Network Rail and Office of Rail Regulation

AO/047 Review of selected calculations in freight and charter operator Schedule 8 for CP5

Final Report

223767-26

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ARUP

Contents

1. Introduction

As part of the Periodic Review 2013, the Office of Rail Regulation (ORR) is updating the Schedule 8 performance regime, including payment rates and benchmarks. In August 2013, the ORR issued a mandate to the Independent Reporter with regard to the review of input data used in the calculation of freight Schedule 8 and charter operator Schedule 8 for Control Period 5 (CP5). This mandate is provided in Appendix A.

Following the issue of the mandate, the Independent Reporter's task was agreed as summarised by the following.

To advise on the robustness of the input data used in the following calculations:

- Freight Schedule 8 Network Rail benchmark;
- Freight Schedule 8 FOC [Freight Operating Company] payment rate; and
- Charter operator Schedule 8 charter operator payment rate.

And additionally, to review selected calculations used in the freight Schedule 8 for CP5.

Thus, the review assessed the accuracy and the sources from which the input data was derived back to Network Rail's original systems, and the accuracy of selected calculations used in the freight payment rates and benchmarks. The review did not check the data that was obtained from the Halcrow work[1] (that drives significant increases in payment rates with the vast majority of service groups) back to its original source.

This final version of this report presents our findings of the review.

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[1] Schedule 8 Recalibration Study: DRAFT estimates of Network Rail Payment Rates - by Service Group, for selected TOCs.

2. Approach

The approach made use of meetings with Network Rail's Freight and Charter representatives and analysis of the information provided by them. The meetings held were as follows:

- An initial meeting on freight and charter Schedule 8 calculations and methods held at Arup's offices on 10 October 2013 (attended by the Arup project team, the Business Intelligence Manager - Office Of Rail Regulation, the Senior Regulatory Economist – Network Rail, the Freight Performance Manager – Network Rail); and

- A subsequent meeting on Freight Schedule 8 Network Rail benchmarks only, held at Network Rail's offices on 17 October 2013 (attended by the Arup project team, the Freight Performance Manager – Network Rail and the Freight Commercial Manager – Network Rail).

A full list of the electronic files that Arup was provided with is included in Appendix B. These included both input and calculation spreadsheets, as well as method statements. Most of this data relates to 2010-11 and 2011-12, a total of 26 Railway Periods.

We were not provided with the CP4 Schedule 8 Network Rail payment rates in 2011-12 prices, which in Network Rail's FOC and charter operator payment rates calculations were sourced from one of the outputs of the Halcrow work[2] to update the passenger Schedule 8 payment rates. Hence we did not check these back to their original source.

The audit was undertaken by reviewing samples of the input data used by Network Rail to calculate performance benchmarks and payment rates, and checking it back to outputs from Network Rail's automated systems in order to give assurance on its integrity.

A review of selected calculations within the calculation sheets also took place.

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[2] Schedule 8 Recalibration Study: DRAFT estimates of Network Rail Payment Rates - by Service Group, for selected TOCs.

3. Input data: Benchmarks

3.1 Background

The Network Rail and Freight Operating Company (FOC) benchmarks detail the number of minutes delay that are allowed within the Schedule 8 regime for each Control Period. For CP5, these will in the main be based on the delay minute target for the final year of CP4, partially adjusted for historic performance of delay minutes per 100 miles travelled. The CP5 adjustments will be derived from 2010-11 and 2011-12 data, and will be finalised as part of the ORR's forthcoming Final Determination.

Network Rail monitors performance against these benchmarks every railway period (every four weeks), and monitors performance within the period through a 'Day 8 statement' that ascribes delay attribution 8 days after it occurs. Data on out-turn performance is derived from Network Rail's monitoring and performance systems and reports are provided to the Network Rail HQ Freight Performance Team, often directly from these systems, to determine payments to and from Network Rail and the FOCs and monitor performance against the benchmark.

If Network Rail performs better than benchmark, it draws a bonus payment from operators. If it performs worse than benchmark, it pays compensation to operators. In CP4, the bonus rate paid to Network Rail is set at 50% of the compensation rate paid from Network Rail. We understand that the payment rates are proposed to be symmetric (i.e. the same for under- and out-performance of benchmark) in CP5.

There is a similar performance regime in place for the performance of freight operators. So, if operators perform better than benchmark, they draw a bonus payment from Network Rail. If operators perform worse than benchmark, then they must pay compensation to Network Rail. The bonus rate paid to the operator for out-performance is also set at 50% of the compensation rate (a difference that is also set to be abolished for CP5).

The PALADIN system (a Network Rail system that contains historical records of train running and their performance) and other systems are used to derive the data for the 'Day 8' and period-end statements, although Arup was told that unresolved disputes are not uncommon at both the 'Day 8' and the period-end dates. The statements issued on these dates consist of the following data:

- All accepted / disputed Network Rail-on-FOC delay by incident; and

- All accepted / disputed FOC-on-Self/Third Party delay by incident.

The attribution of components of delay to a particular operator (or to Network Rail) is not undertaken by the HQ Freight Performance team.

Network Rail's TRUST (Train Running System TOPS) system monitors live train running and performance. Nonetheless, during periods of severe delay a train can be rescheduled in TRUST, meaning that the original schedule is lost, and a process called a service variation minutes adjustment must be undertaken to ensure that the true delay to the service is captured. This is discussed in section 3.4. For CP4, the method that the ORR used to produce the Network Rail

benchmark did not take into account delays not captured by TRUST, in respect of which Schedule 8 payments are still required to be made.

In addition, the Network Rail benchmark has been reduced each year in CP4 to reflect the ORR's regulatory performance trajectory, and we understand that the expectation is that Network Rail will continue to perform throughout CP5 at a level equal or better to the delay minute target set by the ORR for the final year of CP4.

For CP5, a further change is being made to the method, such that the following additional delays are to be included within the benchmark calculation (for reference, see paragraphs 20.92 to 20.98 of the ORR's June 2013 Draft Determination). This includes:

- Delay caused by other train operators, which is classified as Network Rail delay under Schedule 8;

- Delay agreed to be caused by Network Rail as part of the Post Day 8 resolution process;

- Delay agreed to be caused by Network Rail following further escalation to commercial teams Post Day 8; and

- Delay agreed as Service Variation minutes under the Management of Freight Services During Disruption (MFSDD) process.

The details of our audit for all of these elements is contained in Section 3.5.

The other variable involved in the calculation is the mileage completed by the FOC's services. This data is also derived automatically from a Network Rail system called TABS (Track Access Billing System) and is manually inputted to the period-end calculation spreadsheet. This, together with the above data, is transparently presented to the FOC in the period-end report (which the FOC can query, should it deem necessary). This statement itemises the performance of both Network Rail and the FOC during the period, relative to the benchmarks. The net totals from Sections 3.2 and 3.3 are derived and this (in conjunction with smaller adjustments called Service Variation Payments) define the total payment in the period.

Arup reviewed these processes to the extent detailed in Sections 3.2, 3.3 and 3.4 below.

3.2 Network Rail Benchmark

The Network Rail performance benchmark for CP4 is 6.39 minutes per 100 miles for 2013/14 (including only 'pure' Network Rail delays in CP4, with the additions above proposed to be added for CP5). This benchmark was based on performance during the CP3 period.

If Network Rail's performance with regard to FOC delays is below this threshold, the current CP4 rate of payment due is £9.88 per minute (2013/14 prices); rewarding Network Rail for good performance in the period. If Network Rail

delays are above this threshold, the current CP4 rate of payment due from Network Rail is £19.74 per minute (2013/14 prices).

The calculation of the amount of payment due to / from Network Rail is based on:

(a) The number of miles travelled in the period (automatic calculation).

(b) The number of miles travelled in the period multiplied by 6.39 divided by 100.

(c) Number of delay minutes allocated to Network Rail (almost entirely an automatic calculation from TRUST).

(d) The calculation is the total of (b) minus (c) to obtain the 'net' performance.

(e) The total from (d) is multiplied by either £9.88 or £19.74 (as appropriate) to obtain the total payment from/ to Network Rail.

As such, the amount of money due to be paid to or from Network Rail is calibrated on a per period basis (which, because of the difference in payment rates for above and below benchmark, would give a different answer to a calibration on a daily, or annual basis, for example).

3.3 FOC Benchmark

The FOC benchmark is currently 3.05 minutes of delay per 100 miles. This benchmark was set for CP4 based on FOC performance during the CP3 period.

If the FOC's performance (with regard to delays to other FOCs/ TOCs) is below this threshold, the current CP4 rate of payment is £19.15 per minute (2013/14 prices); rewarding the FOC for good performance in the period. If the FOC delays are above this threshold, the current CP4 rate of payment to Network Rail (which is then passed on to other operators) is £38.29 per minute (2013/14 prices).

The calculation is based on the same principles as the Network Rail amounts:

(a) The number of miles travelled in the period (automatic calculation).

(b) The number of miles travelled in the period multiplied by 3.05 divided by 100.

(c) The number of delay minutes allocated to FOC/ Third Party (almost entirely an automatic calculation from TRUST).

(d) The calculation is the total of (b) minus (c) to obtain the 'net' performance.

(e) The total from (d) is multiplied by either £19.15 or £38.29 to obtain the total payment from/ to the FOC.

Again, the amount of money due to be paid to or from Network Rail is calibrated on a per period basis.

3.4 Service Variations

Service Variations concern a situation whereby a booked freight service is retimed and has a new schedule entered into TSDB, with the service running later than originally scheduled.

To provide context for these smaller adjustments, in our sample audit, these accounted for less than 5% of the total payment value for those periods. We reviewed a sample of the Service Variation payments and can confirm these had been appropriately calculated.

3.5 Results

The calculation of performance benchmark payments (the larger portion of the period end statements, covered in Sections 3.2 and 3.3 above) were reviewed according to activities in the table below over two complete periods. We found that the data had been correctly transcribed from Network Rail's reporting systems and that this data had been correctly identified within the monitoring spreadsheets used by Network Rail's HQ Freight Performance Team.

The vast majority of the data involved in the calculations is derived automatically from Network Rail's systems. The only material manual intervention occurs where incidents/ delays are disputed and outstanding post Day 28 (period-end). In this instance, Network Rail's HQ Performance Team estimate the eventual split of outstanding delays based on their professional experience of previous similar incidents.

We were advised that whilst the amount of outstanding disputed delay varies between different FOCs, the total assumed delay from the unresolved pot as a percentage of the total pot is 1.3% for NR-on-FOC delays and 5.4% for FOC-on-TP delays; as the FOCs dispute a higher proportion of FOC-on-NR delay, and in-turn a higher proportion of FOC-on-TP delay than FOC-on-Self delay. This review notes the professional experience of the Performance Team but did not consider the appropriateness of the delay attribution method employed. This is potentially an area for further work.

In addition to the above audit focusing on the 'pure' Network Rail delay, we undertook the checks (on a sample basis) in Table 1 below.

Table 1: Audit Checks Performed

Element	Audit Summary
Network Rail delay minutes agreed post Day 8	We reviewed outstanding delay minutes at Day 8 for sample FOCs. In all cases these delays were resolved by the Route Commercial teams whether through negotiation or through existing commercial arrangements. In all cases, the updated Statements were provided to the Network Rail HQ Freight Performance Team to incorporate into their calculations.
Network Rail delay minutes due to commercial agreements	(as previous)
Network Rail traffic data	We reviewed a sample mileage analysis back to the Period data to ensure this had been applied correctly in the calculations from Network Rail's TABS (Track Access Billing System).

Element	Audit Summary
Service Variation (SV) minutes in 2006/07	We reviewed the total SV minute calculation for the 06/07 year back to the individual Period data. We then analysed a sample of these Periods to confirm that the data (on a train-by-train basis) had been applied correctly in the calculations undertaken by Network Rail.
Data on third party delay to FOCs per 100 miles	We reviewed the derivation of a sample of the data from Network Rail's systems. We reviewed the mileage data from TABS (as previously mentioned). We used this sample to confirm that the data had been applied correctly in the calculations undertaken by Network Rail.

The methodology used to calculate the variance from existing CP4 benchmarks for this small number of samples was robust. Our audit would suggest that the approach of determining the performance against benchmarks has been consistently applied by a small team of individuals.

The Network Rail HQ Freight Performance Team retains an ongoing summary of CP4 performance against the benchmarks for all FOCs. This data is mainly used for internal monitoring purposes, but does provide the detail from which the calibration of robust future benchmarks could be obtained for CP5.

4. Input Data: Payment Rates

4.1 Background

The FOC and Network Rail payment rates define the amount payable by either party in the instance of underperformance when measured against the benchmark, and the bonus receivable by the other party in instances of outperformance when measured against the benchmark. As previously stated, for CP4 the bonus rate is fixed at 50% of the compensation rate.

For CP4, the freight operator payment rate was calculated as a weighted average of the Network Rail on passenger and the Network Rail on freight operator payment rates, based on the split of Network Rail-caused delays at an overall TOC level. The weighted average is intended to pass through the liabilities such that Network Rail is fully compensated (on average) for FOC-caused delays. For CP5, Network Rail has proposed a new approach for calculating the freight operator payment rate based on historic FOC-on-third party delay. It was also proposed to apply weights at a more granular level by individual service group rather than by overall TOC (the average of all of a respective TOC's service groups).

We understand that Network Rail and ORR consider that the CP5 approach of weighting of the freight operator payment rate based on historic data of the split of FOC-on-third party delays by service group will provide a payment rate that better reflects the actual impact of delays caused by freight operators to other train operators than the CP4 approach.   In its Schedules 4 and 8 consultation document, the ORR stated that it is minded to adopt this approach for CP5.

Our audit has considered the input data Network Rail has employed in the calculation of their proposed payment rates and a sample analysis of the spreadsheet used in the calculations.

4.2 Review of Input Data

The input data for payment rates was derived from a number of sources, all of which are available to Network Rail through its train monitoring and performance systems (predominantly PEARS, the PALADIN data Extract And Reporting System) used in the management of the train operator Track Access Agreements. As part of this review, we undertook a sample audit of this data to understand how it was collected, how it was applied and whether there were any manual interventions during the process of calculating these payment rates.

As mentioned above, for CP5, Network Rail is proposing to assess payment rates at a service group level rather than by amalgamated TOC level. Specific TOCs can have one or many service group codes for the purposes of train and route coding and analysis. The payment rate calculation thus involved two key datasets, which are then combined to form this overall weighted average:

- Delay minutes by service group; and
- Cost (£) per delay minute.

4.3 Delay Minutes by Service Group

Delay minutes by service group are derived from Network Rail's performance management system (and attributed to responsible managers in TRUST). This identified performance data over a two-year period (2010-11 and 2011-12) to determine the average delay minute for each particular service group. The data is derived in the following way:

- All delays below threshold (less than 3 minutes) were excluded from the calculation. Full cancellations (and part-cancellations) were also excluded from this calculation;

- All delays of 3 minutes or more (including service which possess no financial value within the passenger TOCs Schedule 8 regime) were obtained;

- Those delays of 3 minutes or more which were attributed (and accepted) as the responsibility of the FOCs (through their responsible manager codes) were obtained; and

- These delays were then aggregated to a particular TOC and then to specific service group codes within each TOC.

We have reviewed a sample of the delay figures derived from Network Rail through to specific service group levels within the PEARS system and can confirm that the figures are consistent. We can confirm that these figures appear to be delay minute figures and do not appear to include any cancellations (that are applied as part of a separate calculation).

4.4 Results

We consider that Network Rail has a consistent approach to calculate the Freight and Charter Payment Rates. We can confirm based on our sample that the data for this analysis has been derived directly from Network Rail's performance/ commercial monitoring systems with limited (if any) manual intervention.

5. Review of Selected Calculations

5.1 Benchmarks

The vast majority of the data involved in the calculation of the benchmarks is derived automatically from Network Rail's systems. The extent of manual intervention required is therefore minimal. We did review a sample of the data from these systems and can confirm they were correctly applied. We also reviewed a sample of the calculations applied within the spreadsheet, and can confirm that the members of the HQ Freight Performance Team were correctly applying the figures in the calculations used to derive both the Day 8 and period-end statements for the FOCs.

5.2 Payment Rates

We also reviewed a sample of the calculations applied to payment rates. Here, passenger payment rates partially inform the FOC benchmark because often a passenger TOC has incurred delay as a result of a FOC failure. There is a difference between how the delay minute figures have been collated and derived between freight and passenger operators. This is because the freight regime payment rates are applied in terms of a value (£ per minute) of average delay, whereas the passenger regime payment rates are applied in terms of a value (£) per minute of average lateness[3]. Therefore, the passenger regime payment rate(s) must be converted into a value per delay minute to be consistent with the delays caused by and to freight operators. We reviewed a sample of these calculations and consider they are appropriate. The fundamental principle of this calculation is that a 1% change in delay minutes equals a 1% change in lateness, a full investigation of which is outside the scope of this study.

5.2.1 Freight Payment Rate Spreadsheet

The Freight Payment Rate workbook reviewed consisted of fourteen worksheets. Two are summary/ calculation worksheets with the remainder being data/ calculation sheets or notes/ background to the data (including responsible manager codes, for example). The summary worksheets also contain formulae which are linked to the other worksheets. The overall calculation has been undertaken according to the following steps:

a) Figures from Network Rail's PEARS system have been derived for each operator, by service group for 2010/11 and 2011/12. These figures indicate the amount that Network Rail paid to the operator of each service group through the Schedule 8 performance model. We reviewed a sample of the calculations used in the spreadsheet back to actual PEARS statements. Whilst there were some minor discrepancies between the figures in the spreadsheet and those calculated manually from the PEARS statements, these were very minor (less than 0.1% variance) and not material to the overall figures. These calculations result in a £ value for the two year period (or 26 railway periods). We can also confirm the link between the

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[3] Delay is the difference between actual time taken between two Recording Points and the booked time in the applicable timetable. Lateness is the difference between actual time at a Contractual Monitoring Point and the booked time in the applicable timetable.

Network Rail datasource and the payment rate spreadsheets. The spreadsheet does show that these financial values (from PEARS) for 2010/11 and 2011/12 were all uplifted to 2012/13 financial (£) values by the inflators in the table below (whilst we did not review the appropriateness of the inflators themselves, we understand that they are consistent with the inflation formulae within the freight track access contract, and have also been calculated independently by ORR).

Table 2: Inflators Used in Model

Year	Uplift to 2011/12 prices	Uplift to 2012/13 prices
2010/11	4.6%	5.2%
2011/12	n/a	5.2%

b) The values by service group were then divided by the total delay minutes that were the responsibility of FOC/ third party within the two year study period. These figures were derived from Network Rail's TRUST system[4]. We can again confirm the link between the Network Rail datasource and the payment rate spreadsheets.

c) The PEARS total value (in £) is then divided by the total delay minutes to obtain an indicative value (in £) per delay minute per service group (at 2012/13 £ value). This figure (for each service group) is then uplifted by the variance arising from Halcrow's study[5], which drives significant increases in payment rates with the vast majority of service groups. The review did not check the data that was obtained from the Halcrow work back to its original source.

5.2.2 Charter Payment Rate Spreadsheet

The workbook reviewed consisted of fifteen worksheets. Two are summary/ calculation worksheets, and the remainder are data/ calculation sheets or notes/ background to the data (including, for example, responsible manager codes). The summary worksheets contain formulae which are linked to the other worksheets.

The figures for the Charter Payment Rate have been derived in the same way as those for the Freight payment Rate for steps (a) to (c) in Section 4.4.1. As with the Freight Payment Rate Spreadsheet, we were able to identify the values included in the Charter Payment Rate Spreadsheet to actual statements and records from Network Rail's systems (the data source).

5.3 Results

We undertook a small random sample audit of the formulae and calculations applied within Network Rail's spreadsheet. This sample indicated that the spreadsheet calculations appeared appropriate, although it should be noted that a previous error with regard to the use of an 'RPI Adjustor' inflator (that wrongly

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[4] This system records and enables the responsibility for delay to be attributed to the responsible party.
[5] Schedule 8 Recalibration Study: DRAFT estimates of Network Rail Payment Rates - by Service Group, for selected TOCs.

increased the rates by a factor equivalent to RPI) was identified during the meeting at Arup's offices on 10th October, and was later corrected.

The data used within the two-year sample for the FOC and Charter payment rates includes all data within these periods. The data was not normalised to omit outliers, and therefore, for example, the payment rate calculated may be higher or lower than the true rate as a result of whether or not very rare incidents (that might occur once in every control period, for example) fell within the two year sample period. More detail on why this period was selected is given in paragraphs 20.53 and 20.54 in the ORR's draft determination whilst a longer period would increase the cost and also mean using data from further in the past, the ORR and Network Rail may wish to consider such an approach for CP6.

Additionally, we consider that parts of the workbooks do not adhere fully to spreadsheet modelling best practices (although this did not affect the output or results of the model in this review).

6. Conclusions

6.1 Input Data

The Freight Schedule 8 Network Rail benchmark appears to be managed and analysed appropriately. Whilst a small number of the inputs are calculated based on the professional experience of the Network Rail team, the vast majority are derived automatically from the two-year sample defined in the Draft Determination (and a longer sample period, or one excluding outliers, might give different results).

We can confirm evidence of the audit-trail for a sample of the input data back to the information contained in Network Rail's performance systems.

6.2 Review of Selected Calculations

Whilst we did not find any inaccuracies in the automated or manual intervention during our sample audit of the benchmark calculations, the spreadsheets that were provided did not always follow best modelling practice, and an RPI inflator error was found during the course of one of the meetings. We understand that this mistake has now been rectified and that revised payment rates have been calculated.

We also understand that the ORR is comfortable with the results of its own audit of NR's calculation of FOC and charter operator payment rates and has also calculated the NR benchmark for CP5. The sample of calculations reviewed as part of this study also contributes to the assurance process. However, this study used a sample-based approach only, and both NR and the ORR may wish to commission a full audit for CP6.

Finally, the largest factor driving the changes to payment rates for CP5 is Halcrow's Study[6], which drives significant increases in payment rates with the vast majority of service groups, which was not reviewed as part of this work (and we understand that the ORR has carried out separate checks on its robustness).

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[6] Schedule 8 Recalibration Study: DRAFT estimates of Network Rail Payment Rates - by Service Group, for selected TOCs.

7. Recommendations

No	Recommendation to NR	Benefits	Evidence of implementation	NR Champion	Date
2013-SH8-01	Consider, for CP6, a full audit of the calculations used in the spreadsheets used to calculate freight and charter Schedule 8 benchmarks and payments.	A full audit would reassure stakeholders that the process used to derive Sch 8 payment rates is robust.	Audit report.	Senior Regulatory Economist.	End December 2017.
2013-SH8-02	Consider, for CP6, a longer period than the two year period chosen as the sample for the purposes of setting CP5 benchmark rates. For consistency, this would have to be applied across all workstreams (not just the freight and charter benchmarks).	A longer sample period would potentially improve the accuracy of the Sch 8 payment rates.	A consideration of the benefits (and potential costs) of switching to a longer sample period.	Senior Regulatory Economist.	End December 2016.
2013-SH8-03	Consider, for CP6, an audit of the accuracy of the manual interventions used in the calculation of the freight benchmarks, perhaps by using historical data to determine how accurate the original manual delay attributions have been relative to the out-turn, once the dispute has been resolved.	This would reassure stakeholders that the process used to derive Sch 8 benchmark rates is robust.	Audit report.	Senior Regulatory Economist.	End December 2017.

Appendix A: Mandate

This mandate was later revised so that the review of the selected calculations applied only to the freight payment rate. An draft report submission date of 25 October 2013 was also agreed by email.

1   Purpose

- To review selected calculations used in the freight Schedule 8 and charter operator Schedule 8 for CP5. These are:
    - Freight Schedule 8 freight operator (FOC) payment rate
    - Charter operator Schedule 8 charter operator payment rate
- To advise on the robustness of the input data used in the following calculations:
    - Freight Schedule 8 Network Rail benchmark
    - Freight Schedule 8 FOC payment rate
    - Charter operator Schedule 8 charter operator payment rate

2   Background

As part of PR13 we are updating the Schedule 8 performance regime. This includes the updates of payment rates and benchmarks in the freight Schedule 8, and an update of the payment rates in the charter Schedule 8.

The methodology for updating the payment rates and benchmarks varies in terms of the certainty we have over the input data used in the calculations and the complexity of the calculations. We have identified two calculations which were carried out by Network Rail for the reporters to review. These are:

- Freight Schedule 8 FOC payment rate
- Charter operator Schedule 8 charter operator payment rate

In addition to this we would like the Reporters to review the input data used in our calculation of the freight Schedule 8 Network Rail benchmark to assess its accuracy. The calculation itself is relatively straight forward but some of the data that was used to calculate it comes from a variety of sources within Network Rail.

3   Scope / Methodology

Network Rail's calculation of FOC payment rate

The independent reporter is required to critically review the methodology and calculations Network Rail has used to calculate the FOC payment rate. This includes:

- Review and comment on Network Rail's approach to calculating the FOC payment rate, including assumptions
- Review the worksheets within the spread sheet model for computational errors within and between worksheets.
- A sample based audit of all the input data to ensure it has correctly been extracted from its original source, including
  - cost data from PEARS in the worksheet entitled 'Data - PEARS Values P1211-1310'
  - delay data from NR BOPSS in the worksheets entitled 'Data - NR & TOT Mins P1211-1310' and 'Data - 2Y Freight Delay on 3rdP'
  - payment rate data from various sources contained in the 'Ref...' worksheets
- Propose any improvements in the methodology that it might be possible to implement for CP6

Network Rail will talk Arup through the process that it went through in order to calculate the FOC payment rate

Network Rail's calculation of the charter operator payment rate

The independent reporter is required to critically review the methodology and calculations Network Rail has used to calculate the charter operator payment rate. This includes:

- Review and comment on Network Rail's approach to calculating the charter operator payment rate, including assumptions
- Review the worksheets within the spread sheet model for computational errors within and between worksheets.
- A sample based audit of all the input data to ensure it has correctly been extracted from its original source, including
  - cost data from PEARS in the worksheet entitled 'Data - PEARS Values P1211-1310'
  - delay data from NR BOPSS in the worksheets entitled 'Data - NR & TOT Mins P1211-1310' and 'Data - 2Y Freight Delay on 3rdP'
  - payment rate data from various sources contained in the 'Ref...' worksheets

The process for calculating the charter operator payment rate is the same as the FOC payment rate, so Network Rail will talk Arup through the process for calculating this at the same time.

Input data provided by Network Rail for ORR calculation of freight Schedule 8 Network Rail benchmark

- A sample based audit of all the input data that Network Rail has provided for the ORR calculation of the freight Schedule 8 Network Rail benchmark, to make sure that it is robust and consistent in definition. Most of this data is relates to 2010-11 and 2011-12, expect where stated:
  - Pure Network Rail delay minutes (reconcile with data in TRUST)
  - Network Rail delay minutes agreed post day 8 (audit NR calculation)
  - Network Rail delay minutes due to commercial agreements (audit NR calculation)
  - Network Traffic data (supplied by Network Rail for this calculation)
  - Service variation minutes in 2006/07
  - Data on third party delay to FOCs per 100 miles (supplied by Network Rail for this calculation)

The Reporter should provide a report, including findings, conclusions and recommendations, expressed in quantitative terms where meaningful to do so. The report should be prepared in draft form and sent electronically to Network Rail and ORR, at the same time. The Reporter should facilitate and provide a

revised report with track changes. This should be followed by a final report, redacted if necessary, for publication on ORR's website.

4   Timescales / Resources

A fully costed proposal for this work is required by **27 August 2013.** The response should also confirm whether there are any conflicts of interest and if so how they will be handled.

Work is expected to commence shortly after, following approval by NR and ORR.

The deliverables are to be phased as follows:

- Draft report on **12 September 2013** setting out :
  - whether the Reporter is satisfied with NR's payment rate calculations, and the input data Network Rail provided for ORR's calculation of the freight Schedule 8 NR benchmark
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- Final report on **20 September 2013** setting out:
  - whether the Reporter is satisfied with NR's payment rate calculations, and the input data is provided for ORR's calculation of the freight Schedule 8 NR benchmark
  - the scale of uncertainty associated with different estimates
  - in the case of material inaccuracy, recommendations for improvements Network Rail should make to the calculations or input data

ORR and NR will aim to provide comments on the draft report by no later than close on business on **16 September 2013** (assuming the draft report is received on **12 September 2013**).

5   Independent Reporter remit proposal

The Independent Reporter shall prepare a fully costed proposal for review and approval by NR and ORR on the basis of this mandate. The approved remit will form part of the mandate and shall be attached to this document. The proposal will detail methodology, tasks, programme, deliverables, resources and costs.

6   Confidence grades

Confidence grades are not required for this mandate.

Appendix B: Files Made Available

Arup was provided with the following files for use in the preparation of this report:

    i.   MS Excel file: "T&F on FOC 2010-11-12";

    ii.   MS Excel file: "CP5 Charter Payment Rate – Full 10-11 &11-12 Data";

    iii.   MS Excel file: "CP5 FOC Payment Rate – Full 10-11 &11-12 Data";

    iv.   MS Word file: "Freight Operator Payment Rate for CP5";

    v.   MS Excel file: "2013 08 – NR and TP ongoing against bmk Ongoing";

    vi.   MS Excel file: "Third party of FOC delay";

    vii.   MS Outlook email: "Re: Outstanding actions from freight Schedule 8 NR benchmark meeting last week" from John Thomlinson at Network Rail, dated 09/05/2013 16:27;

    viii. MS Word file: "HEx Perf Regime Guide";

    ix.   MS Excel file: "HEx Summary 2008 – 2009";

    x.   MS Excel file: "LUL S8 complete summary for 2003 Track Agreement_estimate of payment rates";

    xi.   MS Excel file: "IDBSI009" (Delay 3+ mins to DBS Day 8 Report);

    xii.   MS Excel file: "IDBST009" (Delays caused by DBS for 9th Oct 2013);

    xiii. MS Excel file: "SV Minutes DBS 2013-14 P7";

    xiv. MS Excel file: "GBRf Sign Off 2013-14 Period 5";

    xv.   MS Excel file: "Hidden delay and SV Minutes 2003 Onwards";

    xvi. MS Excel file: "3rd Party Audit Data to Train Level";

    xvii. MS Outlook email: "RE: Data for CP5 Network Rail Benchmark" from John Thomlinson at Network Rail, dated 8/8/13, 14:18;

    xviii. MS Excel file: "DBS SV&C P07 W03" (Service Variation statement);

    xix. MS Excel file: "Western Route DBS Energy Period 5 13-14" (NR Route Dispute Statement);

    xx.   MS Outlook email: "Re: Matt D Contact Details" from John Thomlinson at Network Rail, dated 04/10/2013 14:42; and

    xxi. Adobe Acrobat files: "Pears pdfs.zip" (a Zip folder containing various PEARS output files).