability.

The data extracted from ITPS are essentially the same as came from Trainplan. This means that the issue raised during the 2009/10 audit remains true. This is that the percentage of journeys by bus will be affected as much by the location within the overall journey of the bus portion (a bus portion in between train portions will be counted as a smaller proportion – typically one-third - than one that is at the beginning or the end of the journey – typically half). The Reporter Team assertion that this can only be seen as a trend measure, and not an accurate indicator, therefore remains true.

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Notwithstanding these issues, the Excel macros and other computational elements of the KPI production process were found to be robust, well-written and accurate.

5.5.5   Conclusions

This measure has been adversely affected by the implementation of ITPS in that the temporary need to manually overwrite data clearly compromises the accuracy ratings. However, the implementation of detailed data extraction processes is clearly a positive indicator for the future.

Apart from the short-term use of manually-input average cancellation values, the calculations used in the preparation of the KPI were found to be accurate.

The KPI should continue to be seen as a trend indicator given the way the KPI is still calculated.

5.5.6   Confidence Ratings

The KPI has an assessed rating of B for reliability and 3 for accuracy, unchanged since 2009/10. This reflects the fact that whilst there have been process improvements, the problems with ITPS have over ridden the impact of these. Given the calculation methodology used, A2 is probably the highest grading which could be reasonably expected.

5.6   Rail Replacement Bus Hours

5.6.1   The Measure

Rail replacement bus hours measure the percentage of train schedules run and disrupted (cancelled or replaced by buses vs. the permanent timetable) per weekend, per TOC.

The Rail replacement bus hours measure provides an indication of the extent of bus substitution at weekends. The definition and calculation of the KPI are summarised in Table 5.6.

Measure	Definition	Calculation
Rail replacement bus hours	Number of weekend rail replacement bus service hours operated due to possessions obtained by calculating scheduled arrival time - scheduled departure time using the Train Service Data Base code 'BR' summed over all TOCs.	Rail Replacement Bus Hours = (scheduled departure time - Scheduled arrival time) using TSDB code 'BR' summed over all TOCs.

Table 5.6: Rail Replacement Bus Hours Definition and Calculation

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5.6.2   Findings: Reliability – Process and Procedures

The data requirements are now set out in Data Requirements (v1.2). However, the procedure still specifies that the data is extracted from Trainplan. In actual fact the data are now extracted from ITPS, and this should be corrected in v1.4 of the document. The macros used to extract the data are the same as those used to produce the WTT compliance KPI (see sub-section 5.5.3).

The data are now produced by the Publications Team in Milton Keynes. This started on the 28 June, having previously been produced by OPSU in Leeds. Two detailed procedures are used by the Publication Team. These are the same as those described in sub-section 5.5.2 and set out exactly how the data are extracted.

The calculation process from ITPS is essentially unchanged from Trainplan multiplying journey time by the number of bus schedules. Each bus segment is counted only once irrespective of the number of buses used (i.e. an operator putting on six buses to replace a train will only be counted as one bus).

The production of these KPIs is only a very small proportion of the Publication Team responsibilities but the team have been involved in developing the new procedures and macros.

5.6.3   Findings: Data Accuracy

ITPS data extraction macros

The comments made above in respect of WTT compliance also apply to this measure, since the data are derived from ITPS using the same process.

Subsequent data processing

The source data provided by the Publications team to the Network Availability Team for 2010/11 Period 04 are input to the same spreadsheet as used for the WTT Compliance KPI, 'WTT_Compliance_Bus_Hours_121.xls'. Again, the two sets of data for Period 04 were compared and found to be identical, and the National Rail Replacement Bus Hours (Weekend) chart contained in the Period 04 PIR exactly replicates the equivalent chart generated by this spreadsheet.

5.6.4   General Observations

The implementation of ITPS appears to have had no impact on the quality of this KPI. Similarly the transfer to Milton Keynes has had no discernible impact on the KPI, although the Reporter Team did note that beyond the mechanics of producing the data there was inevitably a lower level of understanding of issues behind the measure. This should improve with experience.

The issue noted at the last audit that the measure does not record actual bus hours remains true. However, provided that the data are captured consistently, this is not a major concern provided this is seen as a trend indicator rather than as an accurate measure, as described. It does mean this will never be an A1 measure.

The overall description of the Measure in the Data Requirements (v1.2) is incorrect and needs amending. The document also still refers to Trainplan and therefore requires updating. The creation of new detailed procedures should help maintain consistency of collation, as personnel change over time.

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5.6.5   Conclusions

The improvements in process are a positive step forward and the minimal impact of ITPS means that this KPI has improved its score from the previous audit. It is, however, still not an absolute measure of total bus hours used by TOCs.

5.6.6   Confidence Ratings

The KPI is rated B for reliability and 3 for accuracy, an improvement on the 2009/10 rating of C4. This reflects a sound documented process using consistent data extraction arrangements but also the fact that it is not a fully accurate measure of bus hours. This is likely to be the highest achievable level based on the current methodology for counting replacement buses.

5.7   Possession Planning – Possession Notification Discount Factor

5.7.1   The Measure

The Possession Planning - Possession Notification Discount Factor measures the percentage of disruptive passenger possessions notified in each of the three possession notification bands. A lower percentage of disruptive passenger possessions notified after T-12 weeks reduces the number of changes to the public timetable. The aspiration is for all possessions to be notified within the informed traveller timescales (T-12). The KPI definition and calculation are summarised in Table 5.7.

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Measure	Definition	Calculation
Possession Planning - Possession Notification Discount Factor	Possession Planning - Possession Notification Discount factor measures the percentage of disruptive passenger possessions notified in each of the three possession notification bands: 1. Possessions notified by First Working Timetable (%): Number of disruptive possessions incorporated in the First Working Timetable (for which is received the biggest discount) 2. Possessions notified by T-12 Timetable (%): Number of disruptive possessions entered into the National Timetable database at least 12 weeks before the date of the possession 3. Possessions notified Post T-12 Timetable (%): Number of disruptive possessions entered into the National Timetable database within 12 weeks before the date of the possession (for which is received the smallest discount, if any)	Possession Planning - Possession Notification Discount factor = Number of disruptive passenger possessions that were entered into National Timetable database within 12 weeks before the date of the possession. Further splits for number of disruptive possessions in each of the three bands

Table 5.7: Definition and Calculation of Possession Planning – Possession Notification Discount Factor

5.7.2   Findings: Reliability – Process and Procedures

The data for this KPI are extracted by the S4CS (Schedule 4 Compensation System) Team based in Milton Keynes under the Business Manager (Compensation) within NDS. At the time of the last audit the team was not fully in place and the old Route based compensation teams were still producing much of the data (see 5.3.1 for a more detailed description of the S4CS team issues).

The overall needs are set out in the Data Requirements (v1.2) document although this has not been issued generally across the team as it is felt this is unnecessary.

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The data for the three bands are extracted directly from S4CS by using the relevant discount factors recorded for each notification (it is important to note that this KPI measures notifications and not possessions).

The procedure states that verification checks should investigate all possessions which do not attract the full discount but in reality, at present, only those with the minimum discount are checked.

The process also relies on TOC challenge where discounts are incorrectly calculated to raise queries.

5.7.3   Findings: Data Accuracy

The S4CS source data for 2009/10 Period 04 are contained in the spreadsheet 'KPI-244-2010-2011-P4.xls', whose 'Data' worksheet contains the required information by possession category, territory and calculated percentage totals by year and period. The corresponding derived output data for inclusion in the 2009/10 Period 04 PIR are contained in the spreadsheet: 'P04_2010_11_Possession_Notification FINAL.xls'.

The source data were compared with the contents of the output spreadsheet, using a pivot table. It was found that the data for 'After T-12' and 'Between 1st WTT and before T-12' were replicated exactly, but that the 'Prior to 1st WTT' data in the output spreadsheet were obtained by subtracting the sum of the other two datasets from 100%, rather than using the original data. The purpose of this is presumably to ensure that the reported totals add up to 100%, thus avoiding the effects of any rounding of the original records. The inconsistencies between the original and calculated records were found to be very small, between 0.1% and 0.4%.

The contents of the output spreadsheet were compared with the corresponding chart shown in the PIR, and found to be 100% consistent.

5.7.4   General Observations

Whilst the personnel undertaking the S4CS tasks have changed, the basic process to produce this KPI remains unchanged.

Because the detailed S4CS process manual has not yet been completed there are currently no procedures for this KPI beyond the Data Requirements document (v1.2).

Validation checks being carried out only cover those possessions getting minimum discount, excluding mid-range discounts as required by the procedure. The checks should be expanded to cover all the possession categories to comply with the procedure.

Whilst not strictly within the remit of this report, the Reporter Team did note that this KPI showed a marked improvement over the last 6 periods. This is in contrast to Late and Very Late Possession changes which shows a relatively static picture. Whilst the two KPIs measure different aspects (notifications vs. possessions) it would seem reasonable to expect a correlation. No one seemed to be able to explain the discrepancy or had investigated it. In order to address this and similar issues, and to extract the maximum amount of information from the

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data presented in the KPIs, correlations and apparent contradictions between the various Network Availability KPIs should be monitored, investigated and reported upon. The reporting could take the form of a Commentary section in the PIR, similar to that provided for the individual elements reported upon in Network Rail's Annual Return.

5.7.5   Conclusions

The lack of a defined process manual is still a weakness but the data collection processes are broadly sound with good levels of data accuracy.

5.7.6   Confidence Ratings

The KPI is rated B for reliability and 2 for accuracy, unchanged from 2009/10. The lack of formal written procedures means the retention of the B score which means that a 2 for accuracy is the highest mark available. Formalising the procedures should move this KPI to an A1 rating.

5.8   Late and Very Late Possession Changes

5.8.1   The Measure

The Late and Very Late Possession Changes indicator measures the number of changes that cause the disruptive element of the possession to be increased or reduced (i.e. a new, cancelled, curtailed or extended possession) for the following time periods

- Between the issue of the Confirmed Period Possession Plan (CPPP) and Weekly Operating Notice (WON).

- After the issue of the Weekly Operating Notice (WON).

The measure is expressed as a percentage of the total number of possessions recorded in the relevant period. The KPI definition and calculation are summarised in Table 5.8.

Measure	Definition	Calculation
Late Notice Disruptive Possessions	Number of new, cancelled, curtailed or extended disruptive possessions that were agreed between the CPPP and the WON (to T-10 days)	Number of new, cancelled, curtailed or extended disruptive possessions that were agreed between the issue of the CPPP and before the issue of the WON, that caused the disruptive element of the possession to be increased or reduced, divided by the total number of possessions recorded in the relevant period

Table 5.8: Definition and Calculation of Late and Very Late Possession Changes

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5.8.2   Findings: Reliability – Process and Procedures

The team collating the KPI data has changed since the last audit. The data sent to the Network Availability Team are now collated by the Improvement and Development team, within NDS, based at Milton Keynes. The data are collated from other data provided by the Lead Planner, Delivery outbased with the Area teams.

The outline data needs are set in the Data Requirement (v1.2) document. There are no supplementary KPI instructions issued at either Milton Keynes or to the Lead Planner, Delivery.

The Lead Planner, Delivery works to a procedure called "Engineering Access and NDS - Supplied Resource Planning" (Ref: NR/L2/NDS/202), of which the latest version is dated 4 September 2010. Within this procedure is the procedure (Section 7) for managing late changes to possessions. This sets out what must happen before a late change is agreed. In doing so any late change which is disruptive requires the filling out of an Access Plan Change Request (APCR). It is from these changes that the Lead Planner, Delivery collates his area figures.

The procedure does not contain a definition of disruptive. The Performance Analysis Manager (NDS) stated that it is defined as any possession impacting on access rights even if no trains are affected.

During the area visits it was clear that each planner has a slightly different interpretation and used their own judgement. This included different ways of looking up if the possessions were disruptive. One Lead Planner, Delivery went straight to the Rules of the Route to look at the impact whilst another would use TRUST/TOPS to check for affected Schedules. This is important since many possessions are around the margins of passenger services where access rights may extend beyond the timetable. A standard definition is required.

There is also a difference as to when the possession change is recorded. Some are recording the change in the period it is granted whilst others are recording it for the period in which the actual possession takes place. This must be standardised.

Two of the Area visits made it clear that when assessing any change through the APCR process, that if the compensation costs were greater than £10k it required director sign off within NDS. However, the third Area was unaware of this requirement and it is not included in the procedure. This position must be regularised.

During the checks on one Area evidence was found of disruptive changes that were not reported. It was difficult to verify if others were made and not reported given the problems of poor record keeping.

The Lead Planners, Delivery have had little or no guidance in what they must record for the KPI and how to record it.

It was also clear that once their numbers are sent in they never have any issues raised about them and have never seen the KPI pack in which the numbers are published. In the case of one of the areas visited, it had consistently the most changes authorised, a fact which the manager responsible was unaware.

Network Rail is currently planning to introduce an updated procedure to improve the management of possessions, including the granting of late possessions. This

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will include an updated change request process. This is currently being trialled by the North Eastern team, but was not audited by the Reporter Team.

5.8.3 Findings: Data Accuracy

The source data for 2009/10 Period 04 are contained in the spreadsheets 'P4 2010_11 Late disruptive posession.xls' (containing Late and Very Late Possession Change data by Route and Area) and 'P04 WON Possessions by period 1011 by NR Route.xls' (containing, among other records, total possession data by Route for Period 04).

The data were aggregated and evaluated, and were found to accurately reflect the results shown in the Period 04 PIR. However, as noted above, the underlying data, upon which these calculations are based, are not particularly reliable.

5.8.4 General Observations

The lack of a clear definition and guidance to the Lead Planner, Delivery at area level brings into question the consistency with which the data are collated. From the data reviewed it is almost certain that possessions deemed not disruptive by one planner would have been counted as such by one of the others. Once again the Reporter team recommend that a definitive definition of disruptive be implemented and briefed out to all the relevant departments.

There is no detailed procedure for how to collate the data and records are kept in different ways at Area level. Actually getting the data together for this audit on occasions involved the responsible managers having to reconstruct the data to show the Reporter Team the results. In some cases this data had still not been supplied at the time of writing this report leading the reporter team to conclude that it could not be found. These arrangements should be standardised and record keeping properly defined.

The revised procedures planned for rollout from December offer an opportunity to ensure that the issues raised in this report are fully addressed.

The Lead Planners, Delivery had little or no visibility of what happened to the data once they supplied it. Of the three Areas visited, none had been challenged on the data or trends within it, even though one of those Areas had the most changes nationally in the four periods reviewed. This does question whether the data is in fact being captured to drive improvement. The reason for each of these KPIs should be reviewed, and, if they are not necessary, removed from the pack.

No one in the Area teams spoken to received the periodic KPI packs, nor had they seen the Data Requirements document.

In sub-section 5.7.4, it was pointed out that there is a difference in the trends being recorded by this KPI and that for late and very late notifications when it would be reasonable to expect them to be similar. Given the issues highlighted above it is probable this reflects inaccuracies in the way this KPI is collated. Network Rail should investigate why there is a discrepancy.

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5.8.5 Conclusions

The lack of clear procedures and guidance to the Area planning teams means that all of those spoken to collate the data in different ways. It is reasonable to assume this applies nationally. Added to this, data records are somewhat 'hit and miss', and at least one possession that was not reported was found, but there may well have been others.

5.8.6 Confidence Ratings

The KPI is rated as D for reliability and 4 for accuracy, a deterioration relative to the 2009/10 rating of C3. This reflects the lack of any standardised process and the fact that it is difficult to verify the accuracy of the records which, given the low numbers involved, should be easily resolvable. The highly manual nature of this data capture at present means the highest achievable level is B2, but this still gives significant scope for improvement.

5.9 Possessions involving Single Line Working

5.9.1 The measure

The Possessions Involving Single Line Working (SLW) KPI measures the number of possessions planned for engineering work with the adjacent line open (ALO).

The measure includes the number of planned possessions that leave an adjacent line that is signalled for bi-directional operation or SIMBIDS (Simplified Bi-Directional Signalling) open, and the number of planned possessions where single line working is implemented. SIMBIDS is provided to allow trains to run in the 'wrong' direction during engineering work / line blockages etc. without resorting to pilot men. The KPI definition and calculation are summarised in Table 5.9.

Measure	Definition	Calculation
Possessions Involving Single Line Working	Number of possessions planned for engineering work with the adjacent line open.	Count of number of possessions shown in PPS showing SLW, BiDi and SIMBIDS

Table 5.9: Definition and Calculation of Possessions involving Single Line Working

5.9.2 Findings: Reliability – Process and Procedures

The data for this KPI is now provided from the Systems Team within the Performance and Planning team (itself part of the Operations and Customer Service Directorate) based in Milton Keynes. This is a significant change from the previous audit where the data was provided by the NAU then based in Leeds. However, the manager with responsibility for the provision of the data to the Network Availability Team is actually the same individual, having transferred from Leeds.

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The procedure for collating the data is now included in the Data Requirements (v1.2) document. It has not changed since the previous audit but previously was not documented.

In essence the KPI relies on a word search of the Weekly Operating Notices (WONs) to identify all instances of Single Line Working, SIMBIDs (Simplified Bi Directional Signalling) or use of bi-directional signalling. Work is underway to standardise the language used, assisted by the centralisation of activities in Milton Keynes, but the trawl still uses various key phrases to identify instances. One factor which is helping is that nearly all traffic remarks are now produced by the Engineering Access Planning (EAP) (formerly the Network Access Unit) now based in Milton Keynes. This is leading to improvements in consistency.

It is not clear that any consistent verification checks take place. The feeling of the Systems Support Manager was that the SLW and SIMBIDs figures are likely to be accurate but recognised capturing the bi-directional data was more prone to error. This is partly an issue of defining when it should be stated in the traffic remarks.

5.9.3   Findings: Data Accuracy

The source data for 2009/10 Period 04 are contained in the spreadsheet 'P04 2010 to 2011 report auto update raw data revised.xls', which contains multiple worksheets, each containing data for the four weeks comprising a Period, which are aggregated to produce Periodic results. The Periodic data are fed to a summary worksheet ('Data National A4 3 charts'), which in turn is used as the source for the charts contained in the PIR.

Checks were conducted on the data aggregation and chart generation processes, and the data and processes used to generate the corresponding elements of the PIR were found to be 100% accurate.

5.9.4   General Observations

The position is basically unchanged from the previous audit. The data is captured in the same way and no changes to this process are currently proposed. However, the procedure is now documented

It is likely that instances of bi-directional working will be missed given the lack of definition in what is recorded in the WONs. However, the fact that Traffic Remarks are now written into the WON mainly by the EAP team in Milton Keynes has improved the consistency with which entries are made. This has helped to improve the capture of all instances where the adjacent line is kept open.

The planned adoption of a new planning system, EARS (Engineering Access Reporting System), which will have tick box data entry facilities, should greatly improve the future accuracy of data capture.

5.9.5   Conclusions

The data processes have settled and the arrangements are now covered in a formal procedure. Relying on word searches can never fully guarantee identifying each instance but more consistent wording in the WON has helped improve accuracy.

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5.9.6 Confidence Ratings

The KPI is rated B for reliability and 3 for accuracy, an improvement on the 2009/10 rating of C4. This reflects the better documentation of the process and better identification of all instances.

Improvements in this score will probably require the implementation of EARS, which will automate data collection, to attain A1.

5.10 Possession Incidents – Delay minutes due to possession overrun

5.10.1 The measure

The Delay minutes due to possession overrun value for a period shall be the total number of delay minutes per 100 train kilometres run due to possession overruns lost by revenue earning trains at or between monitoring points. A lower score means less impact to train services caused by possession overruns. The KPI definition and calculation are summarised in Table 5.10.

Measure	Definition	Calculation
Delay minutes due to possession overrun	The indicator is defined as the Delay minutes per 100 train kilometre run due to possession overrun.	Total delay minutes attributed to possession overruns divided by scheduled train-km. The measurement unit is "delay minutes per 100 train-km" expressed as a number with three decimal places

Table 5.10: Definition and Calculation of Delay Minutes due to Possession Overrun

5.10.2 Findings: Reliability – Process and Procedures

The data collection process is specified within the Data Requirements (v1.2) document. In essence the delay data is derived from PSS. The process remains largely unchanged from the last audit. The data are produced by the national Performance Team based in Milton Keynes.

The procedures and data are a subset of those audited in Q1 this year. This audit concluded that the processes and data produced were robust. The delay data is extracted from PSS via Business Objects before being extracted into an Excel spreadsheet.

The train km data for both passenger and freight trains is obtained via PALADIN.

5.10.3 Findings: Data Accuracy

The source data for 2009/10 Period 04 are contained in the spreadsheet 'P04 2010_11.xls', which includes values for delay and deemed delay (i.e.

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cancellation) minutes, and train km by Period, Route and Area. The delay and deemed delay minutes are presented by individual Period and by running year-to-date (YTD) total.

The source data for the relevant Period are copied into the KPI calculation spreadsheet ('KPI-232-2010_2011-P04.csv' in this case) to produce the required outputs. The KPI calculation spreadsheet includes instructions as to how the user should proceed.

The source data were aggregated and compared with those used for the preparation of the charts in the calculation spreadsheet, and found to be 100% consistent (since the process entails the copying and pasting of data, there is some limited, but inevitable, risk of user error).

The generated chart was compared with the chart contained in the PIR and found to be identical (note: it was observed that the records for 2008/09 were omitted from both charts, because of an error in the formula for looking up the data used in the chart; the data presented are thus correct, but incomplete, and the spreadsheet should be rectified accordingly).

5.10.4   General Observations

The delay data production is a small subset of the performance processes subject to recent audit. There are no issues of concern in this area with the processes subject to a high degree of automation based on extracting the relevant data when attributed to possession overruns within TRUST.

5.10.5   Conclusions

The delay data recording processes are sound as reflected in this year's Q1 report.

5.10.6   Confidence Ratings

The KPI is ranked A for reliability and 1 for accuracy, in line with this year's Q1 audit, and unchanged from 2009/10.

5.11   Possession Incidents – Cancellations due to possession overrun

5.11.1   The measure

The number of equivalent deemed minutes per 100 train kilometre run caused by cancellations due to possession overruns. The aim is to achieve lower scores as a low score means less disruption has been caused to our passengers by possession overruns. The KPI definition and calculation are summarised in Table 5.11.

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Measure	Definition	Calculation
Cancellation minutes due to possession overrun	The number of equivalent deemed minutes per 100 train kilometre run caused by cancellations due to possession overruns	(Delay_Minutes)/(Train_KM*100)

Table 5.11: Definition and Calculation of Cancellations due to Possession Overrun

5.11.2   Findings: Reliability – Process and Procedures

The position for cancellation data is identical to that described in sub-section 5.10 (for delay minutes) with data extracted in an identical fashion.

5.11.3   Findings: Data Accuracy

The source file and checking method are the same as those used for the preceding KPI, Delay Minutes due to Possession Overrun. These revealed that the data and charts for Period 04 are 100% consistent and correct, with all relevant data being included in the charts (again, since the process entails the copying and pasting of data, there is some limited, but inevitable, risk of user error in compiling the KPI).

5.11.4   General Observations

The data extraction process for this was covered in the Q1 audit and there are no issues based on the fact that this is a small subset of the overall performance database.

5.11.5   Conclusions

The cancellation data recording processes are sound as reflected in this year's Q1 report.

5.11.6   Confidence Ratings

The KPI is ranked A for reliability and 1 for accuracy, again unchanged from 2009/10.

5.12   Possession Incidents – Temporary Speed Restrictions

5.12.1   The Measure

Planned TSRs tracks the trend of TSRs planned to happen and for which consultation has been provided with train operators through the Rules of the Route process.

Unplanned TSRs are those speed restrictions which effectively come as a surprise to the train operator and are mainly condition-driven.

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The aim of this measure is to reduce the numbers of unplanned TSRs and ensure that TOCs are informed of TSRs due to happen. Its definition and calculation are summarised in Table 5.12.

Measure	Definition	Calculation
Planned and Unplanned TSRs	The number of TSRs planned and unplanned TSRs in place at the end of each period	No calculations applied

Table 5.12: Definition and Calculation of Possession Incidents – Temporary Speed Restrictions

5.12.2 Findings: Reliability – Process and Procedures

The measure has changed since the previous audit (originally it was delay minutes caused by TSRs). It is now based entirely on unplanned TSRs against target.

The data are collected by the Project Manager National TSR Reductions who is part of the National Maintenance Improvement Team. The revised KPI was agreed between Network Rail and ORR. The detailed recording requirements are set out in one of the sections of the Network Rail Asset Reporting Manual called Definitions for the Reporting of Asset TSR Sites (NR/ARM/M4DF) dated 27 April 2010. This sets out what an unplanned TSR is (as well as planned TSRs) and the criteria for reporting, including how the data should be collated and verified.

The Project Manager National TSR Reduction Monitors on a daily basis all of the TSRs across the network. This includes checking on a weekly basis every Weekly Operating Notice, Part A, for speed restrictions by planning area. In addition he also receives copies of every Emergency Speed Restriction imposed by Route Controls. These are sequentially numbered by Route, so he knows a copy of each Emergency Speed Restriction (ESR) imposed is received. By checking at this level of detail he is able to keep a very close watch on the numbers. This is also helped by the significant reduction in numbers over the last two years.

The numbers are as recorded at midnight on each Saturday, and all TSRs that have been in place for more than seven days are included.

The Project Manager for National TSR Reduction carries out verification checks, using the various data sources supplied by the Route teams, against the TSRs published in the WON, to confirm the totals. He also uses a separate database produced by EAP to carry out an additional check.

Targets are set based on an understanding of the risks of TSRs being imposed. This focus on potential restrictions has been a clear driver in managing TSR levels in recent years. The targets for the current year include a 'stretch target' which is significantly lower than the original one, based on a greater understanding and management of risks.

The numbers are supplied by the Project Manager National TSR Reduction to the Network Availability Team for input into the Possession Indicator Report. They do not carry out any calculations against the data.

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5.12.3   Findings: Data Accuracy

The data for Period 04 are contained in the spreadsheet 'Unplanned Targets P04 2010_11.xls'. As noted above, the data are plotted directly to the charts reproduced in the PIR, without any intervening data manipulation, and checks revealed that the generated charts provided a 100% accurate representation of the underlying data.

5.12.4   General Observations

The process of data collection is robust. The monitoring of all WONs, collection of each ESR 'wire' and the cross-checking against a separate database held by Engineering Access Planning mean that a close watch is now kept on all unplanned TSRs as defined within the procedures. The procedures are well-documented and up-to-date.

The reduction in numbers over recent years means that keeping track of TSRs is now a much more manageable task than previously and helps significantly in managing the reliability and accuracy of the remaining ones. This is illustrated by a recent, unexpected growth in Safety TSRs imposed at unmanned level crossings. These have been included within the data with no issues in the data confidence despite the fact that the original focus was very much on asset condition.

The Project Manager National TSR Reduction clearly has a very strong grip on the numbers. It was not clear how deep that understanding is elsewhere in the team and it is suggested that Network Rail ensures that they are not wholly reliant on one individual for this KPI. It is a largely manual process to collate the data, so this risk should be managed.

5.12.5   Conclusions

The process is well documented and clearly well controlled. Records are comprehensive with clear audit trails available. The process has in built sense checks to ensure high levels of data integrity. It does, however, appear to rely heavily on one individual.

5.12.6   Confidence Ratings

The KPI is rated as A for reliability and 1 for accuracy, an improvement on the equivalent 2009/10 rating of B2. This reflects the well-documented arrangements and the robust checking of a controllable set of records.

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6 Confidence Ratings

Following a review in March 2010, a revision to the confidence ratings used up until that date was agreed with ORR and Network Rail. This is not substantially different to the previous system, still requiring scores for reliability and accuracy. The definitions have however been amplified slightly and the number of accuracy bands reduced. The use of manual or automated calculation has been factored into the description. An additional accuracy factor of X has been added for KPIs that are calculated from a very small data sample, or where the accuracy cannot be reliably assessed.

The revised Reliability and Accuracy descriptions used to assess the KPIs covered in this report are shown in Tables 6.1 and 6.2.

Reliability Band	Description
A	Sound textual records, procedures, investigations or analysis properly documented and recognised as the best method of assessment. Appropriate levels of internal verification and adequate numbers of fully trained individuals
B	As A, but with minor shortcomings. Examples include old assessment, some missing documentation, insufficient internal verification, undocumented reliance on third-party data.
C	Some significant shortcomings in the process which need urgent attention.
D	Major shortcomings in all aspects of KPI: process unfit for purpose

Table 6.1: Confidence Grading System: Reliability

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Accuracy Band	Description
1	Calculation processes automated (to a degree commensurate with dataset size); calculations verified to be accurate and based on 100% sample of data; external data sources fully verified. KPIs expected to be accurate to within ±1%
2	KPIs expected to be accurate to within ±5%
3	Shortfalls against several attributes: e.g. significant manual input to calculations or incomplete data verification or less than 100% sampling used. KPIs expected to be accurate to within ±10%
4	KPIs expected to be accurate to within ±25%
5	Calculation processes largely manual with significant errors; data inconsistently reported and unverified; KPI based on small data sample or cursory inspections and verbal reports. KPIs unlikely to be accurate to less than ±25%
6	No longer used
X	KPI is calculated on a very small sample of data, or accuracy cannot be assessed for some other reason (to be qualified in text of report)

Table 6.2: Confidence Grading System: Accuracy

The ratings for the Network Availability KPIs are as follows:

4(a): Possession Disruption Index – Passenger – the PDI-P measure has been rated at B for reliability and 3 for accuracy, and is unchanged since 2009/10. While there have been improvements in the data collation processes since 2009/10, the Schedule 4 process still requires more formal documentation (including better audit arrangements). The accuracy score reflects the negative impact of the implementation of the Integrated Train Planning System (ITPS) on data quality, and the potential for missing Schedule 4 data, as well as the fact that the PDI-P computation process is essentially unchanged from 2009/10. A rating of B2 is likely to be the highest that can be achieved.

4(b): Possession Disruption Index – Freight – the PDI-F measure has been rated at B for reliability and 3 for accuracy, an improvement on the 2009/10 rating of C3. The improved reliability score reflects the provision of improved documentation since 2009/10; improved documentation of the underlying algorithm and processes would nonetheless be helpful, and this issue should be addressed when

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NARS is introduced. The accuracy score reflects the fact that the PDI-P computation process is essentially unchanged from 2009/10, and continues to rely on considerable manual intervention, particularly in the copying and pasting of data between spreadsheets, with significant scope for straightforward user error. As in the case of PDI-P, our view is that the highest achievable confidence rating for this measure is B2.

WTT Weekend Compliance - this KPI has an assessed rating of B for reliability and 3 for accuracy, and is unchanged since 2009/10. This reflects the fact that, whilst there have been process improvements, the impact on the measure of the problems associated with ITPS implementation have cancelled out the impact of these. Given the calculation methodology used, A2 is the highest grading which could be reasonably expected.

Rail Replacement Bus Hours (Weekend) - KPI is rated B for reliability and 3 for accuracy, an improvement on the 2009/10 rating of C4. This reflects a sound documented process using consistent data extraction arrangements but the fact that it is not an absolute measure of bus hours but a trend indicator is reflected in the accuracy score. This is likely to be the highest achievable level based on the current methodology.

Possession Planning - Possession Notification Discount factor - the KPI is rated B for reliability and 2 for accuracy, unchanged since 2009/10. The lack of formal written procedures means the reliability score remains at B, which in turn means that 2 is the highest accuracy rating available. Formalising the procedures should move this KPI to an A1 rating.

Late Possession and Very Late Possession Charges - the KPI is rated as D for reliability and 4 for accuracy, a deterioration relative to the 2009/10 rating of C3. This reflects the lack of any standardised process and the fact that it is difficult to verify the accuracy of the records, which, given the low numbers involved, should be easily resolvable. The highly manual nature of this data capture at present means the highest achievable level is B2, but this still gives significant scope for improvement.

Possessions Involving Single Line Working - the KPI is rated B for reliability and 3 for accuracy. This improved score from last year's rating of C4 reflects the improved documentation of the process and better identification of all instances through better input consistency into the Weekly Operating Notices traffic remarks. Improvements in this score will probably require the implementation of automated data collection, which should enable the attainment of an A1 rating.

Possession Incidents - Delay Minutes due to Possession Overrun - the KPI is ranked A for reliability and 1 for accuracy, unchanged from the 2009/10 rating, and in line with this year's Q1 audit.

Possession Incidents - Cancellations (deemed minutes) due to Possession Overrun – again, the KPI is ranked A for reliability and 1 for accuracy, again unchanged from the 2009/10 rating, and in line with this year's Q1 audit.

Possession Incidents - Temporary Speed Restrictions - The KPI is rated as A for reliability and 1 for accuracy, an improvement on the 2009/10 rating of B2. This reflects the well documented arrangements and the robust checking of a controllable set of records. This KPI has changed from the last audit of Network Availability KPIs, and is now based on the number of unplanned Temporary

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Speed Restrictions (TSRs) relative to target, whereas it previously reflected the delay minutes caused by such TSRs.

These ratings are summarised in Figure 6.1, and the equivalent 2009/10 ratings are shown in Figure 6.2, for reference.

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Defined up to date, documented procedure, internal verification with fully trained individuals

A — Possession Incidents – Delay Minutes due to possession overruns

Possession Incidents – Cancellations due to possession overruns

Possession Incidents – Temporary Speed Restrictions

B — PDI-P
PDI-F
WTT Compliance
Rail Replacement Bus hours
Possessions involving Single Line Working

Possession Planning – Possession Notification discount factor

C

D — Late and Very Late Possession Changes

No documented process, staff untrained, no internal verification

50%   75%   90%   95%   99%   100%

6   5   4   3   2   1

Accuracy

Significant errors identified in calculations, lack of consistency between reports, unverified data sources

No errors in calculations, data consistency between reports, data sources confirmed and verified

Figure 6.1: Summary of Confidence Ratings for Network Availability KPIs

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Defined up to date, documented procedure, internal verification with fully trained individuals

A					Possession Incidents - Delay Minutes due to possession overruns Possession Incidents - Cancellations due to possession overruns
B			PDI-P WTT Compliance	Possession Planning - Possession Notification Discount Factor Possession Incidents - Temporary Speed Restrictions	
C		Rail Replacement bus hours Possessions involving Single Line Working	Late and Very Late Possession Changes PDI-F		
D					

Reliability (vertical axis)

No documented process, staff untrained, no internal verification

50%	75%	90%	95%	99%	100%
6	5	4	3	2	1

Accuracy

Significant errors identified in calculations, lack of consistency between reports, unverified data sources

No errors in calculations, data consistency between reports, data sources confirmed and verified

Figure 6.2: Summary of 2009/10 Confidence Ratings for Network Availability KPIs

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6.1   Consolidated Recommendations

Table 6.1 contains the outstanding recommendations from 2009/10, and also the additional recommendations arising from this year's Network Availability KPIs. The new recommendations are numbered 2011.4.1, 2011.4.2, etc., to reflect the (end of the) current year and the Network Availability KPI number.

No.	Recommendation to Network Rail	Locations in Text	NR Data Champion	Due Date
2010.4.2	Review each of the supporting KPIs and specify if they are for measuring high-level trends or used to provide accurate assessments. This should be done with data providers to confirm that the data represents: • The most appropriate measurement • Best source of base data • What the target accuracy level is for each KPI	Section 3	Paul Hebditch	March 2011
2010.4.5	Put in place a plan to automate data collection. This should identify opportunities and set out a path to achievement.	Section 3	Neil Henry	March 2011
2011.4.1	Ensure that the high-level data checks specified in the document "CP4 Delivery Plan, Network Availability KPIs – Data Requirement" are being undertaken.	Section 3	Paul Hebditch	March 2011
2011.4.2	A follow-up review should be conducted of the impacts on the KPI production processes of the staffing and system changes that took place since the 2009/10 review.	Section 3	Neil Henry	March 2011
2011.4.3	The S4CS Process Manual should be completed and issued as soon as practicable.	5.3.2.1, 5.3.2.2, 5.3.4	Emma Osborn	December 2010
2011.4.4	A system should be introduced for managing S4CS data and verifying inputs and outputs.	5.3.2.1, 5.3.2.2, 5.3.4	Emma Osborn	September 2011

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2011.4.5	The processes and algorithms underlying the processing of ITPS data for use in the WTT Compliance and Rail Replacement Bus Hours KPIs should be documented.	5.5.3	Victoria Fox	March 2011
2011.4.6	Correlations and apparent contradictions between individual Network Availability KPIs (notably between Possession Planning - Possession Notification Discount Factor and Late and Very Late Possession Change) should be monitored, investigated and reported upon.	5.7.4	Paul Hebditch	March 2011
2011.4.7	A standard definition of disruptive possessions should be established and disseminated by Network Rail.	5.8.2, 5.8.4	Matt Allen	March 2011
2011.4.8	The recording and collation of late and very late disruptive possession changes should be standardised and documented.	5.8.2, 5.8.4	Mark Potter	March 2011

Table 6.1: Network Availability Recommendations

6.2   Areas for Future Review

The following is a synopsis of specific areas identified for checking at the next audit. This is not meant to be an exhaustive list but simply a useful checklist of those things that require further checking as part of the audit programme.

1. A separate review of NARS should be undertaken by early 2011, under the terms of a separate mandate, to ensure that its implementation does not adversely affect the KPI confidence ratings. .

2. Checks should be undertaken to confirm that all impacts of the implementation of ITPS on the Network Availability KPIs have been successfully addressed and removed.

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Glossary of Terms

A1   Glossary of Terms

ALO	Adjacent Line Open
APCR	Access Plan Change Request
BF	Busyness Factor
Bi-Di	Bi-Directional Signalling
CDTT	Corresponding Day Timetable
CPPP	Confirmed Period Possession Plan
EAP	Engineering Access Planning
EARS	Engineering Access Reporting System
ELR	Engineer's Line Reference
ESR	Emergency Speed Restriction
FWTT	First Working Timetable
ITPS	Integrated Train Planning System
LENNON	Latest Earnings Networked Nationally Over Night (Fares Data)
LTP	Long-Term Planning
MOIRA	Passenger Demand Forecasting Software (not an acronym)
NARS	Network Availability Reporting System
NAU	Network Access Unit
NDS	National Delivery Service
NPS	National Passenger Survey
NREJT	Network Rail Extended Journey Time
O&CS	Operations and Customer Services
ODT	Operating Day Template
OPSU	Operational Planning Support Unit
PASS	Average Number of Passenger Journeys per Day
PALADIN	Network Rail Performance Database
PDI-F	Possession Disruption Index – Freight
PDI-P	Possession Disruption Index – Passenger
PIR	Possession Indicator Report

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PPS	Possession Planning System
PSS	Performance Systems Strategy
S4CS	Schedule Four Compensation System
SIMBIDS	Simplified Bi-Directional Signalling
SLW	Single-Line Working
STP	Short-Term Planning
Supplementary	Late notice possession notification
ToDW	Time of Day Weighting
TOPS	Total Operations Processing System
TRUST	Train Running System TOPS
TSR	Temporary Speed Restriction
VoT	Value of Time
WACM	Weighted Average of Cancellation Minutes
WebTAG	Department for Transport's Transport Analysis Guidance Website
WiP	Work in Progress
Wire	Very late notice possession notification
WON	Weekly Operating Notice
WTT	Working Timetable

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